

Comparative Analysis of U.S. Federal Fishery Management to the FAO Ecolabelling Guidelines: A Self-Assessment

Michelle L. Walsh, Galen R. Tromble, Wesley S. Patrick,
and Wendy E. Morrison



U.S. Department of Commerce
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Penny S. Pritzker, Secretary

National Oceanic and Atmospheric Administration
Kathryn D. Sullivan, Administrator

National Marine Fisheries Service
Eileen Sobeck, Assistant Administrator for Fisheries

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Domestic Fisheries Division
Office of Sustainable Fisheries, National Marine Fisheries Service
National Oceanic and Atmospheric Administration
1315 East-West Highway, SSMC3
Silver Spring, MD 20910

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ABSTRACT

The National Oceanic and Atmospheric Administration (NOAA) Fisheries Service and many U.S. fishing industry groups believe that U.S. fisheries are sustainably managed under the strict mandates of the Magnuson-Stevens Fishery Conservation and Management Act and other applicable laws; however, U.S. consumers hear conflicting messages about the sustainability of U.S. seafood. This assessment illustrates conformance between the U.S. federal marine fisheries management system and internationally-accepted guidelines adopted by the Food and Agriculture Organization of the United Nations (FAO). The assessment concludes that NOAA Fisheries addresses all of the FAO's "Minimum Substantive Requirements and Criteria for Ecolabelling." Current management strengths include a participatory and transparent science-based fishery management system, with further effort needed to develop a clear, nationwide implementation of ecosystem-based management approaches. The FAO Ecolabelling Guidelines focus on biological components of sustainability; however, the economic and social aspects of sustainable development also need to be addressed if fisheries are to be fully sustainable. Therefore, NOAA Fisheries surpasses FAO criteria when considering socioeconomic impacts. This conformance assessment will aid NOAA Fisheries and the public by systematically documenting and communicating the sustainable management of U.S. fisheries.

Keywords: conformance, management system, NOAA, sustainable

I. INTRODUCTION

A. RATIONALE

The U.S. fishing industry is continually challenged with educating consumers that their seafood is healthy, safe, and sustainably harvested. In its simplest form, sustainability is about meeting the needs (and wants) of current generations without compromising those of future generations (WCED, 1987; United Nations, 1987). The National Oceanic and Atmospheric Administration (NOAA) Fisheries Service believes that if a U.S. fishery is managed under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and other applicable laws, it is sustainable (ASMI, 2011; Giacalone, 2013; MAFMC, 2013; MAFAC, 2013; and others). The fundamental reason is that U.S. federal marine fisheries are required to uphold the ten National Standards for Fishery Conservation and Management (Table 1), and decision-making is based on the best scientific information available. NOAA Fisheries implements a science-based management process to rebuild depleted fish populations and maintain productive ones, while also minimizing ecosystem impacts of fishing and providing economic opportunities for fishing communities and the seafood industry. NOAA Fisheries scientifically monitors and actively manages U.S. fisheries, and U.S. fishermen operate under some of the most restrictive regulations in the world. These regulations function to sustain U.S. fishery resources, the marine ecosystems from which they are derived, and the fishing communities that depend upon them.

This conformance assessment evaluates U.S. domestic fisheries management under the MSA relative to international criteria set forth by the United Nations Food and Agriculture Organization (FAO)¹ called the *Guidelines for Ecolabelling of Fish and Fishery Products from Marine Capture Fisheries* (FAO Guidelines; FAO, 2009). Within the FAO Guidelines, the section on “Minimum Substantive Requirements and Criteria for Ecolabels” describes criteria for assessing whether resources of an individual fishery are well-managed and biologically sustainable. The guidelines are based on internationally agreed upon fisheries instruments, including the FAO Code of Conduct for Responsible Fisheries, which U.S. government representatives and U.S. stakeholders played a vital role in developing. By conducting this conformance assessment, we will elucidate whether fisheries managed by NOAA Fisheries meet FAO internationally-recognized guidelines, and thus products of these fisheries adhere to the “Minimum Substantive Requirements and Criteria” of sustainability. We view this assessment as a very significant step for NOAA Fisheries to systematically document and communicate the sustainability of its fisheries.

B. BACKGROUND ON THE U.S. FEDERAL FISHERY MANAGEMENT SYSTEM

NOAA Fisheries is responsible for the sustainable harvest, conservation, and protection of living marine resources within the U.S. Exclusive Economic Zone, which (in most instances) spans from 3 to 200 miles offshore. NOAA Fisheries’ primary responsibility is to carry out the

¹The structure and methodology of our framework approach was developed in collaboration with Ocean Trust [a 501 (c)(3) nonprofit education and research foundation] with the support and cooperation of the Gulf States Marine Fisheries Commission and the American Institute of Fishery Research Biologists.

legislative authorities under which it operates, namely the MSA (NOAA, 2007) and other applicable laws. The MSA established a management structure for federal fisheries wherein states that participate in marine fisheries are divided into eight regions each managed by a Regional Fishery Management Council² (Council). Council members are appointed by the Secretary of Commerce and consist of representatives from the regions, including state management agencies³, industry members, as well as the NOAA Fisheries Regional Administrator. Appointees “must be individuals who, by reason of their occupational or other experience, scientific expertise, or training, are knowledgeable regarding the conservation and management, or the commercial or recreational harvest, of the fishery resources of the geographical area concerned” (NOAA, 2007).

Fishery management plans are developed by Councils and approved and implemented by the Secretary of Commerce in accordance with the ten National Standards for Fishery Conservation and Management, which are described within the MSA (Table 1). The National Standards are set in law and prescribe the principles of sustainability that fisheries must follow (e.g., levels of harvest and fishing practices). NOAA Fisheries interprets these standards and provides extensive guidance on how to implement them. The fishery management planning and regulation process involves technical teams, independent scientific committees, constituent advisory panels, enforcement officials, lawyers, management agencies, and the public. The open, public, participatory process of the MSA and related laws and policies, including notice and comment rulemaking procedures under the Administrative Procedures Act (DOJ, 1946) and environmental impact assessments under the National Environmental Policy Act (DOE, 1969), guides the nation’s stewardship of fishery resources (MAFAC, 2005a). The Information Quality Act and subsequent guidelines (managed by the U.S. Office of Management and Budget) set peer-review standards, establish a transparent process for public disclosure, and require that important scientific information be peer-reviewed before dissemination (NOAA, 2012a). In addition, fishery management plans must comply with mandates relating to economic and social issues, including the Regulatory Flexibility Act (FR, 1980), Executive Order 12866 (Regulatory Planning and Review; FR, 1993), and Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations; FR, 1994).

Representatives of third-party organizations such as the National Fisheries Institute and Ocean Trust acknowledge that the NOAA Fisheries/Council process delivers an open, participatory, and science-based system (Lassen, 2001; Connelly, 2012) for managing fisheries through widely-considered and well-established National Standards (after legislation, regulation, litigation, and Council processes are considered; Connelly, 2012). However, NOAA Fisheries has also been critiqued for not adequately communicating the rationale of its goals and its achievements (Conathan, 2012; Connelly, 2012). It is this lack of communication that may have allowed others (e.g., non-governmental organizations, certification agencies, seafood buyers, distributors, retailers, etc.) to define the status of U.S. stocks and forced some markets to require additional evaluations of NOAA’s management and performance (Connelly, 2012). Even though NOAA Fisheries must initiate this dialogue with the public, all stakeholders must become more willing to engage (Conathan, 2012).

²The Caribbean Fishery Management Council is unique in that it includes the Commonwealth of Puerto Rico and the U.S. Virgin Islands.

³In the Pacific region, a tribal representative is mandated also.

This conformance assessment can act as a very significant tool for NOAA Fisheries to systematically document, communicate, and guide the sustainable management of its fisheries. We will begin by outlining the objectives, followed by a description of the structure and methodology used to conduct the assessment including the categories of evidence tracked to corroborate conformance. Then, we will discuss a summary of results and will conclude with a description of future considerations that address areas of weaker conformance of U.S. federal fishery management to the FAO Guidelines, as well as further opportunities to continuously improve the management of our dynamic fisheries.

C. OBJECTIVES AND OUTCOMES

The objective of the current assessment is to evaluate conformance of U.S. federal fishery management processes relative to the “Minimum Substantive Requirements and Criteria for Ecolabelling” section of the FAO Guidelines. The FAO Guidelines, in addition to most ecolabelling schemes, concentrate on evaluating discrete management techniques implemented on a fishery-by-fishery basis; however, the approach of this conformance assessment focuses on the management system as a whole rather than that of an individual fishery. Sustainability may be assessed better by focusing on the overarching management system. This takes the focus from a snapshot of stock status or fishing level of one fishery in isolation, to looking instead at the capacity of the system to respond to changes in stock levels or impacts via management measures in all fisheries under a given jurisdiction. Stocks fluctuate in response to changes in the environment and so will catches for sustainably managed fisheries. As mentioned earlier, in its simplest form, sustainability is about meeting the needs and wants of current generations without compromising those of future generations (WCED, 1987; United Nations, 1987).

The full conformance assessment (Appendix 2) should be used as a reference, which provides documentation on how U.S. federal fishery management compares to criteria described in the FAO Guidelines. It does not need to be read from beginning to end; rather, the Table of Contents can be used to find specific areas of interest. Likewise, the text in Appendix 2 is structured to outline the most relevant evidence of U.S. federal fishery management conforming to FAO Guideline criteria. Appendix 2 does not provide an exhaustive list of all U.S. federal laws and regulations that support fishery management performance or intent, nor a comprehensive description of all stocks under U.S. federal fishery management jurisdiction. Rather, examples are provided to support the scored conformance rating.

This conformance framework may be applied as a self-assessment tool, which can be adapted and applied at various levels of management, e.g., from NOAA Fisheries as a whole (applied here) to the NOAA Regional Office, Council, or fishery management plan level. It also may be used as a way to synchronize regional efforts or to normalize variability in management processes.

II. METHODS

A. STRUCTURE OF THE CONFORMANCE ASSESSMENT

The FAO Guidelines were adopted by the FAO Committee on Fisheries in 2005 and revised in 2009. The FAO Guidelines are written in such a way that makes systematic scoring of conformance difficult. Similar concerns have been raised about the FAO Code of Conduct for Responsible Fisheries (Pitcher et al., 2006). Therefore, in 2010 the FAO developed an Evaluation Framework to provide additional guidance for assessing the conformity of public and private ecolabelling schemes with the FAO Guidelines (FAO, 2010). Contrary to its description, the Evaluation Framework is less an evaluation tool and more a structured summary document that further elaborates on the key issues described within the FAO Guidelines. The current conformance assessment takes a qualitative approach using information contained within the Evaluation Framework and the FAO Guidelines to apply twenty-four “Topics of Pertinence” (Table 2), which are key concepts and principles tracked as superscripts throughout this assessment (see Walsh and Lassen, in review, for more details on methodology). Comments and Benchmark Indicators cited within the assessment are provided directly from the Evaluation Framework. Like the Evaluation Framework, the current assessment does not weigh Benchmark Indicators; “Topics of Pertinence” are regarded equally in the evaluation of conformance.

The FAO Guidelines contain six sections: (1) Scope, (2) Principles, (3) General Considerations, (4) Terms and Definitions, (5) Minimum Substantive Requirements and Criteria for Ecolabelling, and (6) Procedural and Institutional Aspects. The first four sections are introductory and contextual in nature and are not considered further (see FAO, 2009). Similarly, the “Procedural and Institutional Aspects” section addresses authorities not under NOAA Fisheries’ jurisdiction, as U.S. fishing standards are set by Congress. Further, NOAA Fisheries is neither an accreditation nor a certification⁴ agency. Therefore, this assessment will only focus on conformance with the FAO’s “Minimum Substantive Requirements and Criteria for Ecolabelling.”

This conformance assessment evaluates how well U.S. federal marine fisheries meet each of the criteria listed within the “Minimum Substantive Requirements and Criteria for Ecolabelling” by describing applicable statutes as well as regulations and guidelines that apply to federal fisheries, followed by a discussion section on highlighted stocks that illustrates how fisheries are managed and provides evidence that corroborates conformance (Table 3). The extent to which NOAA Fisheries is able to provide strong evidence of conformance for each FAO Guideline largely depends on the variability that exists among regions, e.g., differences in stocks, size and structure of fisheries, fishery management plans, operation of the Councils, relationships between the Councils and NOAA Fisheries’ regional offices, and other factors explained later in this assessment. This assessment will describe regional differences in conformance with each of the criteria.

⁴ Although NOAA Fisheries does have authority under statutory mandates (e.g., Pelly Amendment to the Fishermen’s Protective Act of 1967; High Seas Driftnet Moratorium Protection Act) to certify nations that are conducting fishing operations that do not diminish the effectiveness of international fishery conservation programs to the President (i.e., that these nations should be able to export seafood product into the United States), these certifications are neither third party nor for ecolabels.

B. CONFORMANCE EVIDENCE

Three types of evidence are identified to assess conformance, as recommended by the FAO Evaluation Framework:

1. **Internal evidence** (i.e., the management system says it does something)
2. **Outcome evidence** (i.e., the system demonstrably does what it says it does)
3. **Independent evidence** (i.e., an independent expert has determined that the management system does what it says it does)

Conformance of each topic is described in the “Conformance” column of the rubric via a symbol system, with ● indicating conformance verified by internal evidence, ●● by outcome evidence, and ●●● by independent evidence. Solid symbols (●) indicate strong evidence in all regions and for all fisheries under jurisdiction of the management system; semi-solid symbols (◐) indicate conformance with variable evidence among regions or fisheries (i.e., strong evidence for some but not for others). An empty symbol (○) in the “Conformance” column indicates a gap between the management system and FAO Guidelines. This does not confirm nonconformance; it simply demonstrates a lack of evidence available to verify or refute conformance within the management system. For some topics, the open-access availability of conformance evidence is considered as independent evidence (Table 4), since any member of the public can verify that the claim is being met (e.g., that documented management approaches exist). To minimize redundancy, Topics of Pertinence that have been explained under other guidelines are referred to in the “Reference Guideline #” column of the rubric.

For summary purposes, we have applied a numeric rating system to the symbol scores (●=3; ◐=2; ○=1) within each evidence type (internal; outcome; independent). The maximum overall score allowed using this rating system is 72 (i.e., 24 Topics of Pertinence multiplied by 3, the maximum numeric rating). Percentages of the maximum score are provided in Table 2.

Although U.S. fisheries management may earn three solid symbols for a particular Topic of Pertinence, NOAA Fisheries does not consider such achievement an end point for progress. Maintaining sustainable management is a dynamic and on-going process, and NOAA Fisheries acknowledges that such a score would be a commendable benchmark, but not a terminal goal. NOAA Fisheries strives for continuous improvement in performance through rigorous and progressive conservation and sustainability practices, as well as innovative and evolving management strategies.

C. FUTURE CONSIDERATIONS

To lay the foundation for further improvement, this assessment provides NOAA Fisheries with future considerations for fishery management. In some instances, these future considerations are based on areas of weaker conformance evidence identified by the rubric. In others, especially for Topics of Pertinence that have scored three solid black symbols, future considerations are provided beyond the scope of FAO Guidelines. The provided future considerations are not exhaustive, but rather supply some potential examples for moving U.S.

fishery management forward. Although future considerations were consolidated from reviewing a number of sources, the majority were the findings from the Managing Our Nation's Fisheries 3: Advancing Sustainability Conference, which occurred May 7-9, 2013 in Washington, D.C. (MONF3, 2013a). The conference, co-sponsored by the eight Councils and NOAA Fisheries, brought together leaders in fisheries science, management, conservation, recreation, and industry with the purpose of providing a forum to assess the status of the nation's marine fisheries management programs and future directions at both national and regional levels.

Products that may result from this assessment to address areas for future improvement include white papers on specific issues that provide additional conformance evidence; tools (e.g., documents describing "best practices") for use by the Councils to improve conformance; improved policies or regulatory approaches developed by Councils or implemented by NOAA Fisheries; revised National Standard guidelines; or changes or additions during subsequent MSA reauthorizations.

III. RESULTS AND DISCUSSION

A. CONFORMANCE ASSESSMENT SUMMARY

U.S. federal marine fisheries management under the MSA addresses all of the FAO's "Minimum Substantive Requirements and Criteria for Ecolabelling," i.e., all Topics of Pertinence indicated evidence of conformance (Table 2). Overall, the percentage of the maximum score allowed was very high across all three evidence categories: 97% for internal, 93% for outcome, and 89% for independent evidence. On an individual Topic of Pertinence basis, the areas with weaker conformance evidence (semi-solid and/or fewer symbols) serve as a focus for discussion.

The areas of strongest conformance include attributes of the U.S.'s participatory and science-based fishery management system, specifically:

- complying with local, national and international laws
- developing and abiding by documented management approaches with frameworks at local, national or regional levels
- incorporating uncertainty into stock reference points and catch limits while taking actions if those limits are exceeded
- taking into account the best scientific evidence in determining suitable conservation and management measures with the goal of long-term sustainability
- restoring stocks within reasonable timeframes
- using generic evidence of stock resilience (when necessary)

The areas to be further developed pertain to the lack of clear, nationwide implementation of ecosystem-based approaches to management, such as incorporating the broad role of the "stock under consideration" in the food-web, and considering long-term changes in productivity.

The FAO Evaluation Framework, on which the structure of the current assessment is based, was developed to evaluate whether ecolabelling schemes conform to the FAO Guidelines; however, the FAO Guidelines only address biological components of sustainability. Economic

and social aspects of sustainability also need to be addressed if fisheries are to be fully sustainable. Fishermen, as well as ports and waterfronts, make substantial long-term investments that support fishing activities (Helvey et al., 2012). National Standard 8 of MSA requires that fishery management plans ensure the sustained participation of fishing communities in a manner consistent with conservation goals while minimizing adverse economic impacts on such communities. Therefore, in some aspects, U.S. federal fishery management surpasses requisites set in the FAO “Minimum Substantive Requirements and Criteria for Ecolabelling” by addressing the societal and economic aspects of sustainability as well as the biological.

B. PEER REVIEW AND ASSESSMENT

NOAA Fisheries contracted the Center for Independent Experts (CIE) to peer review the self-assessment and requested that each CIE Reviewer apply the same methodology (i.e., Walsh and Lassen, in review) to conduct an independent assessment of U.S. federal fisheries management. Through a desk review process, the CIE produced three additional assessments of U.S. federal fisheries management (CIE 1 = Maguire 2014; CIE 2 = Hanna; CIE 3 = Jones 2014).

Overall, reviews were positive and applauded NOAA Fisheries efforts to pilot such an assessment. For some Topics of Pertinence, CIE Reviewers rated the performance of U.S. federal fisheries management higher than NOAA Fisheries did. For example, all three Reviewers felt that there is strong independent evidence available that the U.S. considers types and scales of fisheries in management (Topic of Pertinence #5), with CIE Reviewer #1 commenting that "Taking into account the types and scales of fisheries in fisheries management does not imply a redistribution of access rights to smaller operators..." (Maguire 2014), and CIE Reviewer #3 adding that "Lawsuits in federal and state courts to change allocation between recreational and commercial fisheries" have ensued (Jones 2014). All three Reviewers also felt that there is sufficient internal evidence by U.S. federal fisheries management that stocks are not overfished (Topic of Pertinence #18). Here, the discrepancy between ratings by NOAA Fisheries and CIE Reviewers can be attributed to the use of the term "overfished", which CIE Reviewers interpreted as whether "overfishing" is allowed to occur. In federal parlance, the term "overfished" means the biomass of the fish stock has declined below a level that jeopardizes its capacity to produce maximum sustainable yield on a continuing basis, while "overfishing" refers to a fishing mortality rate that exceeds the fishing mortality rate associated with fishing at maximum sustainable yield (see Appendix 2, page 165 for further explanation).

For some Topics of Pertinence, CIE Reviewers rated the performance of U.S. federal fisheries management lower than NOAA Fisheries did. For example, regarding whether verified traditional, fisher or community knowledge is considered in management, all three Reviewers felt there is insufficient independent evidence to that claim. CIE Reviewer #1 noted: "There are no mechanisms for including traditional, fisher or community knowledge in the scientific process. It is an add-on once the scientific advice has been produced and reviewed" (Maguire 2014).

C. CONSERVATIVE COMBINED RATINGS

To consolidate the ratings provided by NOAA Fisheries and CIE assessments, two conservative approaches were applied (Table 2). The Lowest Minimum Combined Rating is the absolute lowest rating of all assessors combined. The Consolidated Numeric Combined Rating averages ratings across reviewers. Using the same numeric system described earlier for summarizing results, symbols were assigned a numeric value (●=3; ◐=2; ○=1) within each evidence type (internal; outcome; independent). When the average calculated to exactly the 0.5 level, the final combined rating was rounded down.

The original NOAA Fisheries scores and the two consolidated scores were minimally different overall (Fig. 1). Even the most conservative approach, the Lowest Minimum Combined Rating, provided relatively high scores. This consolidation process supports the findings of the CIE reviewers, which were generally in agreement with the NOAA Fisheries scores as we noted earlier. Regarding individual Topics of Pertinence, findings were also similar, but there is a wider range of Topics of Pertinence that did not receive as high of scores (Table 2).

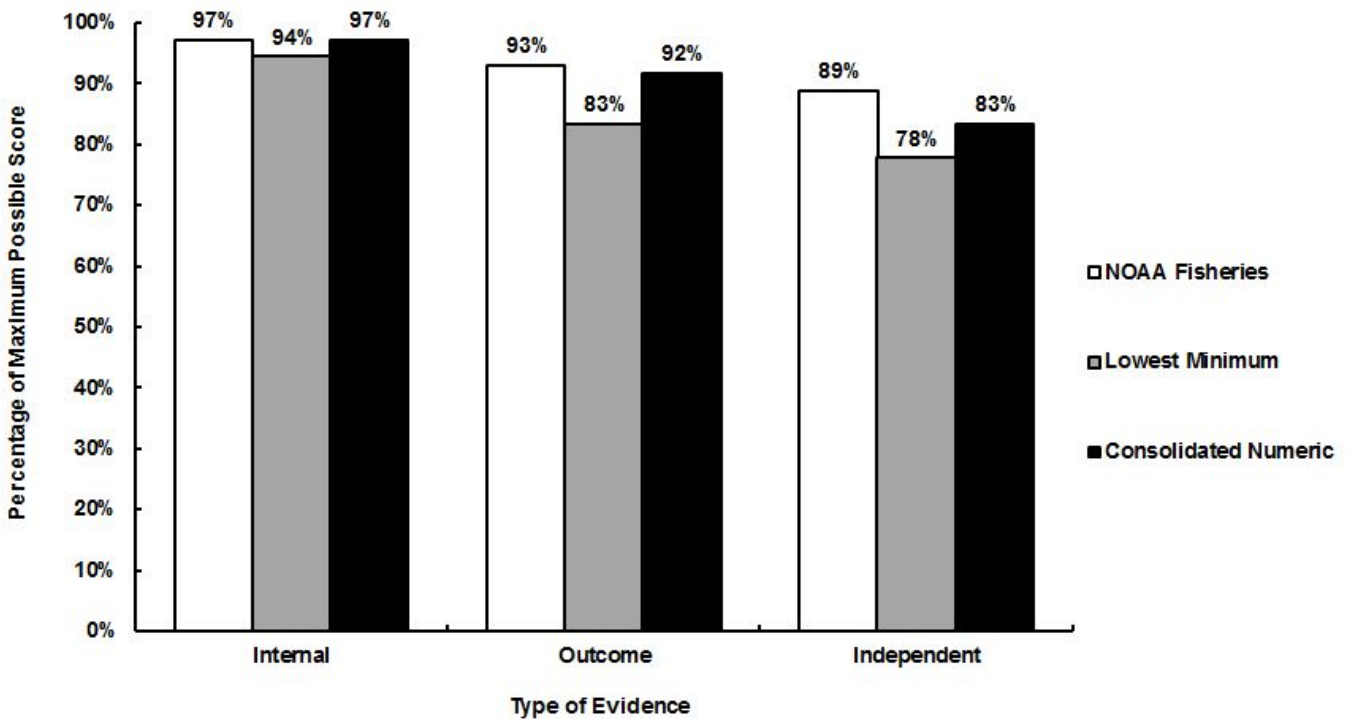


Figure 1. Overall NOAA Fisheries and the two conservative combined ratings (Lowest Minimum and Consolidated Numeric) for internal, outcome and independent evidence.

D. FUTURE CONSIDERATIONS

The most prominent suggestions are those that span a number of Topics of Pertinence and that have been repeatedly communicated by a number of scientists, managers, and stakeholders at the Managing Our Nation's Fisheries 3: Advancing Sustainability Conference, Congressional hearings pertaining to the reauthorization of MSA, Council meetings, as well as other venues.

These future considerations include:

- improving assessment methods for data-poor stocks
- identifying funding assistance for small-scale fishers
- increasing the use of electronic monitoring and reporting for both commercial and recreational fisheries
- expanding opportunities for cooperative research
- increasing stakeholder involvement
- incorporating more multi-species and ecosystem-based approaches into management with stronger consideration for the roles of forage stocks
- integrating flexibility into management to better address the needs of recreational fishers as well as to allow for stocks to respond to environmental influences and climate change
- increasing transparency of management decision-making and rationale
- better communicating the sustainability of U.S. fisheries management and performance

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APPENDIX 1

Excerpt* from

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

**GUIDELINES FOR THE ECOLABELLING
OF FISH AND FISHERY PRODUCTS FROM
MARINE CAPTURE FISHERIES,
REVISION 1, 2009 (FAO, 2009)**

MINIMUM SUSTANTIVE REQUIREMENTS AND CRITERIA FOR ECOLABELS

Introduction

26. The following sets forth the minimum substantive requirements and criteria for assessing whether a fishery can be certified and an ecolabel awarded to a fishery. Ecolabelling schemes may apply additional or more stringent requirements and criteria related to sustainable use of the resources. The requirements and criteria presented below are to be based on and interpreted in accordance with the current suite of agreed international instruments addressing fisheries, in particular the 1982 UN Convention on the Law of the Sea, the 1995 UN Fish Stocks Agreement and the 1995 Code of Conduct for Responsible Fisheries, as well as related documentation including the 2001 Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem.
27. Requirements are specified for each of three areas: the management systems, the fishery and associated “stock under consideration” for which certification is being sought, and consideration of serious impacts of the fishery on the ecosystem. Criteria and related measurable performance indicators and a corresponding monitoring system should be established in order to assess the conformity of the fishery concerned with the requirements and the criteria of the ecolabelling scheme. In developing and applying the criteria and assessing the conformity of the fishery with the standard of certification, the views and opinions of States, RFMOs and FAO should be fully considered.

Management systems

28. Requirement: The fishery is conducted under a management system which is based upon good practice and that ensures the satisfaction of the requirements and criteria described in Paragraph 29. The management system and the fishery operate in **¹compliance with**

* This excerpt only contains the “Minimum Substantive Requirements and Criteria for Ecolabelling” section of the FAO Guidelines. To minimize confusion, any footnotes cited within the original text have been omitted. Instead, Topics of Pertinence from the current assessment methodology have been tracked as bolded superscripts throughout this excerpt. All references to paragraphs refer to specifically numbered paragraphs within the FAO Guidelines.

the requirements of local, national and international law and regulations, including the requirements of any regional fisheries management organization that manages the fisheries on the “stock under consideration.”

- 28.1 For the “stock under consideration” there are ²**documented management approaches** with a well based expectation that ³**management will be successful taking into account uncertainty** and imprecision.
- 28.2 There are objectives, and as necessary, management measures to ⁴**address pertinent aspects of the ecosystem effects of fishing** as per paragraph 31.
29. The following criteria will apply to management systems for any fisheries, but it must be recognized that special consideration needs to be given to small-scale fisheries with respect to the availability of data and with respect to the fact that management systems can differ substantially for different ⁵**types and scales of fisheries** (e.g. small scale through to large scale commercial fisheries).
- 29.1 ⁶**Adequate data and/or information are collected, maintained and assessed** in accordance with applicable international standards and practices for evaluation of the current state and trends of the stocks (see below: Methodological aspects). This can include relevant ⁷**traditional, fisher or community knowledge**, provided its validity can be objectively verified.
- 29.2 In determining suitable conservation and management measures, the ⁸**best scientific evidence** available is taken into account by the designated authority, as well as consideration of relevant ⁷**traditional, fisher or community knowledge**, provided its validity can be objectively verified, in order to evaluate the current state of the “stock under consideration” in relation to, where appropriate, stock specific target and limit reference points.
- 29.2bis: Taking due account of paragraph 32, for the “stock under consideration” the determination of suitable conservation and management measures should include or take account of:
- ⁹**Total fishing mortality** from all sources is considered in assessing the state of the “stock under consideration,” including discards, unobserved mortality, incidental mortality, unreported catches and catches in other fisheries.
 - Management targets are consistent with achieving ¹⁰**maximum sustainable yield** (MSY) (or a suitable proxy) on average, ¹¹**or a lesser fishing mortality if that is optimal** in the circumstances of the fishery (e.g. multispecies fisheries) or ⁴**to avoid severe adverse impacts** on ¹²**dependent predators**.
 - The management system should ¹³**specify limits or directions in key performance indicators** (see 30.2), **consistent with avoiding recruitment**

overfishing or other impacts that are likely to be irreversible or very slowly reversible, and specify the ¹⁴**actions to be taken if the limits are approached** or the desired directions are not achieved.

- 29.3 Similarly, ^{6,8}**data and information**, including relevant ⁷**traditional, fisher or community knowledge**, provided its validity can be objectively verified, are used to ⁴**identify adverse impacts of the fishery on the ecosystem**, and ^{6,8}**timely scientific advice is provided** on the likelihood and magnitude of identified impacts (see paragraph 31).
- 29.4 The designated authorities adopt and effectively implement appropriate measures for the conservation and sustainable use of the “stock under consideration” based on the data, information and scientific advice referred to in the preceding bullets. ¹⁵**Short-term considerations should not compromise the long-term conservation and sustainable use of fisheries resources.**
- 29.5 An effective legal and administrative ¹⁶**framework at the local, national or regional level**, as appropriate, is established for the fishery and ¹⁷**compliance is ensured through effective mechanisms for monitoring, surveillance, control and enforcement** (see paragraph 6).^{**}
- 29.6 In accordance with the Code of Conduct Article 7.5, the ³**precautionary approach is being implemented** to protect the “stock under consideration” and to preserve the aquatic environment. Inter alia this will require that the ⁸**absence of adequate scientific information should not be used as a reason for postponing or failing to take conservation and management measures.** Further, relevant uncertainties are being taken into account through a suitable method of risk assessment. ¹³**Appropriate reference points are determined** and ¹⁴**remedial actions to be taken if reference points are approached or exceeded** are specified.

“Stocks under consideration”

30. Requirement: The ¹⁸**“stock under consideration” is not overfished**, and is maintained at a level which promotes the objective of ¹¹**optimal utilization** and maintains its ¹⁶**availability for present and future generations**, ¹⁹**taking into account that longer term changes in productivity can occur due to natural variability** and/or impacts other than fishing. In the event that biomass drops well below such ¹³**target levels**, management measures (Code of Conduct Article 7.6) should allow for ²⁰**restoration within reasonable time frames** of the stocks to such levels (see also paragraph 29.2.bis). The following criteria are applicable:

^{**} Paragraph 6 is not included in this excerpt. Refer to the Guidelines in full (FAO, 2009).

- 30.1 The ¹⁸**“stock under consideration” is not overfished** if it is above the ¹³**associated limit reference point** (or its proxy).
- 30.2 If fishing mortality (or its proxy) is above the ¹³**associated limit reference point**, ¹⁴**actions should be taken to decrease the fishing mortality (or its proxy) below that limit reference point.**
- 30.3 The ²¹**structure and composition of the “stock under consideration” which contribute to its resilience** are taken into account.
- 30.4 In the absence of specific information on the “stock under consideration,” ²²**generic evidence based on similar stocks can be used** for fisheries with low risk to that “stock under consideration.” However, ³**the greater the risk the more specific evidence is necessary to ascertain the sustainability** of intensive fisheries.
31. Requirement: ⁴**Adverse impacts of the fishery on the ecosystem should be appropriately assessed and effectively addressed.** Much greater ³**scientific uncertainty** is to be expected in assessing possible adverse ecosystem impacts of fisheries than in assessing the state of target stocks. This issue can be addressed by taking a ³**“risk assessment/risk management approach.”** For the purpose of development of ecolabelling schemes, the most probable adverse impacts should be considered, taking into account ^{6,8}**available scientific information**, and ⁷**traditional, fisher or community knowledge** provided that its validity can be objectively verified. Those ⁴**impacts that are likely to have serious consequences should be addressed.** This may take the form of an immediate management response or further analysis of the identified risk. In this context, ⁵**full recognition should be given to the special circumstances** and requirements in developing countries and countries in transition, including financial and technical assistance, technology transfer, and training and scientific cooperation. The following criteria are to be interpreted in the context of avoiding high risk of severe adverse impacts:
- 31.1 ²³**Non-target catches, including discards**, of stocks other than the “stock under consideration” ¹⁸**are monitored** and ²³**should not threaten these non-target stocks with serious risk of extinction;** ^{14,20}**if serious risks of extinction arise, effective remedial action should be taken.**
- 31.2 ¹²The role of the “stock under consideration” in the food-web is considered, and if it is a key prey species in the ecosystem, management measures are in place ⁴**to avoid severe adverse impacts** on ¹²**dependent predators.**
- 31.3 There is ²⁴**knowledge of the essential habitats for the “stock under consideration” and potential fishery impacts on them.** ⁴**Impacts on essential habitats and on habitats that are highly vulnerable to damage by the fishing gear involved are avoided, minimized or mitigated** (Code of Conduct 7.2.2). In

assessing fishery impacts, the full spatial range of the relevant habitat should be considered, not just that part of the spatial range that is potentially affected by fishing.

