DRAFT OF

ENVIRONMENTAL ASSESSMENT AND REGULATORY IMPACT REVIEW FOR REVISIONS TO GUIDELINES FOR NATIONAL STANDARD ONE TO THE MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

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Prepared by the National Marine Fisheries Service

National Oceanic and Atmospheric Administration

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Acronyms and abbreviations used in this document:
B - biomass
B_{lim} - minimum biomass limit
B_{msy} - biomass of a given fish stock that would produce MSY
EA – environmental assessment
EFH - essential fish habitat
EIS - environmental impact statement
ESA - Endangered Species Act
F - fishing mortality rate
F_{lim} – maximum fishing mortality limit
FMP – fishery management plan
FMU – fishery management unit
GT – generation time
FONSI - Finding of no significant impact
IRFA - initial regulatory flexibility analysis
M – natural mortality rate
Magnuson-Stevens Act –- M-S Act
MFMT - maximum fishing mortality threshold
MSST - minimum stock size threshold
MSY - maximum sustainable yield
NEPA - National Environmental Policy Act
NMFS - National Marine Fisheries Service; NOAA Fisheries
NOAA - National Oceanic and Atmospheric Administration
NS1 - National Standard 1
OY - optimum yield
RFA - Regulatory Flexibility Act
RIR – regulatory impact review
SDC- status determination criteria (F_{lim} and B_{lim})
SFA- Sustainable Fisheries Act
SPR - spawning potential ratio
Working Group - NMFS NS1 Working Group

1.0 Introduction

1.1 Executive summary

1.1.1 Intent of proposed action

The National Marine Fisheries Service (NMFS), NOAA, is proposing to revise the guidelines for national standard 1 (NS1 guidelines) as described in 50 CFR Part 600. The intent of this action is to clarify, amplify, and simplify the guidelines in several instances, so that Regional Fishery Management Councils (Councils) and the public have a better understanding of how to: (1) Establish status determination criteria (SDC) for stocks that vary in data quality, (2) construct and revise rebuilding plans, and (3) improve the ability of Councils and NMFS to comply with the requirements of section 304 of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act).

1.1.2 Proposed revisions

The proposed revisions include: (1) rename "minimum stock size threshold" as "minimum biomass limit (B_{lim})", "maximum fishing mortality threshold" as "maximum fishing mortality limit (F_{lim})", and "overfished" as "depleted"; (2) specify that fishery management plans (FMPs) be revised so that species/stocks may be classified as a "core" stock or stocks falling within a "stock assemblage" for each FMP; (3) reinforce the expectation that the annual fishing mortality rate (F) for a given fishery must prevent overfishing by (a) requiring optimum yield (OY) control rules for core stocks to set F_{target} below F_{lim} if adequate data are available, and (b) that any new or revised rebuilding plans specify that the target level of fishing mortality (F_{target}) must be less than F_{lim}, beginning in the first year of the rebuilding plan, except in certain circumstances; (4) specify that B_{lim} should equal $\frac{1}{2}B_{msy}$ as the default value, and clarify when exceptions greater or less than the $\frac{1}{2}B_{msy}$ amount are appropriate, and clarify that in some instances estimates of B_{lim} or a proxy would not be possible for an individual stock or species; (5) revise the maximum rebuilding time horizon formula to remove the discontinuity in the current NS1 guidelines; (6) establish a default value for T_{target}; (7) clarify how to use the fishing mortality rate that produces maximum sustainable yield (F_{msy}) to determine when a fish stock is rebuilt when and only when it is not possible to calculate B_{msy}, or other necessary factors; (8) clarify what kind of revisions are necessary and appropriate when rebuilding plans need to be revised; (9) specify appropriate limitations for F when a stock is not rebuilt at the end of its rebuilding period; (9) elaborate how to manage "straddling stocks" and international highly migratory stocks (HMS).

1.1.3 Transitional steps if proposed revisions are implemented with a final rule

If the proposed revisions to terminology are adopted, NMFS proposes that the Councils and NMFS, on behalf of the Secretary of Commerce (Secretary), in the case of Atlantic highly migratory species (HMS) begin using the new terms in place of the old terms and revise FMP language related to the revised terminology the next time a Council submits an FMP amendment for Secretarial review. NMFS would begin using the new terms in its next Annual Report to Congress of the Status of U.S. Fisheries issued after the effective date of the revised NS1 guidelines. Any codified language existing under 50 CFR Part 600 for fisheries managed under the Magnuson-Stevens Act related to "overfished", "minimum stock size threshold", and "maximum fishing mortality threshold," would be revised by NMFS.

For the proposed revisions to the NS1 guidelines other than terminology, the new guidelines would apply to some, but not all new actions submitted by a Council. Any new action submitted by a Council that includes new or revised SDC ("depleted" or "overfishing" definitions), OY control rules or rebuilding plans, would need to be developed and evaluated according to the revised NS1 guidelines. However, if a Council action that includes new or revised SDC, OY control rules or rebuilding plans is already under development and is at the stage that a draft environmental impact statement's (DEIS) notice of availability has already been published in the Federal Register, when the revised NS1 guidelines becomes effective, then a Council could submit the action under the "old" or "new" NS1 guidelines. If an FMP or FMP amendment or other regulatory action not accompanied by an EIS has already been adopted by a Council for Secretarial review before the final rule implementing the revised NS1 guidelines is effective, then a Council could submit an FMP or FMP amendment or other regulatory action under either the "old" or "new" NS1 guidelines.

After any final rule implementing the revisions to the NS1 guidelines becomes effective, if a Council submits an action (e.g., annual specifications, an FMP amendment, interim rulemaking, or a regulatory amendment) that does *not* involve new or revised SDC, OY control rules, or rebuilding plans for a stock, then that action could be reviewed and approved without the FMP being amended to bring existing SDC, OY control rules, and rebuilding plans into conformance with the new guidelines. The proposed action would still need to be in conformance with all of the national standard guidelines to be approvable. Any FMP amendment or other regulatory action that involves: (1) Proposed SDC, an OY control rule, or a rebuilding plan for a stock not previously managed by SFA-approved SDC or by a rebuilding plan ; or (2) proposed revisions to SDC, an OY control rule, or a rebuilding plan for a stock already managed under SDC or by a rebuilding plan, then the proposed SDC, OY control rule, and/or rebuilding plan would need to comply with the new NS1 guidelines.

Regarding the proposed recommendation that stocks in FMPs be managed according to core stocks and stock assemblages, if a Council determines that a given FMP only has core stocks (e.g., the Mid-Atlantic Council's Spiny Dogfish FMP, the New England Council's Atlantic Sea Scallops FMP, the Deep-Sea Red Crab FMP, and the FMP for the

Gulf of Mexico Stone Crab Fishery), then the Council should make such a determination with accompanying rationale in its next FMP amendment.

In the case of an FMP that has a mixture of SDC-known stocks and stocks having an "unknown status" related to SDC (e.g., Snapper-Grouper FMP) when a Council begins to align its management under "core stocks" and "stock assemblages," the Council could begin such alignment in a stepwise fashion (in a series of separate FMP actions) for given core stocks or stock assemblages, once new or revised SDC, OY control rules, or rebuilding plans are developed. If a Council determines that the stepwise method is problematic it could take action to realign all of the FMP's stocks into core stocks and stock assemblages in one action.

If some stocks are not being managed effectively under a given FMP because their status relative to SDC is unknown, and the proposed revisions to the NS1 guidelines are approved, then the Council should re-evaluate those stocks as soon as possible, to decide whether or not any grouping of some or all stocks having an unknown status could be managed by an SDC under one or more indicator stocks, or through stock assemblage-wide SDC. A Council should clearly designate which stocks in the FMP are in the FMUs and thus subject to SDC and to inclusion in the NMFS Annual Report to Congress on the Status of U.S. Fisheries. Stocks that are listed as threatened or endangered under the Endangered Species Act would be exempt from being evaluated according to SDC, but must be evaluated against SDC within 1 year of being de-listed. Finally, stocks that are primarily dependent on artificial propagation from hatcheries would be exempt from being evaluated according to SDC. If any stocks are currently undergoing overfishing as part of an approved rebuilding plan (e.g., reductions in F are being phased in over a number of years until F is less than or equal to F_{lim}), then, the first time that the Council submits a revised rebuilding plan for those stocks, overfishing must be prevented, beginning in the first year of the revised rebuilding plan, except under circumstances listed under section 304(e)(4)(A) of the Magnuson-Stevens Act.

In general, the Councils would not be required to amend their SDC, OY control rules and rebuilding plans approved under the SFA by any "date certain," with the following exceptions. In the event that NMFS, on behalf of the Secretary of Commerce, determines that a fishery is overfished or approaching an overfished condition under section 304(e)(1) or (e)(2) of the Magnuson-Stevens Act, or a rebuilding plan needs to be revised under section 304(e)(7) of the Magnuson-Stevens Act, then the Council needs to take action consistent with the revised NS1 guidelines. NMFS should notify the appropriate Council if overfishing is occurring in a fishery, even if the fish stock is not determined to be overfished, under the same procedures as described in Section 304(e) (1) and (2) of the Magnuson-Stevens Act.

If one or more stocks in an FMP do not currently have OY control rules, or the OY control rule equals its respective MSY control rule, then the appropriate Council would need to develop and submit an FMP amendment or other appropriate regulatory action and analyses when the SDC or the rebuilding plan for such a fishery needs to be revised.

Revisions are necessary when a stock's rebuilding plan is not making adequate progress under section 304(e)(7) of the Magnuson-Stevens Act, or new data or an assessment indicates that SDC or the rebuilding target needs revision. A Council can submit an OY control rule for Secretarial review before SDC or the rebuilding plan needs to be revised, if it chooses to do so.

1.1.4 Summary of projected impacts of the proposed revisions

The proposed revisions (Alternatives 2.1.2, 2.2.2, 2.3.2, 2.4.2, 2.5.2, 2.6.2, 2.7.2, 2.8.2, and 2.9.2) should not result (immediately) in any biological, economic or social impacts in fisheries in the EEZ (i.e., the effective date of the final rule for this action which is usually 30 days after date of publication of the final rule in the Federal Register), or within the first year or so after the final rule would become effective. A new FMP or an FMP amendment, on average, *would not begin to have any impacts* until approximately 1½ to 2 years after the effective date of the final rule for revisions to NS1 guidelines. This is because most new FMPs and FMP amendments take more than one year to prepare and complete, before being submitted by the Councils for Secretarial review, and most FMP amendments, if approved, take about five more months after submission for Secretarial review, before the final rule becomes effective.

Biological, economic and social impacts, and impacts on the physical environment *"in the longer term"* in this section are covered in Tables 5, 6 and 7 (Parts 1 and 2 for each). NMFS has decided that the biological, economic and social impacts of the management measures that are developed later as a result of the proposed revisions of the NS1 guidelines impacts are best evaluated in qualitative terms, only. Predicting if, when and how often rebuilding plans would need to be revised, or when or how often SDC would need to be revised due to new data or a new stock assessment is not possible at this time.

"*In the longer term*" means effects that would likely begin in 1½ to 2 years as a result of future fishery management actions that rely to some extent on the revised NS1 guidelines, and should not be confused with "long-term effects." "Long-term effects or impacts" relate more to duration of the effects or impacts (e.g., the effects or impacts would continue for a longer period of time than one year or an annual specification cycle).

One proposed revision would require that an OY control rule result in smaller annual allowable harvest amounts than its corresponding MSY control rule. Therefore, to some extent, harvest would be less while managing under an OY control rule than its MSY control rule, but an increase in stock abundance would likely occur sooner than if managing under a MSY control rule. The magnitude of this future impact depends upon the degree of difference between the MSY control rule and the OY control rule, and would be analyzed when an FMP amendment is being considered.

The exact nature and magnitude of impacts associated with these proposed actions cannot be quantified or described in detail, until they are applied to specific stocks/fisheries with

their associated supporting analyses. Overall, the proposed revisions contained in this action are expected to better enable the Councils' and NMFS' ability to construct meaningful SDC and rebuilding plans and comply with the Magnuson-Stevens Act's requirements under section 304 to prevent or end overfishing, rebuild stocks that are overfished (depleted) and achieve OY.

1.2 Purposes and need for action

The overall intent of the Magnuson-Stevens Act is to achieve optimum yield, prevent overfishing and rebuild overfished stocks in as short a time as possible. NMFS and the Councils are charged with the difficult, but important task of balancing the need to prevent overfishing and rebuild overfished stocks in as short a time as possible, taking into account the needs of fishing communities and fishing industry infrastructure, and evaluating actions in terms of overall benefits to the nation.

NMFS, the Councils, the public, and various stakeholders in fisheries in the EEZ have worked with the current version of the NS1 guidelines since June 1998, while developing overfishing definitions and rebuilding plans for various fisheries. Through this experience, NMFS has developed new perspectives about the utility of the current NS1 guidelines.

NMFS decided in November 2003, after receiving public comment on the current usefulness of the NS1 guidelines, and convening a NMFS Working Group (Working Group) to review the guidelines, that it would propose revisions to the guidelines. NMFS believes that the proposed revisions would improve the ability of the Councils to establish meaningful SDC and rebuilding plans that facilitate compliance with the Magnuson-Stevens Act.

1.3 History and development of National Standard 1

The Magnuson-Stevens Act serves as the chief authority for fisheries management in the Exclusive Economic Zone (EEZ) of the United States. Section 301(a) contains 10 national standards with which all FMPs and their amendments must be consistent. Section 301(b) requires that "the Secretary establish advisory guidelines (which shall not have the force and effect of law), based on the national standards, to assist in the development of fishery management plans." Guidelines for the national standards are codified in Subpart D of Title 50 CFR Part 600 (includes 50 CFR 600.5 through 600.355). The guidelines for the national standards were last revised in a final rule published in the Federal Register on May 1, 1998 (63 FR 24212), when guidelines for National Standards 1 (optimum yield), 2 (scientific information), 4 (allocations), 5 (efficiency), and 7 (costs and benefits) were revised, and guidelines for new National Standards 8 (communities), 9 (bycatch), and 10 (safety of life at sea) were added to bring them into conformance with the Magnuson-Stevens Act as amended by the Sustainable Fisheries Act (SFA).

National Standard 1 is "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," according to section 301(a)(1) of the Magnuson-Stevens Act. Section 303(a)(10) requires that each FMP shall "specify objective and measurable criteria for identifying when the fishery to which the plan applies is overfished (with an analysis of how criteria were determined and the relationship of the criteria to the reproductive potential of stocks of fish in that fishery) and, in the case of a fishery which the Council or Secretary has determined is approaching an overfished condition or is overfished, contain conservation and management measures to prevent overfishing or end overfishing and rebuild the fishery."

For any fishery that is overfished, section 304(e)(4)(A) requires that an FMP shall "specify a time period for ending overfishing and 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 within the marine ecosystem; and (ii) 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 U.S. participates, dictate otherwise.

The NS1 guidelines were revised extensively in the May 1, 1998, final rule to make the guidelines conform to revisions to the Magnuson-Stevens Act, as amended by the SFA on October 11, 1996. In particular, the guidelines for NS1 addressed new requirements for FMPs brought about by the addition of section 304 (rebuilding overfished fisheries) to the Magnuson-Stevens Act.

1.4 Advance notice of proposed rulemaking for NS1

1.4.1 The ANPR

NMFS issued an advance notice of proposed rulemaking (ANPR) in the Federal Register on February 14, 2003 (68 FR 7492), to announce that it was considering revisions to the NS1 guidelines that specify the criteria for overfishing and establish rebuilding schedules. NMFS identified several concerns in the ANPR, but did not limit what sections of the NS1 guidelines could be revised.

The five concerns listed in the ANPR were as follows:

1. The definition and use of the minimum stock size threshold for determining when a stock is overfished.
2. Calculation of the rebuilding targets appropriate to the environmental regime.
3. Calculation of the maximum permissible rebuilding times for overfished fisheries.
4. The definitions of overfishing as they relate to a fishery as a whole, or a stock of fish within that fishery.
5. Procedures to follow when rebuilding plans require revision after initiation, especially with regard to modification of a rebuilding schedule.

In the ANPR, NMFS also solicited comments from the public related to: (1) whether or not the NS1 guidelines should be revised, and (2) if revisions are desired, what parts of the NS1 guidelines should be revised, how they should be revised, and why.

The comment period for the ANPR was extended through April 16, 2003, when NMFS issued an extension of the comment period in the Federal Register on March 3, 2003 (68 FR 9967).

1.4.2 Public comments received on the ANPR

NMFS received extensive public comments on the ANPR for the NS1 guidelines. NMFS received 48 letters that had unique content. Those letters contained various recommendations on whether or not to revise the NS1 guidelines, and why or why not they should be revised. Also, members of the public submitted more than 6,900 letters in one of several different forms of similar wording.