- 31.4 In the absence of specific information on the ⁴**ecosystem impacts of fishing** for the unit of certification, ²²**generic evidence based on similar fishery situations can be used** for fisheries with low risk of severe adverse impact. However, ³**the greater the risk the more specific evidence is necessary to ascertain the adequacy of mitigation measures.**

Methodological aspects

32. There are many ways in which state and trends in stocks may be evaluated, that fall short of the highly quantitative and data-demanding approaches to stock assessment that are often used for large scale fisheries in developed countries. ^{6,10}**Use of less elaborate methods for stock assessment should not preclude fisheries** from possible certification for ecolabelling. However it should be noted that, to the extent that the application of such methods results in greater uncertainty about the state of the “stock under consideration,” more ³**precautionary approaches** to managing fisheries on such resources will be required which may necessitate lower levels of utilization of the resource. There is a variety of ⁵**management measures commonly used in small scale or low value fisheries** that nonetheless can achieve quite adequate levels of protection for stocks in the face of uncertainty about the state of the resource. ²**A past record of good management performance could be considered as supporting evidence of the adequacy of the management measures and the management system.**

APPENDIX 2

COMPLETE CONFORMANCE ASSESSMENT*

(TRACKED BY FAO GUIDELINE REFERENCE NUMBER**)

List of Acronyms found within Appendix 2.

ACL	Annual Catch Limits
ABC	Acceptable Biological Catch
AM	Accountability Measures
Bmsy	Stock Biomass that can support Maximum Sustainable Yield
BSAI	Bering Sea and Aleutian Islands
CFR	Code of Federal Regulations
DOC	Department of Commerce
EFH	Essential Fish Habitat
ESA	Endangered Species Act
FAO	Food and Agriculture Organization of the United Nations
FATE	Fisheries and the Environment Program
FMP	Fishery Management Plan
FMU	Fishery Management Unit
IATTC	Inter-American Tropical Tuna Commission
IDCP	International Dolphin Conservation Program
MFMT	Maximum Fishing Mortality Threshold
MMPA	Marine Mammal Protection Act
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSST	Minimum Stock Size Threshold
MSY	Maximum Sustainable Yield
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NS	National Standard
OFL	Over Fishing Limit
OY	Optimum Yield
RFA	Regulatory Flexibility Act
SAFE	Stock Assessment and Fishery Evaluation
SARC	Stock Assessment Review Committee
SDC	Status Determination Criteria
SEDAR	South East Data Assessment and Review
STAR	Stock Assessment and Review
WPSAR	Western Pacific Stock Assessment Review

* Applicable statutes and regulations for the conformance assessment are provided directly from the parent documents listed, respectively. To minimize reader confusion, excerpts have been copied more-or-less verbatim, with the omission of internal (i.e., within statute, regulation) references that may not be included in the excerpt.

** All references to “paragraph(s)” refer to specifically numbered paragraphs within the FAO Guidelines. Refer to the Guidelines in full (FAO, 2009).

MANAGEMENT SYSTEMS

FAO: MANAGEMENT PRACTICE & COMPLIANCE WITH APPLICABLE LAWS

Guidelines Paragraph:

28. Requirement: The fishery is conducted under a management system which is based upon good practice and that ensures the satisfaction of the requirements and criteria described in Paragraph 29. The management system and the fishery operate in ¹**compliance with the requirements of local, national and international law and regulations**, including the requirements of any regional fisheries management organization that manages the fisheries on the “stock under consideration.”

Comments: The standard (evaluation) should include consideration of the management system [see also above – (FAO Guideline) paragraph 27 (See Appendix 1)].

Benchmark Indicator: The standard for the management system is based on current international norms with respect to good practice and satisfies benchmarking requirements established under Guideline (FAO Guideline) Paragraphs 29 and 31.

The standard for the management system requires compliance with local, national and international laws and regulations, including the requirements of any regional fisheries management agreement that directs the management of the fisheries on the “stock under consideration.”

Assessing Conformance^{***}:

1. *Applicable Statute(s)*

A. Magnuson-Stevens Fishery Conservation and Management Act (MSA): TITLE III—
NATIONAL FISHERY MANAGEMENT PROGRAM

i. SEC. 303. CONTENTS OF FISHERY MANAGEMENT PLANS

(a) REQUIRED PROVISIONS.—Any fishery management plan which is prepared by any Council, or by the Secretary, with respect to any fishery, shall—

(1) contain the conservation and management measures, applicable to foreign fishing and fishing by vessels of the United States, which are—

(C) ¹**consistent with the national standards, the other provisions of this Act, regulations implementing recommendations by international**

^{***} NOAA Fisheries implements a suite of legislation and regulation for compliance with international fisheries management and multilateral environmental agreements. For international treaties, each treaty has a specific piece of implementing legislation with requirement. In assessing conformance for Guideline 28, we provide just a few representative examples.

organizations in which the United States participates (including but not limited to closed areas, quotas, and size limits), and any other applicable law;

ii. SEC. 305. OTHER REQUIREMENTS AND AUTHORITY

(f) JUDICIAL REVIEW.—

- (1) **Regulations promulgated by the Secretary under this Act** and actions described in paragraph (2) **shall be subject to judicial review** to the extent authorized by, and in accordance with, chapter 7 of title 5, United States Code, if a petition for such review is filed within 30 days after the date on which the regulations are promulgated or the action is published in the Federal Register, as applicable;
- (2) The actions referred to in paragraph (1) are actions that are taken by the Secretary under regulations which implement a fishery management plan, including but not limited to actions that establish the date of closure of a fishery to commercial or recreational fishing.
- (4) Upon a motion by the person who files a petition under this subsection, the appropriate court shall assign the matter for hearing at the earliest possible date and shall expedite the matter in every possible way.

B. Endangered Species Act (ESA; DOI 1973).

i. SEC. 2. FINDINGS, PURPOSES, AND POLICY

(a) FINDINGS.—The Congress finds and declares that—

- (4) **the United States has pledged itself as a sovereign state in the international community** to conserve to the extent practicable the various species of fish or wildlife and plants facing extinction, **pursuant to**—
 - (A) migratory bird treaties with Canada and Mexico;
 - (B) the Migratory and Endangered Bird Treaty with Japan;
 - (C) the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere;
 - (D) the International Convention for the Northwest Atlantic Fisheries;
 - (E) the International Convention for the High Seas Fisheries of the North Pacific Ocean;
 - (F) the Convention on International Trade in Endangered Species of Wild Fauna and Flora; and
 - (G) other **international agreements**; and
- (5) encouraging the States and other interested parties, through Federal financial assistance and a system of incentives, to develop and maintain conservation programs which meet **national and international standards** is a key to meeting the Nation's international commitments and to better safeguarding, for the benefit of all citizens, the Nation's heritage in fish, wildlife, and plants.

ii. SEC. 7. INTERAGENCY COOPERATION

(c) BIOLOGICAL ASSESSMENT.—

(1) ... Such assessment may be undertaken as part of a Federal agency's **¹compliance with the requirements of section 102 of the National Environmental Policy Act of 1969** (42 U.S.C. 4332).

(n) JUDICIAL REVIEW.— **¹Any person**, as defined by section 3(13) of this Act, **may obtain judicial review**, under chapter 7 of title 5 of the United States Code, **of any decision of the Endangered Species Committee** under subsection (h) in the United States Court of Appeals for (1) any circuit wherein the agency action concerned will be, or is being, carried out, or (2) in any case in which the agency action will be, or is being, carried out outside of any circuit, the District of Columbia, by filing in such court within 90 days after the date of issuance of the decision, a written petition for review.

2. *Regulations/Guidelines*

A. C.F.R. (Code of Federal Regulations) Title 50: Chapter II:

i. Sec. 216.24 TAKING AND RELATED ACTS INCIDENTAL TO COMMERCIAL FISHING OPERATIONS BY TUNA PURSE SEINE VESSELS IN THE EASTERN TROPICAL PACIFIC OCEAN--

(f) Importation, purchase, shipment, sale and transport.

(12) Market Prohibitions.

(i) It is unlawful for any person to sell, purchase, offer for sale, transport, or ship in the United States, any tuna or tuna products unless the tuna products are either:

(b) **¹Harvested in compliance** with the IDCP (International Dolphin Conservation Program) by vessels under the jurisdiction of a nation that is a member of the IATTC (Inter-American Tropical Tuna Commission) or has initiated, and within 6 months thereafter completes, all steps required by an applicant nation to become a member of the IATTC.

B. ESA Section 7 Consultation Handbook, March 1998 (USFWS/NMFS 1998)

i. CHAPTER 4 - FORMAL CONSULTATION

4.4 FORMAL CONSULTATION PROCEDURES

(B) Coordination with other environmental reviews. Formal consultation and the Services' preparation of a biological opinion often involve **¹coordination with** the preparation of documents **mandated** by **other environmental statutes and regulations, including the Fish and Wildlife Coordination Act (FWCA) and the National Environmental Policy Act (NEPA)**. Although other environmental reviews may be processed concurrently with a section 7 consultation package, they should be separate entities. The contents of the biological opinion and incidental take statement, including the discussion of effects to listed or proposed

species and/or critical habitats, and appropriate measures to avoid or minimize those effects, may be addressed in the Service's comments and recommendations under the FWCA, section 404(m) of **the Clean Water Act**, NEPA, **and other authorities**. The section 7 consultation package may be prepared as a stand-alone document under separate signature, or one cover transmittal may be used as long as the consultation package is identified as a separate entity.

3. Discussion

¹Management system is in compliance with relevant local, national, and international laws

Fishery management plans must comply with MSA and its National Standards, ESA, the Marine Mammal Protection Act (MMPA), NEPA, the Regulatory Flexibility Act and other laws. The National Oceanic and Atmospheric Administration (NOAA) Fisheries Service is obligated to comply with all applicable (i.e., local, national, and international) laws. If compliance is in question, litigation ensues (often initiated by non-governmental organizations or stakeholder groups) and any identified noncompliance is rectified through settlement via the U.S. judiciary system.

U.S. federal marine fisheries management complies with international norms through the implementation and enforcement of domestic regulations that respond to resolutions and recommendations of the international organizations in which the U.S. participates, such as Regional Fisheries Management Organizations[†]. U.S. participants and managers of some of these fisheries remark that they feel the United States is one of few countries actually to comply with these difficult-to-enforce, international regulations (Martin and Fougner, 2013; Palacios, 2014).

CONFORMANCE EVIDENCE SUMMARY:

Internal ●	Outcome ●	Independent ●
<ul style="list-style-type: none"> ● MSA: “REQUIRED PROVISIONS.—Any fishery management plan...shall (be) ...consistent with the national standards, the other provisions of this Act, regulations implementing recommendations by international organizations ...and any other applicable law”; 	<ul style="list-style-type: none"> ● Fishery management plans ● Regional Fisheries Management Organization participation 	<ul style="list-style-type: none"> ● If compliance is questioned, the U.S. judiciary system (or determined international court, if applicable) acts as a third-party, independent expert that evaluates whether the management system does what it says it does.

[†] A Regional Fisheries Management Organization is an international body dedicated to the management of fish stocks in a particular high seas region (i.e., international waters).

<ul style="list-style-type: none"> • ESA: “The (U.S.) has pledged itself as a sovereign state in the international community... pursuant to...international agreements.” 		
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4. Conclusions (Conformance/Gaps)

Conformance	Superscript #	Topic Description	Reference Guideline #
●●●	1	Management system is in compliance with relevant local, national, and international laws	

5. Future considerations

¹Management system is in compliance with relevant local, national, and international laws

- During the *Managing Our Nation’s Fisheries 3* Conference held in May 2013, members of the Hawaii Longline Association expressed their frustration with the way in which the United States appears to accept the lack of reporting and suspected noncompliance of some other member countries involved in Regional Fishery Management Organizations. Their view was that “the U.S. seems reluctant to ask the difficult questions that some members may not want to hear or discuss. There is no significant use or attempted use of “peer pressure” to try to force more complete and accurate reporting” (Martin and Fougner, 2013).

FAO: DOCUMENTED MANAGEMENT APPROACHES

Guidelines Paragraph:

28.1 For the “stock under consideration” there are ²**documented management approaches** with a well based expectation that ³**management will be successful taking into account uncertainty** and imprecision.

Comments: None

Benchmark Indicator: None

Assessing Conformance:

1. Applicable Statute(s)

A. MSA: TITLE III—NATIONAL FISHERY MANAGEMENT PROGRAM

i. SEC. 301. NATIONAL STANDARDS FOR FISHERY CONSERVATION AND MANAGEMENT

(a) IN GENERAL.—²**Any fishery management plan prepared**, and any regulation promulgated to implement any such plan, pursuant to this title shall be consistent with the following national standards for fishery conservation and management:

- (1) Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.
- (2) Conservation and management measures shall be based upon the best scientific information available.
- (6) ³**Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.**
- (7) Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.
- (9) Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

ii. SEC. 302. REGIONAL FISHERY MANAGEMENT COUNCILS

(h) FUNCTIONS. Each Council shall, in accordance with the provisions of this Act—

- (1) for each fishery under its authority that requires conservation and management, prepare and submit to the Secretary
 - (A) ²**a fishery management plan**, and
 - (B) amendments to each such plan that are necessary from time to time (and promptly whenever changes in conservation and management measures in another fishery substantially affect the fishery for which such plan was developed);

iii. SEC. 306. STATE JURISDICTION

(a) IN GENERAL.—

- (3) A State may regulate a fishing vessel outside the boundaries of the State in the following circumstances:
 - (A) The fishing vessel is registered under the law of that State, and (i) there is no fishery management plan or other applicable Federal fishing regulations for the fishery in which the vessel is operating; or (ii) the State's laws and regulations are consistent with the fishery management plan and applicable Federal fishing regulations for the fishery in which the vessel is operating.

(B) The fishery management plan for the fishery in which the fishing vessel is operating delegates management of the fishery to a State and the State's laws and regulations are consistent with such fishery management plan. If at any time the Secretary determines that a State law or regulation applicable to a fishing vessel under this circumstance is not consistent with the fishery management plan, the Secretary shall promptly notify the State and the appropriate Council of such determination and provide an opportunity for the State to correct any inconsistencies identified in the notification. If, after notice and opportunity for corrective action, the State does not correct the inconsistencies identified by the Secretary, the authority granted to the State under this subparagraph shall not apply until the Secretary and the appropriate Council find that the State has corrected the inconsistencies...

(b) EXCEPTION.—

(1) If the Secretary finds, after notice and an opportunity for a hearing in accordance with section 554 of title 5, United States Code, that—

(B) any State has taken any action, or omitted to take any action, the results of which will substantially and adversely affect the carrying out of such fishery management plan; the Secretary shall promptly notify such State and the appropriate Council of such finding and of his intention to regulate the applicable fishery within the boundaries of such State (other than its internal waters), pursuant to such fishery management plan and the regulations promulgated to implement such plan.

B. MMPA

i. SEC. 3. Definitions. For the purposes of this chapter—

(27) The term “minimum population estimate” means an estimate of the number of animals in a stock that—

(A) is based on the best available scientific information on abundance, **³incorporating the precision and variability associated with such information;**

C. ESA

i. SEC. 4. DETERMINATION OF ENDANGERED SPECIES AND THREATENED SPECIES

(f)(1) RECOVERY PLANS.— The Secretary shall **²develop and implement plans (hereinafter in this subsection referred to as “recovery plans”) for the conservation and survival of endangered species and threatened species listed** pursuant to this section, unless he finds that such a plan will not promote the conservation of the species. The Secretary, in developing and implementing recovery plans, shall, to the maximum extent practicable—
 (B) incorporate in each plan—

- (i) a description of such site-specific management actions as may be necessary to achieve the plan's goal for the conservation and survival of the species;
- (ii) objective, measurable criteria which, when met, would result in a determination, in accordance with the provisions of this section, that the species be removed from the list; and
- (iii) estimates of the time required and the cost to carry out those measures needed to achieve the plan's goal and to achieve intermediate steps toward that goal.

2. Regulations/Guidelines

A. C.F.R. Title 50: Chapter VI: FISHERY CONSERVATION AND MANAGEMENT, NOAA, DOC (Department of Commerce)

i. Sec. 600.310 National Standard 1—Optimum Yield (OY).

(b) General.

(1) The guidelines set forth in this section describe fishery management approaches to meet the objectives of National Standard 1 (NS1), and include guidance on:

(iii) Preventing overfishing and achieving OY, ³**incorporation of scientific and management uncertainty in control rules**, and adaptive management using annual catch limits (ACL) and measures to ensure accountability (AM);

(3) Approach for setting limits and accountability measures, including targets, for consistency with NS1. In general, when specifying limits and accountability measures intended to avoid overfishing and achieve sustainable fisheries, Councils must ³**take an approach that considers uncertainty in scientific information and management control of the fishery**. These guidelines describe how to address uncertainty such that there is a low risk that limits are exceeded.

(e) Features of MSY (Maximum Sustainable Yield), SDC (Status Determination Criteria), and OY.

(1) MSY

(iv) Specifying MSY... ³**The degree of uncertainty in the estimates should be identified, when possible, through the stock assessment process and peer review...**

(f)^{††} Acceptable biological catch, annual catch limits, and annual catch targets.

(1) Relationship of National Standard 1 to other national standards--General.

(3) National Standard 6 (see Sec. 600.335). ³**Councils must build into the reference points and control rules appropriate consideration of risk, taking into account uncertainties** in estimating harvest, stock conditions, life history parameters, or the effects of environmental factors.

^{††} All of section (f) concerns uncertainty. Only a subset of section (f) is provided here.

- ii. Sec. 600.315 National Standard 2--Scientific Information.
 - (e) SAFE (Stock Assessment and Fishery Evaluation) Report
 - (1) The SAFE report is a document or set of documents that provides Councils with a summary of information concerning the most recent biological condition of stocks and the marine ecosystems in the FMU (Fishery Management Unit) and the social and economic condition of the recreational and commercial fishing interests, fishing communities, and the fish processing industries. It summarizes, on a periodic basis, the best available scientific information concerning the past, present, and possible future condition of the stocks, marine ecosystems, and fisheries being managed under Federal regulation.
 - (ii) The SAFE report provides information to the Councils for determining annual harvest levels from each stock, documenting significant trends or changes in the resource, marine ecosystems, and fishery over time, and **²assessing the relative success of existing state and Federal fishery management programs**. Information on bycatch and safety for each fishery should also be summarized. In addition, the SAFE report may be used to update or expand previous environmental and regulatory impact documents, and ecosystem and habitat descriptions.

- iii. Sec. 600.335 National Standard 6--Variations and Contingencies.
 - (c) Variations.
 - (2) Every effort should be made to develop FMPs (Fishery Management Plans) that discuss and take into account these vicissitudes. To the extent practicable, FMPs should provide a suitable buffer in favor of conservation. **³Allowances for uncertainties should be factored into the various elements of an FMP.**

- iv. Sec. 600.340 National Standard 7--Costs and Benefits.
 - (a) Standard 7. Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.
 - (b) Necessity of Federal management--
 - (2) Criteria. **²In deciding whether a fishery needs management through regulations implementing an FMP, the following general factors should be considered,** among others:
 - (i) The importance of the fishery to the Nation and to the regional economy.
 - (ii) The condition of the stock or stocks of fish and whether an FMP can improve or maintain that condition.
 - (iii) **The extent to which the fishery could be or is already adequately managed** by states, by state/Federal programs, by Federal regulations pursuant to FMPs or international commissions, or by industry self-regulation, consistent with the policies and standards of the Magnuson-Stevens Act.

- v. Sec. 600.350 National Standard 9--Bycatch.

- (d) Minimizing bycatch and bycatch mortality.
 - (3) Select measures that, to the extent practicable, will minimize bycatch and bycatch mortality.
 - (ii) The Councils should ³**adhere to the precautionary approach** found in the Food and Agriculture Organization of the United Nations (FAO) Code of Conduct for Responsible Fisheries (Article 6.5), which is available from the Director, Publications Division, FAO, Viale delle Terme di Caracalla, 00100 Rome, Italy, **when faced with uncertainty...**

3. Discussion

²*There are documented management approaches for the “stock under consideration”*

Fisheries management plans are required provisions of the MSA. All fisheries managed by NOAA have documented fishery management plans that are constructed by Regional Fishery Management Councils and are then approved by the NOAA Fisheries Assistant Administrator (on behalf of the Secretary of Commerce). The documented management approaches detailed in fishery management plans for federally managed stocks can be viewed publically via the NOAA Fisheries website (www.nmfs.noaa.gov/sfa/reg_svcs/fmp/) or via the websites of the Councils.

New England	www.nefmc.org
Mid-Atlantic	www.mafmc.org
South Atlantic	www.safmc.net
Gulf of Mexico	www.gulfcouncil.org ²⁸
Caribbean	www.caribbeanfmc.com
Pacific	www.pcouncil.org
North Pacific	www.alaskafisheries.noaa.gov/npfmc
Western Pacific	www.wpcouncil.org

Not all stocks found within the U.S. Exclusive Economic Zone have federal fishery management plans. In some instances, Councils have ceded the management of federal stocks under their domain to state or regional commission authority, usually when the fishery or stock spans adjacent state and federal waters. Under this structure the state or regional commission will develop and/or oversee the fishery management plan. MSA explicitly provides the authority for delegation, the obligation of the State to ensure any delegated fishery is managed consistent with the MSA, and the authority for NOAA Fisheries to preempt state management should a conservation concern exist. Other stocks remain unregulated because a fishery that substantially influences its numbers either does not exist or is discrete. Inherent in National Standard 7 (“Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication”) is the principle that not every fishery needs regulation (NOAA, 2009). However, this sometimes can have unintended consequences where fast evolving fishing trends can result in new stocks becoming overfished before those fisheries gain the opportunity to be regulated, e.g. monkfish (*Lophius americanus*).

Monkfish, popular in France (as “lotte”) and Italy for years, was featured in 1979 by the American chef and television personality, Julia Child, on one of her more memorable shows. At the time, the species had yet to truly break into the American market. An aggressive expansion of directed monkfish effort off the northeastern U.S. from the mid-1980s ensued, and by the early 1990s, the industry requested that a fishery management plan be developed. By the time the fishery management plan was implemented in 1999, scientists had already determined that the stock had fallen below target abundance levels (i.e., was overfished). Similarly today, the risk of exploiting lesser-known, unregulated stocks continues as consumers attempt to mitigate fishing pressure on more popular stocks that are already over- or fully exploited, by purchasing alternative, lesser known fish species (Smithers, 2012).

All species determined to be endangered or threatened by ESA mandates must have documented recovery plans. Recovery plans for NOAA-managed endangered and threatened species can be viewed publically via the NOAA Fisheries website (www.nmfs.noaa.gov/pr/recovery/plans.htm).

CONFORMANCE EVIDENCE SUMMARY:

Internal	Outcome	Independent
<ul style="list-style-type: none"> ● ● MSA: “Each Council shall...for each fishery under its authority that requires conservation and management, prepare and submit ... a fishery management plan”; ● ESA: “...develop and implement...‘recovery plans’... for the conservation and survival of endangered...and threatened species...” 	<ul style="list-style-type: none"> ● ● Fishery management plans ● Recovery plans 	<ul style="list-style-type: none"> ● ● The documented management approaches detailed in fishery management plans and recovery plans for federally managed stocks can be viewed publically via the NOAA Fisheries website.

³*Uncertainty taken into account via risk assessment or precautionary approach*

When determining annual catch limits, Regional Fishery Management Councils must take an approach that considers both uncertainty in scientific information and in management control of the fishery (Fig. 2). Management uncertainty is management’s ability to match the actual catch level to the target catch in a fishery. An annual catch target is the lowest reference limit to account for management uncertainty, while the upper limit can be set as high as equal to the acceptable biological catch, if that level can be justified. When catch exceeds the annual catch limit, accountability measures are automatically triggered to correct for or mitigate for the overage. The degree to which scientific uncertainty reduces catch from the overfishing limit to the acceptable biological catch is based on a risk policy developed by the Council and is stated in the fishery management plan. Scientific uncertainty is addressed through the acceptable biological

catch reference point, which should be set to a level with less than a 50% probability of overfishing occurring in a given year.

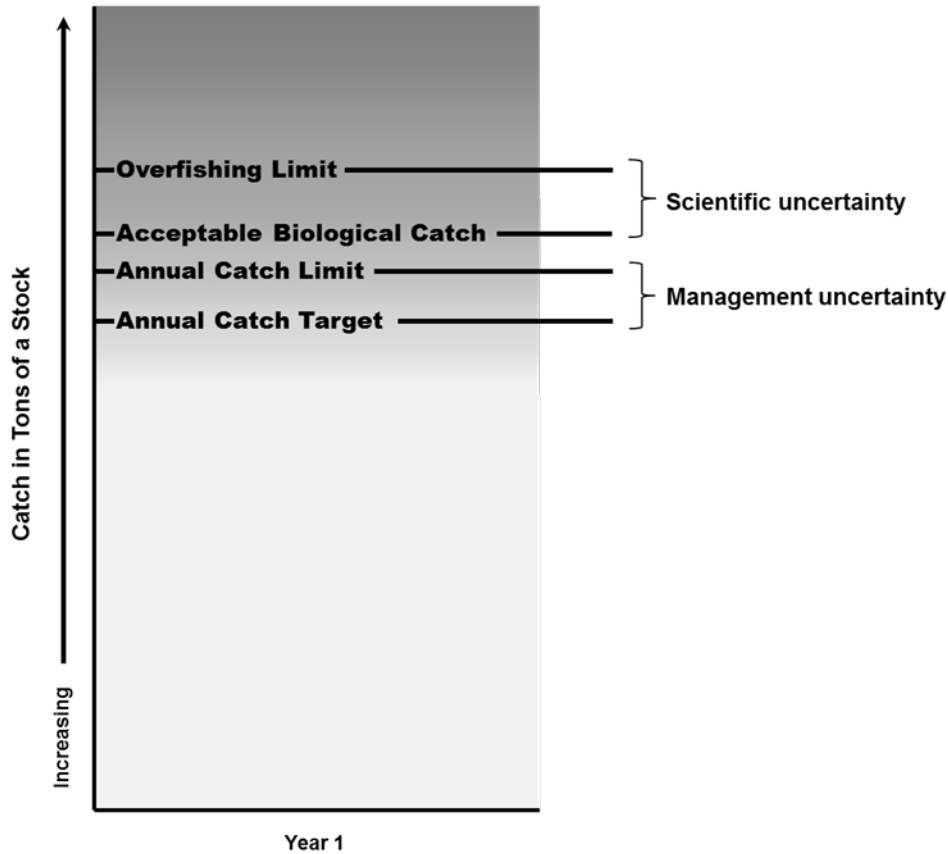


Figure 2. Regional Fishery Management Councils take an approach that considers both scientific and management uncertainty.

CONFORMANCE EVIDENCE SUMMARY:

Internal	Outcome	Independent
<ul style="list-style-type: none"> ● ● MSA: "Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches." ● NS1 Guidelines: "...take an approach that considers uncertainty in scientific information and management control of the fishery" ● NS6 Guidelines: "Allowances for uncertainties should be 	<ul style="list-style-type: none"> ● ● Stock assessments ● Annual catch limits and targets (i.e., the parameters that establish the breadth of management uncertainty considered) set in fishery management plans. 	<ul style="list-style-type: none"> ● ● A Council’s Scientific and Statistical Committee reviews stock assessments and annual catch limits and targets, and for major stocks the Center for Independent Experts acts as a third-party reviewer of benchmark stock assessments and thus the approaches to account for uncertainty. ● Precaution is explicitly enshrined in U.S. fisheries legislation, and is applied to

<p>factored into the various elements of an (Fishery Management Plan)."</p> <ul style="list-style-type: none"> • NS9 Guidelines: "Councils should adhere to the precautionary approach ... when faced with uncertainty..." • MMPA: "... an estimate of the number of animals in a stock ... is based on the best available scientific information on abundance, incorporating the precision and variability associated with such information;" 		<p>management of stocks [Score 8 of 10]; "Most fishery assessments in the USA are highly quantitative and explicitly include the evaluation of uncertainty using Monte Carlo and sophisticated Bayesian techniques" [Score 8 of 10] (Vasconcellos et al., 2006).</p>
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4. Conclusions (Conformance/Gaps)

Conformance	Superscript #	Topic Description	Reference Guideline #
● ● ●	2	There are documented management approaches for the "stock under consideration"	
● ● ●	3	Uncertainty taken into account via risk assessment or precautionary approach	

5. Future considerations

² *There are documented management approaches for the "stock under consideration"*

- "Stakeholders suggested that councils simplify their documents or provide additional documents for those with less technical backgrounds. One way to simplify documents is to make them shorter. For example, the regulations governing the creation of environmental impact statements state that the text of even unusually complex documents should normally be less than 300 pages" (GAO, 2006).
- With few exceptions, most fishery management plans have not been fully revised since first developed 30 to 40 years ago. Parties interested in understanding a stock's current management strategy must read the original plan plus 10 to 30 amendments. Some plans are lengthy (thousands of pages, e.g., Amendment 13 to the Northeast Multispecies Groundfish Fishery is 1660 pages long, not including appendices), and many original documents, although posted on-line, are not in a searchable portable document format (.pdf), requiring readers to browse the entire plan versus searching for keywords within it.

³*Uncertainty taken into account via risk assessment or precautionary approach*

- Management strategy evaluation, also known as the management procedure approach, is a methodology that employs simulations for determining which of a suite of catch control rules achieves management goals best with minimal negative outcomes (Butterworth, 2007; Dorsett et al., 2013). Where applied successfully, the approach has led to more thorough risk assessments, lower inter-annual catch variability, and less debate about catch limits. “Although these methods may take time to develop initially, the benefits of implementing the resulting more robust management and rebuilding strategy generally outweigh the cost of the initial investment in the long run” (Dorsett et al., 2013). For example, the Pacific Council already has applied this approach for groundfish.

FAO: ECOSYSTEM EFFECTS

Guidelines Paragraph:

28.2 There are objectives, and as necessary, management measures to **4address pertinent aspects of the ecosystem effects of fishing** as per paragraph 31.

Comments: None

Benchmark Indicator: None

Assessing Conformance:

1. Applicable Statute(s)

A. MSA: TITLE III—NATIONAL FISHERY MANAGEMENT PROGRAM

- i. SEC. 3. DEFINITIONS As used in this Act, unless the context otherwise requires—
 - (5) The term “conservation and management” refers to all of the rules, regulations, conditions, methods, and other measures... (B) which are designed to assure that – (i) a supply of food and other products may be taken, and that recreational benefits may be obtained, on a continuing basis; (ii) **4irreversible or long-term adverse effects on fishery resources and the marine environment are avoided**; and (iii) there will be a multiplicity of options available with respect to future uses of the resources.
 - (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 **4taking into account the protection of marine ecosystems**;

- ii. SEC. 301. NATIONAL STANDARDS FOR FISHERY CONSERVATION AND MANAGEMENT
- (a) IN GENERAL.—Any fishery management plan prepared, and any regulation promulgated to implement any such plan, pursuant to this title shall be consistent with the following national standards for fishery conservation and management:
- (1) Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.
 - (3) To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.
- iii. SEC. 302. REGIONAL FISHERY MANAGEMENT COUNCILS
- (e) REBUILDING OVERFISHED FISHERIES.—
- (4) For a fishery that is overfished, any ⁴**fishery management plan, amendment, or proposed regulations prepared for such fishery shall**—
 - (A) specify a time period for rebuilding the fishery that shall—
 - (i) be as short as possible, **taking into account** the status and biology of any overfished stocks of fish, the needs of fishing communities, recommendations by international organizations in which the United States participates, and **the interaction of the overfished stock of fish within the marine ecosystem**;
- iv. SEC. 303. CONTENTS OF FISHERY MANAGEMENT PLANS
- (a) REQUIRED PROVISIONS.—Any fishery management plan which is prepared by any Council, or by the Secretary, with respect to any fishery, shall—
- (1) contain the conservation and management measures, applicable to foreign fishing and fishing by vessels of the United States, which are – (A) necessary and appropriate for the conservation and management of the fishery to prevent overfishing and rebuild overfished stocks, and ⁴**to protect, restore, and promote the long-term health and stability of the fishery**;
 - (7) describe and identify essential fish habitat for the fishery based on the guidelines established by the Secretary under section 305(b)(1)(A), ⁴**minimize to the extent practicable adverse effects on such habitat caused by fishing**, and identify other actions to encourage the conservation and enhancement of such habitat;
- v. SEC. 305. OTHER REQUIREMENTS AND AUTHORITY
- (b) FISH HABITAT.—
- (1)(A) The Secretary shall, within 6 months of the date of enactment of the Sustainable Fisheries Act, establish by regulation guidelines to assist the Councils in the ⁴**description and identification of essential fish habitat** in

fishery management plans (**including adverse impacts on such habitat**) and in the consideration of actions to ensure the conservation and enhancement of such habitat.

- (B) The Secretary, in consultation with participants in the fishery, shall provide each Council with recommendations and information regarding each fishery under that Council's authority to assist it in the **4identification of essential fish habitat, the adverse impacts on that habitat,** and the actions that should be considered to ensure the conservation and enhancement of that habitat.

B. MMPA: TITLE I—CONSERVATION AND PROTECTION OF MARINE MAMMALS: MORATORIUM ON TAKING AND IMPORTING MARINE MAMMALS AND MARINE MAMMAL PRODUCTS (NOAA, 1972)

i. SEC. 101.

- (a) Imposition; exceptions. There shall be a moratorium on the taking and importation of marine mammals and marine mammal products, commencing on the effective date of this chapter, during which time no permit may be issued for the taking of any marine mammal and no marine mammal or marine mammal product may be imported into the United States except in the following cases:

- (5)(E)(iii) **4If**, during the course of the commercial fishing season, the Secretary determines that **the level of incidental mortality or serious injury from commercial fisheries** for which a determination was made under clause (i) has resulted or **is likely to result in an impact that is more than negligible on the endangered or threatened species or stock, the Secretary shall use the emergency authority** granted under section 1387 of this title **to protect such species or stock, and may modify any permit** granted under this paragraph as necessary.

C. ESA

i. SEC. 7. INTERAGENCY COOPERATION

(b) OPINION OF SECRETARY.—

- (4) If after consultation ... the Secretary concludes that—

(C) if an endangered species or threatened species of a marine mammal is involved, the taking is authorized pursuant to ... the Marine Mammal Protection Act of 1972; the Secretary shall provide the Federal agency and the applicant concerned, if any, with a written statement that—

- (i) specifies **4the impact of such incidental taking on the species,**
 (ii) **specifies those reasonable and prudent measures that the Secretary considers necessary or appropriate to minimize such impact,**

- (iii) in the case of marine mammals, specifies those measures that are necessary to comply with ... the Marine Mammal Protection Act of 1972 with regard to such taking...

ii. SEC. 10. EXCEPTIONS

(a) PERMITS—

- (2)(A) No permit may be issued by the Secretary authorizing any taking referred to in paragraph (1)(B) unless the applicant therefor submits to the Secretary a conservation plan that specifies—

- (i) **the impact which will likely result from such taking;**
- (ii) **what steps the applicant will take to minimize and mitigate such impacts,** and the funding that will be available to implement such steps;
- (iii) what alternative actions to such taking the applicant considered and the reasons why such alternatives are not being utilized...

D. NEPA

i. SEC. 102. The Congress authorizes and directs that, to the fullest extent possible:

- (1) **the policies, regulations, and public laws of the United States shall** be interpreted and administered in accordance with the policies set forth in this Act, and (2) all agencies of the Federal Government shall –
- (C) **include in every recommendation or report on proposals for legislation and other major Federal actions** significantly affecting the quality of the human environment, a detailed statement by the responsible official on –
 - (i) **the environmental impact of the proposed action,**
 - (ii) **any adverse environmental effects which cannot be avoided should the proposal be implemented,**

E. CONSOLIDATED APPROPRIATIONS ACT: TITLE VIII

i. SEC. 803. Aleutian Islands Fisheries Development.

- (c) Groundfish Optimum Yield Limitation.--The optimum yield for groundfish in the Bering Sea and Aleutian Islands Management Area shall not exceed 2 million metric tons...

See also guideline **31.1**.

2. Regulations/Guidelines

A. C.F.R. Title 50: Chapter IV: JOINT REGULATIONS; ENDANGERED SPECIES COMMITTEE REGULATIONS

- i. Sec. 402.12 Biological assessments.

- (a) Purpose. A biological assessment shall ⁴**evaluate the potential effects** of the action on listed and proposed species and designated and proposed critical habitat **and determine whether any such species or habitat are likely to be adversely affected** by the action and is used in determining whether formal consultation or a conference is necessary.
- B. C.F.R. Title 50: Chapter VI: FISHERY CONSERVATION AND MANAGEMENT, NOAA, DOC
- i. Sec. 600.310 National Standard 1--Optimum Yield.
- (e) Features of MSY, SDC, and OY.--
- (3) Optimum yield--
- (iv) ⁴**Factors to consider in OY specification.**
- (C) Ecological factors. Examples **include impacts on ecosystem component species, forage fish stocks, other fisheries, predator-prey or competitive interactions, marine mammals, threatened or endangered species, and birds.** Species interactions that have not been explicitly taken into account when calculating MSY should be considered as relevant factors for setting OY below MSY. In addition, consideration should be given to managing forage stocks for higher biomass than Bmsy (Stock Biomass at Maximum Sustainable Yield) to enhance and protect the marine ecosystem. Also important are ecological or environmental conditions that stress marine organisms, such as natural and manmade changes in wetlands or nursery grounds, and effects of pollutants on habitat and stocks.
- ii. Sec. 600.815 Contents of Fishery Management Plans
- (a) Mandatory contents--
- (2) Fishing activities that may adversely affect EFH --
- (i) Evaluation. ⁴**Each FMP must contain an evaluation of the potential adverse effects of fishing on EFH** designated under the FMP, including effects of each fishing activity regulated under the FMP or other Federal FMPs. This evaluation should consider the effects of each fishing activity on each type of habitat found within EFH. FMPs must describe each fishing activity, review and discuss all available relevant information (such as information regarding the intensity, extent, and frequency of any adverse effect on EFH; the type of habitat within EFH that may be affected adversely; and the habitat functions that may be disturbed), and provide conclusions regarding whether and how each fishing activity adversely affects EFH. The evaluation should also consider the cumulative effects of multiple fishing activities on EFH.
- (ii) Minimizing adverse effects. ⁴**Each FMP must minimize to the extent practicable adverse effects from fishing on EFH**, including EFH designated under other Federal FMPs. Councils must act to prevent, mitigate, or minimize any adverse effects from fishing, to the extent

practicable, if there is evidence that a fishing activity adversely affects EFH in a manner that is more than minimal and not temporary in nature...

See also guideline **31.1**.

3. Discussion

⁴Ecosystem effects of fishing are assessed and adverse effects addressed

MSA states that every fishery management plan shall identify and minimize adverse effects of fishing on essential fish habitat, which is “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” Every fishery management plan also must comply with the NEPA, which requires drafting of an environmental assessment or impact statement. This statement describes the effects of the proposed fishery management plan and lists one or more reasonable alternatives; however, federal agencies are not mandated to make a particular policy decision based on impact considerations.

In 2006 NOAA Fisheries closed huge areas (~130,000 square miles) of marine waters off the west coast of the United States to ground trawlers to protect these habitats against fishing methods that could cause long-term damage to the ocean floor in those areas (Amendment 19 to the Pacific Coast Groundfish fishery management plan; NOAA WCR). Similar plans also were implemented in areas of the North Pacific off the Alaska Aleutian Islands.

In August 2009, the Secretary of Commerce approved the Fishery Management Plan for the Fish Resources of the Arctic Management Area, which establishes a framework for sustainably managing Arctic marine resources. It initially prohibits commercial fishing in the Arctic waters of the region until more information is available to support sustainable fisheries management (NOAA ARO). Another example of U.S. federal management preemptively addressing potential ecosystem impacts of fisheries is a statutory prohibition in the North Pacific’s Bering Sea and Aleutian Islands Management Area that limits the cumulative optimum yield for groundfish to 2 million metric tons (CAA, 2004), even though greater harvests are possible. This gets to the heart of an “ecosystem-based” approach by limiting overall removals from all sources.

CONFORMANCE EVIDENCE SUMMARY:

Internal	Outcome	Independent
●	●	●
<ul style="list-style-type: none"> ● MSA: "...minimize to the extent practicable adverse effects on such habitat caused by fishing..." ● NS1 Guidelines: "Factors to consider in (Optimum Yield) specification...include impacts on ecosystem component" 	<ul style="list-style-type: none"> ● Techniques implemented among the regions to address pertinent aspects of the ecosystem effects of fishing include gear restrictions to reduce bycatch, marine debris (e.g., derelict fishing gear) and habitat destruction, and time 	<ul style="list-style-type: none"> ● In 2004, the Center for Independent Experts reviewed NOAA Fisheries evaluation of fishing activities that may adversely affect essential fish habitat in the Alaska Region (CIE, 2004). ● Most fishery impacts on

<p>species, forage fish stocks, other fisheries, predator-prey or competitive interactions, marine mammals, threatened or endangered species, and birds."</p> <ul style="list-style-type: none"> • MMPA: "If... the level of incidental mortality or serious injury from commercial fisheries ... is likely to result in an impact that is more than negligible on the endangered or threatened species or stock, the Secretary shall use the emergency authority...title to protect such species or stock..." • ESA: "... if an endangered species or threatened species of a marine mammal is involved ... the Secretary shall provide ... a written statement that— (i) specifies the impact of such incidental taking on the species, (ii) specifies those reasonable and prudent measures that the Secretary considers necessary or appropriate to minimize such impact..."; "...the applicant therefor submits to the Secretary a conservation plan that specifies— (i) the impact which will likely result from such taking; (ii) what steps the applicant will take to minimize and mitigate such impacts..." • NEPA: "...include in every recommendation or report on proposals for legislation and other major Federal actions... (i) the environmental impact of the proposed action, (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented ..." 	<p>and area closures.</p> <ul style="list-style-type: none"> • Environmental impact statements and environmental assessments mandated by NEPA. 	<p>biodiversity are assessed and mitigated for in U.S. federal fishery management plans [Score 8 out of 10 (Vasconcellos et al., 2006)].</p> <ul style="list-style-type: none"> • "Comprehensive estimates of fishery impacts on pelagic fish population biomass and size structure, through analysis of all available data from Pacific tuna fisheries (including multi-national longline fisheries) for 1950-2004, indicate relatively minor impacts on the pelagic ecosystem in the Pacific Ocean" (Bartram et al., 2008 and Bartram and Kaneko, 2009 citing Sibert et al., 2006). • <i>"Ecosystem effects" is a very broad term that encompasses many factors (biodiversity, habitat, food-web, bycatch, etc.) and a comprehensive, independent assessment of all U.S. federal marine fisheries has yet to be conducted.</i>
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See also guideline **31.1**.

4. *Conclusions (Conformance/Gaps)*

Conformance	Superscript #	Topic Description	Reference Guideline #
●●○	4	Ecosystem effects of fishing are assessed and adverse effects addressed	31.1

5. *Future considerations*

⁴*Ecosystem effects of fishing are assessed and adverse effects addressed*

- Although biodiversity is addressed in U.S. fisheries management, consideration of fishery impacts on biocomplexity is unclear. Biocomplexity encompasses the “complex chemical, biological and social interactions” that occur among systems (Colwell, 1999), e.g., the population diversity of a stock complex caused by variations in spawning and rearing habitat and timing (Hilborn et al., 2003). “Biocomplexity is critical for resilience, and population persistence will likely require adaptation to changing conditions” (Safina et al., 2005).
- “One reference point that should be further evaluated is fishery selectivity pattern, which determines population age and size structure on the single-stock scale and community properties such as the size-spectrum slope on an ecosystem level” [Dorsett et al. (2013) referencing Garcia et al. (2012) and Brunel and Piet (2013)].
- NOAA Fisheries’ Marine Fisheries Stock Assessment Improvement Plan (Mace et al., 2001) asserts that next generation assessments will “explicitly incorporate ecosystem considerations such as multispecies interactions and environmental effects, fisheries oceanography, and spatial and seasonal analyses.”

See also guideline **31.1**.

FAO: MANAGEMENT SYSTEM CRITERIA & SMALL SCALE FISHERIES

Guidelines Paragraph:

- 29.** The following criteria will apply to management systems for any fisheries, but it must be recognized that special consideration needs to be given to small-scale fisheries with respect to the availability of data and with respect to the fact that management systems can differ substantially for different ⁵**types and scales of fisheries** (e.g. small scale through to large scale commercial fisheries).

Comments: None

Benchmark Indicator: The standard is applicable to management systems for any fisheries, with due consideration to availability of data and the fact that management systems can differ substantially for different types and scales of fisheries.

Assessing Conformance:

1. Applicable Statute(s)

A. MSA: TITLE III—NATIONAL FISHERY MANAGEMENT PROGRAM

i. SEC. 301. NATIONAL STANDARDS FOR FISHERY CONSERVATION AND MANAGEMENT

(a) IN GENERAL.—Any fishery management plan prepared, and any regulation promulgated to implement any such plan, pursuant to this title shall be consistent with the following national standards for fishery conservation and management:

(6) Conservation and management measures shall take into account and allow for ⁵**variations among, and contingencies in, fisheries**, fishery resources, and catches.

ii. SEC. 303A. LIMITED ACCESS PRIVILEGE PROGRAMS.

(c) REQUIREMENTS FOR LIMITED ACCESS PRIVILEGES.—

(5) ALLOCATION.—In developing a limited access privilege program to harvest fish a Council or the Secretary shall—

(B) consider the basic cultural and social framework of the fishery, especially through—

(i) the development of policies to ⁵**promote the sustained participation of small owner-operated fishing vessels and fishing communities** that depend on the fisheries, including regional or port-specific landing or delivery requirements;

B. REGULATORY FLEXIBILITY ACT

i. SEC. 603. INITIAL REGULATORY FLEXIBILITY ANALYSIS

(a) Whenever an agency is required by section 553 of this title, or any other law, to publish general notice of proposed rulemaking for any proposed rule, or publishes a notice of proposed rulemaking for an interpretative rule involving the internal revenue laws of the United States, the agency shall prepare and make available for public comment an initial regulatory flexibility analysis. Such analysis shall ⁵**describe the impact of the proposed rule on small entities**.

(c) Each initial regulatory flexibility analysis shall also contain a ⁵**description of any significant alternatives** to the proposed rule which accomplish the stated

objectives of applicable statutes and **which minimize any significant economic impact of the proposed rule on small entities.**

- ii. SEC. 604. FINAL REGULATORY FLEXIBILITY ANALYSIS
 - (a) ... Each final regulatory flexibility analysis shall contain--
 - (5) a ⁵**description of the steps the agency has taken to minimize the significant economic impact on small entities** consistent with the stated objectives of applicable statutes, including a statement of the factual, policy, and legal reasons for selecting the alternative adopted in the final rule and why each one of the other significant alternatives to the rule considered by the agency which affect the impact on small entities was rejected.

See also guideline **29.1.**

2. Regulations/Guidelines

A. C.F.R. Title 50: Chapter VI: FISHERY CONSERVATION AND MANAGEMENT, NOAA, DOC

- i. Sec. 600.335 National Standard 6--Variations and Contingencies.
 - (b) Conservation and management. ⁵**Each fishery exhibits unique uncertainties.** The phrase “conservation and management” implies the wise use of fishery resources through a management regime that includes some protection against these uncertainties. The particular regime chosen must be flexible enough to allow timely response to resource, industry, and other national and regional needs. **Continual data acquisition and analysis will help the development of management measures to compensate for variations and to reduce the need for substantial buffers. Flexibility in the management regime and the regulatory process will aid in responding to contingencies.**

B. C.F.R. Title 50: Volume VII: Part 253: FISHERIES ASSISTANCE PROGRAMS, NOAA, DOC

- i. Sec. 253.28 Halibut sablefish (Individual Fishing Quota) loans.
 - (c) Fishermen fishing from small vessels. ⁵**The (Fisheries Finance) Program may finance** up to 80 percent of the cost of purchasing (Halibut/Sablefish Quota Share) by **a fisherman who fishes from a small vessel...**

See also guideline **29.1.**

3. Discussion

⁵Types and scales of fisheries considered in management

The Regulatory Flexibility Act (FR, 1980) requires agencies to consider the impacts of their regulatory proposals and analyze effective alternatives to minimize these impacts on small entities. The Act does not seek preferential treatment, require agencies to adopt least-burdensome regulations, or mandate exemptions for small entities. Rather, it requires agencies to examine public policy issues using an analytical process that identifies barriers to small business competitiveness and seeks a level playing field for small entities (SBA, 2012). The Small Business Administration defines the criteria for small versus large entities, and currently, fish harvesting entities are considered small if they have revenue of less than \$4 million annually. When the Northeast Region implemented a requirement for a different size escape vent in black sea bass pots, they delayed implementation of the rule for one year to allow vessels (all considered small entities under the Regulatory Flexibility Act) to gradually come into compliance as they replaced gear through normal attrition, rather than be forced to absorb the full cost of refitting all their gear at once.

An area where NOAA Fisheries has passed policies that tended to support large-scale structure and not adequately consider small-scale fisheries is that of the Alaska Crab Rationalization program. Due to natural fluctuation in the crab stock, in low abundance years many small boats chose not to leave the dock because the cost was not worth the benefit for the small amount of crab available. Since new entry into the fishery was based on consecutive-year, historical fishing performance, this precluded some small-boat fishermen, who chose not to fish in bad years, from the catch share program. This action pushed out some smaller scale fisherman and favored big industry.

CONFORMANCE EVIDENCE SUMMARY:

Internal	Outcome	Independent
●	◐	◑
<ul style="list-style-type: none"> ● MSA: "Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches." ● NS6 Guidelines: "Each fishery exhibits unique uncertainties. The phrase 'conservation and management' implies the wise use of fishery resources through a management regime that includes some protection against these uncertainties. The particular regime chosen must be flexible enough to allow timely response to resource, industry, 	<ul style="list-style-type: none"> ● Fishery management plans ● RFA analyses ● Council Advisory Committees ● "50-75 nautical mile longline fishing exclusion areas have been established around the main Hawaiian Islands to protect the interests of small-scale troll and handline fishermen" (Bartram et al., 2008 citing the Pelagic Fisheries of the Western Pacific Region fishery management plan – Amendment 5 – 1991). ● "Large vessel closed areas protect the interests of small-scale fishermen in American 	<ul style="list-style-type: none"> ● "US fisheries management plans provide for stakeholders' participation in determining management decisions and address the interests of small-scale fishers. Regional Fishery Management Councils do include small-scale fisheries groups"; "...institutional structures for ongoing consultation...small-scale fisher's opinions are...included in plans." [Score 8 out of 10 (Pitcher et al., 2006; Vasconcellos et al., 2006)]. ● "Are interests of small-scale, etc., fishermen accounted for?"

<p>and other national and regional needs. Continual data acquisition and analysis will help the development of management measures to compensate for variations and to reduce the need for substantial buffers. Flexibility in the management regime and the regulatory process will aid in responding to contingencies."</p> <ul style="list-style-type: none"> • RFA: "...the agency shall prepare and make available for public comment an initial regulatory flexibility analysis. Such analysis shall describe the impact of the proposed rule on small entities"; "Each final regulatory flexibility analysis shall contain...a description of the steps the agency has taken to minimize the significant economic impact on small entities..." 	<p>Samoa. Vessels longer than 50 ft. are prohibited from fishing for pelagic fish in specific areas around Tutuila, Manu`a Islands, Rose Atoll and Swains Island to prevent gear conflict between different sized vessels" (Bartram and Kaneko, 2009 citing regulations for large vessel closed areas in nearshore waters around American Samoa, revised March 15, 2002.).</p> <ul style="list-style-type: none"> • Community Development Quota programs (e.g., Western Alaska) • <i>Catchshare programs that result in fishery consolidation do not always accommodate all types and scales of fisheries.</i> 	<p>Yes." [Bartram et al., 2008 (Hawaii pelagic longline fisheries); Bartram and Kaneko, 2009 (American Samoa longline fisheries)].</p>
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See also guideline **29.1**.

4. Conclusions (Conformance/Gaps)

Conformance	Superscript #	Topic Description	Reference Guideline #
●○○	5	Types and scales of fisheries considered in management	

5. Future considerations

⁵*Types and scales of fisheries considered in management*

- “(NOAA Fisheries) and the Councils should facilitate small-scale operators’ access to resources that can help them build stronger businesses. Specifically, they should work with the private sector and non-governmental community to make available investment capital, technical advice on business and organizational topics, and fishery-related data that businesses can use to operate more efficiently” (Band, 2013). Currently federal support is available for some small-scale fishers and communities (e.g., Morro Bay Community Quota Fund, Western Alaska Community Development Quota Program) but more can be done to provide investment and harvest opportunities as well as to support economic and social benefits.

See also guideline **29.1**.

FAO: ADEQUATE DATA**Guidelines Paragraph:**

- 29.1** **⁶Adequate data and/or information are collected, maintained and assessed** in accordance with applicable international standards and practices for evaluation of the current state and trends of the stocks (see below: Methodological aspects). This can include relevant **⁷traditional, fisher or community knowledge**, provided its validity can be objectively verified.

Comments: Whether the standard assesses if the management system ensures that reliable data are collected about the fishery.

Benchmark Indicator: The standard includes a requirement for the management system to ensure reliable and current data and/or other information about the fishery are collected and maintained to assess the current status and trends of the stocks.

Assessing Conformance:**1. Applicable Statute(s)****A. MSA: TITLE III—NATIONAL FISHERY MANAGEMENT PROGRAM****i. SEC. 301. NATIONAL STANDARDS FOR FISHERY CONSERVATION AND MANAGEMENT**

- (a) **IN GENERAL.**—Any fishery management plan prepared, and any regulation promulgated to implement any such plan, pursuant to this title shall be consistent with the following national standards for fishery conservation and management:
- (2) Conservation and management measures shall be based upon the best scientific information available.

ii. SEC. 302. REGIONAL FISHERY MANAGEMENT COUNCILS**(b) VOTING MEMBERS.**—

- (1) The voting members of each Council shall be:
- (A) The principal State official with marine fishery management responsibility and expertise in each constituent State, who is designated as such by the Governor of the State, so long as the official continues to hold such position, or the designee of such official.
- (B) The regional director of the National Marine Fisheries Service for the geographic area concerned, or his designee, except that if two such directors are within such geographical area, the Secretary shall designate which of such directors shall be the voting member.

- (C) The members required to be appointed by the Secretary in accordance with paragraphs (2) ...
- (2) (A) The members of each Council required to be appointed by the Secretary must be ⁷**individuals who, by reason of their occupational or other experience, scientific expertise, or training, are knowledgeable regarding the conservation and management, or the commercial or recreational harvest, of the fishery resources of the geographical area concerned.** Within nine months after the date of enactment of the Fishery Conservation Amendments of 1990, the Secretary shall, by regulation, prescribe criteria for determining whether an individual satisfies the requirements of this subparagraph.
- iii. SEC. 303. CONTENTS OF FISHERY MANAGEMENT PLANS
- (a) REQUIRED PROVISIONS.—Any fishery management plan which is prepared by any Council, or by the Secretary, with respect to any fishery, shall—
- (5) ⁶**specify the pertinent data** which shall be submitted to the Secretary **with respect to commercial, recreational, charter fishing, and fish processing in the fishery.** including, but not limited to, information regarding the type and quantity of fishing gear used, catch by species in numbers of fish or weight thereof, areas in which fishing was engaged in, time of fishing, number of hauls, economic information necessary to meet the requirements of this Act, and the estimated processing capacity of, and the actual processing capacity utilized by, United States fish processors;
- iv. SEC. 303A. LIMITED ACCESS PRIVILEGE PROGRAMS.
- (c) REQUIREMENTS FOR LIMITED ACCESS PRIVILEGES.—
- (3) FISHING COMMUNITIES.—
- (B) PARTICIPATION CRITERIA.—In developing participation criteria for eligible communities under this paragraph, ⁷**a Council shall consider**—
- (i) **traditional fishing or processing practices** in, and dependence on, the fishery;
- (ii) the cultural and social framework relevant to the fishery;
- (iii) economic barriers to access to fishery;
- (iv) the existence and severity of projected economic and social impacts associated with implementation of limited access privilege programs on harvesters, captains, crew, processors, and other businesses substantially dependent upon the fishery in the region or subregion;
- (v) the expected effectiveness, operational transparency, and equitability of the community sustainability plan; and
- (vi) the potential for improving economic conditions in remote coastal communities lacking resources to participate in harvesting or processing activities in the fishery.
- (4) REGIONAL FISHERY ASSOCIATIONS.—

- (C) PARTICIPATION CRITERIA.— In developing participation criteria for eligible regional fishery associations under this paragraph, ⁷**a Council shall consider**—
- (i) **traditional fishing or processing practices** in, and dependence on, the fishery;
 - (ii) the cultural and social framework relevant to the fishery;
 - (iii) economic barriers to access to fishery;
 - (iv) the existence and severity of projected economic and social impacts associated with implementation of limited access privilege programs on harvesters, captains, crew, processors, and other businesses substantially dependent upon the fishery in the region or subregion;
 - (v) the administrative and fiduciary soundness of the association; and
 - (vi) the expected effectiveness, operational transparency, and equitability of the fishery association plan.
- v. SEC. 305. OTHER REQUIREMENTS AND AUTHORITY
- (i) ALASKA AND WESTERN PACIFIC COMMUNITY DEVELOPMENT PROGRAMS.—
 - (2) (E) Notwithstanding any other provision of this Act, the Western Pacific Council shall take into account ⁷**traditional indigenous fishing practices in preparing any fishery management plan.**
 - (j) WESTERN PACIFIC AND NORTHERN PACIFIC REGIONAL MARINE EDUCATION AND TRAINING.—
 - (2) PROGRAM COMPONENTS. The program shall—
 - (E) develop means by which local and ⁷**traditional knowledge (including Pacific islander, Native Hawaiian, and Alaskan Native knowledge)** can enhance science based management of fishery resources of the region;

B. MMPA

- i. SEC. 3. Definitions. For the purposes of this chapter—
 - (2) The terms “conservation” and “management” means the ⁶**collection and application of biological information** for the purposes of increasing and maintaining the number of animals within species and populations of marine mammals at their optimum sustainable population. Such terms include the entire scope of activities that constitute a modern scientific resource program, including, but not limited to, research, census, law enforcement, and habitat acquisition and improvement. Also included within these terms, when and where appropriate, is the periodic or total protection of species or populations as well as regulated taking.

C. ESA

- i. SEC. 4. DETERMINATION OF ENDANGERED SPECIES AND THREATENED SPECIES

(b) BASIS FOR DETERMINATIONS—

(1)(A) The Secretary shall make determinations required by subsection (a)(1) solely **on the basis of the best scientific and commercial data available** to him after **conducting a review of the status of the species** and after taking into account those efforts, if any, being made by any State or foreign nation, or any political subdivision of a State or foreign nation, to protect such species, whether by predator control, protection of habitat and food supply, or other conservation practices, within any area under its jurisdiction, or on the high seas.

(3)(C)(iii) The Secretary shall implement a system to **monitor effectively the status of all species** with respect to which a finding is made under subparagraph (B)(iii) and shall make prompt use of the authority under paragraph 7 to prevent a significant risk to the well being of any such species.

(g) **MONITORING**.—

(1) The Secretary shall **implement a system** in cooperation with the States **to monitor effectively** for not less than five years **the status of all species** which have recovered to the point at which the measures provided pursuant to this Act are no longer necessary and which, in accordance with the provisions of this section, have been removed from either of the lists published under subsection (c).

ii. SEC. 7. INTERAGENCY COOPERATION

(c) BIOLOGICAL ASSESSMENT.—

(1) ... If the Secretary advises, **based on the best scientific and commercial data available, that such species may be present, such agency shall conduct a biological assessment** for the purpose of identifying any endangered species or threatened species which is likely to be affected by such action.

D. EXECUTIVE ORDER 13175 (FR, 2000)

i. SEC. 5. CONSULTATION

(a) Each agency shall have an accountable process to ensure meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications.

See also guideline **29.2**.

2. Regulations/Guidelines

A. C.F.R. Title 50: Chapter VI: FISHERY CONSERVATION AND MANAGEMENT, NOAA, DOC

i. Sec. 600.315 National Standard 2--Scientific Information.

- (b) FMP development. The fact that scientific information concerning a fishery is incomplete does not prevent the preparation and implementation of an FMP.
- (1) Scientific information includes, but is not limited to, information of a biological, ecological, economic, or social nature. Successful fishery management depends, in part, on the **timely availability, quality, and quantity of scientific information**, as well as on the thorough analysis of this information, and the extent to which the information is applied. If there are conflicting facts or opinions relevant to a particular point, a Council may choose among them, but should justify the choice.
- (c) FMP implementation.
- (2) An FMP should identify **scientific information needed from other sources to improve understanding and management of the resource, marine ecosystem, and the fishery (including fishing communities)**.

See also guideline **29.2**.

3. Discussion

⁶Adequate/reliable data are collected, maintained and assessed

In Sec. 2 “Findings, Purposes, and Policy,” MSA states that “The Congress finds and declares (that) ... (8) the collection of reliable data is essential to the effective conservation, management, and scientific understanding of the fishery resources of the United States.” There are several sources and types of data collected, which ultimately are used for stock assessments and other management decisions such as bycatch limitation, habitat protection, etc.; here we focus on stock assessment. Depending on the region and the fishery, stock assessments usually occur every 1-5 years for each stock.

The amount of data available to conduct stock assessments varies tremendously across the ~500 federally-managed stocks. Although any assessment effort provides important information to resource managers, assessments must meet minimum standards of data availability and modeling complexity to be considered adequate. Generally, a minimally adequate assessment can be conducted where there is good information on the level of annual catch and an indicator of the degree of change in stock abundance over time (NOAA, 2014a). One of the most data rich and frequently assessed regions is the Alaska region, which conducts stock assessments on an annual basis; thus confidence in their abundance estimates is high. Whereas, the Caribbean region, largely a small-scale reef fish fishery, is relatively data poor. In some cases, annual catch limits are based on outdated stock assessments if more recent stock assessments are rejected, e.g., a 2012 annual catch limit for yellowtail snapper in the Florida Keys was based on a 2003 stock assessment (Kelly, 2013).

There are a number of reasons why some fisheries may be data poor, including the data requirements for stock assessments, the cost and payoff of monitoring, and the value of the stock overall (MacCall, 2010). Some stocks are considered “assessment-resistant,” e.g., climate-driven and migratory stocks where interdecadal variability and transboundary factors may apply. Some stocks will always be too small to justify the

expense of monitoring. Assessment requires a long-term commitment to information gathering; there is minimal value in short-term targeted studies. Thus, monitoring tends to be focused on the big and valuable stocks. Of the 230^{†††} stocks managed in the U.S. that account for ~90% of total landings (in poundage), 162 have been assessed at an adequate level. Those stocks that make up the remaining ~10% of landings tend to be assessed with less complex methods. For example, since passage of the annual catch limit requirements, scientists have developed tools to evaluate and manage data-limited stocks. Some include catch based methods, depletion based methods, or abundance based methods (Carruthers et al. 2014).

CONFORMANCE EVIDENCE SUMMARY:

Internal	Outcome	Independent
●	◐	◑
<ul style="list-style-type: none"> ● MSA: "REQUIRED PROVISIONS.—Any fishery management plan...shall... specify the pertinent data...with respect to commercial, recreational, charter fishing, and fish processing in the fishery..." ● NS2 Guidelines: "Successful fishery management depends, in part, on the timely availability, quality, and quantity of scientific information"; An (Fishery Management Plan) should identify scientific information needed from other sources to improve understanding and management of the resource, marine ecosystem, and the fishery (including fishing communities)." ● ESA: "The Secretary shall make determinations...solely on the basis of the best scientific and commercial data available to him after conducting a review of the status of the species..." 	<ul style="list-style-type: none"> ● Fishery management plans ● Stock assessments ● Logbooks ● Observers ● <i>For some fisheries the collection of adequate data is not feasible given constraints due to the size or scale of the fishery. Thus, the degree to which adequate data are available varies.</i> 	<ul style="list-style-type: none"> ● In the review of stock assessments, Councils' Scientific and Statistical Committees and/or the Center for Independent Experts comments on whether or not they feel adequate data has been collected and considered for a stock. ● "Complete annual reliable statistics are obtained on catch and fishing effort for those stocks under the US fishery management plans" [Score 8 out of 10 (Vasconcellos et al., 2006)]. ● "Are timely and reliable statistics available on catch and fishing effort maintained ...in sufficient detail to allow sound statistical analysis? Yes. [Bartram et al., 2008 (Hawaii pelagic longline fisheries); Bartram and Kaneko, 2009 (American Samoa longline fisheries)].

See also guideline **29.2**.

^{†††} Currently, 227 stocks. Gulf of Mexico stone crab and little tunny are no longer managed under federal fishery management plans (FMPs), and Gulf of Mexico black grouper is now managed as a combined Gulf of Mexico/South Atlantic stock under the Gulf of Mexico Reef Fish and Snapper-Grouper FMPs. To provide continuity, these three stocks continue to be counted in the 230 stocks until FY 2015.