Within the group of 6,900 letters, comments contained one or more of following recommendations:
1) Do not weaken the NS1 guidelines, rather, make them more effective in carrying out the mandate of the Magnuson-Stevens Act to end overfishing and rebuild our stocks.
2) The issues in the ANPR are troubling because they suggest NMFS is considering weakening the definition of when a stock is overfished, extending the time frames for rebuilding overfished populations and allowing environmental degradation to be used as an excuse not to rebuild depleted fish stocks to previous levels.
3) NMFS should maintain or strengthen the definition of overfished populations and ensure strict, enforceable rebuilding deadlines in the guidelines.
4) NMFS should not use flexibility or changing environmental conditions to excuse continued overfishing. NMFS should not allow fishermen to exceed target fishing levels, including New England where cod catches have exceeded target fishing levels by 2-4 times the amount of the target TAC.

Within the group of 48 letters, a brief summary of recommendations were as follows:
Minimum stock size threshold (MSST)
1) Keep MSST; give better guidance for designation of MSST for situations when available data are limited.
2) MSST is essential, as it is the only biological portion of the criteria used to determine when a stock is overfished.
3) NMFS should first try to implement current MSST guidance to see if that guidance is effective.
4) Give better advice and a broader range as to what would be a reasonable proxy for MSST in the absence of a biomass value.
5) Give better guidance in terms of how to address different population characteristics for crustaceans, mollusks, and plants compared to bony fishes and cartilaginous fishes.

6) Provide better guidance about how MSY and OY should be addressed for species that are annual crops (should MSSTs and other criteria be point estimates or a range of estimates?).
7) MSST calculations should take into account that for long-lived species, recruitment varies considerably under changing environmental conditions.
8) The requirement that a stock is considered overfished when it falls below MSST in a single year should be changed due to high variability in recruitment.
9) Sometimes a Council prohibits possession for a fish stock having an unknown status that it believes to be overfished. What else should the Council do to satisfy NS1?
10) For stocks or species having unknown MSST in terms of biomass, recognize spawning potential ratio-based values as acceptable substitutes for biomass-based parameters required by the guidelines.
11) Make MSSTs more precautionary. MSSTs should be set at levels that equal 100 percent of the stock size (B_{msy}) capable of producing MSY. MSST should equal B_{msy}.
12) Remove the MSST requirement for some or all stocks. Consider the utility of the North Pacific Council's automatic rebuilding algorithm (harvest control rule (HCR) tiers 1 through 3) as a family of HCRs for managing vulnerable species. F is increasingly reduced as population size decreases as a viable management alternative to a MSST control rule. Guidelines should allow development of an FMP without reference points if landings are capped and a data collection program is instituted.
13) MSST should be optional. For some stocks we have no information on MSST.

Environmental regime change
1) Use environmental regime changes to adjust rebuilding targets.
A) Environmental regimes must be built into the calculation of reasonable rebuilding periods.
B) The NS1 guidelines need to take into account the continuously changing environment.
C) Due to the paucity of specific knowledge about environmental conditions and their effects on fish population abundance, rebuilding targets and MSY control rules should be specified in terms of ranges, rather than a peak value.

2) Do not use environmental regime shifts to adjust rebuilding targets.
A) It is premature and inappropriate to consider the guidelines as to this concern.
B) There does not appear to be any well-known or well-supported case of a currently exploited and depleted fish population whose productivity is reduced because of environmental change unrelated to the adverse effects of fishing on the ecosystem.
C) A policy should be adopted that no adjustments be based on an environmental regime change when setting overfished stock rebuilding plans.
D) A reduction in F is appropriate whether or not a reduction in abundance occurred from fishing, or an environmental regime shift—management still has to take what action it can to protect the fish stock and provide an opportunity for rebuilding.

Maximum permissible rebuilding time
1) Take a minimum amount of time to rebuild a fishery (as short a time as possible).

A) The one GT exception in the guidelines must be removed; leave the guidelines to say, "Rebuild in as short a time as possible."
B) Revise the guidelines to provide that rebuilding be completed as soon as possible, even if it cannot be accomplished in 10 years.
C) Revise the guidelines to avoid balloon payments in rebuilding plans (greater restrictions in the final years of the rebuilding plan).

2) Take the maximum permissible time to rebuild a fish stock.
A) Overzealous rebuilding strategies are likely to violate all the other provisions of OY relating to preservation of the industry, supply of food, maximum benefit to the environment and preservation of cultural and economic aspects of commercial fishing.
B) There should be maximum flexibility in calculating maximum rebuilding times. Goals should not be set too high resulting in unnecessary hardship and losses to consumers, communities, and industry.
C) Remove time limits for rebuilding fisheries. Replace time limits for rebuilding with a requirement to always fish at a rate that allows for stock growth in "normal" environmental conditions.

<u>Definition of overfishing relating to the fishery as a whole</u>
1) Keep guidelines unrevised regarding definitions of overfishing relating to the fishery as a whole.
A) Until now, NMFS has developed a clear, vision as to how to manage ecosystems; it is premature to visit its overfishing definitions concerning a "fishery as a whole."
B) Combining assessments and SDC for assemblages of minor stocks may be problematic because the approach risks overfishing, extirpation and extinction for some stocks. A stronger stock of a mix might be managed to the detriment of a weaker stock of a mix.
C) Individual species should not be combined into complexes for the purpose of management aimed at achieving NS1. There is too much risk associated with choosing indicator species among stocks that have an unknown status.

2) Revise guidelines on management of interrelated stocks.
A) Guidelines should mandate an assessment of aggregated stocks. When stocks are harvested in conjunction with one another, overfishing is permissible by law.
B) Guidelines should allow for bycatch when multiple stocks are harvested together to avoid wasteful discarding.
C) There is no basis in the Magnuson-Stevens Act for any exception to the prohibition against overfishing of NS1. The guideline for generating that exception should be eliminated.
D) NMFS should not allow overfishing of individual stocks in a mixed stock fishery.
E) Revise guidelines to rely upon vulnerable stock criteria prepared by the American Fisheries Society to identify weak stocks.
F) Use both a "representative species" and a "weakest species" as indicator stocks to determine status of assemblages that contain unknown status stocks.

G) Better guidance on flexibility under NS1 is needed–for example, the NE Council should have the flexibility to rebuild to B_{msy} for groundfish and ½ B_{msy} for spiny dogfish, based on ecosystem function and common sense.
H) Revise the guidelines so that Councils do not have to rebuild each stock to B_{msy}, rather they can rebuild their stocks to a biomass that produces OY. B_{msy} cannot be attained for an entire complex of stocks at once.

Rebuilding plans and rebuilding targets requiring revision
1) Revisions to rebuilding plans should be the exception, and only developed under certain circumstances.
A) Only in limited and well-defined circumstances should a rebuilding plan be allowed to exceed the original time limit.
B) The Magnuson-Stevens Act clearly provides that NMFS shall review rebuilding plans at "routine levels not to exceed two years."
C) Rebuilding plans can be adjusted as long as: (1) no plan is less protective as a result of overfishing, and (2) measures do not allow overfishing on stocks being rebuilt.
D) It may be reasonable to shorten or lengthen a rebuilding period (due to scientific information showing that a biomass target should be changed) as long as: (1) specific limits for how much the rebuilding period is adjusted are addressed, (2) ensure that there is no additional risk to a stock, (3) ensure that rebuilding is maintained at least to the original trajectory. Overages in a given year would have to be subtracted in the subsequent year.
E) Rebuilding plans should only be extended when the biomass targets are increased by more than 100 percent.
2) There should be maximum flexibility for making revisions to rebuilding plans.
A) Many current rebuilding targets are too draconian–so as to virtually guarantee the permanent non-participation of some fishing communities.
B) Changes in targets should necessitate minor adjustments in F to ensure forward progress is always made on the rebuilding stock.
C) Guidelines need to clarify when is the precautionary approach appropriate to use–for conservative assumptions for model inputs or conservative harvest policies for outputs? Both?
D) Small adjustments in F should require immediate action; larger adjustments should be phased in over a multi-year schedule.

Maximum fishing mortality (MFMT)
1) Provide alternative approaches to establishing allowable threshold levels–provide guidance encouraging the use of other indicators of overfishing (declining fish catch size or skewed sex ratios)
2) Guidance for NS1 should allow for a number of years (rather than immediately) for fishing effort to be brought down to required levels.

OY and OY control rules

1) Further guidance is needed on the definition of OY, and how it can be defined in a mixed stock fishery.
2) Further guidance is needed on the difference between a single-year OY and long-term OY.
3) Fisheries management should be based on OY control rules, rather than MSY control rules.
4) Define the use of control rules in the context of broad biological, social and economic goals of a fishery.
5) The aim of NS1 should be to operate a fishery around a MSY stock size and an F value similarly fluctuating around F_{OY}, not a biomass above B_{msy} and an F value below F_{OY}.
6) Guidelines need to make very clear what is required for management when biomass is greater than MSST, but less than B_{msy}, and F is less than F threshold.

Miscellaneous
1) Guidelines need to describe how and when to incorporate uncertainty, risk, and precaution.
2) NS1 guidelines should take into account the management measures of neighboring countries for management of trans-boundary stocks. A Council's share in the stock and U.S. fishermen's share in total landings might be quite small, so what would be the U.S. role in management?
3) National standards should be applied equally when developing an FMP. No one standard should override "supplementary standards" that are of the same importance
4) Ensure that fishery management actions taken in state waters do not impair compliance with NS1.
5) When using annual total allowable catches (TACs), confidence intervals (greater than 50-percent chance of success) need to be set to better ensure that the limit (TAC) chosen will not be exceeded.
6) Establish a new term for the state of resource abundance when it is too low (other than overfished).
7) Is OY the optimum for a given year or an average over many years?
8) Is MSY dynamic or a maximum average yield?
9) Calculation of rebuilding targets: factors such as predator/prey relationships, competition for habitat, and carrying capacity, need to be examined. These factors can affect the time to rebuilding and the amount to which a stock can be rebuilt.

1.5 NMFS National Standard 1 Working Group

1.5.1 Formation of Working Group and Terms of Reference

A NMFS NS1 Working Group (Working Group) was formed in April 2003, with "Terms of Reference" to develop recommendations as follows: (1) Determine whether or not the NS1 guidelines should be revised at all; (2) if revisions are desired, what parts of the NS1 guidelines should have priority for revision, and why; (3) any recommended revisions should: be consistent with the objectives of NS1 and technically sound, increase comprehensiveness (i.e., provide guidance for a broader range of situations), add

specificity (i.e., provide more guidance on how to handle particular situations), improve clarity (i.e., are easier for non scientists to understand), and recognize scientific and biological constraints.

1.5.2 Working Group's recommendations for revisions to the NS1 Guidelines

The Working Group submitted a Report that contained its recommendations for changes to the NS1 Guidelines to the Assistant Administrator for Fisheries, NOAA, on November 10, 2003 (see Appendix 1). The Working Group's most substantive recommendations for revisions of the NS1 guidelines were to strengthen the requirements for OY control rules and alignment of managed stocks in an FMP into core stocks and stock assemblages. The Working Group also concluded that it is important to emphasize that the expectation of fisheries management should be to quickly ending overfishing, except under limited circumstances. Also, the Working Group recommended that the formula for the maximum rebuilding time horizon formula should be revised to remove the "discontinuity" that results from the current formula. The Working Group cautioned that proposed revisions to the maximum rebuilding time horizon formula should not be used to justify continued overfishing. It recommended emphasis on current F (preventing overfishing), because F is within our control more so than rate of rebuilding which may vary due to environmental conditions. Also, the Working Group noted that elimination of overfishing is a precursor to rebuilding overfished stocks. The Working Group's recommendations included: Alternative 2.1.2, Alternative 2.2.3, Alternative 2.3.3, Alternative 2.4.2, Alternative 2.5.3, Alternative 2.6.3, Alternative 2.7.3, Alternative 2.8.3, and Alternative 2.9.2.

1.5.3 NMFS recommendations for revisions to the NS1 Guidelines

In addition to the Working Group's recommendations, NMFS considered comments received during the ANPR's comment period, and informal comments received from June 25, 2004 through early October 2004 on the draft codified text for section 600.310 and a preliminary draft of the EA/RIR. NMFS' recommendations include many of the alternatives recommended by the Working Group, and some new or revised alternatives. NMFS' recommendations that are included in this draft environmental assessment/regulatory impact review and proposed rule include: Alternative 2.1.2, Alternative 2.2.2, Alternative 2.3.2, Alternative 2.4.2, Alternative 2.5.2, Alternative 2.6.2, Alternative 2.7.2, Alternative 2.8.2, and Alternative 2.9.2. NMFS revised several of the Working Group's recommendations after further review and consideration of public comments as covered in Alternatives 2.2.2, 2.3.2, 2.5.2, 2.6.2, 2.7.2, and 2.8.2.

NMFS will consider comments on the proposed rule and this draft EA/RIR before implementing any revisions to the NS1 guidelines by a final rule.

2.0 Alternatives

2.1 Terminology. Current NS1 guidelines use the term "threshold" to indicate a property of a control rule that is usually defined as a "limit" in much of the published scientific literature and in various fisheries fora. The word "overfished" is used in both the

Magnuson-Stevens Act and NS1 guidelines to denote a stock or assemblage in need of rebuilding. However, stocks and assemblages can become depleted for reasons other than overfishing. NMFS believes that terminology currently known as MSST, MFMT and overfished should be revised.

2.1.1 Alternative 1 (No action): Retain the terms: overfished (see current section 600.310(d)(1)(iii)), MSST (see current section 600.310(d)(2)(ii)), and MFMT (see current section 600.310(d)(2)(i)). This alternative was not recommended because the United States should conform to current usage elsewhere to avoid confusion and misunderstandings.

2.1.2 Alternative 2 (Proposed): Several terms in the NS1 guidelines should be changed. "Overfished" should be renamed "depleted" (see section 600.310(e)(1)(iii) of the proposed rule), "minimum stock size threshold (MSST)" should be renamed "minimum biomass limit (B_{lim})" (see section 600.310(e)(2)(ii) of the proposed rule), and "maximum fishing mortality threshold (MFMT)" should be renamed "maximum fishing mortality limit (F_{lim})" (see section 600.310 (e)(2)(i) of the proposed rule). Limits should be avoided with high probability. NMFS proposes this alternative over 2.1.1 because it would enable the U.S. to conform to common usage of limits, thresholds and targets by other countries and the scientific community, thus avoiding confusion and misunderstandings.

The use of the term "depleted" rather than "overfished" better reflects the fact that low abundance of a stock is the result of that stock's fishing mortality rate *and* natural mortality rate. Because the term "overfished" implies that a stock is low in abundance mostly or only because of overfishing, it is misleading when some or much of the reduction in a stock's abundance is due to environmental and ecosystem factors. It is difficult to determine the relative contribution of any overfishing compared to environmental and ecosystem factors in causing the depletion of a given fish stock.

2.1.3 Alternative considered but rejected: The fishing mortality reference point should be a *limit*, while the biomass reference point should be a *threshold*. NMFS does not recommend this alternative because it believes that threshold values for F or B should serve as a red flag or warning that a fishery is approaching, but has not reached the minimum biomass limit or the maximum fishing mortality limit. A Council could choose to implement thresholds in addition to the required limits. $B_{threshold}$ would be greater than its corresponding B_{lim}. $F_{threshold}$ would be less than its corresponding F_{lim}.

2.2 Stocks, fisheries and species assemblages. A fishery means one or more stocks of fish that can be treated as a unit for purposes of conservation and management. Fishery management plans (FMPs) are developed to regulate fisheries that have been determined to be in need of conservation and management. Each FMP contains one to several fishery management units (FMUs) and each FMU contains and or affects one to several

stocks. The SDC requirements are intended to apply to the regulated stocks specifically listed in these FMUs. It is only the regulated stocks in the FMUs for which the NS1 requirement to establish MSY, OY and SDC pertain.

In NMFS' 2003 Report to Congress on the Status of U.S. Fisheries, NMFS reported that 503 of the 909 stocks have an unknown status regarding "overfishing," and 541 of 909 stocks have an unknown status regarding "overfished." NMFS receives criticism that the agency's highest priority should be to move as many species as possible from "unknown" to "known" status. However, for the most part, improving quality, frequency, or timeliness of stock assessments for key target species (and other species known to be heavily impacted by fishing) that are often of known status, will likely continue to be a higher priority. For species in an "unknown status," funding and other resources are likely to remain limited for stock assessments and other related studies. Also, the Magnuson-Stevens Act promotes the management of stocks and stock complexes, and the NS1 guidelines state that a stock complex can be managed under SDC, but provides little direct guidance. Therefore, NMFS decided to re-evaluate how to address the management of stock complexes in the NS1 guidelines.

2.2.1 Alternative 1 (No action): Current guidelines use the term "stock or stock complex" to denote that an aggregate or an assemblage of fish (i.e., stock complex) or a single stock of a species can be managed under SDC. Each FMP must specify objective and measurable criteria for each stock or stock complex and provide an analysis for how those SDC were chosen. The current guidelines are problematic when considering a "stock complex" because they do not provide specific guidance as to how to establish SDC for a group of fish stocks.

2.2.2 Alternative 2 (Proposed): The guidelines for NS1 would be revised (see section 600.310(b)(3)(i) and (ii) of the proposed rule) to recommend that each FMP classify regulated stocks *to the extent possible* into two categories: (i) core stocks (which may include key target species, historically-important species that may now be relatively rare, important bycatch species and highly vulnerable species) that have sufficient data, and would be assessed and managed based on individual SDC (F_{lims} and B_{lims}), and MSY and OY control rules to the extent possible, and (ii) stock assemblages that would be assessed and managed based on either aggregate SDC, and MSY and OYs, or stock-specific measures for one or more indicator stocks. It is possible that some stocks having an unknown status would not be assigned to a stock assemblage due to their lack of known conformity with stocks in a given FMP's stock assemblage(s).