⁷*Verifiable traditional, fisher or community knowledge considered*

The Regional Fishery Management Council process allows for extensive public participation and stakeholder involvement in management decisions. Voting members of Councils include the principal state official with marine fishery management responsibility and expertise in each constituent State, the regional administrator of NOAA Fisheries, a tribal member (in the Pacific region), and members recommended by the Governors of each State and appointed by the Secretary of Commerce. In general, those members appointed by the Secretary represent the regional commercial or recreational fishing sector, although members from non-governmental organizations and academia have been appointed. Councils also are required to establish advisory panels, such as the fishing industry committee and other panels to assist in the collection and evaluation of relevant data and information for fishery management plans. These advisory panels include representation of commercial, recreational, and other interests from the region. Thus, through the Council process, traditional, fisher, and/or community (i.e., regional) knowledge is incorporated into decision making. Industry members are invited to address the Council formally and publically and/or serve on advisory panels and committees; some are Council members.

Council meetings are a critical part of the fishery management planning process and are the first and earliest point of development of fishery management policy. It is most beneficial to Tribes, Councils, and NOAA if there is early and active participation in these fora, and NOAA strongly encourages Councils to discuss and work with Tribes to address their concerns while developing fishery conservation and management measures under the MSA. Thus, while it is NOAA's – and not the Councils' – responsibility to consult with Federally-recognized Tribes under Executive Order 13175, the Councils' early engagement with potentially affected Indian Tribes will facilitate and enhance NOAA's rulemaking process (NOAA, 2013a).

In 1999, NOAA Fisheries funded an oral history project in the Northeast to collect traditional ecological knowledge (including spawning area data) and to develop a historical record of fishermen/scientist interactions (GFWDP, 1999). In addition, NOAA Fisheries' Office of Science and Technology maintains a database of interviews from those involved on a day-to-day basis in marine fishing, harvesting, and related activities. This initiative, entitled the Local Fisheries Knowledge Project, focuses on collecting historical information pertaining to the marine environment and ecology that could be helpful for establishing baselines for habitat restoration or rebuilding fish stocks (LFK, 2007). In addition, the Economic and Social Sciences Research Program at the Alaska Fisheries Science Center compiles a database of information pertaining to traditional ecological knowledge of the marine environment in the North Pacific. Information from the database is incorporated into Environmental Impact Statements and other policy documents (AFSC, 2006).

CONFORMANCE EVIDENCE SUMMARY:

Internal ●	Outcome ●	Independent ●
<ul style="list-style-type: none"> ● MSA: "VOTING MEMBERS.—“ ...individuals who, by reason of their occupational or other experience, scientific expertise, or training, are knowledgeable regarding the conservation and management, or the commercial or recreational harvest, of the fishery resources of the geographical area concerned." ● Executive Order 13175: “Each agency shall have an accountable process to ensure meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications.” 	<ul style="list-style-type: none"> ● Council members, committees, and advisory panels ● Public comment sessions at Council meetings ● Northeast oral history project ● Local Fisheries Knowledge Project ● Economic and Social Sciences Research Program at the Alaska Fisheries Science Center 	<ul style="list-style-type: none"> ● Councils meet publicly, and meetings are open for public participation.

4. Conclusions (Conformance/Gaps)

Conformance	Superscript #	Topic Description	Reference Guideline #
● ○ ○	6	Adequate/reliable data are collected, maintained and assessed	
● ● ●	7	Verifiable traditional, fisher or community knowledge considered	

5. Future considerations

⁶*Adequate/reliable data are collected, maintained and assessed*

- The assessment of target stocks could be prioritized over non-target stocks. For stocks of lesser economic value or incidentally harvested, estimates of long term average yields or other “softer” targets could be considered to better link management capability with scientific capacity (Kelly, 2013). NOAA Fisheries is currently updating its Stock Assessment Improvement Plan (SAIP) and an entire chapter is dedicated to prioritization.

See also guideline **29.2**.

FAO: BEST SCIENTIFIC INFORMATION**Guidelines Paragraph:**

29.2 In determining suitable conservation and management measures, the ⁸**best scientific evidence** available is taken into account by the designated authority, as well as consideration of relevant ⁷**traditional, fisher or community knowledge**, provided its validity can be objectively verified, in order to evaluate the current state of the “stock under consideration” in relation to, where appropriate, stock specific target and limit reference points.

Comments: The management system must evaluate the state of the stock. Whether management and conservation measures are determined for the fishery is covered in (FAO Guideline) paragraph 29.4 below.

Benchmark Indicator: The standard includes a requirement for the management system to take into account the best scientific evidence available and consider relevant valid and verifiable traditional, fisher and community knowledge in evaluating the state of the stocks in relation to stock-specific target and limit reference points, where appropriate.

Assessing Conformance:**1. Applicable Statute(s)****A. MSA: TITLE III—NATIONAL FISHERY MANAGEMENT PROGRAM**

- i. SEC. 301. NATIONAL STANDARDS FOR FISHERY CONSERVATION AND MANAGEMENT
 - (a) IN GENERAL.—Any fishery management plan prepared, and any regulation promulgated to implement any such plan, pursuant to this title shall be consistent with the following national standards for fishery conservation and management:
 - (2) Conservation and management measures shall be based upon the ⁸**best scientific information available**.

B. MMPA

- i. SEC. 3. Definitions. For the purposes of this chapter—
 - (19) The term “strategic stock” means a marine mammal stock—
 - (A) for which the level of direct human-caused mortality exceeds the potential biological removal level;
 - (B) which, based on the ⁸**best available scientific information**, is declining and is likely to be listed as a threatened species under the Endangered Species Act of 1973...

- (27) The term “minimum population estimate” means an estimate of the number of animals in a stock that—
- (A) is based on the ⁸**best available scientific information** on abundance, incorporating the precision and variability associated with such information;

C. ESA

i. SEC. 4. DETERMINATION OF ENDANGERED SPECIES AND THREATENED SPECIES

(b) BASIS FOR DETERMINATIONS—

- (1)(A) The Secretary shall ⁸**make determinations** required by subsection (a)(1) solely **on the basis of the best scientific and commercial data available** to him **after conducting a review of the status of the species and after taking into account those efforts**, if any, being made by any State or foreign nation, or any political subdivision of a State or foreign nation, to protect such species, whether by predator control, protection of habitat and food supply, or other conservation practices, within any area under its jurisdiction, or on the high seas.
- (2) The Secretary shall ⁸**designate** critical habitat, and make revisions thereto, under subsection (a)(3) **on the basis of the best scientific data available** and after taking into consideration the economic impact, the impact on national security, and any other relevant impact, of specifying any particular area as critical habitat.

ii. SEC. 7. INTERAGENCY COOPERATION

(c) BIOLOGICAL ASSESSMENT.—

- (1) ... If the Secretary advises, ⁸**based on the best scientific and commercial data available**, that such species may be present, such agency shall conduct a biological assessment for the purpose of **identifying any endangered species or threatened species which is likely to be affected by such action**.

iii. SEC. 8A. CONVENTION IMPLEMENTATION

(c) SCIENTIFIC AUTHORITY FUNCTIONS.—

- (2) The Secretary ⁸**shall base the determinations** and advice given by him under Article IV of the Convention **with respect to wildlife upon the best available biological information derived** from professionally accepted wildlife management practices; but is not required to make, or require any State to make, estimates of population size in making such determinations or giving such advice.

See also guideline **29.1**.

2. Regulations/Guidelines

A. C.F.R. Title 50: Chapter VI: FISHERY CONSERVATION AND MANAGEMENT, NOAA, DOC

- i. Sec. 600.315 National Standard 2--Scientific Information.
 - (b) FMP development. **⁸The fact that scientific information concerning a fishery is incomplete does not prevent the preparation and implementation of an FMP.**
 - (1) Scientific information includes, but is not limited to, information of a biological, ecological, economic, or social nature. Successful fishery management depends, in part, on the timely availability, **⁸quality**, and quantity **of scientific information**, as well as on the thorough analysis of this information, and the extent to which the information is applied. If there are conflicting facts or opinions relevant to a particular point, a Council may choose among them, but should justify the choice.
- ii. Sec. 600.815 Contents of Fishery Management Plans
 - (a) Mandatory contents—
 - (1) Description and identification of EFH —
 - (ii) Habitat information by life stage.
 - (B) Councils should obtain information to **⁸describe and identify** EFH **from the best available sources**, including peer-reviewed literature, unpublished scientific reports, data files of government resource agencies, fisheries landing reports, and other sources of information. Councils should consider different types of information according to its scientific rigor. FMPs should identify species-specific habitat data gaps and deficits in data quality (including considerations of scale and resolution; relevance; and potential biases in collection and interpretation). **⁸FMPs must demonstrate that the best scientific information available was used** in the description and identification of EFH, consistent with national standard 2.

See also guideline **29.1**.

3. Discussion

⁸*Best scientific evidence used in management measures*

MSA's National Standard 2, which affirms the role of science as the basis for management decision making, has resulted in a set of procedures and guidance for selecting the "best" available science from a number of potential alternatives, which differ regionally. National Standard 2 stipulates that the lack of perfect science will not be used as justification to delay implementation of required measures, when indicated by the preponderance of available information. This also implies a commitment by NOAA

Fisheries towards improving the science used in decision-making (MAFAC, 2005b). National Standard 2 Guidelines describe the stock assessment and fishery evaluation report (SAFE), which must be prepared on a regular basis for every fishery management plan.

Stock assessments generally are prepared by working groups led by federal scientists and then are reviewed by independent teams of stock assessment experts. These regional stock assessment review teams are: the Stock Assessment Review Committee (SARC) for the Northeast; the South East Data Assessment and Review (SEDAR) for the Southeast, Gulf of Mexico and Caribbean; the Stock Assessment and Review (STAR) for the Pacific Coast, and the Western Pacific Stock Assessment Review (WPSAR) for the western Pacific region. The Center for Independent Experts provides chairpersons and reviewers for some of these committees.

The American Fisheries Society’s Best Science Committee has identified peer review as a component of the best available science for fisheries (Sullivan et al., 2006). Although the processes differ somewhat among regions, all benchmark stock assessments involve a peer review generated by NOAA Fisheries, with the results provided as management advice to the Regional Fishery Management Councils (Brown et al., 2006). Stock assessments undergo a series of reviews (i.e., stock assessment team; NOAA Science Center; the Council’s Scientific and Statistical Committee; and for benchmark stock assessments of major stocks, the Center for Independent Experts) before being presented and voted on by the Council and then approved or rejected by the NOAA Fisheries Assistant Administrator (on behalf of the Secretary of Commerce).

CONFORMANCE EVIDENCE SUMMARY:

Internal	Outcome	Independent
<ul style="list-style-type: none"> ● ● MSA: "Conservation and management measures shall be based upon the best scientific information available." ● NS2 Guidelines: "(Fishery Management Plans) must demonstrate that the best scientific information available was used..." ● ESA: "BASIS FOR DETERMINATIONS— The Secretary shall make determinations...solely on the basis of the best scientific and commercial data available..."; "The Secretary shall designate critical habitat...on the basis of the best scientific data available..." 	<ul style="list-style-type: none"> ● ● Fishery management plans ● Stock assessments ● When compiling data on the status of U.S. Fisheries, NOAA’s Office of Sustainable Fisheries requests a declared affirmation from Councils’ Scientific and Statistical Committees asserting that they have considered the best scientific information available in their stock assessments. 	<ul style="list-style-type: none"> ● ● Stock assessments for NOAA managed fisheries are reviewed by regional panels of independent experts (e.g., SARC, SEDAR, etc.), and then by a Council’s Scientific and Statistical Committee. ● With the exception of assessments for data-poor stocks, benchmark stock assessments undergo independent peer review through the Center for Independent Experts.

See also guideline **29.1**.

4. *Conclusions (Conformance/Gaps)*

Conformance	Superscript #	Topic Description	Reference Guideline #
●●●	7	Verifiable traditional, fisher or community knowledge considered	29.1
●●●	8	Best scientific evidence used in management measures	

5. *Future considerations*

⁸*Best scientific evidence used in management measures*

- Although U.S. fisheries management does use the best scientific evidence available for stock assessments, cooperative research provides a means for commercial and recreational fishermen to become involved in the collection of fundamental fisheries information to support the development and evaluation of management options. More involvement in the data gathering process may lead to greater trust in the science and understanding of management’s decisions and rationale; thus, cooperative research can result in more buy-in by industry for Council and NOAA management decisions. In addition, given current and likely future budget constraints, activities that improve the amount and quality of incoming data, such as the new NOAA ships and efforts to utilize ship time more effectively, may become more and more necessary. NOAA Fisheries can explore ways to expand its National Cooperative Research Program and other partnership programs, and investigate innovative ways cooperative research can lead to cost-sharing of data gathering among government, industry, academia and other stakeholders. Collaboration between NOAA Fisheries and the fishing industry already has allowed for more efficient and accurate data collection in two valuable Pacific fisheries—hake and sardine.

See also guideline **29.1**.

FAO TOTAL F/MSY/RECRUITMENT OVERFISHING LIMITS

Guidelines Paragraph:

29.2bis: Taking due account of paragraph 32, for the “stock under consideration” the determination of suitable conservation and management measures should include or take account of:

- ⁹**Total fishing mortality** from all sources is considered in assessing the state of the “stock under consideration,” including discards, unobserved mortality, incidental mortality, unreported catches and catches in other fisheries.
- Management targets are consistent with achieving ¹⁰**maximum sustainable yield** (MSY) (or a suitable proxy) on average, ¹¹**or a lesser fishing mortality if that is optimal** in the circumstances of the fishery (e.g. multispecies fisheries) or ⁴**to avoid severe adverse impacts** on ¹²**dependent predators**.
- The management system should ¹³**specify limits or directions in key performance indicators** (see 30.2), **consistent with avoiding recruitment overfishing** or other impacts that are likely to be irreversible or very slowly reversible, and specify the ¹⁴**actions to be taken if the limits are approached** or the desired directions are not achieved.

Comments: None

Benchmark Indicator: The standard includes a requirement for the management system, in assessing the status of the stock under consideration and determining suitable conservation and management measures, to take account of:

- Total fishing mortality from all sources including discards, unobserved mortality, incidental mortality, unreported catches and catches in other fisheries.
- Management targets consistent with achieving MSY (or a suitable proxy) on average, or a lesser fishing mortality if that is optimal in the circumstances of the fishery (e.g. multi-species fisheries) or to avoid severe adverse impacts on dependent predators.

The standard includes a requirement for the management system to specify limits or directions in key performance indicators [see Indicators under (FAO) Guideline Paragraph 30.2], consistent with avoiding recruitment overfishing or other impacts that are likely to be irreversible or very slowly reversible.

The standard includes a requirement for the management system to determine sustainability reference points and to specify in advance remedial actions to be taken if reference points are approached or exceeded or the desired directions are not achieved, including the specification of a recovery plan for stocks that become overfished.

Assessing Conformance:

1. Applicable Statute(s)

A. MSA: TITLE III—NATIONAL FISHERY MANAGEMENT PROGRAM

- i. SEC. 301. NATIONAL STANDARDS FOR FISHERY CONSERVATION AND MANAGEMENT
- (a) IN GENERAL.—Any fishery management plan prepared, and any regulation promulgated to implement any such plan, pursuant to this title shall be consistent with the following national standards for fishery conservation and management:
- (1) Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the ¹¹**optimum yield** from each fishery for the United States fishing industry.
- (9) Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.
- ii. SEC. 302. REGIONAL FISHERY MANAGEMENT COUNCILS
- (g) COMMITTEES AND ADVISORY PANELS.—
- (1)(B) Each scientific and statistical committee shall provide its Council ongoing scientific advice for fishery management decisions, including recommendations for ^{10,13}**acceptable biological catch, preventing overfishing, maximum sustainable yield, and achieving rebuilding targets**, and reports on stock status and health, bycatch, habitat status, social and economic impacts of management measures, and sustainability of fishing practices.
- (h) FUNCTIONS.—Each Council shall...
- (6) ¹³**develop annual catch limits for each of its managed fisheries** that may not exceed the fishing level recommendations of its scientific and statistical committee or the peer review process established ...
- iii. SEC. 303. CONTENTS OF FISHERY MANAGEMENT PLANS
- (a) REQUIRED PROVISIONS.—Any fishery management plan which is prepared by any Council, or by the Secretary, with respect to any fishery, shall—
- (3) assess and specify the present and probable future condition of, and the ¹⁰**maximum sustainable yield** and optimum yield from, the fishery, and include a summary of the information utilized in making such specification;
- (15) ¹³**establish a mechanism for specifying annual catch limits** in the plan (including a multiyear plan), implementing regulations, **or annual specifications, at a level such that overfishing does not occur in the fishery,** ¹⁴**including measures to ensure accountability.**
- iv. SEC. 316. BYCATCH REDUCTION ENGINEERING PROGRAM
- (b) INCENTIVES.—Any fishery management plan prepared by a Council or by the Secretary may establish a system of incentives to reduce total bycatch and seabird interactions, amounts, bycatch rates, and post-release mortality in fisheries under the Council's or Secretary's jurisdiction, including—

- (1) ⁹**measures to incorporate bycatch into quotas**, including the establishment of collective or individual bycatch quotas;

B. SUSTAINABLE FISHERIES ACT – Report of the COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION on S. 39 (U.S. Senate, 1996)

i. Section 103.--Definitions

Section 103 would amend the existing definition of “optimum” with respect to the yield from a fishery to mean the amount of fish prescribed on the basis of the maximum sustainable yield “as reduced” (replacing the phrase “as modified” in current law) by any relevant economic, social, or ecological factor. This change would ¹⁰**prevent allowable catches from exceeding the maximum sustainable yield of a fishery, but is not meant to preclude** the Secretary, the Councils and the scientific and statistical committees of the Councils from **using other appropriate scientific measures of sustained yield where there are insufficient data to determine the maximum sustainable yield of a fishery.**

C. MMPA

i. SEC. 3. Definitions. For the purposes of this chapter—

- (20) The term ¹³“**potential biological removal level**” means the ¹⁰**maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population.**

ii. SEC. 101.

- (a) Imposition; exceptions. There shall be a moratorium on the taking and importation of marine mammals and marine mammal products, commencing on the effective date of this chapter, during which time no permit may be issued for the taking of any marine mammal and no marine mammal or marine mammal product may be imported into the United States except in the following cases:

- (5)(E)(iii) ¹⁴**If**, during the course of the commercial fishing season, the Secretary determines that **the level of incidental mortality or serious injury from commercial fisheries** for which a determination was made under clause (i) has resulted or **is likely to result in an impact that is more than negligible on the endangered or threatened species or stock, the Secretary shall use the emergency authority** granted under section 1387 of this title **to protect such species or stock**, and may modify any permit granted under this paragraph as necessary.

iii. SEC. 118. TAKING OF MARINE MAMMALS INCIDENTAL TO COMMERCIAL FISHING OPERATIONS

- (c) REGISTRATION AND AUTHORIZATION. —

- (1) The Secretary shall, within 90 days after the date of enactment of this section [July 29, 1994]—
- (A) publish in the Federal Register for public comment, for a period of not less than 90 days, any necessary changes to the Secretary's list of commercial fisheries ... (along with an explanation of such changes and a statement describing the marine mammal stocks interacting with, and the approximate number of vessels or persons actively involved in, each such fishery), with respect to ¹⁴**commercial fisheries that have—**
- (i) frequent incidental mortality and serious injury of marine mammals;**
- (ii) occasional incidental mortality and serious injury of marine mammals;** or
- (iii) a remote likelihood of or no known incidental mortality or serious injury of marine mammals;
- (3)(A) An owner of a vessel engaged in any fishery listed under paragraph (1)(A) (i) or (ii) **shall**, in order to engage in the lawful incidental taking of marine mammals in a commercial fishery—
- (i) **have registered as required** ... with the Secretary in order to obtain for each such vessel owned and used in the fishery an authorization for the purpose of incidentally taking marine mammals in accordance with this section...
- (ii) **ensure that a decal** or such other physical evidence of a current and valid authorization as the Secretary may require **is displayed** on or is in the possession of the master of each such vessel;
- (iii) **report as required**...; and
- (iv) **comply with any applicable take reduction plan and emergency regulations** issued under this section.
- (B) Any owner of a vessel receiving an authorization under this section for any fishery listed under paragraph (1)(A) (i) or (ii) shall, as a condition of that authorization, **take on board an observer** if requested to do so by the Secretary.

D. ESA

i. SEC. 4. DETERMINATION OF ENDANGERED SPECIES AND THREATENED SPECIES

(a) GENERAL—

- (1) ¹²**The Secretary shall** by regulation promulgated in accordance with subsection (b) **determine whether any species is an endangered species or a threatened species because of any of the following factors:**

(C) disease or **predation;**

(b) BASIS FOR DETERMINATIONS—

- (1)(A) The Secretary shall make determinations required by subsection (a)(1) solely on the basis of the best scientific and commercial data available to

him after ¹²**conducting a review** of the status of the species and after taking into account those efforts, if any, being made by any State or foreign nation, or any political subdivision of a State or foreign nation, **to protect such species**, whether **by predator control, protection of habitat and food supply**, or other conservation practices, within any area under its jurisdiction, or on the high seas.

- (d) PROTECTIVE REGULATIONS.— ¹⁴**Whenever any species is listed as a threatened species pursuant to subsection (c) of this section, the Secretary shall issue such regulations as he deems necessary and advisable to provide for the conservation of such species. The Secretary may by regulation prohibit with respect to any threatened species any act** prohibited under section 9(a)(1), in the case of fish or wildlife, or section 9(a)(2), in the case of plants, with respect to endangered species; except that with respect to the taking of resident species of fish or wildlife, such regulations shall apply in any State which has entered into a cooperative agreement pursuant to section 6(c) of this Act only to the extent that such regulations have also been adopted by such State.
- (f)(1) RECOVERY PLANS.— The Secretary shall develop and implement plans (hereinafter in this subsection referred to as “recovery plans”) for the conservation and survival of endangered species and threatened species listed pursuant to this section, unless he finds that such a plan will not promote the conservation of the species. The Secretary, in developing and implementing recovery plans, shall, to the maximum extent practicable—
- (B) incorporate in each plan—
- (ii) objective, ¹³**measurable criteria which, when met, would result in a determination**, in accordance with the provisions of this section, **that the species be removed from the list**; and

See also guidelines **28, 28.2, 30, and 32.**

2. Regulations/Guidelines

- A. C.F.R. Title 50: Chapter VI: FISHERY CONSERVATION AND MANAGEMENT, NOAA, DOC
- i. Sec. 600.310 National Standard 1--¹¹**Optimum Yield**.
- (b) General.
- (2) Overview of Magnuson-Stevens Act concepts and provisions related to NS1—
- (ii) ¹¹**OY**. The determination of OY is a decisional mechanism for resolving the Magnuson-Stevens Act's conservation and management objectives, achieving a fishery management plan's objectives, and balancing the various interests that comprise the greatest overall benefits to the Nation.
- (c) Summary of items to include in FMPs related to NS1. This section provides a summary of items that Councils must include in their FMPs and FMP

- amendments in order to address ACL, AM, and other aspects of the NS1 guidelines. ... Councils may review their FMPs to decide if all stocks are “in the fishery” or whether some fit the category of “ecosystem component species.” Councils must also ¹²**describe fisheries data for the stocks, stock complexes, and ecosystem component species** in their FMPs, or associated public documents such as Stock Assessment and Fishery Evaluation Reports.
- (e)[‡] Features of MSY, SDC, and OY.—
- (1) MSY. Each FMP must include an estimate of MSY for the stocks and stock complexes in the fishery.
 - (i) Definitions.
 - (A) ¹⁰**MSY** is the largest long-term average catch or yield that can be taken from a stock or stock complex under prevailing ecological, environmental conditions and fishery technological characteristics (e.g., gear selectivity), and the distribution of catch among fleets.
 - (iv) Specifying MSY... ¹⁰**When data are insufficient to estimate MSY directly, Councils should adopt other measures of reproductive potential, based on the best scientific information available, that can serve as reasonable proxies for MSY, Fmsy (fishing mortality consistent with achieving maximum sustainable yield), and Bmsy, to the extent possible.**
 - (2) Status determination criteria--
 - (i) Definitions.
 - (A) ¹³**Status determination criteria (SDC) mean the quantifiable factors, MFMT (Maximum Fishing Mortality Threshold), OFL (Over Fishing Limit), and MSST (Minimum Stock Size Threshold),** or their proxies, that are used to determine if overfishing has occurred, or if the stock or stock complex is overfished.
 - (3) Optimum yield--
 - (iii) Determining the greatest benefit to the Nation.
 - (C) The benefits of protection afforded to marine ecosystems are those resulting from maintaining viable populations (including those of unexploited species), ¹²**maintaining adequate forage for all components of the ecosystem**, maintaining evolutionary and ecological processes (e.g., disturbance regimes, hydrological processes, nutrient cycles), maintaining the evolutionary potential of species and ecosystems, and accommodating human use.
 - (iv) Factors to consider in OY specification.
 - (C) Ecological factors. Examples include impacts on ecosystem component species, ¹²**forage fish stocks**, other fisheries, ¹²**predator-prey** or competitive **interactions**, marine mammals, threatened or endangered species, and birds. Species interactions that have not been explicitly taken into account when calculating MSY should be considered as relevant factors for setting OY below MSY. In addition, consideration

[‡] Sections (e) and (f) pertain to numerous key performance indicators.

- should be given to managing forage stocks for higher biomass than Bmsy to enhance and protect the marine ecosystem. Also important are ecological or environmental conditions that stress marine organisms, such as natural and manmade changes in wetlands or nursery grounds, and effects of pollutants on habitat and stocks.
- (f) Acceptable biological catch , annual catch limits, and annual catch targets. The following features of acceptable biological catch and annual catch limits apply to stocks and stock complexes in the fishery.
- (2) Definitions.
- (i) ⁹**Catch is the total quantity of fish**, measured in weight or numbers of fish, taken in commercial, recreational, subsistence, tribal, and other fisheries. Catch includes fish that are retained for any purpose, as well as mortality of fish that are discarded.
- (5) Setting the annual catch limit--
- (i) General...A multiyear plan must provide that, ¹⁴**if an ACL is exceeded for a year, then AMs are triggered** for the next year...
- (g) Accountability measures. The following features of accountability measures apply to those stocks and stock complexes in the fishery.
- (1) Introduction. AMs are management controls to ¹⁴**prevent ACLs, including sector-ACLs, from being exceeded, and to correct or mitigate overages of the ACL if they occur.**
- ii. Sec. 600.350 National Standard 9--Bycatch.
- (d) Minimizing bycatch and bycatch mortality... To evaluate conservation and management measures relative to this and other national standards, as well as ⁹**to evaluate total fishing mortality, Councils must--**
- (1) Promote development of a database on bycatch and bycatch mortality in the fishery to the extent practicable...
- (2) For each management measure, assess the effects on the amount and type of bycatch and bycatch mortality in the fishery...
- (3) Select measures that, to the extent practicable, will minimize bycatch and bycatch mortality...
- (4) Monitor selected management measures...
- iii. Sec. 600.815 Contents of Fishery Management Plans
- (a) Mandatory contents--
- (1) Description and identification of EFH--
- (ii) Habitat information by life stage.
- (E) ¹²**Ecological relationships among species and between the species and their habitat require, where possible, that an ecosystem approach be used in determining the EFH of a managed species.**
- EFH must be designated for each managed species, but, where appropriate, may be designated for assemblages of species or life stages that have similar habitat needs and requirements. If grouping species or using species assemblages for the purpose of designating EFH, FMPs

must include a justification and scientific rationale. The extent of the EFH should be based on the judgment of the Secretary and the appropriate Council(s) regarding the quantity and quality of habitat that are necessary to maintain a sustainable fishery and the managed species' contribution to a healthy ecosystem.

- (7) Prey species. Loss of prey may be an adverse effect on EFH and managed species because the presence of prey makes waters and substrate function as feeding habitat, and the definition of EFH includes waters and substrate necessary to fish for feeding. Therefore, actions that reduce the availability of a major prey species, either through direct harm or capture, or through adverse impacts to the prey species' habitat that are known to cause a reduction in the population of the prey species, may be considered adverse effects on EFH if such actions reduce the quality of EFH. ¹²**FMPs should list the major prey species for the species in the fishery management unit and discuss the location of prey species' habitat.** Adverse effects on prey species and their habitats may result from fishing and non-fishing activities.

iv. Sec. 679.22 ¹²**Closures.**

(a) BSAI—

- (8) Steller sea lion protection areas, Aleutian Islands subarea—(i) Seguam Foraging area. (A) The Seguam **foraging area** is all waters within the area between 52° N lat. and 53° N lat. and between 173°30' W long. and 172°30' W long.

See also guidelines **28, 28.2, 30, and 32.**

3. Discussion

⁹ *Total fishing mortality from all sources considered for the managed stock under consideration*

Total fishing mortality refers to all fishing-related mortality whether as targeted or non-targeted (discarded) catch, and NOAA Fisheries-led stock assessments strive to account for total removals by catch and bycatch. The catch component is nearly always taken as known with high accuracy and precision. While unreported catch or unobserved mortality is suspected to occur in some situations, there often is not sufficient documentation to warrant consideration as a large enough factor to incorporate directly into the models (R. Methot, NOAA Fisheries Chief Science Advisor for Stock Assessments, pers. comm.). Unobserved mortality is included in NOAA's definition of bycatch (NOAA, 1998), which is factored into stock assessments. To a lesser extent, unreported catch is also considered. For example, in 2011 NOAA's Pacific Islands Fisheries Science Center published an internal working paper to review ratios of unreported to reported catch from 1948 – 2010 for use in the Main Hawaiian Islands bottomfish stock assessment (Courtney and Brodziak, 2011). A 2011 Pacific Council Groundfish Management Team Report clearly cautioned against the assumption of a risk-

neutral base case model because unquantifiable input values (e.g., unreported catch) were absent from the stock assessments (PFMC, 2011). The acknowledgement that unreported catch introduces bias, even if estimates are not available, suggests unreported catch is considered when assessing a stock.

CONFORMANCE EVIDENCE SUMMARY:

Internal	Outcome	Independent
<ul style="list-style-type: none"> ● ● MSA: "Any fishery management plan...may establish...measures to incorporate bycatch into quotas..." ● NS1 Guidelines: "Definitions. Catch is the total quantity of fish..." ● NS9 Guidelines: "... evaluate total fishing mortality..." 	<ul style="list-style-type: none"> ● ● Stock assessments, which include estimates of total fishing mortality 	<ul style="list-style-type: none"> ● ● Stock assessments for NOAA managed fisheries are reviewed by regional panels of independent experts (e.g., SARC, SEDAR, etc.), and then by a Council’s Scientific and Statistical Committee. ● With the exception of assessments for data-poor stocks, benchmark stock assessments undergo independent peer review through the Center for Independent Experts. ● Total and complete removals from entire stock areas over the whole life cycle were accounted for in stock assessments [Score 8 out of 10 (Vasconcellos et al., 2006)].

¹⁰ *Maximum sustainable yield or proxy used for management targets*

Maximum sustainable yield is the largest amount of catch that can be taken from a stock over an indefinite period without long-term depletion. Maximum sustainable yield is estimated for all stocks where possible, but in some cases it cannot be calculated. In those cases, Regional Fishery Management Councils have either: 1) specified an overfishing limit which is an annual proxy of maximum sustainable yield [e.g., spawning potential ratio], or 2) decided not to provide an estimate of maximum sustainable yield or overfishing limit, but have instead stated that the recommended (by the Council’s Scientific and Statistical Committee) acceptable biological catch is believed to be a sustainable level of catch, albeit not maximum sustainable yield. In the latter case, acceptable biological catch may be based on a number of data-poor stock assessment methods (see Berkson et al. 2011, Carruthers et al. 2014). For example the Pacific Council uses a Depletion-Corrected Average Catch (DCAC) formula to estimate sustainable levels of catch for many of its rockfish species, and the Caribbean Council uses the Only Reliable Catch Stocks (ORCS) method to estimate catch levels for its data poor species.

The National Standard One Guidelines recognize that precise quantitative assessments are not available for all stocks and some stocks do not have sufficient data for any assessment beyond an accounting of historical catch. It remains important to prevent overfishing in these situations, even though the exact level of catch that causes overfishing is not known. The overall guidance is that when stocks have limited information about their potential yield, harvest rates need to be moderated until such information can be obtained (FR, 2009).

CONFORMANCE EVIDENCE SUMMARY:

Internal	Outcome	Independent
<ul style="list-style-type: none"> ● ● MSA: "REQUIRED PROVISIONS.—Any fishery management plan...shall... assess and specify...maximum sustainable yield..."; "Each scientific and statistical committee shall provide its Council ongoing scientific advice for fishery management decisions, including recommendations for ...maximum sustainable yield..." ● MMPA: "The term 'potential biological removal level' means the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock ..." 	<ul style="list-style-type: none"> ● ● Fishery management plans ● Stock assessments 	<ul style="list-style-type: none"> ● ● With the exception of data-poor stocks, maximum sustainable yield is included in regional stock assessments of which benchmark assessments are reviewed by the Center for Independent Experts. For data-poor stocks, review may come from regional independent-expert panels (e.g., STAR Panel review of data-poor methods on the Pacific Coast), and assessments are reviewed and approved by a Council's Scientific and Statistical Committee. ● Once approved by the Secretary of Commerce, fishery management plans, plan amendments, and framework actions are considered public policy; so any management measure within the management plan is subject to public comment procedures before decision making as called for by the Administrative Procedures Act. Thus, the public itself can independently review and provide comments to Councils regarding maximum sustainable yield specifications in fishery management plans before approval by the Secretary of Commerce.

¹¹Optimal utilization is promoted in management

The determination of optimum yield is a decisional mechanism for resolving MSA conservation and management objectives, achieving a fishery management plan’s objectives, and balancing the various interests that comprise the greatest overall benefits to the nation. Optimum yield is based on maximum sustainable yield, reduced to incorporate conservation and management measures.

CONFORMANCE EVIDENCE SUMMARY:

Internal ●	Outcome ●	Independent ●
<ul style="list-style-type: none"> ● MSA: "Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the U.S. fishing industry." 	<ul style="list-style-type: none"> ● Fishery management plans ● Stock assessments 	<ul style="list-style-type: none"> ● The assessment and specification of optimum yield is included in some regional stock assessments (e.g., SEDAR), of which benchmark assessments are reviewed by the Center for Independent Experts. ● Once approved by the Secretary of Commerce, fishery management plans, plan amendments, and framework actions are considered public policy; so any management measure within the management plan is subject to public comment procedures before decision making as called for by the Administrative Procedures Act. Thus, the public itself can independently review and provide comments to Councils regarding maximum sustainable yield specifications in fishery management plans before approval by the Secretary of Commerce.

¹²*Food-web ecosystem considerations considered*

“Forage fish differ from other stocks due to their population fluctuations and to their ecological role in the food web... It is notable that these fluctuations were present long before modern fishing began; this does not mean that fishing lacks effect, but that it occurs in the context of somewhat unstable productivity for these stocks” (Kaplan, 2013).

MSA requires Regional Fishery Management Councils to develop annual catch limits for each of their managed fisheries; however, fishery management plans developed by Councils vary in inclusiveness from some considering only target stocks of the fishery versus others that consider both target and non-target stocks. Councils may include non-targeted “ecosystem component” species in fishery management plans, and management

would be applied to “the fishery” to protect these non-targeted stocks with which the fishery interacts. MSA also allows Councils to develop fishery ecosystem plans that are applicable to fishery resources throughout the ecosystem and establish marine managed areas in the Exclusive Economic Zone. Councils include relevant trophic information and prey species in their 5-year essential fish habitat reviews.

The Western Pacific Council develops fishery ecosystem plans for all fisheries under its jurisdiction. The South Atlantic Council’s fishery ecosystem plan aims at providing a foundation from which to attain a more comprehensive understanding of habitat and biology of species, fishery information, social and economic impacts of management, and ecological consequences of conservation and management. The Pacific Council amended its Coastal Pelagic Species management plan to prohibit krill (a forage species) harvest, and recently adopted the Pacific Coast fishery ecosystem plan, which sets up a framework for actions to implement ecosystem-based management. The North Pacific Fishery Management Council amended the Gulf of Alaska and Bering Sea/Aleutian Islands Groundfish management plans to preclude directed fishing on over 20 important forage species. In addition, there are fishery closures in the waters surrounding some rookeries in the Bering Sea/Aleutian Islands to protect Steller sea lion foraging areas.

CONFORMANCE EVIDENCE SUMMARY:

Internal ●	Outcome ●	Independent ●
<ul style="list-style-type: none"> ● NS1 Guidelines: "Councils must also describe fisheries data for the...ecosystem component species in their (Fishery Management Plans)..."; "The benefits of protection afforded to marine ecosystems are those resulting from...maintaining adequate forage for all components of the ecosystem ..."; "Factors to consider in (Optimum Yield) specification ...Examples include impacts on ecosystem component species, forage fish stocks, other fisheries, predator-prey or competitive interactions..." ● CFR 50-VI-600.815: "Ecological relationships among species and between the species and their habitat require, where possible, that an ecosystem approach be used in determining the (Essential Fish Habitat) of a managed species"; "(Fishery Management Plans) should list 	<ul style="list-style-type: none"> ● Fishery ecosystem plans ● Pacific Council's Coastal Pelagic Species fishery management plan prohibits krill (a forage species) harvest ● North Pacific Council amended the Gulf of Alaska and Bering Sea/Aleutian Islands Groundfish management plans preclude directed fishing on over 20 important forage species ● In annual Stock Assessment and Fishery Evaluation Reports, the North Pacific Council's Groundfish Plan Teams prepare separate Ecosystem Considerations sections, which include descriptors of forage fish ● Fishery closure areas around some rookeries to protect Steller sea lion foraging areas in the Bering Sea/Aleutian Islands ● NOAA's Pacific Fisheries Science Center, Fishery 	<ul style="list-style-type: none"> ● Ecosystem linkages with fishery are made explicit in management plans [Score 8 out of 10 (Vasconcellos et al., 2006)]. ● The United States exhibited a ‘good’ performance rating for publishing principles, establishing indicators, and implementing ecosystem-based management and scored highest of 33 countries regarding setting ecosystem-based management principles (Pitcher et al., 2009). ● A World Wildlife Fund independent review acknowledged that ecosystem-based management science, policy, and data are being developed in the U.S. for marine capture fisheries (Grieve and Short, 2007). ● <i>Note that food-web considerations comprise only a portion of overall ecosystem-</i>

<p>the major prey species for the species in the fishery management unit and discuss the location of prey species' habitat."</p> <ul style="list-style-type: none"> • ESA: "The Secretary shall... determine whether any species is an endangered species or a threatened species because of... predation..."; "The Secretary shall make determinations...to protect such species, whether by predator control, protection of ...food supply..." • <i>Food-web considerations are generally included within the broader category of ecosystem considerations. When overtly discussed in regards to fisheries management, the provisions tend to be discretionary (e.g., "should" versus of "shall").</i> 	<p>Biology and Stock Assessment Division, conducts diet and food web modeling for a variety of federally managed species</p>	<p><i>based approaches.</i></p>
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¹³*Management should specify limits or directions in key performance indicators, e.g. overfishing*

Control rules, which are set by Regional Fishery Management Councils, are specified approaches to setting acceptable biological catch for a stock as a function of the scientific uncertainty in the estimate of an overfishing limit and any other scientific uncertainty. Each Council has a Scientific and Statistical Committee, a body that analyzes scientific stock assessments and defines how many fish can be caught while either maintaining a healthy stock or, in the case of a fishery that is overfished, keeping the fishery on its rebuilding trajectory. For each stock, the Scientific and Statistical Committee specifies the maximum fishing mortality threshold (Table 5), which is based on the fishing mortality that can produce maximum sustainable yield, and is the rate beyond which overfishing occurs. The Scientific and Statistical Committee also specifies the overfishing limit, which is the annual amount of catch that corresponds to maximum fishing mortality rate applied to available abundance. Then, the Committee recommends an acceptable biological catch, a risk-averse level of annual catch for a stock reduced from the overfishing limit or maximum fishing mortality threshold to account for scientific uncertainty. This would serve as the “fishing level recommendation” that the annual catch limit may not exceed. Managers specify the annual catch limit at or below the acceptable biological catch. Measures to ensure accountability are triggered based on the annual catch limit. Annual catch targets are recommended to be specified adequately below the annual catch limit to account for management uncertainty to lower the risk of exceeding the annual catch limit.

On June 29, 2012, NOAA Fisheries approved the final fishery management plan amendment putting annual catch limits and accountability measures into place for all federally managed stocks (Rauch, 2012). As per the MSA signed and reauthorized by President George W. Bush in 2007, all federal fisheries must be harvested under annual

catch limits with accompanying accountability measures to prevent and end overfishing in the United States.

Annually, NOAA Fisheries reports to Congress on the stock status of major species managed under federal fishery management plans (NOAA SF). The report describes the status of the stock in regards to “overfishing,” i.e., whether the rate of removal from a stock is too high, and to whether or not the stock is “overfished,” i.e., the population is too low (below a prescribed threshold). In addition, NOAA Fisheries calculates and tracks the Fish Stock Sustainability Index (FSSI), a performance measure for the sustainability of 227 U.S. fish stocks selected for their importance to commercial and recreational fisheries. The FSSI increases as stock status becomes known, overfishing is ended, and stocks increase to the level that provides maximum sustainable yield.

CONFORMANCE EVIDENCE SUMMARY:

Internal ●	Outcome ●	Independent ●
<ul style="list-style-type: none"> ● MSA: "...Each Council shall...develop annual catch limits for each of its managed fisheries that may not exceed the fishing level recommendations of its scientific and statistical committee or the peer review process..."; REQUIRED PROVISIONS.—Any fishery management...shall— ...establish a mechanism for specifying annual catch limits... or annual specifications, at a level such that overfishing does not occur in the fishery..."; "Each scientific and statistical committee shall provide its Council ongoing scientific advice for fishery management decisions, including recommendations for acceptable biological catch, preventing overfishing, maximum sustainable yield, and achieving rebuilding targets..."; ● NSI Guidelines: "Status determination criteria (SDC) mean the quantifiable factors, MFMT (Maximum Fishing Mortality Threshold), OFL (Over Fishing Limit), and MSST (Minimum Stock Size Threshold), or their proxies, that are used to determine if 	<ul style="list-style-type: none"> ● Fishery management plans ● Recovery plans ● Fish Stock Sustainability Index ● Status of Stocks Report (to Congress) 	<ul style="list-style-type: none"> ● Some reference limits and indicators are included in stock assessments and are thus reviewed by regional independent-expert panels (e.g., SEDAR, SARC, STAR), Councils’ Scientific and Statistical Committees, and some benchmark assessments are reviewed by the Center for Independent Experts. ● Once approved by the Secretary of Commerce, fishery management plans, plan amendments, and framework actions, are considered public policy; so any management measure within the management plan is subject to public comment procedures before decision making as dictated by the Administrative Procedures Act. Thus, the public itself can independently review and provide comments to Councils regarding key indicators in fishery management plans before approval by the Secretary of Commerce. ● To a considerable extent, U.S. federal marine fisheries implement formal reference points for stocks using the best science available [Score 8.5 out

<p>overfishing has occurred, or if the stock or stock complex is overfished."</p> <ul style="list-style-type: none"> • MMPA: "The term 'potential biological removal level' means the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population" • ESA: "... The Secretary shall develop and implement (recovery) plans... and...incorporate in each plan— ...measurable criteria which, when met, would result in a determination...that the species be removed from the list..." 		<p>of 10 (Vasconcellos et al., 2006)].</p> <ul style="list-style-type: none"> • The Fish Stock Sustainability Index and the Status of Stocks report are available online via the NOAA Fisheries website so any member of the public can view an explanation and verify the existence and limits of key performance indicators (i.e., overfishing and overfished determinations) for U.S. federal marine fisheries.
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¹⁴*Actions taken if limits approached or exceeded*

Accountability measures are management controls to prevent annual catch limits from being exceeded and to correct or mitigate overages of the annual catch limit if they occur. Preventative accountability measures (e.g., in-season fishery closures if target catch limits have been reached) are preferred to prevent annual catch limits from being reached. However, if exceeded, corrective management actions (e.g., overage payback in the next fishing year) are triggered to fix the operational factor(s) that caused the overage and to address any resulting biological harm to the stock. For fisheries without in-season management controls to prevent the annual catch limit from being exceeded, accountability measures utilize annual catch targets that are set below annual catch limits so that catches do not exceed the annual catch limit.

The annual catch limit and accountability measure system specified by the National Standard Guidelines is expected to be effective for achieving fishery management objectives (i.e., avoiding overfishing, rebuilding overfished stocks, achieving optimum yield) when fishery monitoring and stock assessment programs are sufficient. The annual catch limit system requires fishery monitoring data with accuracy, precision, timeliness and transparency, and stock assessments that are frequent, accurate and relatively precise. When one of these requirements is not met, the annual catch limit system often fails to meet management objectives. For example, application of the annual catch limit system to recreational fisheries, bycatch fisheries, or data-poor fisheries is costly and generally ineffective because catch estimates and stock assessments are uncertain and not timely enough for responsive management actions (Cadrin, 2012).

CONFORMANCE EVIDENCE SUMMARY:

<p style="text-align: center;">Internal</p> <p style="text-align: center;">●</p>	<p style="text-align: center;">Outcome</p> <p style="text-align: center;">●</p>	<p style="text-align: center;">Independent</p> <p style="text-align: center;">●</p>
<ul style="list-style-type: none"> ● MSA: "REQUIRED PROVISIONS.— Any fishery management plan...shall... establish a mechanism for specifying annual catch limits in the plan...including measures to ensure accountability." ● NS1 Guidelines: "...if an (Annual Catch Limit) is exceeded for a year, then (Accountability Measures) are triggered for the next year...";"(Accountability Measures) are management controls to prevent (Annual Catch Limits)...from being exceeded, and to correct or mitigate overages of the (Annual Catch Limits) if they occur"; ● MMPA: "If...the level of incidental mortality or serious injury from commercial fisheries...is likely to result in an impact that is more than negligible on the endangered or threatened species or stock, the Secretary shall use the emergency authority to protect such species or stock..." ● ESA: "PROTECTIVE REGULATIONS.—Whenever any species is listed as a threatened species pursuant to subsection (c) of this section, the Secretary shall issue such regulations as he deems necessary and advisable to provide for the conservation of such species. The Secretary may by regulation prohibit with respect to any threatened species any act..." 	<ul style="list-style-type: none"> ● Accountability measures in fishery management plans ● Rebuilding plans for overfished stocks in fishery management plans ● Take reduction plans for marine mammals ● List of Fisheries categorization and mitigation measures for incidental mortality and serious injury to marine mammals occurring in each fishery ● Recovery plans for threatened or endangered species 	<ul style="list-style-type: none"> ● Once approved by the Secretary of Commerce, fishery management plans, plan amendments, and framework actions, are considered public policy; so any management measure within the management plan is subject to public comment procedures before decision making as dictated by the Administrative Procedures Act. Thus, the public itself can independently review and provide comments to Councils regarding the actions proposed in fishery management plans before approval by the Secretary of Commerce. ● If actions are not taken when limits are exceeded, the U.S. judiciary system (generally via non-governmental organization lawsuit against NOAA Fisheries) acts as a third-party, independent expert that evaluates whether accountability measures or other actions were appropriately taken as required if limits are exceeded.

See also guidelines 28, 28.2, 30, and 32.

4. Conclusions (Conformance/Gaps)

Conformance	Superscript #	Topic Description	Reference Guideline #
●●○	4	Ecosystem effects of fishing are assessed and adverse effects addressed	28.2
●●●	9	Total fishing mortality from all sources considered for the managed stock under consideration	
●●●	10	Maximum sustainable yield or proxy used for management targets	
●●●	11	Optimal utilization is promoted in management	
○●○	12	Food-web ecosystem considerations considered	
●●●	13	Management should specify limits or directions in key performance indicators, e.g. overfishing	
●●●	14	Actions taken if limits approached or exceeded	28, 30

5. Future considerations

¹⁰Maximum sustainable yield or proxy used for management targets

- “The (MSA) is virtually silent on the implications of uncertainty and variability of (Maximum Sustainable Yield). Guidelines for implementing the Act are primarily oriented to situations in which estimates of (Maximum Sustainable Yield) reference points are reasonably precise and stable. Although it has been successful for some fisheries, in others the (Maximum Sustainable Yield) approach falls short in addressing ecosystem complexity and variability and in accounting for uncertainty in the estimates of stock size and reference points” (NRC, 2014).
- “Unfortunately, despite the inherent differences in the recreational and commercial fisheries, managers employ the same basic tools to manage both sectors—the use of an annual catch limit in pounds or numbers, tied in some way to maximum sustainable yield to constrain harvest...(Brame, 2013).
- “Recreational fishermen have vastly different motivations than commercial fishermen. Commercial fisherman attempt to maximize harvestable poundage as efficiently as possible – a goal shared by very few recreational fishermen. While harvesting fish is an important component of recreational fishing trips, the overall goal of most recreational fishermen is an enjoyable experience that is largely driven by fishing opportunity...The Federal fisheries management system should look towards examples of terrestrial wildlife and freshwater fisheries management in terms of managing recreational activities for maximizing opportunity, not solely for maximizing yield” (Nussman, 2013).

¹¹Optimal utilization is promoted in management

- “There is currently an inconsistency in MSA objectives with regard to fish population levels, depending on whether or not stocks are in an overfished condition. For the management of stocks that are not overfished the goal is (Optimum Yield), which ... is greater than (Biomass at Maximum Sustainable Yield). However, the goal for overfished stocks is to rebuild to (Biomass at Maximum Sustainable Yield). Thus, (Maximum Sustainable Yield) is treated as both a limit and a target, depending on whether or not a stock is overfished. Given that the goal of national standard one is to achieve optimum yield on a continuing basis, the goal of a rebuilding plan should also be to rebuild directly to a population level supporting (Optimum Yield)...” (Dorsett et al., 2013).

¹²Food-web ecosystem considerations considered

- NOAA Fisheries’ analytical tool, Integrated Ecosystem Assessment, provides a structure to assess the status and trends of ecosystem components relative to management objectives, to account for the holistic impact of management decisions, and to guide the assessment of management. Integrated Ecosystem Assessments draw on both the natural and human-dimensions sciences to determine the status of the coupled socioeconomic-ecological system, as well as serving as an integrative complement to single-species/sector assessments currently applied in management (Levin, 2013).
- Councils and NOAA Fisheries could consider calculating reference points on a multi-species basis, which may include modifying traditional techniques for managing multi-stock fisheries and stock complexes.
- A precautionary approach could be applied for developing/emerging fisheries, especially since many of the nation’s forage fish currently are unmanaged.
- “The key scientific challenges with respect to forage fish are understanding their high levels of population fluctuation, and understanding their supporting role – both ecologically and economically— in the fishery food web and ecosystem. Both characteristics make traditional fishery reference points (such as maximum sustainable yield) difficult to estimate. New approaches, largely based on global data analysis, economic analyses, and ecosystem modeling, can help to evaluate the trade-offs between forage fish yield, harvest of predatory fish, and persistence of protected predators and other marine species” (Kaplan, 2013).
- “As fisheries managers typically recognize, the (Magnuson-Stevens) Act requires that excessive mortality of any forage stock must be reduced or maintained at levels necessary to prevent overfishing of that same stock of forage fish. However, the overfished/overfishing definition does not specify that the fishery experiencing an excessive rate or level of fishing mortality, and the fishery whose

capacity to produce (Maximum Sustainable Yield) is jeopardized, be the same fishery. Thus, the MSA provides the authority to manage the mortality of forage species at levels that do not jeopardize the capacity of dependent predator species to produce (Maximum Sustainable Yield)” (Baker, 2013).

¹³*Management should specify limits or directions in key performance indicators, e.g. overfishing*

- “The up and down fluctuations in (Annual Catch Limits) to prevent overfishing and foregone yield is not always an ideal way to manage the fishery because in some cases they tend to have a negative short-term effect on fishing communities. This is particularly true for recreational fisheries...” (Methot, 2013).
- Changes in the overfishing limit control rule can be phased-in according to a pre-agreed formula (dependent on a number of factors, e.g., natural mortality rate, degree of uncertainty, etc.) in order to smooth the impact of oscillating annual catch limits over time. Additionally, multi-year averaging of catch overages/underages can be used to designate thresholds and limits for highly fluctuating or weakly monitored stocks (Methot, 2013).

See also guidelines **28, 28.2, 30, and 32.**

FAO ECOSYSTEM IMPACTS/TIMELY SCIENTIFIC ADVICE

Guidelines Paragraph:

29.3 Similarly, ^{6,8}**data and information**, including relevant ⁷**traditional, fisher or community knowledge**, provided its validity can be objectively verified, are used to ⁴**identify adverse impacts of the fishery on the ecosystem**, and ^{6,8}**timely scientific advice is provided** on the likelihood and magnitude of identified impacts (see paragraph 31).

Comments: The standard should assess whether management considers ecosystem impacts.

Benchmark Indicator: The standard includes a requirement for the management system to receive timely scientific advice regarding the likelihood and magnitude of adverse impacts of the fishery on the ecosystem, taking into account relevant and objectively verified traditional fisher or community knowledge.

Assessing Conformance:**1. Applicable Statute(s)**

See guidelines 28.2, 29.1, and 29.2.

2. Regulations/Guidelines

See guidelines 28.2, 29.1, and 29.2.

3. Discussion

See guidelines 28.2, 29.1, and 29.2.

4. Conclusions (Conformance/Gaps)

Conformance	Superscript #	Topic Description	Reference Guideline #
●●●	4	Ecosystem effects of fishing are assessed and adverse effects addressed	28.2
●●●	6	Adequate/reliable data are collected, maintained and assessed	29.1
●●●	7	Verifiable traditional, fisher or community knowledge considered	29.1
●●●	8	Best scientific evidence used in management measures	29.2

5. Future considerations

See guidelines 28.2, 29.1, and 29.2.

FAO LONG-TERM CONSERVATION & SUSTAINABLE USE**Guidelines Paragraph:**

- 29.4** The designated authorities adopt and effectively implement appropriate measures for the conservation and sustainable use of the “stock under consideration” based on the data, information and scientific advice referred to in the preceding bullets. ¹⁵**Short-term considerations should not compromise the long-term conservation and sustainable use of fisheries resources.**

Comments: Refer to the best scientific evidence available – as per Guidelines Paragraph 2.10 (See FAO 2009).

Benchmark Indicator: The standard includes a requirement for appropriate management measures for the conservation and sustainable use of the stock under consideration and

the protection of the aquatic environment to be adopted and implemented, based on the best scientific evidence available and the precautionary approach.

Assessing Conformance:

1. Applicable Statute(s)

A. MSA: TITLE III—NATIONAL FISHERY MANAGEMENT PROGRAM

i. SEC. 3. DEFINITIONS

(5) The term “conservation and management” refers to all of the rules, regulations, conditions, methods, and other measures

(B) which are designed to assure that –

(iii) ¹⁵**there will be a multiplicity of options available with respect to future uses of the resources.**

ii. SEC. 301. NATIONAL STANDARDS FOR FISHERY CONSERVATION AND MANAGEMENT

(a) IN GENERAL.—Any fishery management plan prepared, and any regulation promulgated to implement any such plan, pursuant to this title shall be consistent with the following national standards for fishery conservation and management:

(1) Conservation and management measures shall prevent overfishing while ¹⁵**achieving, on a continuing basis, the optimum yield from each fishery** for the United States fishing industry.

iii. SEC. 303. CONTENTS OF FISHERY MANAGEMENT PLANS

(a) REQUIRED PROVISIONS.—Any fishery management plan which is prepared by any Council, or by the Secretary, with respect to any fishery, shall—

(1) contain the conservation and management measures, applicable to foreign fishing and fishing by vessels of the United States, which are—

(A) necessary and appropriate for the ¹⁵**conservation and management of the fishery to** prevent overfishing and rebuild overfished stocks, and to protect, restore, and **promote the long-term health and stability of the fishery;**

B. MMPA: TITLE I—CONSERVATION AND PROTECTION OF MARINE MAMMALS: MORATORIUM ON TAKING AND IMPORTING MARINE MAMMALS AND MARINE MAMMAL PRODUCTS

i. SEC. 118. TAKING OF MARINE MAMMALS INCIDENTAL TO COMMERCIAL FISHING OPERATIONS

(f) TAKE REDUCTION PLANS. —

- (2) The immediate goal of a take reduction plan for a strategic stock shall be to reduce, within 6 months of its implementation, the incidental mortality or serious injury of marine mammals incidentally taken in the course of commercial fishing operations to levels less than the potential biological removal level established for that stock...¹⁵**The long-term goal of the plan shall be to reduce, within 5 years of its implementation, the incidental mortality or serious injury of marine mammals incidentally taken in the course of commercial fishing operations to insignificant levels** approaching a zero mortality and serious injury rate, taking into account the economics of the fishery, the availability of existing technology, and existing State or regional fishery management plans.

C. ESA

i. SEC. 4. DETERMINATION OF ENDANGERED SPECIES AND THREATENED SPECIES

- (f)(1) RECOVERY PLANS.— The Secretary shall develop and implement plans (hereinafter in this subsection referred to as “recovery plans”) for the conservation and survival of endangered species and threatened species listed pursuant to this section, unless he finds that such a plan will not promote the conservation of the species. The Secretary, in developing and implementing recovery plans, shall, to the maximum extent practicable—
- (B) incorporate in each plan—
- (i) a description of such site-specific management actions as may be necessary to achieve the plan’s ¹⁵**goal for the conservation and survival of the species;**
 - (ii) objective, measurable criteria which, when met, would result in a determination, in accordance with the provisions of this section, that the species be removed from the list...

D. NEPA

- i. SEC. 102. The Congress authorizes and directs that, to the fullest extent possible: (1) ¹⁵**the policies, regulations, and public laws of the United States shall** be interpreted and administered in accordance with the policies set forth in this Act, and (2) all agencies of the Federal Government shall –
- (C) **include in every recommendation or report on proposals for legislation and other major Federal actions** significantly affecting the quality of the human environment, a detailed statement by the responsible official on –
- (iv) **the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity...**

2. Regulations/Guidelines

A. C.F.R. Title 50: Chapter VI: FISHERY CONSERVATION AND MANAGEMENT, NOAA, DOC

- i. Sec. 600.310 National Standard 1--Optimum Yield.
 - (e) Features of MSY, SDC, and OY.--
 - (3) Optimum yield--
 - (i) Definitions--
 - (A) ¹⁵**MSY is the largest long-term average catch or yield that can be taken from a stock or stock complex** under prevailing ecological, environmental conditions and fishery technological characteristics (e.g., gear selectivity), and the distribution of catch among fleets.
 - (B) In NS 1, use of the phrase “achieving, on a continuing basis, the optimum yield from each fishery” means producing, from each stock, stock complex, or fishery: a ¹⁵**long-term series of catches such that the average catch is equal to the OY, overfishing is prevented, the long term average biomass is near or above Bmsy, and overfished stocks and stock complexes are rebuilt consistent with timing and other requirements...**
 - (iv) Factors to consider in OY specification...To the extent possible, the relevant social, economic, and ecological factors used to establish OY for a stock, stock complex, or fishery should be quantified and reviewed in historical, short-term, and ¹⁵**long-term contexts**.

3. Discussion

¹⁵*Goal of long-term sustainability present*

In its Next-Generation Strategic Plan (NOAA, 2010a), NOAA describes its vision for the future, which includes “collective effort(s) to reduce the vulnerability of communities and ecological systems in the short-term, while helping society avoid or adapt to long-term environmental, social, and economic changes.” Within the plan, NOAA outlines long-term outcomes with specific objectives, including an informed society prepared for and responsive to climate impacts and weather-related events, and marine fisheries, habitats, biodiversity, and communities sustained within healthy and productive ecosystems.

CONFORMANCE EVIDENCE SUMMARY:

Internal	Outcome	Independent
●	●	●
<ul style="list-style-type: none"> ● MSA: "DEFINITIONS.—... “conservation and management” refers to all of the rules, regulations, conditions, 	<ul style="list-style-type: none"> ● Accountability measures and rebuilding plans are enacted to protect and restore stocks for future use. 	<ul style="list-style-type: none"> ● In Natural Resources Defense Council v. Daley, 209 F.3d 747 (D.C. Cir. 2000), the court ruled that National Standard One

<p>methods, and other measures... to assure that...there will be ... options available with respect to future uses of the resources"; "Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery"; "REQUIRED PROVISIONS.— Any fishery management plan... shall... contain the conservation and management measures... necessary...to... promote the long-term health and stability of the fishery;"</p> <ul style="list-style-type: none"> • NS1 Guidelines: "To the extent possible, the relevant social, economic, and ecological factors used to establish (Optimum Yield) for a stock, stock complex, or fishery should be quantified and reviewed in historical, short-term, and long-term contexts." • MMPA: "The long-term goal of the (take reduction) plan shall be to reduce, within 5 years of its implementation, the incidental mortality or serious injury of marine mammals incidentally taken in the course of commercial fishing operations to insignificant levels" • ESA: "The Secretary ... shall ... incorporate in each (recovery) plan ... a description of such site-specific management actions as may be necessary to achieve the plan's goal for the conservation and survival of the species;" • NEPA: "...include in every recommendation or report on proposals for legislation and other major Federal actions ... the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity..." 	<ul style="list-style-type: none"> • Take reduction plans for marine mammals. • Recovery plans for endangered and threatened species. • Environmental impact statements and environmental assessments mandated by NEPA 	<p>(prevent overfishing/achieve optimum yield on a continuing basis) takes precedent over National Standard Eight (economic/community considerations); that conservation has clear priority over short term-economic interests under the MSA was clarified in at least two subsequent suits filed by the Natural Resources Defense Council (Dorsett et al., 2013).</p> <ul style="list-style-type: none"> • U.S. federal fishery management plans have clearly stated long-term objectives [Score 9 out of 10 (Vasconcellos et al., 2006)].
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4. *Conclusions (Conformance/Gaps)*

Conformance	Superscript #	Topic Description	Reference Guideline #
●●●	15	Goal of long-term sustainability present	

5. *Future considerations*

¹⁵*Goal of long-term sustainability present*

- Defining optimum yield as having both a short- and long-term goal may help stakeholders understand that there is a difference in the yield that a fishery can currently achieve versus what it could achieve in the future given the characteristics of the fishery. For example, some direct ways in which optimum yield can be improved from its current state is if scientific uncertainty can be reduced by better stock assessments, management uncertainty can be reduced by better reporting mechanisms, bycatch is reduced through gear improvements and better temporal/spatial management, or the carrying capacity of targeted stocks can be increased through habitat improvement and optimization of the ecosystem trophic structure.
- Because optimum yield and ecosystem-based fisheries management share similar goals and objectives, emphasizing that the current yields of fisheries can be systematically optimized may be what Babcock and Pikitch (2004) offered as a “sufficiently simple, unified, and compelling [concept]” that motivates stakeholders and Councils to replace the current single-species fisheries management philosophy with ecosystem-based fisheries management. Many scientists agree that optimizing yield and implementing ecosystem-based fisheries management is a long-term process, and would be best achieved through a strategic planning process that identifies the goals and objectives of fisheries (EPAP 1999, Fluharty and Cyr 2001, Link 2002, Busch et al. 2003, Holiday and Gautam 2005). NOAA’s Integrated Ecosystem Assessment framework is an ideal way of scoping these optimum yield and ecosystem-based fisheries management goals and objectives, although other scoping processes could be used (e.g., Mid-Atlantic Council’s Visioning Process). Similarly, the use of fishery ecosystem plans, such as by the Pacific Fishery Management Council, is an ideal way of outlining goals and objectives, and coordinating actions among a Council’s fishery management plans for achieving those goals and objectives (EPAP 1999; Fluharty and Cyr 2001; Tromble 2008).

FAO MONITORING SURVEILLANCE ENFORCEMENT**Guidelines Paragraph:**

29.5 An effective legal and administrative ¹⁶**framework at the local, national or regional level**, as appropriate, is established for the fishery and ¹⁷**compliance is ensured through effective mechanisms for monitoring, surveillance, control and enforcement** (see paragraph 6^{††}).

Comments: None

Benchmark Indicator: The standard includes a requirement for an effective legal and administrative framework for the fishery, including relevant traditional, fisher or community approaches, provided their performance can be objectively verified.

The standard includes a requirement for suitable monitoring, surveillance, control and enforcement, including relevant traditional, fisher or community approaches, provided their performance can be objectively verified.

Assessing Conformance:**1. Applicable Statute(s)****A. MSA: TITLE III—NATIONAL FISHERY MANAGEMENT PROGRAM****i. SEC. 301. NATIONAL STANDARDS FOR FISHERY CONSERVATION AND MANAGEMENT**

(a) IN GENERAL.—Any fishery management plan prepared, and any regulation promulgated to implement any such plan, pursuant to this title shall be consistent with the following national standards for fishery conservation and management:

(1) Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

ii. SEC. 302. REGIONAL FISHERY MANAGEMENT COUNCILS

(a) ESTABLISHMENT.—

(1) There shall be established...eight Regional Fishery Management Councils...

(2) Each Council shall reflect the expertise and interest of the ¹⁶**several constituent States in the ocean area over which such Council is granted authority.**

(b) VOTING MEMBERS.—

(1) The voting members of each Council shall be:

^{††} Refer to the Guidelines in full (FAO, 2009).