An indicator stock, while also considered a core stock because they are SDC-known, serves as the basis of management of a stock assemblage (a group of stocks having an "unknown status" except for any indicator stocks in that assemblage). An indicator stock would occur in the same area as the other members of a stock assemblage and should generally have similar productivity as the other stocks in the assemblage and be caught by the same gear.

Therefore, the proposed alternative is more specific about how to classify stocks and the basis for such a classification than the current guidelines (the no action alternative—2.2.1) that mention "stock or stock complex" but don't provide any basis for classification.

A Council should determine how to partition stocks into "core" and "assemblage" categories. Some cases may be straightforward when the FMP has only one stock; such a stock is a core stock even if good estimates of its SDC are not yet available (e.g., the FMPs for the Deep Sea Red Crab Fishery and the Golden Crab Fishery of the South Atlantic). In other cases, an FMP might be made up of several stocks all of which have SDC and are currently major fisheries (FMP for Summer Flounder, Scup and Black Sea Bass Fisheries); such stocks would also be designated as core stocks. In other cases, an FMP may have *core stocks* and other *stocks having an unknown status* (e.g., Snapper-Grouper FMP for the South Atlantic Region). Some or all of the stocks having an "unknown status" might fit into stock assemblages while some stocks having an "unknown status" may not fit into any stock assemblage. Stocks that have an "unknown status" and don't fit into any stock assemblage in the FMP should still be managed to the extent possible. Stocks not in an assemblage should still have SFA-approved SDC, even though their status related to SDC is unknown. Other stocks may be mentioned and/or listed in the FMP (but not the FMUs) because of interest in data collection for these stocks, their importance to the marine ecosystem, or other reasons not necessarily related to conservation and management.

Unlike in Alternative 2.2.3, several categories of stocks would be exempt from the requirement to specify SDC, including (1) stocks primarily dependent on hatchery production, and (2) stocks listed as "endangered" or "threatened" under the Endangered Species Act (ESA). Stocks that are primarily dependent on hatchery production, such as some Pacific salmon stocks, would not require SDC because they are not primarily dependent on the natural ecosystem production. However, this exemption from NS1 does not exempt fisheries for these hatchery stocks from other national standards. Stocks that are listed as "threatened" or "endangered" under the ESA would be exempt from NS1 guidelines until they are no longer listed. Within one year of de-listing, a stock previously listed under the ESA would become subject to NS1 considerations and a determination of SDC and depletion status would need to be made within one year of de-listing.

NMFS proposes this alternative over Alternative 2.2.1 because this alternative is much more specific in providing clarification of how to manage groups of stocks having an unknown status related to their SDC, and which stocks qualify as exemptions from specification of SDC. NMFS proposes this alternative over Alternative 2.2.3 because it is more specific in covering which stocks are exempt from specification of SDC.

2.2.3 Alternative 3 The guidelines for NS1 would be revised to recommend that each FMP classify all stocks into two categories: (i) core stocks (which may include key target

species, historically-important species that may now be relatively rare, important bycatch species and highly vulnerable species) that have sufficient data, and would be assessed and managed based on individual SDC (F_{lims} and B_{lims}), and MSY and OY control rules, and (ii) stock assemblages that would be assessed and managed based on either aggregate SDC and MSY and OYs, or stock-specific measures for one or more indicator stocks.

An indicator stock, while also considered a core stock because they are SDC-known, serves as the basis of management of a stock assemblage (a group of stocks having unknown status except for any indicator stocks in that assemblage). An indicator stock would occur in the same area as the other members of a stock assemblage and should generally have similar productivity as the other stocks in the assemblage and be caught by the same gear.

Therefore, Alternative 2.2.3 is more specific about how to classify regulated stocks and the basis for such classifications than the current guidelines (the no action alternative--Alternative 2.2.1) that mention "stock or stock complex" but don't provide any basis for classification. However, alternative 2.2.3 is not as practical as Alternative 2.2.2, in terms of guidance provided for stocks of unknown status (i.e., those stocks with unknown status that may not fit into any stock assemblage). Also, unlike Alternative 2.2.2, Alternative 2.2.3 does not provide specific guidance about how to address stocks in FMPs that would be exempt from the requirement to have specified SDC.

2.2.4 Alternatives considered but rejected

2.2.4.1 Alternative 4: Every species has its own SDC and OY.

This alternative would require that every fish stock be assigned an SDC or a proxy value. Proxy values could include landings values, catch per unit effort data, fishery independent data such as abundance surveys, or best estimates available based on consensus of a panel of experts. Although this would be a laudable goal, experience has shown that it is not always possible.

2.2.4.2 Alternative 5. SDC or their proxies should only be required for target species.

This alternative would require that only target species in a fishery be assigned SDC or their proxies.

2.2.4.3 Alternative 6. Each stock assemblage must have estimates for SDC or their proxies for a "strong stock" and a "weak stock".

This alternative would require that all stock assemblages be managed according to at minimum, SDC or their proxies for a strong stock and a weak stock.

2.2.4.4 Alternative 7. Establish a F_{lim} for multispecies assemblages. F_{lim} can be greater than the MSY control rule for minor components of the assemblage as long as it

does not drive any stock in the assemblage below its specific B_{lim}. This approach is not precluded in the Recommended Solution (see proposed action---section 2.2.2).

2.2.4.5 Alternative 8. Manage all multispecies fisheries as assemblages with an overall F_{lim} and B_{lim}, or F_{lims} and B_{lims} based on one or more indicator stocks, except that individual stocks in assemblages must satisfy the current requirements in the NS1 guidelines (e.g., do not become subject to listing under ESA). This alternative was not recommended because it could result in important target species remaining in a depleted state indefinitely, an action that would compromise the long-term benefits to the Nation. If such an action did actually result in increased long-term benefits to the Nation, it would be covered by the mixed species exception contained in the Recommended Solution.

2.2.4.6 Alternative 9. Manage to the weakest stock in an assemblage. Not recommended because this alternative would compromise long-term net benefits to the Nation. However, it is recognized that weak stocks require special consideration and this is included in the Recommended Solution.

2.2.4.7 Alternative 10. Manage to the economically or biologically most important stock in an assemblage. Not recommended because this alternative would likely lead to numerous stocks becoming overfished and likely compromise long-term net benefits to the Nation.

2.2.4.8 Alternative 11. Increase the flexibility of the current "mixed stock exception" in the guidelines. NMFS was unable to determine how to accomplish this objective without compromising the long-term viability of ecologically important stocks and assemblages.

2.3 Fishing mortality limits. Several FMPs or their amendments that were developed to comply with the SFA allow overfishing to continue in the short term as part of an overall rebuilding plan. Nevertheless, efforts to eliminate cases of protracted overfishing should be intensified. Strengthening the requirement to eliminate overfishing conforms to NS1 of the Magnuson-Stevens Act that states, "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."

2.3.1 Alternative 1 (No action): Section 304(e)(4)(A) of the Magnuson-Stevens Act states that for a fishery that is overfished, proposed regulations shall specify a time period for ending overfishing and rebuilding the fishery that shall be as short as possible..." However, the NS1 guidelines do not currently provide guidance as to what, if any circumstances would be sufficient for overfishing to continue in the short term.

2.3.2 Alternative 2 (Proposed): The expectation under this alternative is that F should not be greater than F_{lim} in the first year of any new or revised rebuilding plan. F_{lim} should

remain defined in the same manner as MFMT is in the current NS1 guidelines. However, if overfishing is allowed to continue at the outset of a rebuilding plan due to limited circumstances, the time period specified for ending overfishing shall 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, the interaction of the overfished stock of fish within the marine ecosystem; and 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. Progress towards eliminating overfishing should not await approval of a formal rebuilding plan. For example, the Secretary may promulgate emergency or interim measures to reduce overfishing for any fishery under section 305(c)(1) and (2) of the Magnuson-Stevens Act.

NMFS proposes this alternative because it gives specific guidance lacking in Alternative 2.3.1 about the expectation that overfishing is ended in the first year of a rebuilding plan, and specifies the circumstances (i.e., factors to be taken into account) under which overfishing does not have to be ended in the first year of a rebuilding plan. NMFS proposes this alternative over Alternative 2.3.3, because Alternative 2.3.2 has a direct link to section 304(e)(4)(A) of the Magnuson Stevens Act.

2.3.3 Alternative 3: F_{lim} should remain defined in the same manner as MFMT is in the current guidelines, but where appropriate, requirements for maintaining or reducing F below the F_{lim} should be strengthened to provide a lower tolerance for overfishing. Overfishing should be eliminated as short a time as possible to promote stock rebuilding and prevent further stock depletion. For stocks/fisheries under a rebuilding plan, phase-in periods for reducing F down to the level of the F_{lim} should only be permitted if the following conditions are met: (i) the maximum permissible rebuilding time is no greater than it would have been without the phase-in period, and the (ii) fishing mortality rates must, at least, be reduced by a substantial (e.g., measurable) amount each year. Progress toward eliminating overfishing should not await approval of a formal rebuilding plan.

2.4 Biomass (stock size) limits. Some members of the fishing industry perceive the minimum stock size criterion for compliance with the SFA as a mechanism for unduly restrictive management measures. Others have perceived the minimum stock size criterion as signaling that rebuilding plans may not be required, until stocks have become severely depleted. Also, the current definition of MSST is perceived by some as being too complex, and by others as too restrictive given the variety of life spans and variability in recruitment for various fish stocks. NMFS believes that there is a need to simplify the requirements for specifying and calculating MSST, and emphasize its role as a secondary, rather than a primary consideration, relative to the need to reduce F and end overfishing.

2.4.1 Alternative 1 (No action): Each FMP must specify, to the extent possible, an objective and measurable B_{lim} or B_{lim} proxy for each stock or stock complex (new terms

would be core stock and stock assemblages) covered in the FMP, and provide an analysis of how the B_{lim} or B_{lim} proxy was chosen and how they relate to reproduction potential. The B_{lim} or B_{lim} proxy must be expressed in such a way that enables the Council and the Secretary of Commerce to monitor the stock or stock complex and determine annually whether the stock is overfished. To the extent possible, B_{lim} should be whichever of the following is greater: $\frac{1}{2}B_{msy}$, or the minimum stock size at which rebuilding to B_{msy} would be expected to occur within 10 years while fishing at the F_{lim} level, whichever is greater.

2.4.2 Alternative 2 (Proposed): Each FMP must specify, to the extent possible, an objective and measurable B_{lim} or B_{lim} proxy for each stock or stock complex (new terms would be core stock and stock assemblages) covered in the FMP, and provide an analysis of how B_{lim} or B_{lim} proxy was chosen and how they relate to reproduction potential (*see exceptions described below*). The B_{lim} or B_{lim} proxy must be expressed in such a way that enables the Council and the Secretary of Commerce to monitor the stock or stock complex and determine annually whether the stock is overfished. A B_{lim} or proxy would be required for each individual core stock, and for a stock assemblage at the level of an aggregate number, unless an assemblage is to be evaluated or monitored according to one or more indicator stocks, with limited exceptions (see section 600.310(e)(2)(ii) of proposed rule). The default B_{lim} should be $\frac{1}{2}B_{msy}$, with limited exceptions (see section 600.310(e)(2)(ii)(A) of proposed rule).

A B_{lim} or proxy should always be specified with the following exceptions (see section 600.310(e)(2)(ii)(B) of proposed rule). If an OY control rule is implemented that results in fishing mortality rates at least as conservative as would have been the case if B_{lim} had been used, then explicit *use* of a B_{lim} is not required. Even under these circumstances, use of a B_{lim} is encouraged. If B_{lim} is not specified by a Council explicitly, NMFS, nevertheless, would evaluate B_{lim} for fish stocks managed in a manner described above, to help ensure that the control rule is effective and in line with B_{lim} estimates for the fish stocks. If such a stock were found to fall below $\frac{1}{2}B_{msy}$, NMFS should conduct a scientific evaluation of the adequacy of the OY control rule.

In rare cases, it may be possible to justify a B_{lim} level below $\frac{1}{2}B_{msy}$ (e.g., for stocks with high natural fluctuations that result in biomass frequently falling below $\frac{1}{2}B_{msy}$, even when overfishing does not occur). In this case, it may be reasonable to set the B_{lim} near the lower end of some appropriate range (e.g., the lower 95% confidence interval) of natural fluctuations that should result if a stock assemblage was not subjected to overfishing. On the other hand, the B_{lim} could be set higher than $\frac{1}{2}B_{msy}$ for stocks that are rarely expected to fall below some biomass level appreciably higher than $\frac{1}{2}B_{msy}$.

For short-lived stocks with high annual fluctuations in productivity and abundance, it is permissible to define B_{lim} relative to stock abundance over a multi-year period as is currently done for Pacific salmon (see section 600.310(e)(2)(ii)(D) of proposed rule).

If the Secretary determines that existing data are inadequate for providing an estimate of B_{lim} or reasonable proxy thereof, specification of a B_{lim} is not required and is replaced by the expectation of stricter control of fishing mortality. See Alternative 2.7 for a related issue.

NMFS proposes this alternative over Alternatives 2.4.1 and Alternative 2.4.3, because this alternative simplifies the default value compared to Alternative 2.4.1, and follows the current knowledge of fish population dynamics better than Alternative 2.4.3.

2.4.3 Alternative 3: Set B_{lim} equal to B_{msy} as the default value. This alternative would result in more frequent annual determinations that a stock is depleted and in need of a rebuilding plan because any time a stock's abundance is below B_{msy}, the stock would be "depleted." Stocks vary in abundance from year to year even when they are at, or near B_{msy} due to variation of a number of factors such as production of young related to environmental factors and predators. However, fishery scientists who study population dynamics generally agree that some fluctuation around B_{msy} is natural and not harmful to the stock and ½ B_{msy} is a good default value for management, unless stock-specific data indicates otherwise. Therefore, this alternative was not selected because, in most cases, this would be unnecessarily conservative and would likely result in alternations back and forth between the states of depleted and not depleted (and therefore frequent alternations back and forth between needing a rebuilding plan and not needing a rebuilding plan) to the point that fishery management would not be practical.

2.4.4 Alternatives considered but rejected

2.4.4.1 Alternative 4: Modify the current B_{lim} definition to the greater of ½ of the MSY stock size or the minimum stock size at which rebuilding to the MSY stock size would be expected to occur within 10 years if the stock or stock complex were exploited at the target F appropriate to that biomass level. This is unnecessarily complex, particularly when one considers the details of how to conduct the analysis (e.g., effect of the initial age structure on the result); however, the Recommended Solution would not prevent this approach if desired.

2.4.4.2 Alternative 5. Disassociate the definition of B_{lim} from B_{msy}, particularly in cases where MSY-based reference points cannot be estimated or are unreliable. An example would be adopting B_{lim} approaches as per ICES and NAFO. More analysis is needed to determine the relationship between B_{lim} and B_{msy}. However, the Recommended Solution does not preclude this option.

2.4.4.3 Alternative 6. B_{lim} would not be required for any fisheries. This alternative is not recommended because experience has clearly demonstrated that a B_{lim} is necessary to ensure a rebuilding response if a stock has become depleted. Even in well-managed fisheries, where overfishing is a rare occurrence, there are possibilities of assessment errors or environmental changes that can cause a rapid decrease in the abundance of fish stocks under otherwise good management. Without a B_{lim} to trigger a formal rebuilding

program, remedial management has tended to be late and inadequate. Therefore, at the least, a B_{lim} is needed as a "second line of defense" for a stock or assemblage that has either not been managed so as to prevent overfishing, or has become depleted for other reasons, or a combination of these. If B_{lims} were not required, it would probably be necessary to develop some sort of proxy to use to trigger a rebuilding plan.

2.5 Maximum rebuilding time horizons. The definition of the maximum rebuilding time horizon in the current NS1 guidelines contains an inherent discontinuity because fish stocks having different T_{mins} but the same GT, have a number of stocks with different T_{min} having the *same* T_{max}. T_{min} is defined as the minimum rebuilding time based on number of years it takes to achieve a 50-percent probability that biomass will equal or exceed B_{msy} at least once when F=0. T_{max} is defined as the maximum permissible rebuilding time (see Figure 1).

Section 304(e)(4)(A) of the Magnuson-Stevens Act requires that for an "overfished fishery" the FMP must: "(A) specify a time period for ending overfishing and rebuilding that 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, and (ii) 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 U.S. participates dictate otherwise".