- (A) The principal State official with marine fishery management responsibility and expertise in each constituent State, who is designated as such by the Governor of the State, so long as the official continues to hold such position, or the designee of such official.
- (B) The regional director of the National Marine Fisheries Service for the geographic area concerned, or his designee, except that if two such directors are within such geographical area, the Secretary shall designate which of such directors shall be the voting member.
- (2) (A) The members of each Council required to be appointed by the Secretary must be individuals who, by reason of their occupational or other experience, scientific expertise, or training, are knowledgeable regarding the conservation and management, or the commercial or recreational harvest, of the fishery resources of the geographical area concerned...
- (5) (A) The Secretary shall appoint to the Pacific Council one representative of an Indian tribe with Federally recognized fishing rights from California, Oregon, Washington, or Idaho ...
- (c) NONVOTING MEMBERS.—
 - (1) The nonvoting members of each Council shall be:
 - (A) The regional or area director of the United States Fish and Wildlife Service for the geographical area concerned, or his designee.
 - (B) The commander of the Coast Guard district for the geographical area concerned, or his designee; except that, if two Coast Guard districts are within such geographical area, the commander designated for such purpose by the commandant of the Coast Guard.
 - (C) The Executive Director of the Marine Fisheries Commission for the geographical area concerned, if any, or his designee.
 - (D) One representative of the Department of State designated for such purpose by the Secretary of State, or his designee.
 - (2) The Pacific Council shall have one additional nonvoting member who shall be appointed by, and serve at the pleasure of, the Governor of Alaska.
- (g) COMMITTEES AND ADVISORY PANELS.—
 - (1)(A) Each Council shall establish, maintain, and appoint the members of a scientific and statistical committee to assist it in the development, collection, evaluation, and peer review of such statistical, biological, economic, social, and other scientific information as is relevant to such Council's development and amendment of any fishery management plan.
 - (2) Each Council shall establish such advisory panels as are necessary or appropriate to assist it in carrying out its functions under this Act.
 - (3) (A) Each Council shall establish and maintain a fishing industry advisory committee which shall provide information and recommendations on, and assist in the development of, fishery management plans and amendments to such plans.
 - (4) The Secretary shall establish advisory panels to assist in the collection and evaluation of information relevant to the development of any fishery management plan or plan amendment for a fishery... Each advisory panel

shall participate in all aspects of the development of the plan or amendment; be balanced in its representation of commercial, recreational, and other interests; and consist of not less than 7 individuals who are knowledgeable about the fishery for which the plan or amendment is developed, selected from among—

- (A) members of advisory committees and species working groups appointed under Acts implementing relevant international fishery agreements pertaining to highly migratory species; and
- (B) other interested persons.

iii. SEC. 303. CONTENTS OF FISHERY MANAGEMENT PLANS

(a) REQUIRED PROVISIONS.—Any fishery management plan which is prepared by any Council, or by the Secretary, with respect to any fishery, shall—

- (5) specify the pertinent data which shall be submitted to the Secretary with respect to commercial, recreational, charter fishing, and fish processing in the fishery, including, but not limited to, information regarding the type and quantity of fishing gear used, catch by species in numbers of fish or weight thereof, areas in which fishing was engaged in, time of fishing, number of hauls, economic information necessary to meet the requirements of this Act, and the estimated processing capacity of, and the actual processing capacity utilized by, United States fish processors;

iv. SEC. 311. ¹⁷**ENFORCEMENT**

(a) RESPONSIBILITY.—The provisions of this Act shall be enforced by the Secretary and the Secretary of the department in which the Coast Guard is operating. Such Secretaries may, by agreement, on a reimbursable basis or otherwise, utilize the personnel, services, equipment (including aircraft and vessels), and facilities of any other Federal agency, including all elements of the Department of Defense, and of any State agency, in the performance of such duties.

B. MMPA: TITLE I—CONSERVATION AND PROTECTION OF MARINE MAMMALS: MORATORIUM ON TAKING AND IMPORTING MARINE MAMMALS AND MARINE MAMMAL PRODUCTS

i. SEC. 107. ¹⁷**ENFORCEMENT**

(a) [UTILIZATION OF PERSONNEL.] — Except as otherwise provided in this title, the Secretary shall enforce the provisions of this title. The Secretary may utilize, by agreement, the personnel, services, and facilities of any other Federal Agency for the purposed of enforcing this title.

ii. SEC. 118.

(f) TAKE REDUCTION TEAMS

- (6)(A) At the earliest possible time (not later than 30 days) after the Secretary issues a final stock assessment ... for a strategic stock ... the Secretary may—
- (i) establish a take reduction team for such stock...
- (B) The Secretary may request a take reduction team to address a stock that extends over one or more regions or fisheries, or multiple stocks within a region or fishery, if the Secretary determines that doing so would facilitate the development and implementation of plans required under this subsection.
- (C) Members of take reduction teams shall have expertise regarding the conservation or biology of the marine mammal species which the take reduction plan will address, or the fishing practices which result in the incidental mortality and serious injury of such species. Members shall include representatives of Federal agencies, each coastal State which has fisheries which interact with the species or stock, appropriate Regional Fishery Management Councils, interstate fisheries commissions, academic and scientific organizations, environmental groups, all commercial and recreational fisheries groups and gear types which incidentally take the species or stock, Alaska Native organizations or Indian tribal organizations, and others as the Secretary deems appropriate. Take reduction teams shall, to the maximum extent practicable, consist of an equitable balance among representatives of resource user interests and nonuser interests.

C. ESA

i. SEC. 11. PENALTIES AND ENFORCEMENT

(e) ¹⁷**ENFORCEMENT.**—

- (1) The provisions of this Act and any regulations or permits issued pursuant thereto shall be enforced by the Secretary, the Secretary of the Treasury, or the Secretary of the Department in which the Coast Guard is operating, or all such Secretaries. Each such Secretary may utilize by agreement, with or without reimbursement, the personnel, services, and facilities of any other Federal agency or any State agency for purposes of enforcing this Act.

2. *Regulations/Guidelines*

A. C.F.R. Title 15: Chapter IX: NMFS (National Marine Fisheries Service), NOAA, DOC

- i. Sec. 905.3 USE IN ENFORCEMENT PROCEEDINGS OF INFORMATION COLLECTED BY VOLUNTARY FISHERY DATA COLLECTORS -- Access to Information. --¹⁷**Information collected by a voluntary fishery data collector:**
- (a) Is subject to disclosure to both the Secretary and the public, to the extent required or authorized by law; and

- (b) **Is subject to discovery by any party to an enforcement proceeding**, to the extent required or authorized by law.

B. C.F.R. Title 50: Chapter II: NMFS (National Marine Fisheries Service), NOAA, DOC

- i. Sec. 216.8 ENFORCEMENT OFFICERS--¹⁷**Enforcement Agents of the National Marine Fisheries Service shall enforce the provisions of the MMPA and may take any actions authorized by the MMPA with respect to enforcement.** In addition, the Secretary may utilize, by agreement, the personnel, services, and facilities of any other Federal Agency for the purposes of enforcing this MMPA. Pursuant to the terms of section 107(b) of the MMPA, the Secretary may also designate officers and employees of any State or of any possession of the United States to enforce the provisions of this MMPA.

C. C.F.R. Title 50: Chapter VI: FISHERY CONSERVATION AND MANAGEMENT, NOAA, DOC

- i. Sec. 600.310 National Standard 1--Optimum Yield.
 (e) Features of MSY, SDC, and OY.—
 (3) Optimum yield--
 (ii) General. OY is a long-term average amount of desired yield from a stock, stock complex, or fishery. An FMP must contain conservation and management measures, including ACLs and AMs, to achieve OY on a continuing basis, and provisions for information collection that are designed to determine the degree to which OY is achieved. These measures should allow for practical and effective implementation and enforcement of the management regime. ¹⁷**The Secretary has an obligation to implement and enforce the FMP.** If management measures prove unenforceable--or too restrictive, or not rigorous enough to prevent overfishing while achieving OY--they should be modified; an alternative is to reexamine the adequacy of the OY specification...

3. Discussion

¹⁶*Framework for fisheries at local, national or regional level*

NOAA Fisheries is responsible for the management, conservation and protection of living marine resources within the U.S. Exclusive Economic Zone (in most cases waters 3 to 200 miles offshore). Using the tools provided by the MSA, NOAA's National Marine Fisheries Service assesses and predicts the status of fish stocks, ensures compliance with fisheries regulations and works to reduce wasteful fishing practices. Under the MMPA, NOAA Fisheries recovers protected marine species without unnecessarily impeding economic and recreational opportunities. With the help of the five regional offices, NOAA Fisheries is able to work with communities on fishery management issues.

The MSA established a management structure wherein states with federal marine fisheries are divided into eight regions (New England, Mid-Atlantic, South Atlantic, Caribbean, Gulf of Mexico, Pacific, North Pacific, Western Pacific), each of which is managed by a Regional Fishery Management Council. Council members are appointed by the Secretary of Commerce and include the state management agencies, industry members from the region, and the NOAA Fisheries Regional Administrator. The Caribbean Council is unique in that it includes the Commonwealth of Puerto Rico and the U.S. Virgin Islands. The Pacific Council includes a tribal representative. On occasion, academics and members of non-governmental organizations also are appointed to a Council. The fishery management planning and implementation process involves technical teams, independent scientific committees, constituent advisory panels, enforcement officials, lawyers, management agencies, and the public. The Assistant Administrator, on behalf of the Secretary of Commerce, approves all Council-developed fisheries management plans and amendments before they are enacted. NOAA Fisheries General Counsel reviews legal aspects of proposed fishery management plans and amendments. Each Council has its own administrative staff, which includes an Executive Director.

The MMPA specifies take reduction plans be developed and implemented to assist in the recovery or prevent the depletion of strategic marine mammal stocks that interact with certain fisheries. NOAA Fisheries convenes take reduction teams to develop such plans. Take reduction teams consist of a balance of representatives from the fishing industry, Councils, state and federal resource management agencies, the scientific community, and conservation organizations.

CONFORMANCE EVIDENCE SUMMARY:

Internal	Outcome	Independent
<p style="text-align: center;">●</p> <ul style="list-style-type: none"> ● MSA: "...There shall be established... Regional Fishery Management Councils...Each Council shall reflect the expertise and interest of the several constituent States in the ocean area over which such Council is granted authority" ● MMPA: "...for a strategic stock ... the Secretary may ... establish a take reduction team ... Members shall include representatives of Federal agencies, each coastal State which has fisheries which interact with the species or stock, (etc.)..." 	<p style="text-align: center;">●</p> <ul style="list-style-type: none"> ● Regional fishery management councils ● NOAA Fisheries headquarters and regional offices ● Take reduction teams for marine mammals 	<p style="text-align: center;">●</p> <ul style="list-style-type: none"> ● Councils meet publicly, and meetings are open for public participation. Most Council meetings as well as some advisory panel meetings are also streamed and/or archived online. Thus, any member of the public can be an independent verifier that legal and administrative frameworks for U.S. federal fisheries are established.

¹⁷ *Compliance ensured via monitoring and enforcement*

As mandated by MSA, the U.S. Coast Guard is responsible for enforcing fisheries management plans at sea, in conjunction with NOAA Fisheries Office of Law Enforcement ashore. The Coast Guard also enforces laws to protect marine mammals and endangered species. All Regional Fishery Management Councils have a non-voting Coast Guard member. Under the federally funded NOAA Cooperative Enforcement Program, the Office of Law Enforcement has ongoing formal Cooperative Enforcement Agreements and Joint Enforcement Agreements with state enforcement agencies, such as police and fish and wildlife departments.

NOAA Fisheries has been using observers to collect catch and bycatch data from U.S. commercial fishing and processing vessels since 1972. Annually, 47 different fisheries are monitored by observer programs logging over 77,000 observer days at sea (NOAA NOP). NOAA’s Northeast Region utilizes at-sea monitors to collect scientific data on board domestic commercial fishing vessels as well as for documenting vessel compliance with federal fishing regulations. At-sea monitors observe fishing operations, conduct interviews with vessel captains and crew, photograph catch (including bycatch), and measure select portions of the catch and fishing gear (NERO, 2010).

In some fisheries, a level of voluntary compliance and self-enforcement is maintained. For example, in the Alaska pollock fishery, a fisheries network funds the development of near-real time maps of salmon bycatch so that fishermen can avoid these areas. The fishermen themselves are self-monitoring; there is peer pressure to avoid fishing in these salmon-intense areas with economic consequences to doing so. Sea State, Inc. generates similar maps of permanent, persistent hotspots of rockfish bycatch in the whiting fishery of the Pacific Northwest from fishermen data, and groups of “motherships” have established bycatch contracts for self-enforcement of risk management pools (Halfinger, 2010). The University of Massachusetts Dartmouth is trying to initiate a similar map-generation program on the East Coast for herring in the squid, mackerel, and butterfish fishery. It has been suggested that voluntary compliance could be strengthened by improving how fishery regulations are developed, implemented and enforced (Shaw, 2005).

CONFORMANCE EVIDENCE SUMMARY:

Internal	Outcome	Independent
<p style="text-align: center;">●</p> <ul style="list-style-type: none"> ● MSA (and similar language in MMPA and ESA): "ENFORCEMENT. (a) RESPONSIBILITY.—The provisions of this Act shall be enforced by the Secretary and the Secretary of the department in which the Coast Guard is operating. Such Secretaries may...utilize the personnel, services, equipment (including aircraft and vessels), and facilities of any other Federal 	<p style="text-align: center;">●</p> <ul style="list-style-type: none"> ● Observers and at-sea monitors ● Logbooks, vessel trip reports, catch reports, permits, and trip tickets ● Vessel boardings (by Coast Guard and/or NOAA Fisheries Office of Law Enforcement) ● Vessel monitoring systems 	<p style="text-align: center;">●</p> <ul style="list-style-type: none"> ● U.S. federal marine fisheries management has a fairly effective catch inspection scheme [Score 7 out of 10 (Vasconcellos et al., 2006)]. ● King and Sutinen (2010) argue that "The deterrence effect of the existing enforcement system in the Northeast multispecies groundfish fishery is weak because economic gains from violating fishing regulations are nearly 5 times the economic

<p>agency, including all elements of the Department of Defense, and of any State agency, in the performance of such duties"</p> <ul style="list-style-type: none"> • NS1 Guidelines: "The Secretary has an obligation to implement and enforce the (Fishery Management Plan)." • CFR 15-IX-905.3: "Information collected by a voluntary fishery data collector...Is subject to discovery by any party to an enforcement proceeding..." • CFR 50-II-216.8: "Enforcement Agents of the National Marine Fisheries Service shall enforce the provisions of the MMPA and may take any actions authorized by the MMPA with respect to enforcement." 		<p>value of expected penalties" and they conclude that "noncompliance is a significant problem (in this) fishery, as it has been for at least 20 years."</p>
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4. Conclusions (Conformance/Gaps)

Conformance	Superscript #	Topic Description	Reference Guideline #
●●●	16	Framework for fisheries at local, national or regional level	
●●○	17	Compliance ensured via monitoring and enforcement	

5. Future considerations

¹⁶*Framework for fisheries at local, national or regional level*

- In the United States, frameworks exist at local, regional and national levels to conduct open and transparent fisheries management processes and decision-making. "Increased emphasis on outreach has improved stakeholder understanding ... but more needs to be done" (Cupka, 2013).

¹⁷*Compliance ensured via monitoring and enforcement*

- Some regulators and enforcement personnel believe compliance can be improved by increasing the number of dockside enforcement agents, inspections, and coverage programs. Mechanisms for monitoring and enforcement are in place; however, there is not always enough capacity to maintain the levels needed. Some suggest streamlining the investigative process associated with U.S. Coast Guard

violations and increasing the certainty and severity of penalties (King and Sutinen, 2010).

- Although some fisheries (e.g. Alaska pollock, which generally consists of large-vessel, large corporate entities) provide observer coverage completely funded by industry, other fisheries (e.g. New England groundfish, which generally consists of small-vessel, small business entities) struggle with at-sea monitoring costs and petition NOAA Fisheries and the Department of Commerce for financial assistance. NOAA Fisheries and Councils could continue to “work with fishermen and external organizations to reduce the cost of fishery monitoring, including by developing methods to implement electronic monitoring systems as a replacement or supplement for human fishery observers” (Conathan, 2012). NOAA Fisheries recently established a policy on electronic technologies and fishery-dependent data collection (NOAA, 2013b), and released a discussion draft of advice and best practices guidance to map out some of the issues and challenges associated with the adoption of such new technologies (NOAA, 2013c).

FAO PRECAUTIONARY APPROACH

Guidelines Paragraph:

29.6 In accordance with the Code of Conduct Article 7.5, the ³**precautionary approach is being implemented** to protect the “stock under consideration” and to preserve the aquatic environment. Inter alia this will require that the ⁸**absence of adequate scientific information should not be used as a reason for postponing or failing to take conservation and management measures.** Further, relevant uncertainties are being taken into account through a suitable method of risk assessment. ¹³**Appropriate reference points are determined** and ¹⁴**remedial actions to be taken if reference points are approached or exceeded** are specified.

Comments: Precautionary Approach covered in conjunction with (FAO Guideline) paragraph 29.4.

Reference points covered under paragraph (FAO Guideline) 29.2bis.

Benchmark Indicator: The standard includes a requirement for relevant uncertainties to be taken into account through a suitable method of risk assessment.

Assessing Conformance:

1. *Applicable Statute(s)*

See guidelines **28.1, 29.2, and 29.2bis.**

2. Regulations/Guidelines

See guidelines **28.1**, **29.2**, and **29.2bis**.

3. Discussion

See guidelines **28.1**, **29.2**, and **29.2bis**.

4. Conclusions (Conformance/Gaps)

Conformance	Superscript #	Topic Description	Reference Guideline #
●●●	3	Uncertainty taken into account via risk assessment or precautionary approach	28.1
●●●	8	Best scientific evidence used in management measures	29.2
●●●	13	Management should specify limits or directions in key performance indicators, e.g. overfishing	29.2bis
●●●	14	Actions taken if limits approached or exceeded	29.2bis

5. Future considerations

See guidelines **28.1**, **29.2**, and **29.2bis**.

“STOCKS UNDER CONSIDERATION”

FAO OVERFISHED STOCKS

Guidelines Paragraph:

30. Requirement: The ¹⁸“**stock under consideration**” is **not overfished**, and is maintained at a level which promotes the objective of ¹¹**optimal utilization** and maintains its ¹⁶**availability for present and future generations**, ¹⁹**taking into account that longer term changes in productivity can occur due to natural variability** and/or impacts other than fishing. In the event that biomass drops well below such ¹³**target levels**, management measures (Code of Conduct Article 7.6) should allow for ²⁰**restoration within reasonable time frames** of the stocks to such levels (see also paragraph 29.2.bis). The following criteria are applicable:

Comments: See also (FAO Guideline) paragraph 29.2bis with respect to the specification of levels and a recovery plan.

Benchmark Indicator: The standard includes an assessment of the state of the stock under consideration [see also (FAO Guideline) paragraph 27 (See Appendix 1)].

The standard includes the requirement that the stock under consideration is not overfished and promotes the objective of optimal utilization and maintains its availability for present and future generations. The standard includes a clear understanding of what is meant by overfished and overfishing, conforming to current international norms (e.g. Code of Conduct) through the specification of levels (reference points) [compare with (FAO Guideline) paragraph 29.2bis].

In the event that biomass drops well below a specified level consistent with the objective of optimal utilization and availability for present and future generations due to natural variability and/or impacts other than fishing, management measures (Code of Conduct Article 7.6), should allow for restoration of the stocks to such levels within reasonable time frames.

Assessing Conformance:

1. *Applicable Statute(s)*

A. MSA: TITLE III—NATIONAL FISHERY MANAGEMENT PROGRAM

i. SEC. 3. DEFINITIONS As used in this Act, unless the context otherwise requires—

- (5) The term “conservation and management” refers to all of the rules, regulations, conditions, methods, and other measures (A) which are required ²⁰**to rebuild, restore, or maintain, and which are useful in rebuilding, restoring, or maintaining, any fishery resource and the marine environment;**

ii. SEC. 301. NATIONAL STANDARDS FOR FISHERY CONSERVATION AND MANAGEMENT

(a) IN GENERAL.—Any fishery management plan prepared, and any regulation promulgated to implement any such plan, pursuant to this title shall be consistent with the following national standards for fishery conservation and management:

- (1) Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

iii. SEC. 304. ACTION BY THE SECRETARY

(e) REBUILDING OVERFISHED FISHERIES.—

(4) For a fishery that is overfished, any fishery management plan, amendment, or proposed regulations for such fishery shall—

- (A) ²⁰**specify a time period for rebuilding the fishery that shall—**
 (i) **be as short as possible**, taking into account the status and biology of any overfished stocks of fish, the needs of fishing communities, recommendations by international organizations in which the United

States participates, and the interaction of the overfished stock of fish within the marine ecosystem;

- (ii) ¹⁹**not exceed 10 years, except in cases where** the biology of the stock of fish, other **environmental conditions**, or management measures under an international agreement in which the United States participates **dictate otherwise**;

B. MMPA: TITLE I—CONSERVATION AND PROTECTION OF MARINE MAMMALS: MORATORIUM ON TAKING AND IMPORTING MARINE MAMMALS AND MARINE MAMMAL PRODUCTS

i. SEC. 118. TAKING OF MARINE MAMMALS INCIDENTAL TO COMMERCIAL FISHING OPERATIONS

(f) TAKE REDUCTION PLANS. —

- (5)(A) ²⁰**For any stock in which incidental mortality and serious injury from commercial fisheries exceeds the potential biological removal level established** under section 117, **the plan shall include measures the Secretary expects will reduce, within 6 months of the plan’s implementation, such mortality and serious injury to a level below the potential biological removal level.**

C. ESA

i. SEC. 4. DETERMINATION OF ENDANGERED SPECIES AND THREATENED SPECIES

(a) GENERAL—

- (1) ¹⁸**The Secretary shall** by regulation promulgated in accordance with subsection (b) **determine whether any species is an endangered species or a threatened species because of any of the following factors:**

(B) **overutilization for commercial, recreational,** scientific, or educational purposes;

- (f)(1) ²⁰**RECOVERY PLANS.—The Secretary shall develop and implement plans (hereinafter in this subsection referred to as “recovery plans”) for the conservation and survival of endangered species and threatened species listed** pursuant to this section, unless he finds that such a plan will not promote the conservation of the species. The Secretary, in developing and implementing recovery plans, shall, to the maximum extent practicable—

(B) incorporate in each plan—

- (i) a description of such site-specific management actions as may be necessary to achieve the plan’s goal for the conservation and survival of the species;
- (ii) objective, measurable criteria which, when met, would result in a determination, in accordance with the provisions of this section, that the species be removed from the list; and

- (iii) estimates of the ²⁰**time required** and the cost **to carry out those measures** needed to achieve the plan's goal and to achieve intermediate steps toward that goal.

D. EXECUTIVE ORDER -- Preparing the United States for the Impacts of Climate Change (WH, 2003)

- i. SEC. 3. Managing Lands and Waters for Climate Preparedness and Resilience. Within 9 months of the date of this order and in coordination with the efforts described in section 2 of this order, the heads of the Departments of Defense, the Interior, and Agriculture, the Environmental Protection Agency, ¹⁹**NOAA**, the Federal Emergency Management Agency, the Army Corps of Engineers, and other agencies as recommended by the Council established in section 6 of this order **shall** work with the Chair of CEQ and the Director of the Office of Management and Budget (OMB) to **complete an inventory and assessment of proposed and completed changes to their land- and water-related policies, programs, and regulations necessary to make the Nation's watersheds, natural resources, and ecosystems, and the communities and economies that depend on them, more resilient in the face of a changing climate...**

See also guidelines **28.1, 29.2bis, and 29.4.**

2. Regulations/Guidelines

A. C.F.R. Title 50: Chapter VI: FISHERY CONSERVATION AND MANAGEMENT, NOAA, DOC

- i. Sec. 600.310 National Standard 1--Optimum Yield.
- (e) Features of MSY, SDC, and OY.--
- (2) Status determination criteria--
- (i) Definitions.
- (A) Status determination criteria (SDC) mean the quantifiable factors, MFMT, OFL, and MSST, or their proxies, that are used to determine if overfishing has occurred, or if the stock or stock complex is overfished. Magnuson-Stevens Act (section 3(34)) defines both "overfishing" and "overfished" to mean a rate or level of fishing mortality that jeopardizes the capacity of a fishery to produce the MSY on a continuing basis. ¹⁸**To avoid confusion, this section clarifies that "overfished" relates to biomass of a stock or stock complex**, and "overfishing" pertains to a rate or level of removal of fish from a stock or stock complex.
- (B) Overfishing (to overfish) occurs whenever a stock or stock complex is subjected to a level of fishing mortality or annual total catch that jeopardizes the capacity of a stock or stock complex to produce MSY on a continuing basis.

- (E) ¹⁸**Overfished. A stock or stock complex is considered “overfished” when its biomass has declined below a level that jeopardizes the capacity of the stock or stock complex to produce MSY on a continuing basis.**

See also guidelines **28.1**, **29.2bis**, and **29.4**.

3. Discussion

¹⁸*Stock is not overfished*

The FAO’s Evaluation Framework clarifies that “The standard includes a clear understanding of what is meant by overfished and overfishing, conforming to current international norms (e.g. Code of Conduct) through the specification of levels (reference points).” However, the FAO Code of Conduct does not explicitly define overfishing or overfished; therefore, herein we interpret “overfished” as defined by the National Standard Guidelines [‘A stock or stock complex is considered “overfished” when its biomass has declined below a level that jeopardizes the capacity of the stock or stock complex to produce (Maximum Sustainable Yield) on a continuing basis’ (FR, 2009; NOAA 2009)], and we assess this Topic of Pertinence in accordance with the U.S. definition. As per the phrasing of FAO Guideline 30, it is a requirement that stocks must not be overfished.

Overfished stocks are not always primarily caused by overfishing, and thus the word “overfished” can be misleading. While fishing is often a cause of depletion of stocks involved in an active fishery, in some cases, low abundance is a result of sub-optimal environmental conditions caused by ecosystem productivity changes or habitat destruction. Thus, since management focuses heavily on regulating fishing activity in response to overfished stock status and in these instances declines in abundance may have little to do with fishing activity, managing abundance may be outside the control of Regional Fishery Management Councils and NOAA fishery managers (MONF3, 2013b); such is the case with pink shrimp.

For pink shrimp, the relationship between parent and juvenile abundance is poor, and differences in year class result from variable environmental effects on the survival of young shrimp stages from spawning until recruitment into the fishery (Nance, 1993). Although (parent) shrimp abundance is measured to monitor stock level, abundance is not the primary driver for fisheries management because most shrimp do not survive longer than 2 years, and thus, abundance is considered as an “annual crop.” Instead, managers consider historic harvest amounts and fishing rates, environmental conditions such as weather and water temperatures, as well as the amount of surviving parents, while developing a management strategy for the fishery. As long as environmental conditions are favorable, shrimp are very productive and can rebound in abundance from one year to the next. As an annual species, pink shrimp is not required to have a designated annual catch limit, as long as overfishing is determined not to be occurring.

CONFORMANCE EVIDENCE SUMMARY:

Internal	Outcome	Independent
<ul style="list-style-type: none"> ● NS Guidelines: "To avoid confusion, this section clarifies that "overfished" relates to biomass of a stock or stock complex, and "overfishing" pertains to a rate or level of removal of fish from a stock or stock complex"; "A stock or stock complex is considered "overfished" when its biomass has declined below a level that jeopardizes the capacity of the stock or stock complex to produce (Maximum Sustainable Yield) on a continuing basis." ● ESA: "The Secretary shall... determine whether any species is an endangered species or a threatened species because of... overutilization for commercial, recreational, scientific, or educational purposes;" 	<ul style="list-style-type: none"> ● Fish Stock Sustainability Index ● As of the end of 2013, NOAA Fisheries manages 40 major stocks/complexes (17%; out of a total of 230 of known status) that have been assessed as overfished (NOAA, 2014b). 	<ul style="list-style-type: none"> ● Dell' Apa et al. (2012) notes that "(U.S. federal marine) fisheries managers have now stopped the overfishing on almost all species managed and some stocks have rebuilt... One recognized success is the North Atlantic spiny dogfish (<i>Squalus acanthias</i>) stock, which (was) declared overfished in 1998 as a consequence of an intense direct fishery... In 2010, after 12 years of...management, the ...stock was considered rebuilt..." ● Milazzo (2012) concludes that despite the persistence of a number of federally-managed overfished stocks in the United States, "a good number of overfished stocks are no longer overfished ...And more than a dozen overfished stocks have been successfully rebuilt..."

¹⁹*Long-term changes in productivity are considered*

The North Pacific Fisheries Management Council has implemented precautionary management strategies to address long-term changes in productivity, such as those influenced by climate change. In 2008, the Council established the Northern Bering Sea Research Area, which closed the area to bottom trawling, thus halting trawl-induced impacts on habitat and stocks. The understanding was that changing climate and ocean temperatures may alter the ranges of species within the area, and by curbing trawling, the fleet’s ability to react to changing fish distributions would be constrained until a fuller understanding of those changes could be established (Campbell, 2013). NOAA Fisheries also is exploring adaptive management strategies. The Fisheries and the Environment (FATE) program provides information for adapting management to major shifts in productivity (NOAA FATE). However, “Rapidly changing conditions challenge the slow-moving and deliberative Federal regulatory process, and flexibility is needed to respond to newly available scientific information about species distribution, abundance, and reaction to climatic variables” (Campbell, 2013).

NOAA’s Office of Sustainable Fisheries is drafting a Climate Change Vulnerability Index, which integrates climate forecasts, species distributions, and species life history characteristics to estimate relative vulnerability across stocks. The methodology was created for use on data-rich and data-poor stocks; integrating

quantitative information when available, and expert opinion when quantitative data is lacking. Pilot tests have found the methodology to be robust across temperate and tropical ecosystems.

In 2012, NOAA announced the funding of three new research projects to predict ocean acidification’s effects on commercial fisheries (NOAA, 2012b). Research at Woods Hole Oceanographic Institution will focus on understanding the connection between fluctuations of carbon dioxide levels and ocean scallop populations, harvest and economic conditions. The State University of New York at Stony Brook will examine bay scallops and hard clams to determine acidification’s effects on each species and identify the most vulnerable regions of estuaries. The University of Washington will study a large climate model with fish populations and economic models in order to predict ocean conditions and economic effects. Since these NOAA-funded research endeavors are only in their initial stages, incorporation of results into management has yet to be implemented.

CONFORMANCE EVIDENCE SUMMARY:

Internal	Outcome	Independent
<p style="text-align: center;">●</p> <ul style="list-style-type: none"> • MSA: "For a fishery that is overfished, any fishery management plan, amendment, or proposed regulations for such fishery shall—...specify a time period for rebuilding the fishery that shall—...not exceed 10 years, except in cases where the biology of the stock of fish, other environmental conditions, or management measures ... dictate otherwise;" 	<p style="text-align: center;">●</p> <ul style="list-style-type: none"> • Some rebuilding plans outlined in fishery management plans • Northern Bering Sea Research Area closures • Fisheries and the Environment (FATE) program 	<p style="text-align: center;">●</p> <p>Once approved by the Secretary of Commerce, fishery management plans, plan amendments, and framework actions, are considered public policy; so any management measure within the management plan is subject to public comment procedures before decision making as dictated by the Administrative Procedures Act. Thus, the public itself can independently review and provide comments to Councils regarding specifying rebuilding periods based on long-term changes in productivity in fishery management plans before approval by the Secretary of Commerce.</p>

²⁰*Restoration of stocks required within reasonable timeframes*

Herein, we focus on “restoration” in regards to rebuilding fish stocks managed through the MSA. As per the phrasing of FAO Guideline 30, it is not absolute that all stocks are restored at any given moment in time, rather that management measures allow for restoration of depleted stocks within reasonable time frames.

“Rebuilding plans for depleted (overfished) stocks affect the amount of fish available to a fishery. The MSA requires that rebuilding take as short a time as possible,

after due consideration of the effect on fishing communities, with a maximum rebuilding time of 10 years if possible. Alternatively, for long-lived stocks that cannot rebuild in 10 years, rebuilding must occur in the time to rebuild if there were no fishing, plus one generation time. This requirement necessarily leads to large reductions in catch of directed fishery stocks that are being rebuilt, and can restrict mixed-stock fisheries when the rebuilding stock coexists with healthy stocks. However, it is important to note that rebuilding programs are designed to increase stock sizes to provide for biological stability and the attendant future economic benefits” (MONF3, 2013b).

As mentioned previously, although it is often assumed that a fish stock is overfished due to overfishing, many other factors can influence the health and abundance of a fish stock and inhibit its ability to rebuild over an expected time frame. These factors can include natural mortality, disease, natural population cycles, habitat degradation, and environmental changes such as climate, ocean acidification, and land-based pollution. The fishery for Pribilof Island blue king crab *Paralithodes platypus* has been closed to directed fishing since 1999 and a number of other measures have been implemented to protect this resource, but the stock has made no progress towards rebuilding. This failure to recover is likely due to environmental conditions that are unfavorable to the blue king crab’s reproduction and survival rates (NOAA, 2011).

Even when overfishing is eradicated, many overfished stocks are projected to take decades to rebuild (Table 6). Atlantic halibut *Hippoglossus hippoglossus* supported commercial fisheries in the Gulf of Maine-Georges Bank region from the early-1800s to the 1880s (Hennemuth and Rockwell, 1987). The directed fishery in the Gulf of Maine-Georges Bank continued into the early 20th century when the heavily-fished stock appears to have reached the point of collapse. The population still has not recovered. NOAA Fisheries projects that the Atlantic Halibut fishery in the northeast will not be rebuilt until approximately 2056 (Brodziak and Col, 2006).

Note the text in the “Comments” of FAO Guideline 30.2, provided by the FAO Evaluation Framework: "This language relates to the requirement for restoration of the stocks above. If management measures are in place and are working, then all should be well. If not, the certificate may need to be suspended or revoked." Overfished U.S. federal marine stocks are managed under rebuilding plans that allow for limited harvest to account for the status of the stock; thus, although some stocks are determined to be overfished, the fisheries are still considered sustainable by FAO criteria if management measures are in place and are working.

CONFORMANCE EVIDENCE SUMMARY:

Internal	Outcome	Independent
<p style="text-align: center;">●</p> <ul style="list-style-type: none"> ● MSA: "The term “conservation and management” refers to all of the rules, regulations, conditions, methods, and other measures... to rebuild, restore, or maintain... any fishery resource and the marine 	<p style="text-align: center;">●</p> <ul style="list-style-type: none"> ● Rebuilding plans outlined in fishery management plans ● Recovery plans for ESA-listed species ● Take reduction plans for marine mammals ● Full moratoriums on catch for 	<p style="text-align: center;">●</p> <ul style="list-style-type: none"> ● U.S. federal fishery management plans are aimed at restoring depleted stocks [Score 9 out of 10] and the United States is "showing good compliance" regarding whether the depleted stocks actually are

<p>environment"; "For a fishery that is overfished, any fishery management plan, amendment, or proposed regulations... shall—...specify a time period for rebuilding the fishery that shall—...be as short as possible...(but) not exceed 10 years, except in cases where the biology of the stock of fish, other environmental conditions, or management measures... dictate otherwise;"</p> <ul style="list-style-type: none"> • MMPA: "... the plan shall include measures the Secretary expects will reduce, within 6 months of the plan's implementation, such mortality and serious injury to a level below the potential biological removal level." • ESA: "The Secretary shall develop and implement (recovery) plans... for the conservation and survival of endangered species and threatened species listed...(and) incorporate in each plan—... estimates of the time required and the cost to carry out those measures..." 	<p>some stocks</p> <ul style="list-style-type: none"> • Since 2000, 34 federally managed U.S. stocks have been rebuilt (NOAA, 2014b). 	<p>being rebuilt [Score 7 out of 10; "some effective rebuilding of most depleted stocks"] (Pitcher et al. 2006; Vasconcellos et al., 2006).</p> <ul style="list-style-type: none"> • Milazzo (2012) noted substantial progress via either reduced fishing mortality or stock recovery in about two-thirds of U.S. federal stocks that have required rebuilding plans. • Oremus et al. (2014) found a strong relationship between policy implementation (i.e., the requirement to rebuild US fish stocks) and rebounds in stocks. • Once approved by the Secretary of Commerce, fishery management plans, plan amendments, and framework actions, are considered public policy; so any management measure within the management plan is subject to public comment procedures before decision making as dictated by the Administrative Procedures Act. Thus, the public itself can independently review and provide comments to Councils regarding rebuilding plans and timeframes before approval by the Secretary of Commerce.
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See also guidelines **28.1**, **29.2bis**, and **29.4**.

4. Conclusions (Conformance/Gaps)

Conformance	Superscript #	Topic Description	Reference Guideline #
●●●	3	Uncertainty taken into account via risk assessment or precautionary approach	28.1
●●●	11	Optimal utilization is promoted in management	29.2bis
●●●	13	Management should specify limits or directions in key performance indicators, e.g. overfishing	29.2bis
●●●	15	Goal of long-term sustainability present	29.4
◐◐◐	18	Stock is not overfished	
●◐◐	19	Long-term changes in productivity considered	
●●●	20	Restoration of stocks required within reasonable timeframes	

5. *Future considerations*

¹⁸*Stock is not overfished*

- The terminology used by U.S. fishery managers for defining stock status could be clarified so as to minimize confusion, especially to the general public. “Stocks in a depleted condition are designated to be in an overfished condition in current Federal parlance, even if overfishing was not the primary cause of the depletion...Should the overfished designation be redefined as depleted to acknowledge habitat and environmental effects?” (MONF3, 2013b).
- MSA requires that stocks assessed as overfished must be rebuilt to sustainable levels by limiting fishing effort. Once a stock is determined to be overfished, a rebuilding plan must be enacted within 2 years of that determination. Rebuilding targets are based on historic species’ abundance, which often lack the ability to consider future oceanographic conditions. The Center for American Progress notes that until this provision is addressed, participants in even well-managed fisheries will be punished as they face stricter quotas in a futile attempt to rebuild stocks to levels that are no longer realistic or attainable (Conathan, 2012). “In warm water regimes near the southern extent of a cold water species range, some stocks cannot rebuild to targets based on an obsolete understanding of stock productivity, even under a fishing moratorium, until the regime reverts back to its normal colder state” (Goethel, 2013). As key input parameters for biological reference point models change, perhaps so could catch and rebuilding targets. Factors such as the changing oceanographic conditions could be considered when establishing catch targets and (especially long-term) rebuilding plans.
- “Fishing mortality reference points seem to be more robust to uncertainty than are biomass reference points, both in the context of rebuilding and more generally... The rate at which a fish stock rebuilds depends on ecological and other environmental conditions such as climate change in addition to the fishing-induced mortality...Estimates of (Biomass at Maximum Sustainable Yield) may be imprecise even for stocks that are relatively “data-rich,” because of the complex and dynamic nature of ecosystems” (NRC, 2014).
- “...rebuilding fishery stocks and maintaining them at sustainable levels involves much more than addressing overfishing; habitats must be capable of supporting the renewed production of fishery stocks...” (Boreman, 2013). Proactive management strategies, such as habitat restoration or stock enhancement, may enable overfished stocks to rebuild faster than by limiting fishing effort alone. The NOAA Fisheries Office of Habitat Conservation has restored 69,000 acres of habitat through 2,300 community-based restoration projects since 1996 (NOAA HC). Currently, NOAA Fisheries does not utilize marine stock enhancement as a fisheries management strategy, although there is some involvement, mostly financial and research, in stocking depleted anadromous salmon. The Councils

and NOAA Fisheries can explore the feasibility of implementing and/or expanding proactive management strategies (e.g., habitat restoration, stock enhancement) in order to decrease rebuilding timeframes for overfished stocks with very long (i.e., multi-decade) projection targets.

- The overfished determination can be based on multi-year estimates of abundance instead of single-year ones.

¹⁹*Long-term changes in productivity considered*

- “Climate-based ecosystem change has the potential to affect fish stock distribution, population size, productivity, and fishery yield. Informative and predictive indicators of natural variability, combined with an understanding of their effects on fish stocks, could improve fishery management and minimize harvest as a contributor to stock declines. With modern oceanographic observing systems, changes in parameters such as sea temperatures, ocean chemistry, and sea levels can be identified and measured; current data processing technology also allows for enormous amounts of information to be available for analysis. However, it is not clear what information fishery managers need to improve decision-making, or how they can best adapt regulatory approaches when presented with specific information about ecosystem change” (MONF3, 2013b).
- “Although there is interest in development of adaptive management triggers tied to environmental variables, further work is needed to determine how such a trigger might be incorporated into (NOAA Fisheries’) regulatory framework. As conditions continue to change, it is likely that... fixed area closures may need reevaluation and modification to remain centered on core areas of stock distribution... This type of flexible closure system, although effective, may challenge the ability of the Federal regulatory system to be responsive within a season or fishing year, and managers may need to consider implementation through industry agreements, with the Council’s role shifting to evaluation of effectiveness and requiring accountability... The mechanisms for coordination and cooperation in management of transboundary stocks will be tested as climate change continues to drive changes in species abundance and distribution across jurisdictional lines.” (Campbell, 2013).
- Scientific and Statistical Committees, Fishery Management Plan Development Teams and/or NOAA Fisheries Science Centers can continue to assess the influence of long-term changes in productivity, such as climate change and ocean acidification, on water regimes and resources and consider formulas that adjust calculated reference points and environmental triggers in response these changes. In addition, management roles may need to be modified in order to optimize the responsiveness and effectiveness of implemented strategies. “Attention should be paid to mechanisms for cooperation between state managers, between state and federal managers, and between neighboring nations to ensure that assessment

programs are coordinated and harvest levels are appropriate as stocks shift.” (Campbell, 2013).

²⁰*Restoration of stocks required within reasonable timeframes*

- “Some believe that the current focus on rebuilding in a certain amount of time results in overly restrictive fishery management that is unnecessarily harmful to fishermen and fishing communities, and that more flexibility is needed to optimize multiple goals. Others believe current rebuilding policies are too lenient towards short-term economic urgencies, and that they insufficiently consider the long-term benefits of fully rebuilt stocks” (MONF3, 2013b).
- “Fish stock rebuilding plans are designed to achieve rapid rebuilding of biomass and spawning stocks consistent with the biological characteristics of the resource. However, the requirement to rebuild within 10 years, if biologically possible, prevents consideration of alternative management actions that could lead to greater socioeconomic benefits while supporting stock recovery in the long term. Several alternative management strategies that could be considered in this context have been implemented successfully in venues outside of the United States (e.g., New Zealand)” (NRC, 2014).
- “The most limiting provision of the (MSA) statute ... states that a rebuilding plan ‘shall not exceed 10 years except in cases where the biology of stock of fish or other environmental conditions dictate otherwise.’ A more flexible interpretation and implementation ... would enable rebuilding plans to be more consistent with the biological realities of a stock, including recruitment, growth, and natural mortality, as those population dynamics are affected by unpredictable changes in the environment and ecosystem” (NSC, 2012). An alternative approach to a fixed timeframe would allow stocks to rebuild via a fishing mortality rate-based strategy (i.e., eliminate overfishing and let nature take its course) versus constraining the stock to a predefined rebuilding period (Odell, 2013). In some cases, a new stock assessment or new assessment methodology determines that a stock previously declared as overfished actually had never been overfished. In these cases, rebuilding plans have already been defined with distinct and restrictive stock targets (Punt, 2013). A standardized process for reviewing rebuilding progress could be established.

See also guidelines **28.1**, **29.2bis**, and **29.4**.

FAO OVERFISHED STOCKS (REFERENCE POINTS & PROXIES)**Guidelines Paragraph:**

30.1 The ¹⁸“**stock under consideration**” is not overfished if it is above the ¹³**associated limit reference point** (or its proxy).

Comments: If the size of the stock under consideration is above its limit reference point (or its proxy), the standard does not consider it to be overfished.

Benchmark Indicator: None

Assessing Conformance:**1. Applicable Statute(s)**

See guidelines **29.2bis** and **30**.

2. Regulations/Guidelines

See guidelines **29.2bis** and **30**.

3. Discussion

See guidelines **29.2bis** and **30**.

4. Conclusions (Conformance/Gaps)

Conformance	Superscript #	Topic Description	Reference Guideline #
●●●	13	Management should specify limits or directions in key performance indicators, e.g. overfishing	29.2bis
●●●	18	Stock is not overfished	30

5. Future considerations

See guidelines **29.2bis** and **30**.

FAO REFERENCE POINTS RESPONSE**Guidelines Paragraph:**

- 30.2** If fishing mortality (or its proxy) is above the ¹³**associated limit reference point**,
¹⁴**actions should be taken to decrease the fishing mortality (or its proxy) below that limit reference point.**

Comments: This language relates to the requirement for restoration of the stocks above. If management measures are in place and are working, then all should be well. If not, the certificate may need to be suspended or revoked.

Benchmark Indicator: If fishing mortality (or its proxy) is above the associated limit reference point, the standard requires actions to be taken to decrease the fishing mortality (or its proxy) below that limit reference point.

Assessing Conformance:**1. *Applicable Statute(s)***

See guideline **29.2bis**.

2. *Regulations/Guidelines*

See guideline **29.2bis**.

3. *Discussion*

See guideline **29.2bis**.

4. *Conclusions (Conformance/Gaps)*

Conformance	Superscript #	Topic Description	Reference Guideline #
●●●	13	Management should specify limits or directions in key performance indicators, e.g. overfishing	29.2bis
●●●	14	Actions taken if limits approached or exceeded	29.2bis

5. *Future considerations*

See guideline **29.2bis**.

FAO STOCK RESILIENCE**Guidelines Paragraph:**

30.3 The ²¹**structure and composition of the “stock under consideration” which contribute to its resilience** are taken into account.

Comments: None

Benchmark Indicator: The standard requires that the assessment of the stock under consideration takes into account the structure and composition of that stock which contribute to its resilience.

Assessing Conformance:**1. *Applicable Statute(s)*****A. MSA: TITLE III—NATIONAL FISHERY MANAGEMENT PROGRAM****i. SEC. 301. NATIONAL STANDARDS FOR FISHERY CONSERVATION AND MANAGEMENT**

(a) IN GENERAL.—Any fishery management plan prepared, and any regulation promulgated to implement any such plan, pursuant to this title shall be consistent with the following national standards for fishery conservation and management:

- (1) Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.
- (2) Conservation and management measures shall be based upon the best scientific information available.

2. *Regulations/Guidelines***A. C.F.R. Title 50: Chapter VI: FISHERY CONSERVATION AND MANAGEMENT, NOAA, DOC****i. Sec. 310 National Standard 1--Optimum Yield.**

(c) Summary of items to include in FMPs related to NS1. This section provides a summary of items that Councils must include in their FMPs and FMP amendments in order to address ACL, AM, and other aspects of the NS1 guidelines. Councils may review their FMPs to decide if all stocks are “in the fishery” or whether some fit the category of “ecosystem component species.”

²¹**Councils must also describe fisheries data for the stocks, stock complexes, and ecosystem component species in their FMPs, or associated public documents such as Stock Assessment and Fishery Evaluation (SAFE) Reports.** For all stocks and stock complexes that are “in the fishery”,

the Councils must evaluate and describe the following items in their FMPs and amend the FMPs, if necessary, to align their management objectives to end or prevent overfishing...

ii. Sec. 600.315 National Standard 2--Scientific Information.

(e) SAFE Report

- (1) The SAFE report is a document or set of documents that provides Councils with a summary of information concerning the most recent biological condition of stocks and the marine ecosystems in the FMU and the social and economic condition of the recreational and commercial fishing interests, fishing communities, and the fish processing industries. It summarizes, on a periodic basis, the best available scientific information concerning the past, present, and possible future condition of the stocks, marine ecosystems, and fisheries being managed under Federal regulation.
- (ii) The SAFE report provides information to the Councils for determining annual harvest levels from each stock, ²¹**documenting significant trends or changes in the resource, marine ecosystems, and fishery over time, and assessing the relative success** of existing state and Federal fishery management programs. Information on bycatch and safety for each fishery should also be summarized. In addition, the SAFE report may be used to update or expand previous environmental and regulatory impact documents, and ecosystem and habitat descriptions.

3. Discussion

²¹*Stock structure and composition contributing to resilience considered*

Stock Assessment and Fishery Evaluation (SAFE) reports provide Regional Fishery Management Councils with information for determining annual harvest levels from each stock, documenting significant trends or changes in the resource, marine ecosystems, and fishery over time, and assessing the relative success of existing state and federal fishery management programs. In 2009, NOAA Fisheries developed a risk assessment tool to assist Councils, managers, and scientists in evaluating the vulnerability of stocks to overfishing (Patrick et. al., 2009). The tool incorporates both stock productivity (i.e., capacity to recover rapidly when depleted) and susceptibility to fishing (i.e., potential to be impacted by the fishery), and thus gives an indication of a stock’s resilience.

CONFORMANCE EVIDENCE SUMMARY:

Internal	Outcome	Independent
●	●	●
● NS2 Guidelines: "The (Stock Assessment and Fishery Evaluation) report provides information to the Councils for	● Stock Assessment and Fishery Evaluation reports	● Stock Assessment and Fishery Evaluation reports are part of the public record and can be viewed online via the regional

<p>determining annual harvest levels from each stock, documenting significant trends or changes in the resource, marine ecosystems, and fishery over time, and assessing the relative success of existing state and Federal fishery management programs."</p>		<p>Council or NOAA Science Center websites.</p> <ul style="list-style-type: none"> • Stock assessments for NOAA managed fisheries are reviewed by regional panels of independent experts (e.g., SARC, SEDAR, etc.), and then by a Council’s Scientific and Statistical Committee. Further, with the exception of assessments for data-poor stocks, benchmark stock assessments undergo independent peer review through the Center for Independent Experts.
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4. Conclusions (Conformance/Gaps)

Conformance	Superscript #	Topic Description	Reference Guideline #
●●●	21	Stock structure and composition contributing to resilience considered	

5. Future considerations

²¹*Stock structure and composition contributing to resilience considered*

- “Stock assessments on most popular stocks are done sporadically, usually every three to five years. This delay may lead to hard (Annual Catch Limits) placed on a stock which are generated from a three-year-old assessment, based on four-year-old data, which likely no longer reflect the current state of the stock (and the resultant allowable catch)” (Brame, 2013).
- NOAA Fisheries, Regional Fishery Management Councils, and Scientific and Statistical Committees could continue to explore mechanisms such as management procedures to provide quota adjustments in-between assessments (Butterworth, 2007; Rademeyer et al., 2007), as well as increased funding to improve the frequency of surveys and stock assessments.

FAO GENERIC DATA USE**Guidelines Paragraph:**

- 30.4** In the absence of specific information on the “stock under consideration,” ²²**generic evidence based on similar stocks can be used** for fisheries with low risk to that “stock under consideration.” However, ³**the greater the risk the more specific evidence is necessary to ascertain the sustainability** of intensive fisheries.

Comments: None

Benchmark Indicator: For fisheries with low risk, when specific information on the “stock under consideration” is lacking, the standard allows for the use of generic evidence based on similar stocks. Where the risk is greater, the standard requires more specific evidence to ascertain the sustainability of intensive fisheries.

Assessing Conformance:**1. *Applicable Statute(s)*****A. MSA: TITLE III—NATIONAL FISHERY MANAGEMENT PROGRAM****i. SEC. 301. NATIONAL STANDARDS FOR FISHERY CONSERVATION AND MANAGEMENT**

(a) IN GENERAL.—Any fishery management plan prepared, and any regulation promulgated to implement any such plan, pursuant to this title shall be consistent with the following national standards for fishery conservation and management:

- (1) Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.
- (3) To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and ²²**interrelated stocks of fish shall be managed as a unit or in close coordination.**

See also guideline **28.1**.

2. *Regulations/Guidelines***A. C.F.R. Title 50: Chapter VI: FISHERY CONSERVATION AND MANAGEMENT, NOAA, DOC****i. Sec. 310 National Standard 1--Optimum Yield.**

(d) Classifying stocks in an FMP—

- (9) Indicator stocks. ²²**An indicator stock is a stock with measurable status determination criteria that can be used to help manage and evaluate**

more poorly known stocks that are in a stock complex. If an indicator stock is used to evaluate the status of a complex, it should be representative of the typical status of each stock within the complex, due to similarity in vulnerability. If the stocks within a stock complex have a wide range of vulnerability, they should be reorganized into different stock complexes that have similar vulnerabilities; otherwise the indicator stock should be chosen to represent the more vulnerable stocks within the complex. In instances where an indicator stock is less vulnerable than other members of the complex, management measures need to be more conservative so that the more vulnerable members of the complex are not at risk from the fishery. More than one indicator stock can be selected to provide more information about the status of the complex. When indicator stock(s) are used, periodic re-evaluation of available quantitative or qualitative information (e.g., catch trends, changes in vulnerability, fish health indices, etc.) is needed to determine whether a stock is subject to overfishing, or is approaching (or in) an overfished condition.

See also guideline **28.1**.

3. Discussion

²²*Generic evidence based on similar stock situations*

The status of individual stocks in a complex may be determined using the status determination criteria of one or more appropriate indicator stocks in the complex, or the status determination criteria may apply to the complex as a whole. An example of an indicator stock is the pelagic armorhead (*Pseudopentaceros wheeleri*), which is used as the indicator species for a three-species seamount groundfish complex that includes raftfish (*Hyperoglyphe japonica*) and alfonsin (*Beryx splendens*) in the Western Pacific [part of the Hawaii Archipelago Fishery Ecosystem Plan].

CONFORMANCE EVIDENCE SUMMARY:

Internal	Outcome	Independent
●	●	●
<ul style="list-style-type: none"> ● MSA: "To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination." ● NSI Guidelines: "An indicator stock is a stock with measurable status determination criteria that can be used to help manage and evaluate more poorly known 	<ul style="list-style-type: none"> ● The justification for considering a stock as a complex or for assessing a stock via an indicator stock is explained in the fishery management plan. 	<ul style="list-style-type: none"> ● Fishery management plans, plan amendments, and framework actions, are considered public policy; so any management measure within must undergo public comment procedures before decision-making, as dictated by the Administrative Procedures Act. Thus, the public itself can independently review and provide comments to Councils regarding use of

<p>stocks that are in a stock complex. If an indicator stock is used to evaluate the status of a complex, it should be representative of the typical status of each stock within the complex, due to similarity in vulnerability."</p>		<p>generic evidence in fishery management plans before approval by the Secretary of Commerce.</p>
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See also guideline **28.1**.

4. Conclusions (Conformance/Gaps)

Conformance	Superscript #	Topic Description	Reference Guideline #
●●●	3	Uncertainty taken into account via risk assessment or precautionary approach	28.1
●●●	22	Generic evidence based on similar stock situations	

5. Future considerations

²²*Generic evidence based on similar stock situations*

- “Within the set of managed stocks, some are managed individually as members of a multi-stock fishery, and some are aggregated into stock complexes for management purposes. This creates a dichotomy because the stocks in a multi-stock fishery tend to be managed conservatively to protect the weakest stock from overfishing, and the stocks in the complex are managed according to a simple approach or by an indicator stock that may not be the weakest stock in the complex, so some stocks may be experiencing some level of overfishing. A more consistent middle ground would use multiple indicator stocks for the complexes in order to do better at protecting the weaker stocks, and would use more economic analysis of the multi-stock fisheries in order to determine the overall benefits that may be obtained by allowing small degree of overfishing of some stocks in order to obtain the full available yield from other stocks” (Methot, 2013). In addition, assessing more than one indicator species in a complex may lead to better estimates of stock status.
- “The requirement to end overfishing for all stocks in mixed-stock fisheries has protected less productive species but with yield forgone for healthy stocks in the same complex. The “mixed-stock exception” in the (MSA) provides an option for reducing the impact of rebuilding on the harvest of healthy stocks. However, the exception has not been invoked, in part because of the narrow range of situations to which it applies under the (MSA) and also because of the complexity of the issue it is meant to address. The operational feasibility of the exception could be modified to expand the range of situations to which it can be applied, subject to

assurances that the less productive species are not driven to unacceptably low abundance.” (NRC, 2014).

- Regarding annual catch limits, NOAA Fisheries could provide more guidance to Councils on applying mixed-stock exemptions through the use of aggregate maximum sustainable yield modeling approaches (Gaichas et al., 2012), which allow overfishing of one stock in a multi-species fishery in order to permit the harvest of another species to its optimum level.

See also guideline **28.1**.

ECOSYSTEM CONSIDERATIONS

FAO ECOSYSTEM IMPACTS

Guidelines Paragraph:

31. Requirement: ⁴**Adverse impacts of the fishery on the ecosystem should be appropriately assessed and effectively addressed.** Much greater ³**scientific uncertainty** is to be expected in assessing possible adverse ecosystem impacts of fisheries than in assessing the state of target stocks. This issue can be addressed by taking a ³**“risk assessment/risk management approach.”** For the purpose of development of ecolabelling schemes, the most probable adverse impacts should be considered, taking into account ^{6,8}**available scientific information**, and ⁷**traditional, fisher or community knowledge** provided that its validity can be objectively verified. Those ⁴**impacts that are likely to have serious consequences should be addressed.** This may take the form of an immediate management response or further analysis of the identified risk. In this context, ⁵**full recognition should be given to the special circumstances** and requirements in developing countries and countries in transition, including financial and technical assistance, technology transfer, and training and scientific cooperation. The following criteria are to be interpreted in the context of avoiding high risk of severe adverse impacts:

Comments: Basic requirement for inclusion of assessment and management of impacts of the fishery on the ecosystem covered under (FAO Guideline) paragraph 29.3.

Could cover risk assessment procedures and recognition of special circumstances of developing countries, etc.

Benchmark Indicator: The standard includes a requirement that adverse impacts of the fishery on the ecosystem are assessed and addressed by management, and satisfied benchmarking requirements established under (FAO Guideline) paragraphs 31.1–31.3. This issue can be addressed by taking a “risk assessment/risk management approach.”

The standard requires that full recognition is given to the special circumstances and requirements in developing countries and countries in transition with respect to the management response to serious consequences to the ecosystem, which may depend on financial and technical assistance, technology transfer, and training and scientific cooperation.

Assessing Conformance:

1. *Applicable Statute(s)*

See guidelines **28.1, 28.2, 29, 29.1, 29.2** and **31.1**.

2. *Regulations/Guidelines*

See guidelines **28.1, 28.2, 29, 29.1, 29.2** and **31.1**.

3. *Discussion*

See guidelines **28.1, 28.2, 29, 29.1, 29.2** and **31.1**.

4. *Conclusions (Conformance/Gaps)*

Conformance	Superscript #	Topic Description	Reference Guideline #
●●●	3	Uncertainty taken into account via risk assessment or precautionary approach	28.1
●●◐	4	Ecosystem effects of fishing are assessed and adverse effects addressed	28.2, 31.1
●◐◐	5	Types and scales of fisheries considered in management	29
●◐◐	6	Adequate/reliable data are collected, maintained and assessed	29.1
●●●	7	Verifiable traditional, fisher or community knowledge considered	29.1
●●●	8	Best scientific evidence used in management measures	29.2

5. *Future considerations*

See guidelines **28.1, 28.2, 29, 29.1, 29.2** and **31.1**.

FAO BYCATCH

Guidelines Paragraph:

31.1 ²³**Non-target catches, including discards**, of stocks other than the “stock under consideration”¹⁸ **are monitored** and ²³**should not threaten these non-target stocks with**

serious risk of extinction; ^{14,20} **if serious risks of extinction arise, effective remedial action should be taken.**

Comments: None

Benchmark Indicator: The standard includes a requirement that non-target catches, including discards, are monitored, and such catches do not threaten these non-target stocks with serious risk of extinction.

The standard requires that effective remedial action be taken.

Assessing Conformance:

1. *Applicable Statute(s)*

A. MSA: TITLE III—NATIONAL FISHERY MANAGEMENT PROGRAM

i. SEC. 301. NATIONAL STANDARDS FOR FISHERY CONSERVATION AND MANAGEMENT

(a) IN GENERAL.—Any fishery management plan prepared, and any regulation promulgated to implement any such plan, pursuant to this title shall be consistent with the following national standards for fishery conservation and management:

- (1) Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.
- (9) Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

ii. SEC. 303. CONTENTS OF FISHERY MANAGEMENT PLANS

(a) REQUIRED PROVISIONS.—Any fishery management plan which is prepared by any Council, or by the Secretary, with respect to any fishery, shall—

- (11) ²³ **establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery,** and include conservation and management measures that, to the extent practicable and in the following priority—

- (A) minimize bycatch; and
- (B) minimize the mortality of bycatch which cannot be avoided;

(b) DISCRETIONARY PROVISIONS.—Any fishery management plan which is prepared by any Council, or by the Secretary, with respect to any fishery, may—

- (3) ²³ **establish specified limitations which are necessary and appropriate for the conservation and management of the fishery on the—**

- (A) catch of fish (based on area, species, size, number, weight, sex, **bycatch**, total biomass, or other factors);
- iii. SEC. 313. NORTH PACIFIC FISHERIES CONSERVATION
- (g) BYCATCH REDUCTION INCENTIVES.—
- (2) (A) The North Pacific Council may submit, and the Secretary may approve, conservation and management measures which provide ²³**allocations of regulatory discards to individual fishing vessels as an incentive to reduce per vessel bycatch and bycatch rates in a fishery...**
- iv. SEC. 316. BYCATCH REDUCTION ENGINEERING PROGRAM
- (b) INCENTIVES.—Any fishery management plan prepared by a Council or by the Secretary may establish a system of incentives to reduce total bycatch and seabird interactions, amounts, bycatch rates, and post-release mortality in fisheries under the Council's or Secretary's jurisdiction, including—
- (1) ²³**measures to incorporate bycatch into quotas**, including the establishment of collective or individual bycatch quotas;
- (2) ²³**measures to promote the use of gear with verifiable and monitored low bycatch and seabird interactions, rates**
- B. MMPA: TITLE I—CONSERVATION AND PROTECTION OF MARINE MAMMALS: MORATORIUM ON TAKING AND IMPORTING MARINE MAMMALS AND MARINE MAMMAL PRODUCTS
- i. SEC. 101.
- (a) Imposition; exceptions. There shall be a moratorium on the taking and importation of marine mammals and marine mammal products, commencing on the effective date of this chapter, during which time no permit may be issued for the taking of any marine mammal and no marine mammal or marine mammal product may be imported into the United States except in the following cases:
- (5)(E)(iii) ²³**If, during the course of the commercial fishing season, the Secretary determines that the level of incidental mortality or serious injury from commercial fisheries for which a determination was made under clause (i) has resulted or is likely to result in an impact that is more than negligible on the endangered or threatened species or stock, the Secretary shall use the emergency authority granted under section 1387 of this title to protect such species or stock, and may modify any permit granted under this paragraph as necessary.**
- ii. SEC. 305. ...the Secretary shall submit annual reports to the Congress which include—
- (3) a description of the ²³**efforts to assess, avoid, reduce, and minimize the bycatch** of juvenile yellowfin tuna and bycatch of nontarget species;

C. ESA

i. SEC. 3. DEFINITIONS— For the purposes of this Act—

(19)(A) ²³**The term “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.**

ii. SEC. 4. DETERMINATION OF ENDANGERED SPECIES AND THREATENED SPECIES

(b) BASIS FOR DETERMINATIONS—

(1)(B) In carrying out this section, the Secretary shall give consideration to species which have been—

- (i) designated as requiring protection from unrestricted commerce by any foreign nation, or pursuant to any international agreement; or
- (ii) identified as in danger of extinction, or likely to become so within the foreseeable future, by any State agency or by any agency of a foreign nation that is responsible for the conservation of fish or wildlife or plants.

iii. SEC. 9. PROHIBITED ACTS

(a) GENERAL. —

(1) Except as provided in sections 6(g)(2) and 10 of this Act, with respect to any endangered species of fish or wildlife listed pursuant to section 4 of this Act ²³**it is unlawful for any person** subject to the jurisdiction of the United States **to**—

(A) import any such species into, or export any such species from the United States;

(B) **take any such species within the United States or the territorial sea of the United States;**

(C) **take any such species upon the high seas;**

D. MIGRATORY BIRD TREATY ACT (MBTA, 2002)

i. SEC. 2. [16 U.S.C. 703] ... it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or egg of any such bird, or any product whether or not manufactured, which consists, or is composed in whole or part, of any such bird or any part, nest, or egg thereof...

See also guidelines **29.2bis**, **29.5**, and **30**.

2. Regulations/Guidelines

A. C.F.R. Title 50: Chapter II: NMFS (National Marine Fisheries Service), NOAA, DOC

- i. Sec. 222.402 Annual determination of fisheries to be observed; notice and comment.
 - (a) The Assistant Administrator, in consultation with Regional Administrators and Science Center Directors, will make an annual determination ²³**identifying which fisheries the agency intends to observe.** This determination will be **based on the extent to which:**
 - (3)**The fishery uses a gear or technique that is known or likely to result in incidental take of sea turtles** based on documented or reported takes in the same or similar fisheries;
- ii. Sec. 229.7 AUTHORIZATION FOR COMMERCIAL FISHERIES UNDER THE MARINE MAMMAL PROTECTION ACT OF 1972--Monitoring of incidental mortalities and serious injuries.
 - (b) Observer program. ... the Assistant Administrator may observe Category I and II vessels as necessary. Observers may, among other tasks:
 - (1) ²³**Record incidental mortality and injury, and bycatch of other nontarget species;**
- iii. Sec. 600.350 National Standard 9--Bycatch.
 - (d) Minimizing bycatch and bycatch mortality.
 - (1) Promote development of a database on bycatch and bycatch mortality in the fishery to the extent practicable. A review and, where necessary, improvement of data collection methods, data sources, and applications of data must be initiated for each fishery to ²³**determine the amount, type, disposition, and other characteristics of bycatch and bycatch mortality in each fishery** for purposes of this standard. Bycatch should be categorized to focus on management responses necessary to ²³**minimize bycatch and bycatch mortality to the extent practicable. When appropriate, management measures, such as at-sea monitoring programs, should be developed** to meet these information needs.
 - (e) Other considerations. ²³**Other applicable laws, such as the MMPA, the ESA, and the Migratory Bird Treaty Act, require that Councils consider the impact of conservation and management measures on living marine resources other than fish; i.e., marine mammals and birds.**

See also guidelines **29.2bis**, **29.5**, and **30**.