2.5.1 Alternative 1 (no action): The definition of the maximum rebuilding time horizon (T_{max}) in the current guidelines contains an inherent discontinuity. This can be problematic due to biological uncertainties in calculating the minimum time to rebuild. In the current NS1 guidelines, T_{max} may not exceed 10 years if T_{min} is less than 10 years, and T_{max} may not exceed T_{min} plus one GT if T_{min} is greater than or equal to 10 years. The problem is, that this results in a discontinuity in rebuilding times when T_{min} is near 10 years. For example, T_{max} equals 10 years when T_{min} equals 9.5 years, but T_{max} equals 15 years if T_{min} equaled 10.5 years and the GT was five years (Figure 1, Table 1). In the former case, the fishery would need to be nearly ceased for 10 years, but in the latter case some fishing could be allowed. The number of years that the discontinuity occurs for fish stocks of various T_{mins} with the same GT, varies with a value of "GT minus one" years (see Tables 2, 3, and 4).

The best scientific estimate of T_{min} always has a probability distribution due to expected variability in biological stock productivity during the rebuilding period. If the probability distribution is very broad, then continuing with the above example, a T_{min} of 9.5 years could be equivalent to something like a 49-percent chance that T_{min} exceeds 10 years and a T_{min} of 10.5 years could be equivalent to something like a 51-percent chance that T_{min}

exceeds 10 years. This probability distribution for T_{min} is a biological fact and represents the best scientific information. It is not due to inadequate scientific information (and it is unrealistic to expect that we would be able to predict recruitment far into the future). It is an unreasonable use of best scientific information to have a sharp difference between the extreme management response, and the resultant large impact on the fishery, when T_{min} has a 49-percent chance of exceeding 10 years versus the more gradual management response when T_{min} has a 51-percent chance of exceeding 10 years. Accounting for this biological uncertainty in T_{min} requires a smoother transition in T_{max} calculation.

2.5.2 Alternative 2 (proposed): Under the proposed revision to the rebuilding time horizon formula (as described in section 600.310(f)(4)(ii)(B)(*3*) of the proposed rule), if T_{min} plus one GT exceeds 10 years, then T_{max} =T_{min} plus one GT; otherwise, under section 600.310(f)(4)(ii)(B)(*2*) of the proposed rule, T_{max} can be up to 10 years. For example, if T_{min} equals 9.5 years and the GT equals five years, the T_{max} would equal 14.5 years (Figure 1, Table 1). This proposal to smooth the discontinuity would result in some stocks having a longer T_{max}. However, T_{max} is the upper limit for the 50-percent probability of rebuilding. It is expected that the target time to rebuild is sooner than T_{max} so that there is more than a 50-percent probability of rebuilding by the time that T_{max} occurs (see below for discussion of presumptive value for T_{target}).

NMFS proposes this alternative over Alternative 2.5.1, because from a biological and mathematical perspective the new formula makes better sense and the new formula in this alternative would make better use of the best scientific information available (National Standard 2) regarding the biological variability in T_{min}. The current formula for determining the maximum rebuilding time horizon may not be consistent with National Standard 2 in some cases when T_{min} of a fish stock or fish species approaches 10 years. The larger the GT in conjunction with a given set of T_{mins}, the larger the number of years that fall under the discontinuity under the "no action," that no longer fall under the discontinuity under the "proposed action" (see Tables 1, 2, 3, and 4).

Also, under the proposed alternative, NMFS proposes to set a default value for T_{target} midway between T_{min} and T_{max} in cases where the needs of the fishing community merit extending rebuilding beyond T_{min}. This approach recognizes that the best scientific information available typically will not allow precise measurements of the needs of fishing communities or the economic benefits of a particular T_{target} value. The presumptive value would be applied unless specific information is available demonstrating that a different T_{target} (between T_{min} and T_{max}) is appropriate.

2.5.3 Alternative 3: Under the proposed revision to the rebuilding time horizon formula (as described in section 600.310(f)(4)(ii)(B)(*3*) of the proposed rule), if T_{min} plus one GT exceeds 10 years, then T_{max} =T_{min} plus one GT; otherwise, under section 600.310(f)(4)(ii)(B)(*2*) of the proposed rule, T_{max} can be up to 10 years. For example, if

T_{min} equals 9.5 years and the GT equals five years, the T_{max} would equal 14.5 years (Figure 1, Table 1). This proposal to smooth the discontinuity would result in some stocks having a longer T_{max}. However, T_{max} is the upper limit for the 50-percent probability of rebuilding. It is expected that a target time to rebuild be set that is sooner than T_{max} so that there is more than a 50-percent probability of rebuilding by the time that T_{max} occurs.

Therefore, this alternative is more preferable than Alternative 2.5.1. The formula for calculating maximum rebuilding time in this alternative makes better sense and it make better use of the best scientific information available (National Standard 2) regarding the biological variability in T_{min}, whereas the current formula may not follow National Standard 2 in some cases when T_{min} of a fish stock or fish species approaches 10 years. The larger the GT in conjunction with a given set of T_{mins}, the larger the number of years that fall under the discontinuity under the "no action," that no longer fall under the discontinuity under the "proposed action" (see Tables 1, 2, 3, and 4). However, this alternative does not contain the specific guidance contained in Alternative 2.5.2 about the proposed default value for T_{target}.

2.5.4 Alternative 4: Under this alternative, the transition to use of "plus one GT" would be more gradual. For example, when T_{min} is less than 10 years, then only one GT times T_{min} divided by 10 would be added. An even more gradual transition would use T_{min} divided by 20 so that ½ of one GT would be added when T_{min} equaled 10 and it would not be until T_{min} equaled 20 that a full GT would be added when calculating T_{max}. However, NMFS did not choose this alternative because it would require a more complex formula to define the level of T_{max} relative to the level of T_{min}.

2.5.5 Alternatives considered but rejected

2.5.5.1 Alternative 5: Emphasize stock biology constraints rather than the MSA's 10-year guideline by setting T_{max}=2 GT across the board (see response in discussion below for section 2.5).

2.5.5.2 Alternative 6: Emphasize stock biology constraints rather than the MSA's 10-year guideline by setting T_{max}=1.5 GT across the board (see response in discussion below in section 2.5).

2.5.5.3 Alternative 7: Set T_{max}=2 * T_{min} across the board (see response in discussion below in section 2.5).

2.5.5.4 Alternative 8: Set T_{max}=T_{min} plus p* GT, where p is <1 (see response in discussion below in section 2.5).

2.5.5.5 Alternative 9: Set T_{max}=the time it takes to rebuild if fishing at a constant rate of ½F_{msy} across the board. Not recommended for severely depleted stocks where

depleted stocks where depensatory effects may be important, ½F_{msy} may not be low enough to enable the stock to rebound above the depensatory threshold, below which its long-term viability is jeopardized. (Also see response in discussion below in section 2.5.

2.5.5.6 Alternative 10: If T_{min} is greater than 10, then T_{max}= 10 plus 2*(T_{min}-10); i.e., 2 rebuilding years are allowed for each year greater than 10 that it would take to rebuild at F=0.0. There is no need to invoke GT, and the discontinuity problem is reduced. This alternative is not recommended because while the discontinuity is not as strong as it is in the current NS1 guidelines, it still exists (also see Response in discussion below in section 2.5)

2.5.5.7 Alternative 11: T_{min} is defined based on minimum feasible levels of F, rather than F=0.0. This alternative is not recommended because any definition of "minimum feasible levels" would be too subjective. Zero F should mean zero F. In any case, T_{min} is only one part of the calculation of T_{max}. The Recommended Solution would generally result in rebuilding F greater than zero.

Discussion for section 2.5: There are many possible variations to the alternatives that were considered but rejected, a number of which were discussed by the Working Group. However, they can all be boiled down to alternatives that contain one or both of T_{min} and life history parameters. Inclusion of the T_{min} makes the T_{max} responsive to the degree of depletion and the expected rate of recovery. Inclusion of the GT allows the T_{max} to be responsive to the life span of the subject stock. Both are highly relevant factors to consider, although alternatives that contain T_{min} are problematic because each new stock assessment is likely to result in a new estimate of this quantity due to changes that have accrued with stock size and age distribution since the last assessment, and other factors.

2.6 Rebuilding targets. Under the current guidelines, once a stock has been declared overfished, it must be rebuilt back to at least B_{msy} before it is declared rebuilt and no longer requires a rebuilding plan. NMFS recognizes that data are sometimes insufficient to accurately estimate the rebuilding target (B_{msy}) or the minimum time to reach this target (T_{min}); therefore, alternative approaches are needed for developing rebuilding plans in these situations.

2.6.1 Alternative 1 (no action): Currently, the NS1 guidelines do not offer alternative methods to conclude that a stock is rebuilt when biomass-based values are unknown for a given stock. Without such alternative methods, some fish stocks may have little or no management associated with them in terms of rebuilding because managers are not sure what objectives they should choose as the basis of management.

2.6.2 Alternative 2 (proposed): When the Secretary determines that there are inadequate data to estimate biomass-based reference points reliably, it would be permissible to use appropriate F_{target} values (not to be exceeded) in place of biomass-based reference points

for *managing rebuilding* in certain situations, as described in section 600.310(f)(3)(v) of the proposed rule. For example, when there are inadequate data to estimate T_{min} and/or a B_{msy} rebuilding target reliably, but the available quantitative and qualitative evidence suggests that a core stock or stock assemblage is sufficiently depleted that it requires rebuilding, then F_{lim} can be used as follows: As long as the average F has been *substantially* below F_{lim} for at least two GT, it would be reasonable to declare a core stock or stock assemblage to be rebuilt, if there is no other scientific evidence that the stock's biomass is still depleted. Absent a stock-specific analysis demonstrating the level of F that would be most effective at rebuilding the stock in as short a time as possible, the default level for substantially below F_{lim} should be set at 75 percent of F_{lim}.

NMFS proposes this alternative rather than Alternative 2.6.1 because it provides a reasonable method for rebuilding stocks when F_{lim} or a proxy is known but B_{lim} or a proxy for the same stock is unknown. NMFS proposes this alternative rather than Alternative 2.6.3, because setting the rebuilding F much closer to F_{lim}, rather than at 75 percent of F_{lim}, would do little to explicitly rebuild the stock in as short a time as possible. Even healthy stocks are expected to have some buffer between F_{lim} and F_{target}, so it is reasonable to require an explicit buffer for stocks on rebuilding plans. Although the Working Group did not recommend this option, NMFS believes that a default buffer level is preferable to remaining silent with regard to the buffer.

2.6.3 Alternative 3: When the Secretary determines that there are inadequate data to estimate biomass-based reference points reliably, it would be permissible to use appropriate Fs as proxies for *managing rebuilding* in certain situations. For example, when there are inadequate data to estimate T_{min} and/or a B_{msy} rebuilding target reliably, but the available quantitative and qualitative evidence suggests that a core stock or stock assemblage is sufficiently depleted that it requires rebuilding, then F_{lim} can be used as follows: As long as the average F has been below F_{lim} for at least two GT, it would be reasonable to declare a core stock or stock assemblage to be rebuilt, if there is no other scientific evidence that the stock's biomass is still depleted.

2.6.4 Alternative considered but rejected

2.6.4.1 Alternative 4: The rebuilding F must result in at least a 95-percent probability of annual increases in stock size for the foreseeable future (e.g., over the next ten years). This alternative is not recommended because a requirement for stock increases in each and every year might require an unnecessarily restrictive rebuilding F due to natural variation in stock size, particularly if it is known that one or more poor year classes will soon recruit to the stock.

2.7 Revision of rebuilding plans. Rebuilding plans may need to be revised because the actual rate of rebuilding deviates substantially from the expected rate of rebuilding, or new estimates of rebuilding parameters (e.g., the stock's SDC, B_{msy}, T_{min}, or T_{max}) are substantially different than those currently being used for management of the stock.

2.7.1 Alternative 1 (no action): The Magnuson-Stevens Act requires that progress towards ending overfishing and rebuilding affected fish stocks be evaluated for adequacy at least every two years, but does not define "adequate progress." Current guidelines do specify procedures to follow when rebuilding plans require revision after initiation. Current guidelines also do not specify what steps should be taken when a fish stock is not rebuilt at the end of its rebuilding plan.

2.7.2 Alternative 2 (proposed alternative): Fishing mortality targets and other measures of progress in rebuilding a core stock or stock assemblage are expected to be achieved, on average, over the rebuilding period. Rebuilding plans need not be adjusted in response to each minor stock assessment update. This is especially true when initial rebuilding plans have target times to rebuild that are sooner than the maximum permissible time to rebuild, thereby providing a buffer to absorb some slower than anticipated pace of rebuilding.

If rebuilding occurs substantially faster or slower than expected (but estimates of stock assessment parameters and variables have not been substantially modified based on a new or revised stock assessment), NMFS recommends that the NS1 guidelines provide the following (see section 600.310(f)(5)(ii) of the proposed rule). First, if rebuilding proves to have occurred substantially faster than initially projected, then the rebuilding plan should be maintained in order to rebuild in as short a time as possible. Second, if rebuilding proves to have occurred substantially slower than expected, then the rebuilding plan should be revised, by reducing the rebuilding $F_{targets}$, and/or lengthening the rebuilding time horizon. Reduction in rebuilding Ftarget would better achieve the goal of rebuilding in as short a time as possible, while lengthening the rebuilding time horizon may address the short-term needs of the fishing community better.

If estimates of rebuilding parameters have been substantially modified based on a new or revised stock assessment, NMFS recommends that NS1 guidelines should also provide the following. First, if new estimates of stock abundance or rebuilding targets change in such a way as to suggest that increased F would be consistent with rebuilding within the specified time horizon, then the rebuilding plan may be maintained or be revised by increasing the rebuilding $F_{targets}$ and/or shortening the rebuilding time horizon. The benefits of such changes need to be considered in the context of the possibility of the need for future changes in the opposite direction. Second, if estimates of stock abundance or rebuilding parameters change in such a way as to suggest that substantial reductions in F would be necessary to rebuild the core stock or stock assemblage within the specified time horizon, and if rebuilding targets have been achieved, then the rebuilding plan should be revised by reducing the rebuilding $F_{targets}$ and/or lengthening the rebuilding time horizon. If the current rebuilding $F_{targets}$ have been exceeded, the current T_{max} must be maintained, and future $F_{targets}$ must be reduced to the extent necessary to compensate for previous overruns (years when F_{target} was exceeded).

Stocks that are no longer overfished, but not yet rebuilt at the end of T_{max}. If at the end of the T_{max}, the stock has not rebuilt to B_{msy}, then the rebuilding F cannot be increased until the stock is rebuilt. Further, if the rebuilding F is at F_{lim} and the stock has not rebuilt by T_{max}, then the rebuilding F should be reduced to 75 percent of F_{lim} until the stock is considered rebuilt. NMFS believes that rebuilding needs to continue in these instances until B_{msy} is reached so that the Magnuson-Stevens Act's objectives of restoring the capacity of the stock to produce MSY and attaining OY for a given fishery are met.

NMFS proposes this alternative rather than alternative 2.7.1 because this alternative gives general guidance about what kinds of steps to take when revising a rebuilding plan due to substantially different rates of rebuilding compared to expected rates of rebuilding in a rebuilding plan. It also describes steps to take when new estimates of rebuilding parameters become available that are substantially different than the current rebuilding parameters. NMFS proposes this alternative rather than alternative 2.7.3 because this alternative also addresses how to manage stocks that are no longer overfished, but not yet rebuilt at the end of T_{max}.

2.7.3 Alternative 3 (Same alternative as Alternative 2.7.2 except no guidance on how to manage stocks that are no longer overfished, but not yet rebuilt at the end of Tmax). Fishing mortality targets and other measures of progress in rebuilding a core stock or stock assemblage are expected to be achieved, on average, over the rebuilding period. Rebuilding plans need not be adjusted in response to each minor stock assessment update. This should be especially true when initial rebuilding plans have target times to rebuild that are sooner than the maximum permissible time to rebuild, thereby providing a buffer to absorb some slower than anticipated pace of rebuilding.

If rebuilding occurs substantially faster or slower than expected (but estimates of stock assessment parameters and variables have not been substantially modified based on a new or revised stock assessment), NMFS recommends that the NS1 guidelines provide the following (see section 600.310(f)(5)(ii) of the proposed rule). First, if rebuilding proves to have occurred substantially faster than initially projected, then the rebuilding plan should be maintained in order to rebuild in as short a time as possible. Second, if rebuilding proves to have occurred substantially slower than expected, then the rebuilding plan should be revised, by reducing the rebuilding $F_{targets}$, and/or lengthening the rebuilding time horizon.

If estimates of rebuilding parameters have been substantially modified based on a new or revised stock assessment, NMFS recommends that NS1 guidelines should also provide the following. First, if new estimates of stock abundance or rebuilding targets change in such a way as to suggest that increased F would be consistent with rebuilding within the specified time horizon, then the rebuilding plan may be maintained or be revised by increasing the rebuilding $F_{targets}$ and/or shortening the rebuilding time horizon. The

benefits of such changes need to be considered in the context of the possibility of the need for future changes in the opposite direction. Second, if estimates of stock abundance or rebuilding parameters change in such a way as to suggest that substantial reductions in F would be necessary to rebuild the core stock or stock assemblage within the specified time horizon, and if rebuilding targets have been achieved, then the rebuilding plan should be revised by reducing the rebuilding $F_{targets}$ and/or lengthening the rebuilding time horizon. If the current rebuilding $F_{targets}$ have been exceeded, the current T_{max} must be maintained, and future $F_{targets}$ must be reduced to the extent necessary to compensate for previous overruns (years when F_{target} was exceeded).

2.7.4 Alternative considered but rejected
Regarding the situation where rebuilding has occurred substantially faster than expected: If rebuilding proves to have occurred substantially faster than initially projected, it is permissible to either retain the current rebuilding time horizon and increase the former F to meet it, or keep the current F and shorten the time horizon accordingly. This alternative is not recommended. Rebuilding F should not be increased just because, for example, there has been a run of fortuitously good recruitments. A run of poor recruitments may follow and the rate of rebuilding will fall behind schedule. It is important to remember that rebuilding projections are usually averages or medians of a large number of alternative plausible scenarios.

2.8 OY (Target) control rules. Many of the stocks in current FMPs have OY control rules and MSY control rules that result in the same amount of harvest of a given stock. Some OY control rules result in the same annual harvest of a stock as its corresponding MSY control rule; other current OY control rules result in a smaller annual harvest than their corresponding MSY control rule. Some fish stocks that have not been assigned control rules have inadequate data for specifying an OY control rule. Other fish stocks that have not yet been assigned an OY control rule appear to have sufficient data to specify one.

2.8.1 Alternative 1 (No action): Current NS1 guidelines state that annual target harvest levels *may* be prescribed on the basis of an OY control rule similar to an MSY control rule, but designed to achieve OY on average instead of MSY (see section 600.310(f)(4)(i) of the current NS1 guidelines). Current guidelines also state that each FMP *should* include an estimate of MSY (and therefore, an MSY control rule–see section 600.310(c)(1)(ii) of current NS1 guidelines).

2.8.2 Alternative 2 (Proposed): OY target control rules must be developed and satisfy the condition that they are less than the MSY control rule over their entire range, *unless inadequate data is associated with a fishery*. Under this alternative, an OY control rule is required, except in limited circumstances, as described in section 600.310(d)(4)(i) of the proposed rule. The OY control rule sets the target level for the fishery and should result in less annual harvest than its associated MSY control rule. It is intended to be achieved on average; e.g., with a 50-percent probability.

Currently, NMFS allows OY control rules to be at the same level as MSY control rules. When the OY control rule equals the MSY control rule, there is a 50-percent chance that overfishing would occur each year. Upon further consideration, NMFS does not believe that allowing OY control rules to equal MSY control rules would adequately prevent overfishing. Therefore, NMFS proposes this alternative rather than the "no action" alternative (Alternative 2.8.1).

NMFS proposes this alternative rather Alternative 2.8.3 because some fish stocks would likely not have sufficient data associated with them to be assigned an OY control rule that is less than its corresponding MSY control rule.

2.8.3 Alternative 3: OY target control rules must be developed and must satisfy the condition that they are less than the MSY control rule over their entire range. The requirement for a MSY control rule that sets the limit of F_{lim} needs to strengthened. The requirement for an OY control rule needs to be changed from "may" to "must" as described in section 600.310(d)(4)(i) of the proposed rule. The OY control rule sets the target level for the fishery. It is intended to be achieved on average; e.g., with a 50-percent probability. Setting the OY control rule below the F_{lim} means that there would be at least a 50-percent chance of not exceeding the F_{lim} due to uncertain assessments and imprecise fishery management controls. Under this alternative, there would be no exceptions for fish stocks with insufficient data.

2.9 International fisheries. Several Magnuson-Stevens Act requirements and NS1 guidelines (particularly responsibility for determining overfished status, the need for rebuilding plans, and the process for implementing rebuilding plans) are difficult to apply in international fisheries for straddling stocks, and for highly migratory species (HMS) such as tuna, swordfish, marlins and sharks. The greatest difficulties arise in cases where (i) there is no responsible international authority, and (ii) the U.S. catches only a small portion of a stock or assemblage.

2.9.1 Alternative 1 (No Action): Currently, the NS1 guidelines state the following regarding fisheries managed under international agreement: "For fisheries managed under an international agreement, Council action must reflect traditional participation in the fishery, relative to other nations, by fishermen of the United States."

2.9.2 Alternative 2 (Proposed): Under section 600.310(f)(4)(iii) of the proposed rule, revised guidelines for "Fisheries managed by the United States and other nations" would: (i) generally rely on international organizations in which the U.S. participates to determine the status of HMS stocks or assemblages under their purview, including specification of status determination criteria and the process to apply to them; (ii) if the international organization in which the U.S. is a participant does not have a process for developing a formal plan to rebuild a specific overfished HMS stock or assemblage, use the Magnuson-Stevens Act process for development of a rebuilding plan by a regional fishery management council or NMFS to be promoted in the international organization or

arrangement; and (iii) to develop appropriate domestic fishery regulations to implement internationally agreed upon measures or appropriate U.S. fishery measures consistent with a rebuilding plan giving due consideration to the position of the U.S. domestic fleet relative to other participants in the fishery.

3.0 Description of the affected environment

3.1 Biological environment--Description of the stocks.

Stocks that would or could eventually be affected by any changes to the guidelines for National Standard 1 include stocks within the FMUs for FMPs already implemented by final rule and FMPs under Secretarial review for possible approval. Also, stocks being contemplated for management by the various fishery management councils could also be affected by the current guidelines or any changes to the NS1 guidelines. This is because the SDC (i.e., depleted and overfishing) chosen for a stock will affect the OY and, if necessary, the rebuilding plan chosen and what management measures are used in the fishery for that stock.

Sometimes "Species" is equivalent to a "stock" within a given FMP; some species have more than one stock for a given FMP. The management unit for some stocks managed under an FMP often range beyond the normal jurisdiction of a given regional fishery management council. For example, the bluefish and spiny dogfish stocks managed by the Mid-Atlantic Council actually range as far north as the New England Council jurisdiction and as far south as the South Atlantic Council's jurisdiction.

The status information for overfished and overfishing for various stocks is described in NMFS 2003 Report to Congress: Status of U.S. Fisheries (issued May 2004). Stocks that are currently overfished or undergoing overfishing are also listed in Appendices 2 through 7 of this analysis for proposed revisions for NS1. These appendices are taken from the NMFS 2003 Report to Congress: Status of the U.S. Fisheries (May 2004).

The NMFS 2003 Report defines "major" stocks as those with total landings in 2001 (commercial and recreational) equaling or exceeding 200,000 pounds. For "minor" stocks, total landings in 2001 were less than 200,000 pounds. Most of the major stocks in the NMFS 2003 Report would be classified as "core stocks" that are SDC-known. Some of the minor stocks are SDC-known, but most of the minor stocks have an unknown status related to SDC and could be classified as stocks in a stock assemblage other than indicator stocks, or stocks having an unknown status that cannot yet be assigned to a stock assemblage. Brief descriptions of overfished and overfishing definitions for most stocks or groups of fish stocks approved under the SFA are listed by FMP in the NMFS 2003 Status of U.S. Fisheries Report (May 2004).

The original FMPs and their associated FMP amendments contain detailed descriptions of the biological environment of species and stocks in the FMPs' FMU and life history of those species and stocks; therefore that information is not repeated here. Copies of FMPs and their Amendments are available from their respective Councils. Addresses of the

Councils and NMFS' Office of Sustainable Fisheries that is responsible for management of Atlantic HMS, on behalf of the Secretary of Commerce are listed in Appendix 8.

As of June 3, 2005, FMPs were approved or partially approved, and in most cases implemented, as listed by Council or the Secretary of Commerce for Atlantic HMS in sections 3.1.1 through 3.1.10.

3.1.1 New England FMC
3.1.1.1 Northeast Multispecies Fishery FMP - refer to Amendment 13.
3.1.1.2 Atlantic Sea Scallop FMP – refer to Amendment 10.
3.1.1.3 Atlantic Salmon FMP – refer to Amendment 1.
3.1.1.4 Atlantic Monkfish FMP – refer to the FMP.
3.1.1.5 Atlantic Herring FMP – refer to the FMP.
3.1.1.6 Atlantic Deep-Sea Red Crab – refer to the FMP.
3.1.1.7 Skates of the Northeast Region FMP –refer to the FMP.

3.1.2 Mid-Atlantic FMC
3.1.2.1 Atlantic Mackerel, Squids, and Butterfish FMP – refer to Amendment 8.
3.1.2.2 Atlantic Surf Clams and Ocean Quahogs – refer to Amendment 13
3.1.2.3 Summer Flounder, Scup, and Black Sea Bass – refer to Amendments 12 and 13.
3.1.2.4 Atlantic Bluefish – refer to Amendment 1.
3.1.2.5 Spiny Dogfish – refer to the FMP.
3.1.2.6 Golden Tilefish – refer to the FMP.

3.1.3 South Atlantic FMC
3.1.3.1 Snapper-Grouper Fishery of the South Atlantic Region – refer to Amendment 10.
3.1.3.2 Atlantic Coast Red Drum FMP – refer to Amendment 1.
3.1.3.3 FMP for the Shrimp Fishery - refer to Amendment 3.
3.1.3.4 FMP for Coral, Coral Reefs, and Live Hard Bottom Habitats of the South Atlantic Region – refer to Amendment 4.
3.1.3.5 FMP for the Golden Crab Fishery of the South Atlantic – refer to the FMP.
3.1.3.6 FMP for Pelagic Sargassum Habitat of the South Atlantic Region – refer to the FMP.
3.1.3.7 FMP for the Dolphin and Wahoo Fishery of the South Atlantic – refer to the FMP.

3.1.4 South Atlantic FMC and Gulf of Mexico FMC (Joint FMPs)
3.1.4.1 FMP for the Spiny Lobster Fishery of the Gulf of Mexico and South Atlantic – refer to Amendment 5.
3.1.4.2 FMP for Coastal Migratory Pelagic Resources of the Gulf of Mexico and South Atlantic – refer to Amendment 10.

3.1.5 Gulf of Mexico FMC

3.1.5.1 FMP for Coral, and Coral Reefs Management of the Gulf of Mexico – refer to the FMP.
3.1.5.2 FMP for the Red Drum Fishery – refer to the FMP.
3.1.5.3 FMP for the Stone Crab Fishery – refer to the FMP and Amendment 1.
3.1.5.4 FMP for the Shrimp Fishery of the Gulf of Mexico – refer to the FMP and Amendment 1
3.1.5.5 FMP for the Reef Fish Resources of the Gulf of Mexico – refer to the FMP and Amendment 1

3.1.6 Caribbean FMC
3.1.6.1 FMP for the Spiny Lobster Fishery of Puerto Rico and the U.S. Virgin Islands – refer to the FMP
3.1.6.2 FMP for the Shallow Water Reeffish Fishery of Puerto Rico and the U.S. Virgin Islands – refer to the FMP.
3.1.6.3 FMP for Corals and Reef Associated Invertebrates of Puerto Rico and the U.S. Virgin Islands – refer to the FMP.
3.1.6.4 FMP for the Queen Conch Resources of Puerto Rico and the U.S. Virgin Islands – refer to the FMP.

3.1.7 Pacific Fishery Management Council
3.1.7.1 Pacific Coast Groundfish FMP – refer to Amendment 11
3.1.7.2 FMP for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California – refer to Amendment 14.
3.1.7.3 Coastal Pelagic Fisheries FMP – refer to Amendment 8.
3.1.7.4 FMP for West Coast Fisheries for Highly Migratory Species – refer to the FMP.

3.1.8 Western Pacific FMC
3.1.8.1 FMP for Crustacean Fisheries of the Western Pacific region – refer to Amendment 9.
3.1.8.2 FMP for Precious Corals Fisheries of the Western Pacific Region – refer to Amendment 4.
3.1.8.3 FMP for Bottomfish and Seamount Groundfish Fisheries – refer to Amendment 6.
3.1.8.4 FMP for Pelagic Fisheries of the Western Pacific Region – refer to Amendment 8.
3.1.8.5 FMP for Coral Reef Ecosystems of the Western Pacific Region – refer to the FMP.

3.1.9 North Pacific FMC
3.1.9.1 FMP for Groundfish Fishery of Bering Sea and Aleutian Islands – refer to Amendment 55.
3.1.9.2 FMP for Groundfish Fishery of the Gulf of Alaska – refer to Amendment 55.
3.1.9.3 FMP for Bering Sea and Aleutian Islands King and Tanner Crab Fishery – refer to Amendment 8.

3.1.9.4 FMP for the Weathervane Scallop Fishery off Alaska – refer to Amendment 5.
3.1.9.5 FMP for High Seas Salmon – refer to Amendment 5.

3.1.10 Secretary of Commerce
3.1.10.1 FMP for Atlantic Tunas, Swordfish and Sharks – refer to the FMP and Amendments 1 and 2.
3.1.10.2 FMP for Atlantic Billfishes – refer to the FMP and Amendment 1.

3.2 Physical environment. The physical environment for each of the aforementioned fisheries is described in their respective FMPs. The Councils and the Secretary of Commerce are required by the Magnuson-Stevens Act to describe and identify essential fish habitat (EFH) for each of the fisheries being managed in the EEZ, and to 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. The identification and designation of EFH for each of the following FMPs is contained in the following FMP amendments (or the original FMP itself):

3.2.1 New England FMC
3.2.1.1 Northeast Multispecies - Amendment 11(approved 3/8/99)
3.2.1.2 Atlantic Sea Scallops - Amendment 9 (approved 3/8/99)
3.2.1.3 Atlantic Salmon - Amendment 1 (approved 3/8/99)
3.2.1.4 Monkfish - Amendment 1 (approved 4/22/99)
3.2.1.5 Atlantic Herring - Amendment 1 (approved 10/27/99)
3.2.1.6 Atlantic Deep Sea Red Crab - the FMP itself (effective 10/21/02)
3.2.1.7 Skates of the Northeast Region - the FMP itself (effective 9/18/03)

3.2.2 Mid-Atlantic FMC
3.2.2.2 Atlantic Mackerel, Squids and Butterfish - Amendment 8 (approved EFH designations on 4/28/99; disapproved fishing impacts on EFH)
3.2.2.3 Atlantic Surf Clams and Ocean Quahogs - Amendment 12 (approved 4/28/99; disapproved fishing impacts on EFH)
3.2.2.4 Summer Flounder, Scup, and Black Sea Bass - Amendment 12 (approved 4/28/99; disapproved fishing impacts on EFH); Amendment 13 addressed fishing impacts on EFH (effective 3/31/03)
3.2.2.5 Atlantic Bluefish - Amendment 1 (approved EFH designations on 7/29/99; disapproved fishing impacts on EFH)
3.2.2.6 Spiny Dogfish - the FMP itself (approved on 9/29/99)
3.2.2.7 Golden Tilefish (Mid Atlantic Region) - the FMP itself (approved on 5/10/01 and effective on 11/1/01)

3.2.3 South Atlantic FMC
3.2.3.1 Snapper-Grouper - Amendment 10 (approved 6/3/99)
3.2.3.2 Atlantic Coast Red Drum - Amendment 1 (approved 6/3/99)

3.2.3.3 Shrimp Fishery of the South Atlantic Region - Amendment 3 (approved 6/3/99)
3.2.3.4 Coral, Coral Reefs, and Live Hard Bottom Habitats of the South Atlantic Region - Amendment 4 (approved 6/3/99)
3.2.3.5 Golden Crab of South Atlantic Region - Amendment 1 (approved 6/3/99)
3.2.3.6 Pelagic Sargassum Habitat of the South Atlantic Region - the FMP itself (effective 11/03/03)
3.2.3.7 Dolphin and Wahoo Fishery of the Atlantic - the FMP itself - approved 12/23/03

3.2.4 South Atlantic and Gulf of Mexico FMCs (joint)
3.2.4.1 Spiny Lobster Fishery of the Gulf of Mexico and South Atlantic - Amendment 5 (approved on 6/3/99)
3.2.4.2 Coastal Migratory Pelagic Resources of the Gulf of Mexico and South Atlantic (king mackerel, Spanish mackerel, cobia, dolphin, bluefish, and little tunny) - Amendment 10 (approved on 6/3/99)

3.2.5 Gulf of Mexico FMC
3.2.5.1 Coral and Coral Reefs Management of the Gulf of Mexico - approved 2/8/99
3.2.5.2 Red Drum Fishery of the Gulf of Mexico - red drum: approved 2/8/99
3.2.5.3 Stone Crab Fishery of the Gulf of Mexico - stone crab: approved 2/8/99
3.2.5.4 Shrimp Fishery of the Gulf of Mexico - brown, white, pink, and royal red shrimp: approved 2/8/99
3.2.5.5 Reef Fish Resources of the Gulf of Mexico - red grouper, gag, scamp, black grouper, red snapper, vermilion snapper, gray snapper, yellowtail snapper, lane snapper, greater amberjack, lesser amberjack, tilefish, gray triggerfish: approved 2/8/99

3.2.6 Caribbean FMC
3.2.6.1 Spiny Lobster Fishery of Puerto Rico and U.S. Virgin Islands - spiny lobster: approved 2/8/99
3.2.6.2 Shallow Water Reeffish Fishery of Puerto Rico and the U.S. Virgin Islands - coney, red hind, Nassau grouper, mutton snapper, schoolmaster, gray snapper, silk snapper, yellowtail snapper, white grunt, banded butterfly fish, queen triggerfish, squirrelfish, sand tile fish, redtail parrotfish: approved 2/8/99
3.2.6.3 Corals and Reef Associated Invertebrates of Puerto Rico and U.S. Virgin Islands - approved 2/8/99
3.2.6.4 Queen conch Resources of Puerto Rico and U.S. Virgin Islands - queen conch: approved 2/8/99

3.2.7 Pacific FMC
3.2.7.1 Pacific Coast Groundfish - Amendment 11 (approved 3/3/99)
3.2.7.2 Ocean Salmon - Amendment 14 (approved 9/27/00)
3.2.7.3 Coastal Pelagics - Amendment 8 (approved 6/10/99)
3.2.7.4 West Coast Fisheries for Highly Migratory Species - the FMP itself (approved 2/4/04)

3.2.8 Western Pacific FMC
3.2.8.1 Crustacean Fisheries of Western Pacific Region - Amendment 9 (approved 2/3/99)
3.2.8.2 Precious Corals Fisheries of the Western Pacific Region - Amendment 4 (approved 2/3/99)
3.2.8.3 Bottomfish and Seamount Groundfish Fisheries - Amendment 6 (approved 2/3/99)
3.2.8.4 Pelagic Fisheries of Western Pacific Region - Amendment 8 (approved 2/3/99)
3.2.8.5 Coral Reef Ecosystems of the Western Pacific Region - the FMP itself (approved 6/14/02)

3.2.9 North Pacific FMC
3.2.9.1 Groundfish Fishery of the Bering Sea and Aleutian Islands (BSAI)- Amendment 55 approved on 1/20/99
3.2.9.2 Groundfish Fishery of the Gulf of Alaska - Amendment 55 approved on 1/20/99)
3.2.9.3 BSAI King and Tanner Crab Fishery -Amendment 8 approved on 1/20/99)
3.2.9.4 Weathervane Scallop Fishery off Alaska - Amendment 5 approved 1/20/99
3.2.9.5 High Seas Salmon -Amendment 5 approved 1/20/99

3.2.10 Secretary of Commerce
3.2.10.1 Atlantic Tuna, Swordfish and Shark Fisheries - the FMP's final rule was published in May 1999. The final rule for Amendment 1 to the FMP was published in December 2003. Amendment 1 included updated EFH identifications for five species of sharks (approved 4/15/99).
3.2.10.2 Atlantic Billfish Fisheries - the final rule for Amendment 1 that identified EFH for billfishes was published in May 1999 (approved 4/15/99).