3. Discussion

²³*Non-target catch and discards not threatened by target fishery*

NOAA Fisheries generates a National Bycatch Report to identify trends both nationally and regionally and to monitor progress in reducing bycatch. Fishery requirements for minimizing bycatch and discards include gear modifications (e.g., minimum mesh sizes, bycatch reduction or turtle excluder devices), reduced tow or soak times, discrete fishing seasons, and area closures, among others. Further, a number of U.S. federal fisheries are managed via catch share programs (e.g., limited access privilege programs, individual fishing or transferable quotas, sector management), enabling fishermen to reduce bycatch by providing those with allocation more flexibility to choose when and to some degree where to fish (i.e., within timeframes or areas when/where the risk of catching non-target species is lower).

“There is a national plan of action in place (i.e., United States National Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries) to reduce the incidental catches of seabirds, with mitigation measures including observer coverage, Tori streamers and other bird scaring devices, use of fully thawed baits, strategic dumping of offal, removal of hooks from discarded offal and mandatory handling and release requirements for birds that come aboard alive” (Vasconcellos et al. 2006).

CONFORMANCE EVIDENCE SUMMARY:

Internal	Outcome	Independent
<ul style="list-style-type: none"> ● ● MSA: Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch"; "REQUIRED PROVISIONS.—Any fishery management plan... shall— ...establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery"; ● NS9 Guidelines: "...determine the amount, type, disposition, and other characteristics of bycatch and bycatch mortality..."; "Other applicable laws, such as the MMPA, the ESA, and the Migratory Bird Treaty Act, require that Councils consider the impact of conservation and management measures on living marine resources other than fish; i.e., marine mammals and birds." ● MMPA: "If...the level of incidental mortality or serious injury from commercial 	<ul style="list-style-type: none"> ● ● Observers ● Logbooks, vessel trip reports, catch reports and trip tickets ● Dealer, landing, and production reports ● Protected resource stranding and entanglement reports ● Time and area closures ● Catchshare management ● Gear and bait restrictions and modifications ● U.S. National Bycatch Report ● Bycatch Reduction Engineering Program 	<ul style="list-style-type: none"> ● ● U.S. fisheries management mandates fishing gear to avoid bycatch of non-target species, environmental and habitat damage [Score 8 out of 10] (Vasconcellos et al., 2006). ● "A survey of the bycatch problem in U.S. fisheries identified a number of overfished stocks that are harvested incidentally in operations targeting other stocks, including numerous species with relatively high bycatch rates, such as several shark species, skates, butterfish, summer flounder, (and) red snapper" (Milazzo, 2012).

<p>fisheries...is likely to result in an impact that is more than negligible on the endangered or threatened species or stock, the Secretary shall use the emergency authority...to protect such species or stock..."</p> <ul style="list-style-type: none"> • ESA: "The term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct"; "...with respect to any endangered species of fish or wildlife...it is unlawful...to... take any such species..." • Migratory Bird Treaty Act: "...it shall be unlawful at any time, by any means or in any manner, to ... take, capture, kill, attempt to take, capture, or kill, possess... any migratory bird..." 		
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See also guidelines **29.2bis**, **29.5**, and **30**.

4. Conclusions (Conformance/Gaps)

Conformance	Superscript #	Topic Description	Reference Guideline #
●●●●	14	Actions taken if limits approached or exceeded	29.2bis
●●●○	17	Compliance ensured via monitoring and enforcement	29.5
●●●●	20	Restoration of stocks required within reasonable timeframes	30
●●●○	23	Non-target catch and discards not threatened by target fishery	

5. Future considerations

²³*Non-target catch and discards not threatened by target fishery*

- “The 2009 (National Standard One) Guidelines created a category of stocks termed ecosystem component species which are distinct from the managed stocks in the plan that need status determination criteria and annual catch limits. The managed stocks could perhaps be separated into target species and non-target species to assist in the prioritization of assessment efforts and in a differential management response for the non-target stocks” (Methot, 2013).
- “With the globalization of seafood markets, seafood products often move from countries with weak governance to countries with strong governance (Smith et.

al., 2010). Weak governance countries, usually developing countries, often fail to control overfishing and bycatch. In an analysis of country compliance with Article 7 of the Code (i.e., fisheries management), developed nations on average generally scored twice as high as those from developing nations (Pitcher et. al., 2009). Yet, with prevailing conditions in the global seafood market, it is more advantageous for many developing countries to be seafood exporters and generate surplus value (Smith et al., 2010). This can especially occur when developing countries fill the void created in a fishery whose production is stopped or reduced due to regulatory restrictions or underutilization. This displacement of production (i.e., “spillover or market transfer effect”) to countries with weak governance may also cause greater environmental damage (Chan and Pan, 2012). A good example of transfer effects was the closure of the Hawaii longline swordfish fishery from 2001 to 2004 when non-U.S. fleets increased their production in the Pacific Ocean resulting in an estimated increase in sea turtle bycatch compared to the Hawaii fishery (Chan and Pan, 2012)” (Helvey and Wick, 2013).

- Additional management measures, such as no-discard or 100% retention regulations, may be considered to incentivize bycatch reduction, as well as to minimize waste of fisheries resources at sea.

See also guideline **29.2bis**, **29.5**, and **30**.

FAO FOOD-WEB CONSIDERATIONS

Guidelines Paragraph:

31.2 ¹²**The role of the “stock under consideration” in the food-web is considered**, and if it is a key prey species in the ecosystem, management measures are in place to ⁴**to avoid severe adverse impacts** on ¹²**dependent predators**.

Comments: None

Benchmark Indicator: The standard requires that the role of the “stock under consideration” in the food-web is considered, and if it is a key prey species in the ecosystem, management measures are in place to avoid severe adverse impacts on dependent predators.

Assessing Conformance:

1. *Applicable Statute(s)*

See guidelines **28.2** and **29.2bis**.

2. *Regulations/Guidelines*

See guidelines **28.2** and **29.2bis**.

3. Discussion

See guidelines **28.2** and **29.2bis**.

4. Conclusions (Conformance/Gaps)

Conformance	Superscript #	Topic Description	Reference Guideline #
●●○	4	Ecosystem effects of fishing are assessed and adverse effects addressed	28.2
○○○	12	Food-web ecosystem considerations considered	29.2bis

5. Future considerations

See guidelines **28.2** and **29.2bis**.

FAO ESSENTIAL HABITATS

Guidelines Paragraph:

31.3 There is ²⁴knowledge of the essential habitats for the “stock under consideration” and potential fishery impacts on them. ⁴Impacts on essential habitats and on habitats that are highly vulnerable to damage by the fishing gear involved are avoided, minimized or mitigated (Code of Conduct 7.2.2). In assessing fishery impacts, the full spatial range of the relevant habitat should be considered, not just that part of the spatial range that is potentially affected by fishing.

Comments: None

Benchmark Indicator: The standard includes a requirement that impacts on essential habitat for the stock under consideration and on habitats that are highly vulnerable to damage by the fishing gear involved are avoided, minimized or mitigated. In assessing fishery impacts, the standard full spatial range of the relevant habitat should be considered, not just that part of the spatial range that is potentially affected by fishing.

Assessing Conformance:

1. Applicable Statute(s)

A. MSA: TITLE III—NATIONAL FISHERY MANAGEMENT PROGRAM

- i. SEC. 3. DEFINITIONS As used in this Act, unless the context otherwise requires—
 - (10) The term ²⁴**“essential fish habitat” means those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity.**
- ii. SEC. 303. CONTENTS OF FISHERY MANAGEMENT PLANS
 - (a) REQUIRED PROVISIONS.—Any fishery management plan which is prepared by any Council, or by the Secretary, with respect to any fishery, shall—
 - (7) ²⁴**describe and identify essential fish habitat for the fishery** based on the guidelines established by the Secretary, minimize to the extent practicable adverse effects on such habitat caused by fishing, and identify other actions to encourage the conservation and enhancement of such habitat;
- iii. SEC. 305. OTHER REQUIREMENTS AND AUTHORITY
 - (b)⁺⁺⁺ FISH HABITAT—
 - (1)(A) The Secretary shall, within 6 months of the date of enactment of the Sustainable Fisheries Act, establish by regulation guidelines to assist the Councils in the ²⁴**description and identification of essential fish habitat in fishery management plans (including adverse impacts on such habitat)** and in the consideration of actions to ensure the conservation and enhancement of such habitat. The Secretary shall set forth a schedule for the amendment of fishery management plans to include the identification of essential fish habitat and for the review and updating of such identifications based on new scientific evidence or other relevant information.

B. ESA

- i. SEC. 3. DEFINITIONS— For the purposes of this Act—
 - (5)(A) The term ²⁴**“critical habitat” for a threatened or endangered species means—**
 - (i) **the specific areas within the geographical area occupied by the species,** at the time it is listed in accordance with the provisions of section 4 of this Act, **on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection;**
- ii. SEC. 4. DETERMINATION OF ENDANGERED SPECIES AND THREATENED SPECIES
 - (a) GENERAL—
 - (1) ²⁴**The Secretary shall** by regulation promulgated in accordance with subsection (b) **determine whether any species is an endangered species or a threatened species because of any of the following factors:**

⁺⁺⁺ All of section (b) concerns essential fish habitat. Only a subset of section (b) is provided here.

- (A) **the present or threatened destruction, modification, or curtailment of its habitat or range;**
- (3)(A) The Secretary, by regulation promulgated in accordance with subsection (b) and to the maximum extent prudent and determinable—
- (i) shall, concurrently with making a determination under paragraph (1) that a species is an endangered species or a threatened species,
²⁴**designate any habitat of such species which is then considered to be critical habitat;**
- (b) BASIS FOR DETERMINATIONS—
- (2) The Secretary shall ²⁴**designate critical habitat**, and make revisions thereto, under subsection (a)(3) on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impact, of specifying any particular area as critical habitat.

See also guideline **28.2**.

2. Regulations/Guidelines

A. C.F.R. Title 50: Chapter VI: FISHERY CONSERVATION AND MANAGEMENT, NOAA, DOC

i. Sec. 600.815 Contents of Fishery Management Plans

(a) Mandatory contents--

- (1) Description and identification of EFH-- (i) Overview. ²⁴**FMPs must describe and identify EFH in text that clearly states the habitats or habitat types determined to be EFH for each life stage of the managed species. FMPs should explain the physical, biological, and chemical characteristics of EFH and, if known, how these characteristics influence the use of EFH by the species/life stage. FMPs must identify the specific geographic location or extent of habitats described as EFH.** FMPs must include maps of the geographic locations of EFH or the geographic boundaries within which EFH for each species and life stage is found.

(ii) Habitat information by life stage.

- (A) Councils need basic information to understand the usage of various habitats by each managed species. Pertinent information includes the geographic range and habitat requirements by life stage, the distribution and characteristics of those habitats, and current and historic stock size as it affects occurrence in available habitats. FMPs should summarize the life history information necessary to understand each species' relationship to, or dependence on, its various habitats, using text, tables, and figures, as appropriate. FMPs should document patterns of temporal and spatial variation in the distribution of each major life stage (defined by developmental and functional shifts) to aid in understanding habitat

- needs. FMPs should summarize (e.g., in tables) all available information on environmental and habitat variables that control or limit distribution, abundance, reproduction, growth, survival, and productivity of the managed species. The information should be supported with citations.
- (10) Review and revision of EFH components of FMPs. Councils and NMFS should periodically review the EFH provisions of FMPs and revise or amend EFH provisions as warranted based on available information. FMPs should outline the procedures the Council will follow to ²⁴**review and update EFH information**. The review of information should include, but not be limited to, evaluating published scientific literature and unpublished scientific reports; soliciting information from interested parties; and searching for previously unavailable or inaccessible data. Councils should report on their review of EFH information as part of the annual Stock Assessment and Fishery Evaluation (SAFE) report prepared pursuant to § 600.315(e). A complete review of all EFH information should be conducted as recommended by the Secretary, but **at least once every 5 years**.

See also guideline **28.2**.

3. Discussion

²⁴*Knowledge of the essential habitats for managed stocks*

Every 5 years Regional Fishery Management Councils review essential fish habitat for every fishery management plan that focuses on new information acquired since the previous review. These reviews include descriptions of essential fish habitat, fishing and non-fishing activities that may adversely affect essential fish habitat, as well as cumulative impacts. Councils conclude each review with conservation and enhancement recommendations as well as research and information needs.

NOAA Fisheries has developed a Habitat Blueprint to establish policy frameworks for making broader ecosystem decisions across different offices within the agency (e.g., Research, Fisheries, and Weather Service). The program builds on existing programs, prioritizes activities, and guides future actions (Pawlak, 2012). California's Russian River watershed was selected as the first habitat focus area. NOAA applies flood and weather forecasting, integrated monitoring, habitat protection and restoration, stakeholder education, and coastal and ocean planning and management to address issues resulting from the heavy demand for and competing uses of the river's water. Objectives include rebuilding endangered Coho (*Oncorhynchus kisutch*) and threatened steelhead (*O. mykiss*) stocks to sustainable levels through habitat protection and restoration (NOAA HB).

CONFORMANCE EVIDENCE SUMMARY:

<p style="text-align: center;">Internal</p> <p style="text-align: center;">●</p>	<p style="text-align: center;">Outcome</p> <p style="text-align: center;">●</p>	<p style="text-align: center;">Independent</p> <p style="text-align: center;">●</p>
<ul style="list-style-type: none"> ● MSA: "The term "essential fish habitat" means those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity"; REQUIRED PROVISIONS.— Any fishery management... shall...describe and identify essential fish habitat for the fishery"; " ...The Secretary shall... establish by regulation guidelines to assist the Councils in the description and identification of essential fish habitat in fishery management plans (including adverse impacts on such habitat)..." ● CFR 50-VI-600.815: "(Fishery Management Plans) must describe and identify (Essential Fish Habitat) for each life stage of the managed species... should explain the physical, biological, and chemical characteristics ... (and) identify the specific geographic location or extent of habitats..." ● ESA: "The term "critical habitat" for a threatened or endangered species means— ...the specific areas within the geographical area occupied by the species...on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection"; "The Secretary... shall, concurrently with making a determination...that a species is an endangered species or a threatened species, designate any habitat of such species which is then considered to be critical habitat" 	<ul style="list-style-type: none"> ● Fishery management plans 	<ul style="list-style-type: none"> ● In 2004, the Center for Independent Experts reviewed NOAA Fisheries evaluation of fishing activities that may adversely affect essential fish habitat in the Alaska Region, and in part, reviewed what NOAA described as essential fish habitat (CIE, 2004). ● Once approved by the Secretary of Commerce, fishery management plans, plan amendments, and framework actions, are considered public policy; so any management measure within the management plan is subject to public comment procedures before decision making as dictated by the Administrative Procedures Act. Thus, the public itself can independently review and provide comments to Councils regarding essential fish habitat in fishery management plans before approval by the Secretary of Commerce. ● Fishery management plans are available publicly online, so any member of the public can verify that essential fish habitat is described and identified.

See also guideline **28.2**.

4. *Conclusions (Conformance/Gaps)*

Conformance	Superscript #	Topic Description	Reference Guideline #
●●○	4	Ecosystem effects of fishing are assessed and adverse effects addressed	28.2
●●●	24	Knowledge of the essential habitats for managed stocks	

5. *Future considerations*

²⁴*Knowledge of the essential habitats for managed stocks*

- “Already an essential part of fisheries management, perhaps the most effective way to keep habitat conservation in the forefront as (Coastal and Marine Spatial Planning) develops is to make it a national standard under the Magnuson-Stevens Act. Establishing a National Standard for habitat conservation would elevate the importance of identifying essential fish habitat (EFH), focus habitat-related research and monitoring, facilitate operational improvements to the Federal process involved with habitat conservation, and help the Regional Fishery Management Councils refine their habitat conservation objectives for fisheries management” (Boreman, 2013).
- “NOAA Fisheries has developed a Marine Fisheries Habitat Assessment Improvement Plan (NOAA 2010b) that defines the agency’s role in pursuing habitat science and establishes a framework to coordinate habitat research, monitoring, and assessments in support of our fishery management responsibilities. Among other goals, it is explicitly designed to reduce habitat-related uncertainty in stock assessments, support assessments of ecosystem services, and contribute to ecosystem-based fishery management and integrated ecosystem assessments. The plan deals with managed stocks and stock complexes within Fishery Management Plans, with particular focus on the 230 stocks in the Fish Stock Sustainability Index” (Sutter et al., 2013).
- A long-term, standardized process for monitoring and evaluating habitat could be developed to establish a baseline, assess long term impacts, and support rapid response to non-fishing habitat impacts.

See also guideline **28.2**.

FAO GENERIC DATA USE (ECOSYSTEM IMPACTS)**Guidelines Paragraph:**

31.4 In the absence of specific information on the ⁴**ecosystem impacts of fishing** for the unit of certification, ²²**generic evidence based on similar fishery situations can be used** for fisheries with low risk of severe adverse impact. However, ³**the greater the risk the more specific evidence is necessary to ascertain the adequacy of mitigation measures.**

Comments: None

Benchmark Indicator: When specific information on the ecosystem impacts is lacking, the standard allows for the use of generic evidence based on similar fishery situations for fisheries with low risk.

Where the risk of ecosystem impacts is greater, the standard requires more specific evidence to ascertain the adequacy of mitigation measures.

Assessing Conformance:**1. *Applicable Statute(s)***

See guidelines **28.1, 28.2, and 30.4.**

2. *Regulations/Guidelines*

See guidelines **28.1, 28.2, and 30.4.**

3. *Discussion*

See guidelines **28.1, 28.2, and 30.4.**

4. *Conclusions (Conformance/Gaps)*

Conformance	Superscript #	Topic Description	Reference Guideline #
● ● ●	3	Uncertainty taken into account via risk assessment or precautionary approach	28.1
● ● ◐	4	Ecosystem effects of fishing are assessed and adverse effects addressed	28.2
● ● ●	22	Generic evidence based on similar stock situations	30.4

5. *Future considerations*

See guidelines **28.1, 28.2, and 30.4.**

METHODOLOGICAL ASPECTS:

Assessing current state and trends in target stocks

FAO METHODOLOGICAL ASPECTS

Guidelines Paragraph:

32. There are many ways in which state and trends in stocks may be evaluated, that fall short of the highly quantitative and data-demanding approaches to stock assessment that are often used for large scale fisheries in developed countries. ^{6,10}**Use of less elaborate methods for stock assessment should not preclude fisheries** from possible certification for ecolabelling. However it should be noted that, to the extent that the application of such methods results in greater uncertainty about the state of the “stock under consideration,” more ³**precautionary approaches** to managing fisheries on such resources will be required which may necessitate lower levels of utilization of the resource. There is a variety of ⁵**management measures commonly used in small scale or low value fisheries** that nonetheless can achieve quite adequate levels of protection for stocks in the face of uncertainty about the state of the resource. ²**A past record of good management performance could be considered as supporting evidence of the adequacy of the management measures and the management system.**

Comments: Ecolabelling schemes should have measures in place that facilitate participation by fisheries that use methods for stock assessment that are less quantitative and data-demanding as approaches often used for large scale fisheries in developed countries.

Benchmark Indicator: Certification of fisheries against the standard allows for the consideration of fisheries whose stock status is assessed using less quantitative and data-demanding approaches, but requires fisheries that fall into this category to demonstrate more precautionary approaches to management.

The standard recognizes that a record of good management performance can be considered as supporting evidence of the adequacy of the management measures and the management system.

Assessing Conformance:

1. *Applicable Statute(s)*

See guidelines **28.1, 29, 29.1** and **29.2bis**.

2. *Regulations/Guidelines*

See guidelines **28.1, 29, 29.1** and **29.2bis**.

3. Discussion

See guidelines **28.1, 29, 29.1** and **29.2bis**.

4. Conclusions (Conformance/Gaps)

Conformance	Superscript #	Topic Description	Reference Guideline #
●●●	2	There are documented management approaches for the “stock under consideration”	28.1
●●●	3	Uncertainty taken into account via risk assessment or precautionary approach	28.1
●◐◐	5	Types and scales of fisheries considered in management	29
●◐◐	6	Adequate/reliable data are collected, maintained and assessed	29.1
●●●	10	Maximum sustainable yield or proxy used for management targets	29.2bis

5. Future considerations

See guidelines **28.1, 29, 29.1** and **29.2bis**.

Table 1. “National Standards for Fishery Conservation and Management” of the Magnuson-Stevens Fishery Conservation and Management Act (C.F.R. Title 50: Chapter VI: Fishery Conservation and Management, NOAA, Department of Commerce, Sec. 600.310 et seq.).

#	Description
1	Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.
2	Conservation and management measures shall be based upon the best scientific information available.
3	To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.
4	Conservation and management measures shall not discriminate between residents of different States. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.
5	Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.
6	Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.
7	Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.
8	Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities by utilizing economic and social data that meet the requirements of paragraph (2), in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.
9	Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.
10	Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

Table 2. Assessment of U.S. federal fisheries management by NOAA Fisheries (derived from "Conclusions" sections of Appendix 2) and the Center for Independent Experts (CIE). Topics of Pertinence are extracted from the FAO Ecolabelling Guidelines and benchmark indicators of FAO's Evaluation Framework. Conformance of each topic is described with ● indicating conformance verified by internal evidence, ●● by outcome evidence, and ●●● by independent evidence. Solid symbols (●) indicate strong evidence in all regions and for all fisheries under NOAA Fisheries jurisdiction, and semi-solid symbols (◐) indicate conformance with variable evidence among regions or fisheries (i.e., strong evidence in some but not in others). Gray cells highlight Topics of Pertinence rated higher by CIE assessors than by NOAA Fisheries. Black cells highlight Topics of Pertinence rated lower by CIE assessors than by NOAA Fisheries. Conservative combined ratings include the Lowest Minimum (absolute lowest rating of all assessors combined) and the Consolidated Numeric (ratings averaged across reviewers; where ●=3 ◐=2 ○=1; final combined rating rounded down if average at the 0.5 level). INT = internal evidence; OUT = outcome evidence; IND = independent evidence.

Topic of Pertinence #	FAO Guideline #	Topic of Pertinence Description	Assessor									Conservative Combined Scores								
			NOAA Fisheries			CIE 1			CIE 2			CIE 3			Lowest Minimum			Consolidated Numeric		
			INT	OUT	IND	INT	OUT	IND	INT	OUT	IND	INT	OUT	IND	INT	OUT	IND	INT	OUT	IND
1	28	Management system is in compliance with relevant local, national, and international laws	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
2	28.1; 32	There are documented management approaches for the "stock under consideration"	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3	28.1; 29.6; 30.4; 31; 31.4; 32	Uncertainty taken into account via risk assessment or precautionary approach	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Table 2. Assessment of U.S. federal fisheries management by NOAA Fisheries and the Center for Independent Experts (continued).

Topic of Pertinence #	FAO Guideline #	Topic of Pertinence Description	Assessor									Conservative Combined Scores								
			INT	OUT	IND	INT	OUT	IND	INT	OUT	IND	INT	OUT	IND	INT	OUT	IND			
			NOAA Fisheries			CIE 1			CIE 2			CIE 3			Lowest Minimum			Consolidated Numeric		
4	28.2; 29.2bis; 29.3; 31; 31.3; 31.4	Ecosystem effects of fishing are assessed and adverse effects addressed	●	●	◐	●	●	●	●	●	●	●	◐	◐	●	◐	◐	●	●	◐
5	29; 31; 32	Types and scales of fisheries considered in management	●	◐	◐	●	●	●	●	●	●	●	◐	●	●	◐	◐	●	◐	●
6	29.1; 29.3; 31; 32	Adequate/reliable data are collected, maintained and assessed	●	◐	◐	●	◐	◐	●	◐	●	●	●	●	●	◐	◐	●	◐	◐
7	29.1; 29.2; 29.3; 31	Verified traditional, fisher or community knowledge considered	●	●	●	●	◐	◐	●	●	○	●	●	◐	●	◐	○	●	●	◐
8	29.2; 29.3; 29.6; 31	Best scientific evidence used in management measures	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Table 2. Assessment of U.S. federal fisheries management by NOAA Fisheries and the Center for Independent Experts (continued).

Topic of Pertinence #	FAO Guideline #	Topic of Pertinence Description	Assessor									Conservative Combined Scores								
			NOAA Fisheries			CIE 1			CIE 2			CIE 3			Lowest Minimum			Consolidated Numeric		
			INT	OUT	IND	INT	OUT	IND	INT	OUT	IND	INT	OUT	IND	INT	OUT	IND	INT	OUT	IND
9	29.2bis	Total fishing mortality from all sources considered for the managed stock under consideration	●	●	●	●	●	●	●	○	○	●	●	●	●	○	○	●	●	●
10	29.2bis; 32	Maximum sustainable yield or proxy used for management targets	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
11	29.2bis; 30	Optimal utilization is promoted in management	●	●	●	●	○	○	●	○	○	●	●	●	●	○	○	●	○	○
12	29.2bis; 31.2	Food-web ecosystem considerations considered	○	○	○	●	●	●	●	○	●	○	○	○	○	○	○	○	○	○
13	29.2bis; 29.6; 30; 30.1; 30.2; 31.1	Management should specify limits or directions in key performance indicators, e.g. overfishing	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Table 2. Assessment of U.S. federal fisheries management by NOAA Fisheries and the Center for Independent Experts (continued).

Topic of Pertinence #	FAO Guideline #	Topic of Pertinence Description	INT	OUT	IND	INT	OUT	IND	INT	OUT	IND	INT	OUT	IND	INT	OUT	IND	INT	OUT	IND
			Assessor												Conservative Combined Scores					
			NOAA Fisheries			CIE 1			CIE 2			CIE 3			Lowest Minimum			Consolidated Numeric		
14	29.2bis; 29.6; 30.2	Actions taken if limits approached or exceeded	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
15	29.4; 30	Goal of long-term sustainability present	●	●	●	●	●	●	●	●	◐	●	●	◐	●	●	◐	●	●	◐
16	29.5	Framework for fisheries at local, national or regional level	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
17	29.5; 31.1	Compliance ensured via monitoring and enforcement	●	●	◐	●	◐	◐	●	●	◐	●	●	◐	●	◐	◐	●	●	◐
18	30; 30.1	Stock is not overfished	◐	◐	◐	●	●	●	●	◐	◐	●	◐	◐	◐	◐	◐	●	◐	◐
19	30	Long-term changes in productivity considered	●	◐	◐	●	◐	◐	◐	○	○	◐	◐	◐	◐	○	○	◐	◐	◐

Table 2. Assessment of U.S. federal fisheries management by NOAA Fisheries and the Center for Independent Experts (continued).

Topic of Pertinence #	FAO Guideline #	Topic of Pertinence Description	INT	OUT	IND	INT	OUT	IND	INT	OUT	IND	INT	OUT	IND	INT	OUT	IND	INT	OUT	IND
			Assessor												Conservative Combined Scores					
			NOAA Fisheries			CIE 1			CIE 2			CIE 3			Lowest Minimum			Consolidated Numeric		
20	30; 31.1	Restoration of stocks required within reasonable timeframes	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
21	30.3	Stock structure and composition contributing to resilience considered	●	●	●	◐	◐	◐	●	●	●	●	●	◐	◐	◐	◐	●	●	◐
22	30.4; 31.4	Generic evidence based on similar stock situations	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
23	31.1	Non-target catch and discards not threatened by target fishery	●	●	◐	●	●	●	●	●	◐	●	●	◐	●	●	◐	●	●	◐
24	31.3	Knowledge of the essential habitats for managed stocks	●	●	●	●	●	●	●	●	◐	●	●	◐	●	●	◐	●	●	◐
SUMMARY																				
Total Sum Score ¹			70	67	64	71	66	66	71	65	61	70	67	62	68	60	56	70	66	60
Percentage of Maximum Possible ²			97	93	89	99	92	92	99	90	85	97	93	86	94	83	78	97	92	83

¹Sum of numeric ratings from all Topics of Pertinence where ●=3; ◐=2; ○=1

²Based on a maximum possible score of 72 (i.e., 24 Topics of Pertinence multiplied by 3, the maximum numeric rating).

Table 3. Structure of the Conformance Assessment for each FAO Guideline outlined in the “Minimum Substantive Requirements and Criteria for Ecolabelling” section (FAO tracking guideline numbers 28-32, including sub-numbers).

Section	Format within complete assessment
<u>SUBJECT</u> ¹	bold, small caps, underlined
# FAO Guidelines Paragraph ²	bold
Topics of Pertinence	bold, tracked with superscripts
<i>Comments/Benchmark Indicator</i>	italics, underlined
<u>Assessing Conformance</u>	bold, italics, underlined
1. Applicable Statute(s)	number 1, bold, italics
2. Regulations/Guidelines	number 2, bold, italics
3. Discussion	number 3, bold, italics
Examples from major stocks	unformatted text
• EVIDENCE	bold, caps, table, bulleted list, notes in italics
4. Conclusions (Conformance/Gaps) ³	number 4, bold, italics, table
5. • Future considerations	number 5, bold, italics, bulleted list

¹We assigned a subject to each FAO Guideline to provide a succinct overall description of the guidance within.

²FAO Guidelines, comments and benchmark indicators, and applicable statutes and regulations/guidelines for the conformance assessment are provided directly from the parent documents, respectively.

³This section includes the conformance rubric.

Table 4. Examples of independent entities used to verify independent evidence of conformance in the full assessment of U.S. federal fishery management.

Independent Entity	Comments
Bartram et al. (2006; 2008)	Responsible Fisheries Assessment of Hawaii's Pelagic Longline Fisheries
Bartram and Kaneko (2009)	Responsible Fisheries Assessment of American Samoa Pelagic Longline Fisheries
Center for Independent Experts Court rulings	Reviews stock assessments e.g., <i>Natural Resources Defense Council v. Daley</i> , 209 F.3d 747 (D.C. Cir. 2000)
General public Grieve and Short (2007)	Open-access evidence of conformance Implementation of ecosystem-based management in marine capture fisheries: Case studies from WWF's marine ecoregions.
Milazzo (2012)	Progress and problems in U.S. marine fisheries rebuilding plans.
Oremus et al. (2014)	The requirement to rebuild US fish stocks: Is it working?
Pitcher et al. (2006)	Evaluations of compliance with the FAO (UN) Code of Conduct for Responsible Fisheries.
Pitcher et al. (2009)	An evaluation of progress in implementing ecosystem-based management of fisheries in 33 countries.
Regional Councils' Scientific and Statistical Committees Stock Assessment Review Teams	Reviews stock assessments Reviews stock assessments; e.g. SARC, SEDAR, STAR, WPSAR
Vascalonos et al. (2006)	An estimation of compliance of the fisheries of the USA with Article 7 (Fisheries Management) of the FAO (UN) Code of Conduct for Responsible Fishing

Table 5. Key performance indicators specified in fishery management plans.

Performance indicator	Acronym	Definition
Acceptable Biological Catch	ABC	A risk-averse level of annual catch for a stock reduced from the overfishing limit or maximum fishing mortality rate to account for scientific uncertainty
Annual Catch Limit	ACL	Level of annual catch of a stock/complex that serves as the basis for invoking accountability measures
Annual Catch Target	ACT	Amount of annual catch of a stock/complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the annual catch limit
Maximum Sustainable Yield	MSY	Largest long-term average catch that can be taken from a stock/complex under prevailing ecological, environmental conditions and fishery technological characteristics
Maximum Fishing Mortality Threshold	MFMT	Rate beyond which overfishing occurs
Minimum Stock Size Threshold	MSST	Level of biomass below which the stock/complex is considered to be overfished
Overfishing Limit	OFL	Annual amount of catch that corresponds to maximum fishing mortality threshold applied to available abundance
Optimum Yield	OY	Based on maximum sustainable yield; decisional mechanism for resolving MSA conservation and management objectives, achieving a fishery management plan's objectives, and the greatest overall benefits to the Nation

Table 6. NOAA Fisheries federally managed stocks with rebuilding plans of 20 years or longer (as of 31 December 2013). Does not include highly migratory species due to international influences on those stocks beyond U.S. control.

Stock	Current year in rebuilding plan	Total # of years in rebuilding plan	Fishery Management Council	Over-fishing?
Nassau grouper	9	25	Caribbean	No
Goliath grouper	9	30	Caribbean	No
Snowy grouper	8	34	South Atlantic	Yes
Red snapper	3	35	South Atlantic	Yes
Red snapper	13	32	Gulf of Mexico	No
Atlantic cod ¹	10	22	New England	Yes
Atlantic halibut	10	52	New England	No
Thorny skate	11	25	New England	Yes
Yellowtail flounder ¹	8	26	New England	Yes
Bocaccio ²	14	22	Pacific	No
Canary rockfish ³	13	26	Pacific	No
Cowcod ⁴	13	67	Pacific	No
Yelloweye rockfish ³	11	71	Pacific	No
Darkblotched rockfish ³	12	23	Pacific	No
Pacific ocean perch ³	14	20	Pacific	No
Hancock Seamount Groundfish Complex	28	-	Western Pacific	Unknown

¹Georges Bank stock

²Southern Pacific Coast stock

³Pacific Coast stock

⁴Southern California stock