4.0 Environmental consequences.

If the proposed revisions to the NS1 guidelines become effective through a final rule, there would not be any immediate biological, economic, social impacts, or impacts on the physical environment (i.e., 30 days after the publication date of the final rule in the Federal Register). Also, it is not likely that there would be any biological, economic, social impacts, or impacts on the physical environment within the first year, or so, after the effective date of the final rule. For the purposes of evaluating cumulative impacts, NMFS considers the aforementioned time period as part of "present actions" related to the proposed revisions to NS1 guidelines in this action.

Biological, and economic impacts; and impacts on the physical environment *"in the longer term"* in this section are covered qualitatively and listed in Tables 5, 6, and 7 (Parts 1 and 2 for each Table); nevertheless, it is difficult to predict when revisions to various FMPs would occur. NMFS believes that social impacts "*in the longer term*" will closely follow the qualitative designation for economic impacts in Table 7 (Parts 1 and 2). The lack of knowledge about which FMPs (or which fish stocks in an FMP for those containing more than one stock) would

actually be affected by the proposed revisions, and when, makes any discussion of any impacts on individual fishing communities especially problematic. For example, different communities might be affected differently by a given action (e.g., a revised rebuilding plan for a given stock in the Northeast multispecies fishery). "*In the longer term*" means effects that could begin in 1½ to 2 years as a result of future fishery management actions that rely to some extent on the revised NS1 guidelines and should not be confused with "long-term effects." "Long-term effects or impacts" relate more to duration of the effects or impacts (e.g., the effects or impacts would continue for a longer period of time than one year or an annual specification cycle).

The following provides an example of why it is difficult to predict actual impacts "in the longer term." Following the effective date of the final rule, if an FMP amendment or other regulatory action contains a first-time rebuilding plan, then the SDC-known stocks would need MSY and OY control rules, and the OY control rules should be less than their respective MSY control rules, if adequate data exists (see exceptions to this statement in section 1.1.3 for actions already initiated and beyond a certain point of preparation by the Councils). An analyst would need to consider the stock abundance, the abundance of related stocks in the fishery, the current number of participants in the fishery, and other fisheries that those vessel owners, dealers and processors participate in. Such information could change substantially over a period of years yielding much different results (i.e., impacts).

A new FMP or an FMP amendment, on average, would not begin to have any impacts until approximately 1½ to 2 years after the effective date of the final rule for revisions to NS1 guidelines. This is because most new FMPs and FMP amendments take more than one year to prepare and complete, before being submitted by the Councils for Secretarial review, and most FMP amendments, if approved, take about five more months for the final rule to become effective after Secretarial review begins. Not only that, but some FMP amendments may have little or no impacts on an FMP's SDC or rebuilding plans. For example, an FMP amendment that establishes a limited access program for a fishery might not affect any SDC, rebuilding plans or OY control rules for the various fish stocks in the FMP. In some cases, FMP amendments that established first-time rebuilding plans for a fish stock did not require any new management measures. The FMP amendments that established rebuilding plans for Gulf of Mexico (GOM) greater amberjack (Secretarial Amendment 2 to the GOM Reef Fish Resources FMP) and GOM red snapper (Amendment 22 to the GOM Reef Fish Resources FMP) evaluated existing management measures and determined that they were consistent with the initial phases of the rebuilding plans in those FMP amendments. Therefore, when those rebuilding plans were implemented, no new measures were needed.

In Tables 5-7 (Parts 1 and 2 for each table), many of the SDC-known stocks in a given FMP may actually be unaffected by the proposed revision, especially the ones that are not overfished or not undergoing overfishing. In such cases, the impact listed is ***italicized*** if the specific proposed revision is likely to affect a minority of stocks in the FMP.

4.1 Biological impacts. Refer to Table 5 (Parts 1 and 2) for qualitative summaries of estimated biological impacts of alternatives (other than for Terminology) "*in the longer term*" (beginning 1½ to 2 years and beyond) by FMP.

4.1.1 Terminology. See section 2.1.

4.1.1.1 No action alternative:
See section 2.1.1. Overfished and overfishing definitions and rebuilding plans would not be affected if the no action alternative were adopted (i.e., current terminology is retained). Keeping the terms "overfished," "minimum stock size threshold" and "maximum fishing mortality threshold" would have no biological effect on target and non-target species in fisheries managed by the U.S. in the Exclusive economic zone (EEZ). Likewise, the no action alternative for Terminology would have no effect on marine mammals under the Marine Mammal Protection Act, or endangered or threatened species under the Endangered Species Act.

4.1.1.2 Alternative 2: Proposed action:
See section 2.1.2. Replacing "overfished" with "depleted", "minimum stock size threshold" with "minimum biomass limit" (B_{lim}), and "maximum fishing mortality threshold" with "maximum fishing mortality limit" (F_{lim}) would have no biological effects on target and non-target species in fisheries managed by the U.S. in the Exclusive economic zone (EEZ). Likewise, it would have no effects on marine mammals or endangered or threatened species under the Endangered Species Act.

The proposed term "depleted" better reflects our lack of knowledge about the relative contribution of overfishing, and environmental factors as they affect most of our fishery resources that are in a state of low abundance. "Limits" rather than "thresholds" are used more often in fisheries worldwide, to denote a stock size at its lowest abundance that is still not considered overfished, and a fishing mortality rate that is the highest value that is still not considered overfishing for a given stock.

The term "thresholds" can be used as a warning flag that a fishery is approaching a biomass or maximum fishing mortality limit, but the use of such thresholds is not required. Remember that $B_{threshold}$ is greater than B_{lim}, and $F_{threshold}$, is less than F_{lim}.

4.1.2 Stocks, fisheries and species assemblages. See section 2.2.

4.1.2.1 No action alternative: See section 2.2.1. While the current guidelines state that each "stock or stock complex" should be managed under SDC, they do not provide specific guidance on the basis for aligning fisheries within an FMP so as to manage some stocks individually and others as a group. Under this alternative for "Stocks, fisheries and species assemblages", management of a group of fish stocks would continue to be inconsistent among FMPs and Councils due to lack of specific guidance. In many cases, some fish stocks would probably continue to be unmanaged because of the lack of specific guidance about how to manage "stock complexes" in the current NS1 guidelines.

In Table 5 (Part 1), the working assumptions for the no action alternative (NA) for the "stocks" (ST) proposed revision are: (1) for FMPs that contain SDC-known stocks, only, the projected

biological impacts in the longer term would be none (N), and (2) for FMPs that are made up of SDC-known stocks and stocks having an unknown status, or FMPs made up only of stocks having an unknown status, the projected biological impacts in the longer term would be "Negative (Neg)", due to the lack of specific guidance in the current NS1 guidelines on how to manage "stock complexes." NMFS presumes that the lack of management of at least some stocks having an unknown status has a negative biological impact under the NA compared to the PA.

4.1.2.2 Proposed action: See section 2.2.2. Under the proposed revised guidelines, this alternative would clarify and amplify the current guidelines by providing more specific guidance about how to realign fisheries by core stocks and stock assemblages (i.e., how to manage stock complexes).

Under the proposed action, no immediate (30 days after publication of the NS1 final rule) biological impacts would occur, and biological impacts in the first year or so after the effective date of the final rule are also highly unlikely.

Likewise, the final rule for the NS1 guidelines would have little or no biological impacts on marine mammals under the Marine Mammal Protection Act or endangered or threatened species under the Endangered Species Act, immediately or during the first year or so after the effective date of the final rule.

It is difficult to predict how many changes will occur eventually in management of fisheries under the various FMPs, and how much of an incremental biological impact would result from the revisions to the NS1 guidelines. Therefore, biological impacts in the longer term are difficult to predict for some FMPs. Refer to Table 5 (Part 1).

Many FMPs have a limited number of stocks in the management unit, to the point that all the stocks in those FMPs would likely be designated as core stocks (e.g., many of the FMPs for stocks along New England, the Mid Atlantic, South Atlantic, and Gulf of Mexico). These FMPs would not likely be affected by the PA because the manner in which core stocks are managed would not change with the proposed revision under "Stocks, fisheries and assemblages." Therefore, under the PA, the biological impacts designation is "None (N)" for FMPs that likely have core stocks only.

Core stocks would be SDC-known (One of F_{lim} and B_{lim}, or both, are known, or have a proxy) compared to stocks in stock assemblages other than indicator stocks. Some core stocks are currently managed by SDC proxies (e.g., deep sea red crab; skates in the NE Region; Sargassum), because fishery managers decided it was time to manage such stocks, based on the available information indicating that they are probably overfished, or approaching an overfished condition.

Some FMPs would likely have a mixture of core stocks and stock assemblages. Examples include: South Atlantic Snapper-Grouper; Reef Fish Resources of the Gulf of Mexico; Pacific Coast Groundfish; Western Pacific Pelagics; West Coast Pelagics; Groundfish of the Gulf of

Alaska; Groundfish of the Bering Sea and Aleutian Islands; Alaskan Scallops; and Atlantic Tunas, Swordfish and Sharks. Some core stocks may be minor stocks in terms of landings, but useful as an indicator stock that can logically be combined with other stocks in an assemblage.

Some FMPs would likely be managed only as one or more stock assemblages under aggregate SDC, MSY, and OY or their proxies. Examples might include: South Atlantic corals, Gulf of Mexico Corals, Caribbean Shallow Water Reeffish Fishery of Puerto Rico and the U.S. Virgin Islands, Western Pacific Precious Corals, and the Coral Reef Ecosystems of the Western Pacific Region (see Table 5 (Part 1)).

Stocks that are realigned into stock assemblages and managed formally for the first time by indicator stocks or stock aggregate SDC or proxies would likely be afforded better protection in the longer term.

This proposed revision should provide for a more orderly method to determine which stocks should have their own control rules and which stocks should be grouped together for management purposes. NMFS believes that the specific guidance contained in this proposed action would result in some realignment of how particular stocks are managed (especially some stocks having an unknown status).

In Table 5 (Part 1), the working assumptions for the proposed action alternative (PA) for the "stocks" (ST) proposed revision are: (1) for FMPs that contain SDC-known stocks, only, and would likely be made up of core stocks, only, the projected biological impacts in the longer term would be "None (N)"; and (2) for FMPs that contain SDC-known and stocks having an unknown status, and would likely contain core stocks and stock assemblages, the projected biological impacts in the longer term would likely be "Positive (Pos)". This is because some stocks grouped in stock assemblages, other than indicator stocks, might benefit by having management for that stock based on management measures derived from SDC of the indicator stock or assemblage-wide SDC. It is impossible to estimate how often this would be the case. The magnitude of biological impacts on stocks having an unknown status might be difficult to estimate even when SDC are designated for a given stock assemblage; still, some indicator stocks for stock assemblages might benefit from improved data collection.

4.1.2.3 Alternative 3.

See section 2.2.3. Under this alternative, all core stocks and stocks are placed in stock assemblages the biological consequences are very similar to those described in section 4.1.2.2. However, this alternative seems more likely to result in some stocks with unknown status being assigned to a stock assemblage when that stock is not a reasonable fit to the assemblage given the general criteria (occur in the same area, similar productivity, and caught by the same gear). Also, this alternative and the "no action alternative" lack clear, accurate guidance related to stocks that could be exempt from the SDC requirement. In other words, when comparing this alternative to the no action alternative, the biological consequences are none for core stocks and positive for some stocks having an unknown status. When comparing this alternative to the proposed action (Alternative 2.2) the biological consequences for some stocks having an unknown status could be negative and the biological consequences could be negative for stocks

(stocks that rely primarily on hatchery propagation or are listed under the ESA) that could be exempt from the requirement to have SDC if they were placed in a stock assemblage instead of being managed separately.

4.1.3 Fishing mortality limits. See section 2.3.

4.1.3.1 No action alternative: See section 2.3.1. The current NS1 guidelines in concert with section 304(e) of the Magnuson-Stevens Act, provide that when the Secretary notifies a Council that overfishing for a stock or stock complex is occurring, the Council must take remedial action within one year of the time of notification, to prepare an FMP, FMP amendment or proposed regulation to end overfishing (see section 600.310(e)(2) and (e)(3)) of the current NS1 guidelines. NMFS has interpreted paragraph (e)(3)(i) of section 600.310 to mean that a Council must take remedial action by submitting a plan to end overfishing and rebuilding within one year but overfishing does not have to be ended immediately if sufficient justification is provided in the rebuilding plan as to why it is being postponed. Stocks currently undergoing overfishing are listed in Appendices 2 through 7 (NMFS 2003 Report to Congress: Status of the U.S. Fisheries). Some of these stocks have rebuilding plans that allow overfishing in the short term.

In Table 5 (Part 1), the working assumptions under fishing mortality limits (FML) for the no action alternative (NA) are: (1) for most stocks not subject to overfishing, the biological impacts in the longer term would be none (N); (2) for stocks that are subject to overfishing (see Appendices 2 through 7), the biological impacts would possibly be negative (Neg) under the NA compared to the PA.

4.1.3.2. Proposed action: See section 2.3.2. An objective of the Magnuson-Stevens Act as described in section 304(e) is to end overfishing in a fishery and rebuild affected stocks of fish, and any such overfished fishery should have a plan and regulations that specify a time period when overfishing ends and rebuilding occurs.

Therefore, NMFS proposes to limit the conditions under which overfishing is allowed to continue as described in section 600.310(f)(3)(i) of the proposed rule for this action. Under the proposed action, the expectation is that F should not be greater than F_{lim} beginning in the first year of any new or revised rebuilding plan. However, if overfishing is allowed to continue at the outset of a rebuilding plan due to some limited circumstances, generally, the time period specified for ending overfishing shall be as short as possible, taking into account: (1) The status and biology of any overfished stocks of fish, (2) the needs of fishing communities, (3) recommendations by international organizations in which the United States participates, and (4) the interaction of the overfished stock of fish within the marine ecosystem. This proposed revision compared to the no action alternative is expected to accelerate rebuilding of some overfished stocks with new or revised rebuilding plans.

If the proposed revision for F limits is implemented, it is not likely that there would be any biological impacts in the first year or so of the effective date on target species, non-target species, or protected species. In the longer term, NMFS believes that the specific guidance contained in the proposed revision could reduce the number of instances when F is allowed to

exceed F_{lim}, all other factors being equal. According to NMFS' 2003 Status of U.S. Fisheries Report (May 2004), there are 60 major fish stocks that are still experiencing overfishing. The number of stocks found to be ***not*** subject to overfishing in 2003 is 232, compared to 208 in 2002. In general, ending overfishing sooner could have positive biological impacts.

In Table 5 (Part 1), the working assumptions under fishing mortality limits (FML) for the proposed alternative (PA) are: (1) for stocks not undergoing overfishing (see Appendices 2 through 7), there would be no (N) biological impact in the longer term, and (2) for stocks undergoing overfishing, the biological impacts in the longer term "*could* be positive (Pos)," because overfishing would undergo closer scrutiny and can no longer continue unless the conditions in this proposed revision are met.

4.1.4 Biomass (stock size) limits. See section 2.4.

4.1.4.1 No action alternative: See section 2.4.1. The current definition of B_{lim} ($\frac{1}{2}B_{msy}$ or the minimum stock size to which rebuilding to B_{msy} would be expected within 10 years while fishing at the F_{lim} level, whichever is greater) is perceived by some as being too complex, and by others as being unnecessarily restrictive.

In Table 5 (Part 1) for BL, under the no action alternative (NA) for FMPs that have only stocks that are not overfished, the working assumptions for the biological impacts in the longer term are none (N), although some positive impact would occur if one of these stocks became depleted in the future. For FMPs that don't have SFA-approved overfished definitions yet, the designation is "Pos" for Positive and "U" for unknown—because we don't know if they will have SFA-approved overfishing definitions. Examples are the Caribbean Reefish FMP and the Caribbean Spiny Lobster FMP. Also, FMPs that have short-lived species that might qualify for "depleted" status based on a multi-year period (if justified from a biological point of view) could be designated "U" because biological impacts are unknown (e.g., squids in the Atlantic Mackerel, Squid, and Butterfish FMP, shrimp in the South Atlantic Shrimp FMP, and salmon in the West Coast Salmon FMP) if basing "depleted" status for such stocks on one year, only, instead of a multi-year period.

4.1.4.2 Alternative 2 (Proposed action): See section 2.4.2. There is a need to (i) simplify the requirements for specifying and calculating B_{lim}, and (ii) emphasize B_{lim}'s role as a secondary, rather than a primary consideration relative to the need for reducing F and ending overfishing.

Under the revised guidelines, B_{lim} or its proxy would still be required, either at the level of individual stocks for core stocks, or the level of assemblages or indicator species for assemblage stocks, with limited exceptions below. The revised guidelines would be simplified to define the default B_{lim} as $\frac{1}{2}B_{msy}$. A stock or assemblage that falls below the B_{lim}, would be deemed "depleted" and would require a rebuilding plan.

NMFS believes that it is not necessary or prudent to set B_{lim} at, or above, B_{msy} because fish stocks fluctuate naturally even if fished at an optimal F (i.e., under this scenario a stock would

"flip" back and forth between overfished and rebuilt). Stocks for which overfishing does not occur would rarely fall below $\frac{1}{2}B_{msy}$, except in cases of very high natural mortality (short lifespan), or significant variability in recruitment. Based on empirical evidence, it appears that stocks are typically able to rebound from $\frac{1}{2}B_{msy}$ to B_{msy} with little difficulty, so long as F is suitably constrained.

The $\frac{1}{2}B_{msy}$ value for B_{lim} is a reasonable default value, but can be replaced by a stock-specific determination, if appropriate. For instance, it may be possible to justify B_{lim} levels below $\frac{1}{2}B_{msy}$, because some stocks with high natural fluctuations result in biomass frequently falling below B_{msy}, even when overfishing does not occur. In this case, it may be reasonable to set the B_{lim} near the lower end of some appropriate range (e.g., the lower 95-percent confidence interval) of natural fluctuations that would result if the stock or assemblage were not subjected to overfishing. On the other hand, B_{lim} could be set higher than $\frac{1}{2}B_{msy}$ for stocks that are rarely expected to fall below some biomass level appreciably higher than $\frac{1}{2}B_{msy}$.

For short-lived stocks with high annual fluctuations in productivity and abundance, it would be permissible to define B_{lim} relative to stock abundance over a multi-year period as described in section 600.310(e)(2)(ii)(D) of the proposed rule for this action.

A B_{lim} or proxy should always be specified, if possible, with the following exceptions. First, if an OY control rule results in F values at least as conservative as would have been the case if a B_{lim} had been used, then explicit use of the B_{lim} is not required. Second, if the Secretary determined that existing data are grossly inadequate or insufficient for providing a defensible, albeit approximate, estimate of B_{lim} or a reasonable proxy thereof, specification of such would not be required. In such a case, the fish stock should be assigned to a stock assemblage and be managed according to B_{lims} of one or more indicator stocks or an assemblage-wide B_{lim}. Occasionally, it may be necessary to rely on qualitative evidence that the stock or assemblage is, or is not sufficiently depleted as to require rebuilding.

These clarifications would provide a more practical approach for using B_{lim} in fishery management. The clarifications reflect methods that some fishery management councils have begun using for management of fish stocks in special cases. For instance, for short-lived stocks with high annual fluctuations in productivity and abundance (some species of squid and Pacific salmon), it would be permissible to define B_{lim} relative to stock abundance over a multi-year period (currently done with Pacific salmon) *if sufficient fact-specific justification is provided.*

This alternative would not result in any immediate or near term biological impacts on target species, non-target species, or protected species. If any biological impacts occur in the longer term, they will be known when changes are made to B_{lim} or its proxy, with accompanying management measures and analyses.

In Table 5 (Part 1) for BL, under the proposed action alternative (PA) for FMPs that have only stocks that are not overfished, the working assumptions for the biological impacts in the longer term are none (N). For FMPs that don't have SFA-approved overfished definitions yet, the designation is Positive (Pos) (e.g., Caribbean Reefish FMP and Caribbean Spiny Lobster FMP). For FMPs that have short-lived species that might qualify for "depleted" status based on a multi-year period (if justified from a biological point of view) biological impacts would be designated "Pos" for "Positive," because the depleted definition would only be justified on actual biology of the species in question. Characteristics of the stock might include high rate of annual recruitment for a large range of biomass amounts at the beginning of spawning season. The combination of characteristics of a given stock would have to be fact specific and strongly justify a depleted status being based on more than one year. Some fishery scientists believe that a number of stocks in the EEZ could qualify for a depleted status based on more than one year, but only after careful evaluation and could include some species of squid, shrimp, and salmon. There are no FMPs that currently set B_{lim} (BL) below ½B_{msy}, so that the PA would not immediately cause any stocks to become listed as "depleted." Some FMPs (Pacific Coast Groundfish and some of the stocks in some of the FMPs for the South Atlantic and Gulf of Mexico Fishery Management Councils) set B_{lim} above ½ B_{msy} so there would be a long-term possibility that the Council could revise their B_{lim} down to ½ B_{msy} and reconsider whether these stocks were ever depleted.

4.1.4.3 Alternative 3. See section 2.4.3. The biological impacts of this alternative compared to the no action alternative and the proposed action would likely be that at least some fish stocks would have higher abundance on average (over a given time period). However, it may unduly restrict fishing in cases where the stock is fluctuating due to natural variability. However, NMFS believes that for most fish stocks, ½ B_{msy} is a reasonable default value for B_{lim} because such stocks are able to increase in abundance rapidly as long as their biomass does not decrease below the proposed default value in Alternative 2.

4.1.5 Rebuilding time horizons. See section 2.5.

4.1.5.1 No action alternative: See section 2.5.1. The minimum rebuilding time (T_{min}) is the number of years it takes to achieve a 50 percent probability that biomass will equal or exceed B_{msy} at least once when F = 0.0, during that time period. Also, T_{max} is defined as the maximum allowable number of years it takes to achieve at least a 50-percent probability that biomass will equal or exceed B_{msy} while fishing under a rebuilding plan.

The definition of T_{max} in the current guidelines contains an inherent discontinuity. In the current NS1 guidelines, T_{max} may not exceed 10 years if T_{min} is less than 10 years, and T_{max} may not exceed T_{min} plus one GT if T_{min} is greater than or equal to 10 years. The problem is that this results in a discontinuity in rebuilding times when T_{min} is near 10 years. For example, T_{max} equals 10 years when T_{min} equals 9.5 years for a given stock, so there is almost no opportunity to catch that fish stock during the 10 years, but T_{max} equals 15 years if T_{min} equals 10.5 years and the GT is 5 years. With the longer T_{max}, a higher F could be allowed.

In Table 5 (Part 1), for the NA for RTH, the designation of "Pos" indicates that for FMPs that may have one or more stocks with a GT time of around 9.5 to 10 years the T_{max} could be shorter under the NA, than under the PA.

4.1.5.2 Proposed action: See section 2.5.2. The proposed action removes the discontinuity for T_{max} by revising the NS1 guidelines as follows: If T_{min} plus one GT exceeds 10 years, then T_{max} $=T_{min}$ plus one GT; otherwise T_{max} can be up to 10 years. The proposed formula would have no effect on stocks with T_{min} that is at least 10 years. For stocks that have a T_{min} of less than 10 years, the number of different stocks (i.e., different T_{mins}) that could have longer T_{max} values equals GT minus 1 year (see Tables 1 through 4).

Comparisons of the T_{max} values for the current rebuilding time formula and proposed rebuilding time formula of fish stocks are listed in Tables 1, 2, 3, and 4 for generation times of 5, 3, 6, and 9 years, respectively. These tables compare the groups of various T_{mins} having different T_{max} values under the current formula (no action alternative—see section 2.5.2) compared to the proposed formula (proposed action –see section 2.6.2). For example, using Table 1, when the GT=5 under the current formula, four stock groups (Stocks E, F, G and H) with T_{mins} of 6, 7, 8 and 9 years, respectively, have the same T_{max} value of 10 years, and then the stock (Stock I) with the next highest T_{min} (10 years) has a T_{max} that jumps by five years compared with Stock H which has a T_{min} that is only one year less. The discontinuity does not exist with the proposed formula as shown in the example in Table 1. Stocks E, F, G, and H having T_{mins} that are 6, 7, 8 and 9 years, respectively, have T_{max} values that increase likewise by one year (11, 12, 13, and 14 years, respectively), so that Stock I's T_{max} is only one year longer (15) than Stock H.
The number of stocks with incrementally longer T_{min} values that would have a higher T_{max} value under the proposed formula (proposed action) compared to the no action alternative equals GT less one year (i.e., the longer the GT, the larger the number of groups of fish classified by T_{min} values that are affected by the discontinuity) (see Tables 1, 2, 3, and 4).

For the rebuilding time horizon proposed measure, as listed in Table 5 (Part 1), the designation of "Neg" means it is possible that the rebuilding period for one or more stocks in the FMP would be longer under the PA and the designation of "Pos" means that it is possible that the rebuilding period for one or more stocks in the FMP might be shorter under the NA. Stocks with a short T_{min} (e.g., 1-5 years) and a short GT (e.g., 1-5 years) would be unaffected and remain constrained by the 10-year RTH.

This might result in a longer rebuilding T_{max} for one or more species or stocks in a fishery with a large number of overfished stocks (e.g. the Northeast multispecies fishery) if existing rebuilding plans failed and had to be revised later. Such fish stocks might have a larger T_{max} compared to under the no action alternative.

However, the Magnuson-Stevens Act calls for rebuilding time periods to be as short as possible, and this portion of the proposed revision only affects the maximum rebuilding time horizon. The

target time for rebuilding can still be set sooner and Councils should always consider the shortest time possible. The proposed revision also would establish a default value for T_{target}. The biological consequences of establishing a presumptive (default) value for T_{target} should be that rebuilding plans on average would have a shorter T_{target} than they would have without such specific guidance (as in alternative 2.5.1). In other words, the choice of T_{target} that equals T_{max} or a value approaching it, needs to have justification as to the needs of fishing communities and economic benefits comparing alternative $T_{targets}$. In the absence of such knowledge, the presumptive T_{target} is a value midway between T_{min} and T_{max}, a value that would have a better probability of rebuilding the stock more rapidly than a larger T_{target}.

4.1.6 Rebuilding targets. See section 2.6.

4.1.6.1 No action alternative: See section 2.6.1. Currently, the NS1 guidelines do not offer alternative methods to conclude that a stock is rebuilt when biomass targets or T_{min} values or their proxies are not sufficiently well-estimated under the best available science.

In Table 5 (Part 2), under the no action alternative (NA), the working assumptions are that (1) for FMPs with SDC-known stocks, only, this issue is not pertinent so that potential biological impacts in the long term are none (N), and for FMPs with stocks of unknown status related to T_{min} or B_{lim}, the potential biological impacts in the long term are "Negative (Neg)" because the current guidelines offer no alternative methods for rebuilding when the rebuilding target of B_{msy} or a biomass based proxy is unknown.

4.1.6.2 Proposed action: See section 2.6.2. The proposed revisions would provide that when the NMFS on behalf of the Secretary determines that there are inadequate data to estimate biomass-based reference points reliably, it would be permissible to use appropriate F values in place of $B_{targets}$ and rebuilding schedules in certain situations. For example, when there are inadequate data to estimate T_{min} and/or a B_{msy} rebuilding target reliably, but the available evidence suggests that a core stock or stock assemblage is depleted, then it should be permissible to set a rebuilding F below F_{lim} that would result in at least a 50-percent chance that the stock or assemblage's abundance would increase. Rebuilding performance would be evaluated every two years as required by the Magnuson-Stevens Act. In these circumstances, it may be reasonable to declare a stock or assemblage to be rebuilt if F has been sufficiently below the F_{lim} (e.g., at 0.75 F_{lim}) for at least two GTs, provided there is no other strong evidence that the biomass is still depleted.

Some FMPs could adopt this approach towards rebuilding a stock when biomass levels and targets are not sufficiently well-estimated under the best available data, as long as an F value and GT could be estimated. For example, if an F value and GT can be estimated for Nassau grouper and Goliath grouper of the Gulf of Mexico, then these stocks might be candidates for using this approach for managing for a rebuilt fishery in the absence of reasonable estimates of current biomass and historical estimates of biomass (see Table 5 (Part 2).

If the proposed revision is implemented by a final rule, no immediate or near-term biological impacts would occur on target species, non-target species, or protected species. If any longer term biological impacts occur, they would be known once the FMP is revised and accompanied by specific analyses.

In Table 5 (Part 2), under the proposed action alternative (PA) for RT, the working assumptions are that (1) for FMPs with SDC-known stocks, only, this issue is not pertinent so that potential biological impacts in the long term are "None (N)" and (2) for FMPs with stocks of unknown status (in this case, stocks for which we cannot estimate T_{min} or its proxy and B_{msy}) the potential biological impacts in the long term are "Positive (Pos)" because the proposed revisions offer another method (keeping F below $0.75F_{lim}$ for two GTs for a given fish stock) to estimate when rebuilding has occurred.

4.1.6.3 Alternative 3. See section 2.6.3. The biological impacts of alternative 3 would likely be positive for some fish stocks compared to the no action alternative and negative compared to the proposed action. This is because the no action alternative does not have any guidance on how to manage a fish stock in terms of rebuilding when a reasonable estimate of B_{msy} and/or B_{lim} does not exist, but F_{lim} is known. A fish stock managed under Alternative 4.1.6.3 is less likely to be rebuilt after 2 GTs than when managed under Alternative 4.1.6.2.

4.1.7 Revision of rebuilding plans. See section 2.7.

4.1.7.1 No action alternative: See section 2.7.1. Section 304(e)(7) of the Magnuson-Stevens Act requires that adequate progress towards ending overfishing and rebuilding affected fish stocks be evaluated at least every two years, but does not define "adequate progress." Current guidelines do not include additional guidance (beyond the two-year review requirement) on procedures to follow when evaluating the effectiveness of a rebuilding plan or deciding what parameters of a rebuilding plan should be modified under different circumstances.

In Table 5 (Part 2), the working assumptions for revision of rebuilding plans (RRB) under the no action alternative (NA) are: If the stock is not overfished, then the potential biological impact in the longer term is "None (N)", unless that stock becomes overfished later. If one or more stocks in an FMP are in a rebuilding phase of a plan and review of the plan indicates that revision of the rebuilding plan is necessary, then the likelihood of revising a successful rebuilding plan is designated as "unknown (U)" because of the lack of specific guidance in the guidelines about how to revise rebuilding plans.

4.1.7.2 Proposed action: See section 2.7.2. NMFS notes that by definition $F_{targets}$ should be achieved on average; therefore, it recommends that rebuilding plans should not be adjusted in response to each minor stock assessment update. However, if rebuilding plans are to be adjusted, then it may be permissible in some circumstances to modify either the sequence of rebuilding fishing mortality rates, or the time horizon, or both. Rebuilding must continue until the B_{msy} is attained.

If the proposed revision were implemented by a final rule, no immediate or near term biological impacts would likely occur on target species, non-target species, or protected species. It is unknown how often rebuilding plans would be modified in the future using the proposed revisions compared to using the current guidance which is less specific. With this new guidance, it would be easier for such revisions to be made in a consistent manner across regions. Impacts of adjusting a rebuilding plan with a given set of new measures would have to be evaluated and analyzed in any case before any additional measures are approved. New rebuilding plans would probably take about two years to implement (including time for preparation of the FMP amendment and analyses, Secretarial review of FMP amendment and final rulemaking).

A stock that is no longer overfished, but not yet fully rebuilt at the end of its rebuilding plan's time period, is more likely to be rebuilt under the specific guidance contained in Alternative 2.7.2 compared to Alternative 2.7.3.

In Table 5 (Part 2), the working assumptions for revision of rebuilding plans (RRB) under the PA are as follows: If the stock is not overfished, then the probable biological impact in the longer term is "None (N)". If one or more stocks in an FMP are in a rebuilding phase of a plan and review of the plan indicates that revision of the rebuilding plan is necessary, then the likelihood of constructing a successful rebuilding plan is designated as "Positive (Pos)" because it is more likely that a revised rebuilding plan would succeed under the PA.

4.1.7.3 Alternative 3. See section 2.7.3. The biological impacts for this alternative would be the same as the biological impacts for Alternative 4.1.7.2, except that this alternative does not provide specific guidance about what management actions should be taken if a fish stock has reached the end of its rebuilding period and is not fully rebuilt. Therefore, under this alternative there is uncertainty as to whether a Council would take what NMFS believes to be the appropriate action.

4.1.8 OY control rules. See section 2.8.

4.1.8.1 No action alternative: See section 2.8.1. Some current FMPs have explicit MSY control rules, and fewer have explicit OY control rules. The current guidelines state that FMPs *may* have OY control rules. Some current OY control rules *equal* their corresponding MSY control rule. In Table 5 (Part 2) the working assumptions for describing potential biological impacts in the long term for the NA for OY control rules are: (1) there could be negative (Neg) biological impacts for FMPs that do not currently have OY control rules, or have OY control rules that equal MSY control rules because OY control rules less than MSY control rules (as in the PA) would usually provide for less overfishing and fewer stocks becoming depleted. Also, under the NA, biological impacts would be none (N) for stocks in FMPs that already have an OY control rule that is less than its corresponding MSY control rule.

4.1.8.2 Proposed action alternative: See section 2.8.2. OY control rules need to be developed and must satisfy the condition that they are less than their respective MSY control rule in all

circumstances. Targets such as the OY control rule should be designed to have better than a 50-percent probability of preventing overfishing.

For stocks that currently are being harvested at F_{msy} (F_{lim}) or higher, if an OY control rule is implemented, there would be a short-term reduction in annual catch approximately equal to the ratio of the OY control rule to the current F. The lower F from the OY control rule would allow the biomass to grow larger at a rate dependent on the biology of the stock. The product of the lower OY-based F and this higher biomass would produce a long-term average catch that may be only slightly below the MSY. The larger biomass would have additional possible benefits, including: less fluctuation in biomass because there would be more age groups in the stock, lower cost of fishing due to higher stock density, and greater protection of the ecosystem.

Under this alternative, no immediate or near term biological impacts would likely occur on target species, non-target species, or protected species. It is difficult to predict the extent of any changes that would occur if OY control rules are required and become the basis for management measures for SDC-known stocks. It would depend upon the extent to which the OY control rule is set below the MSY control rule. Therefore, biological impacts in the longer term for various fisheries are difficult to predict. Such impacts would be analyzed at the time an OY control rule and its accompanying management measures are proposed as the basis for managing a given fishery.

In Table 5 (Part 2) the working assumptions for describing potential biological impacts in the long term for the proposed action alternative (PA) for OY control rules are: (1) there would probably be "Positive (Pos)" biological impacts for FMPs that do not currently have OY control rules, and "Pos" for FMPs that currently have OY control rules that equal their corresponding MSY control rule for one or more fish stocks. Under the PA, biological impacts would be "None (N)" for FMPs that already have an OY control rule that has lower values (allowable harvest levels) than its corresponding MSY control rule throughout its range.

FMPs managed by the New England Fishery Management Council: The Northeast Multispecies FMP, Sea Scallop FMP, Monkfish FMP and Atlantic herring have MSY control rules and OY control rules, but the OY control rule equals the MSY control rule, so the designation in Table 5 (Part 2) for that FMP under the PA is "Pos" and the designation for the NA is "Neg." The Skates FMP, and Deep Sea Red Crab FMP have MSY control rules, but no OY control rules. The Skate FMP is designated "N" for None under the PA and the NA because for several stocks that are overfished retention is prohibited so they have an OY=zero. The Deep Sea Red Crab FMP is designated "Pos" under the PA and "Neg" under the NA. The Atlantic Salmon FMP has no MSY control rule or OY control rule, so it is designated "Neg" for the NA and "Pos" for the PA (also, see Appendix 9).

FMPs managed by the Mid-Atlantic Fishery Management Council: The Summer Flounder, Scup, and Black Sea Bass FMP; Bluefish FMP; Surf Clam and Ocean Quahog FMP; Squid, Mackerel, and Butterfish FMP; and Golden Tilefish FMP have MSY control rules, but no OY control rules, so they are designated "Neg" for the NA and "Pos" for the PA (also, see Appendix 9).

FMPs managed by the South Atlantic Fishery Management Council: The Snapper-Grouper FMP, Atlantic Coast Red Drum FMP, South Atlantic Shrimp FMP, and Dolphin-Wahoo FMP have MSY control rules, but no OY control rules approved under the SFA, so they are designated in Table 5 (Part 2) as "Neg" for the NA and "Pos" for the PA. For the Golden Crab FMP, OY = MSY, so that FMP is designated as "Neg" under the NA and "Pos" under the PA (also, see Appendices 10 and 11).

FMPs managed jointly by the South Atlantic and Gulf of Mexico Fishery Management Councils: For the Coastal Migratory Pelagics FMP, the designation in Table 5 (Part 2) is "Neg" for the NA and "Pos" for the PA, because the South Atlantic populations of Spanish mackerel, king mackerel, and cobia do not have an SFA-approved OY control rules. For the Spiny Lobster FMP, the designation is "Neg" for the NA and "Pos" for the PA, because that FMP does not have an OY control rule approved under SFA (also, see Appendices 10 and 11).

FMPs managed by the Gulf of Mexico Fishery Management Council: For many stocks in the Reef fish FMP, the OY control rule equals the MSY control rule, so that the designation for this FMP in Table 5 (Part 2) is "Neg" for the NA and "Pos" for the PA. For the FMP for Coral, Coral Reefs and Live/Hard Bottom; the Stone Crab FMP; the Red Drum FMP, and the Shrimp FMP, the designation in Table 5 (Part 2) is "Neg" for the NA and "Pos" for the PA, because there is no SFA-approved OY control rule that is less than the MSY control rule (also, see Appendices 10 and 11).

FMPs for the Caribbean Fishery Management Council (Puerto Rico and U.S. Virgin Islands): The Caribbean Council's FMPs do not have SFA-approved SDC and rebuilding plans and control rules yet. Therefore, for the Spiny Lobster FMP, Shallow Water Reeffish FMP, the FMP for Corals and Associated Invertebrates, and the FMP for the Queen conch resources, the designation in Table 5 (Part 2) is "Neg" for the NA which would allow MSY control rules to equal OY control rules, and "Pos" for the PA which would require that OY control rules be less than their respective MSY control rules.

FMPs for the Pacific Coast Fishery Management Council: For the Pacific Coast Groundfish Fishery FMP, the designation in Table 5 (Part 2) is "None (N)" for OY control rules under the PA and the NA, because the major and minor stocks already have OY control rules less than their MSY control rules (See Appendix 12) at least for lower levels of stock biomass. For the West Coast Salmon FMP, the designation in Table 5 (Part 2) is "N" for OY control rules under the PA and the NA, because the major and minor stocks already have a combined OY that allows less harvest than the individual MSY control rules for most stocks in a given year (See Appendix 13).

For the Coastal Pelagics FMP the stocks have MSY control rules or proxies, Pacific sardine and Pacific mackerel have OY control rules that are different than the MSY control rules, and for market squid there is no OY control rule. The two stocks, northern anchovy and jack mackerel have minimal fisheries and are not being actively managed—they do not have OY control rules. Therefore, for Coastal Migratory Pelagics, the designation is "N" for the NA and "Pos" for the

PA. For the FMP for West Coast Highly Migratory Species, all the species have MSY control rules and in all cases except the two sharks (common thresher and shortfin mako) for which there are harvest guidelines, the OY control rule would be the same as the MSY control rule. Therefore, the designation for OY control rules for the West Coast HMS FMP in Table 5 (Part 2) is "Neg" under the NA and "Pos" under the PA because the stocks do not have OY control rules that result in a lower harvest than their corresponding MSY control rules.

FMPs for the Western Pacific Fishery Management Council: See Appendix 14. For Table 5 (Part 2), under the NA for the FMP for Crustacean Fisheries the designation is "Neg", and under the PA it is "Pos" because the Lobster complex-Northwestern Hawaiian Islands has an MSY control rule and an OY control rule, but the OY control rule is not less than the MSY control rule (the OY control rule is not a function of the MSY control rule) (See Appendix 14). The FMP for Precious Corals is designated "Neg" and the PA is designated as "Pos" because various stocks (species listed by "coral bed" location) have MSY and OY control rules, but the OY control rule is not less than the MSY control rule (the OY control rule is not a function of the MSY control rule). The FMP for Bottomfish and Seamount Groundfish Fisheries is designated as "Neg" under the NA and "Pos" under the PA because the Seamount Complex and the four bottomfish complexes each have an MSY control rule, but not an OY control rule. The FMP for Pelagic Fisheries is designated as "Neg" under the NA and "Pos" under the PA because eight stocks of tuna, the stock of swordfish, the stock of marlin, "other billfishes, and pelagic sharks have an MSY control rule, but no OY control rule. The FMP for Coral Reef Ecosystems, the designation under the NA is "Neg" and "Pos" under the PA because the five multispecies complexes have MSY and OY control rules, but the OY control rule is not less than the MSY control rule (the OY control rule is not a function of the MSY control rule).

FMPs for the North Pacific Fishery Management Council: For the FMP for Groundfish of the Gulf of Alaska and the FMP for Groundfish of the Bering Sea and Aleutian Islands, the designation in Table 5 (Part 2) is "N (None)" under the NA and "N (None)" under the PA, because those FMPs already have the equivalent of MSY control rules (the overfishing level step) and OY control rules (the multiple steps used to get to the annual total allowable catch for a stock or an assemblage), and the OY control rules are less than their corresponding MSY control rules.

For the Scallop FMP, for weathervane scallops, the MSY control rule is $M=F_{msy}=0.13$. The OY is a numerical range with the upper bound of $MSY=M*B_{msy}$, so OY could equal MSY. Therefore, the designation in Table 5, Part 2 is for weathervane scallop is "Neg" for the NA and "Pos" for the PA.

For the Bering Sea and Aleutian Islands King and Tanner Crab FMP, the MSY control rules are $F_{msy} = M$ with M=0.2 for king crabs and M=0.3 for snow and Tanner crabs. The OY is set as a range from zero to a maximum of MSY. Therefore, if the proposed revision to "OY control rules" were implemented, the OY control rule would likely be revised.

FMPs managed by NMFS on behalf of the Secretary of Commerce: For the FMP for Atlantic Tunas, Swordfish, and Sharks, these stocks are managed by MSY control rules because the ICAAT convention points to MSY and ATCA prevents the Secretary from implementing regulations that have the effect of increasing or decreasing a harvest allocation agreed to at ICAAT. The Billfish FMP is also managed under MSY rather than OY. Therefore, under the PA, the designation for both FMPs for IF is "N (None)" because no further change can be made to the management to manage by an OY control rule that is less than its respective MSY control rule. Although the biological impacts might be small, the designation for the NA for IF is "Neg (negative)" because it is believed that on average, that overfished stocks would suffer at least some negative biological impacts (e.g., slower rebuilding) compared to the PA.

4.1.9 International fisheries. See section 2.9.

4.1.9.1 No action alternative: See section 2.9.1. For "International fisheries," there are no known biological impacts of this alternative "in the longer term" other than the possibility that some fisheries that are managed under International agreements might benefit from the extra guidance contained in the proposed action. Fisheries not subject to international agreement probably have no (None) biological impacts from this alternative.

4.1.9.2 Proposed action: See section 2.9.2. For "International fisheries," the fish stocks that are subject to International fishery management might benefit in terms of some positive (Pos) biological impacts through better management as a result of the expanded guidance in the proposed action compared to the no action alternative.

It is difficult to predict the extent of any changes that would occur in management of a domestic fishery that is also part of a straddling stock or are managed by an international agreement as a result of the proposed clarifications. Although several stocks have distributions that cross the U.S.-Canada and U.S.-Mexico borders, there is no formal determination of which of these should be considered as straddling stocks. Eventual biological impacts in the longer term are difficult to predict; such impacts would be analyzed at the time that new management measures are proposed to manage such a fish stock. No immediate or near term biological impacts would occur, if the proposed revision to NS1 guidelines is implemented by a final rule.

4.2 Physical environment (habitat) impacts. Refer to Table 6 (Parts 1 and 2) for qualitative summaries of estimated impacts on the physical environment (especially EFH) in the longer term (beginning 1½ to 2 years and beyond) by FMP.

4.2.1 Terminology. See section 2.1.

4.2.1.1 No action alternative. See section 2.1.1. There are no impacts on EFH from this alternative for terminology.

4.2.1.2 Proposed action alternative. See section 2.1.2. There would be no impacts on EFH when the proposed revisions first become effective, or in the longer term (beyond one year after the effective date), or at any later time interval.

4.2.2 Stock, fisheries, and species assemblages. See section 2.2.

4.2.2.1 No action alternative: See section 2.2.1. Current guidelines state that each "stock or stock complex" should be managed under SDC. In terms of impacts on the physical environment in the longer term, stocks that are SDC-known would likely continue to benefit from sufficient management measures to rebuild overfished stocks and protect EFH (e.g., guard against loss of EFH). Stocks that have an unknown status with respect to their SDC that cannot be grouped with other stocks into a stock complex because of the current lack of guidance, would likely continue to suffer from our lack of knowledge of EFH for stock complexes. Under the NA for unknown status stocks that are caught by bottom tending gear (i.e., trawl or dredge gear), EFH for these stocks *might* not benefit from sufficient management, so that the designation in Table 6 (Part 1) is "Neg." For FMPs that are likely to have only core stocks the designation for impacts of the NA on the physical environment is N for none.

4.2.2.2 Proposed action alternative: See section 2.2.2. The proposed revised guidelines clarify and amplify the current guidelines by providing more specific guidance about how to realign fisheries by core stocks and stock assemblages.

This clarification and amplification of the amount and type of guidance that the proposed revision contains compared to the current guidelines, could result in changes to current management of some fisheries as discussed in section 4.1.2.

This proposed revision should not have any immediate impacts, or any impacts within 1 to 1½ years after the final rule is effective. However, in the longer term, stocks that have unknown status could be managed in stock assemblages because of adequate guidance (unlike the case for stock complexes in the NA), and would likely benefit from better knowledge of EFH than before. Under the PA for stocks with unknown status that are caught by bottom tending gear (i.e., trawl or dredge gear), EFH for these stocks *might* benefit from sufficient management, so that the designation in Table 6 (Part 1) is "Pos". For FMPs that are likely to have only core stocks, the designation for impacts of the PA on the physical environment is N for none.

4.2.3 Fishing mortality limits. See section 2.3. See first two paragraphs of section 4.1.3.

4.2.3.1 No action alternative: See section 2.3.1. It's conceivable that in a few instances, if F is not reduced as quickly as it would be under the PA, there could be minor impacts on EFH (e.g., more fishing activity and gear use on habitat). Under the NA, for FMPs in which one or more stocks are undergoing overfishing, the designation in Table 6 (Part 1) is "Neg" (negative) for possible impacts on EFH that would likely be short–term in duration, and only begin to occur "in the longer term" if a fishery has bottom-tending gear such as trawls or dredges. Under the NA, for FMPs that don't have stocks currently undergoing overfishing, the designation for FML is "N" for none; for FMPs for which the overfishing status is unknown for some stocks and not undergoing overfishing for the other stocks, the designation is "U" for unknown.

4.2.3.2 Proposed action alternative: See section 2.3.2. This proposed revision should not have any immediate impacts, or any impacts within 1 to 1½ years after the final rule is effective. Under this alternative, F might be reduced more quickly for some fisheries compared to the NA. If so, for stocks sometimes harvested by bottom tending gear, the physical environment and presumably EFH would benefit from reduced gear use. This proposed revision would have no immediate impacts on EFH. Under the PA, for FMPs in which one or more stocks are undergoing overfishing, the designation in Table 6 (Part 1) is "Pos" (positive) for possible impacts on EFH that would likely be short term in duration and only begin to occur "in the longer term," if a fishery has bottom-tending gear such as trawls or dredges. Under the PA, for FMPs that don't have stocks currently undergoing overfishing, the designation for FML is "N" for none; for FMPs for which the overfishing status is unknown for some stocks and not undergoing overfishing for the other stocks, the designation is "U" for unknown. However, to the extent that fewer stocks would be overfished, there could be positive effects on the ecosystem that could benefit EFH in unknown ways.

4.2.4 Stock size limits. See section 2.4. See first eight paragraphs of section 4.1.4.

4.2.4.1 No action alternative. See section 2.4.1. There would be no immediate impacts or impacts "in the longer term" on the physical environment or EFH. Under the NA for BL, for FMPs that do not have any stocks that are overfished, the impacts on EFH "in the longer term" would be "N" for none. Under the NA for BL, for FMPs that have one or more stocks that are overfished, the impacts on EFH "in the longer term" are unknown (U) at this time.

4.2.4.2 Proposed action alterative. See section 2.4.2. This proposed revision would not have any immediate impacts, and few, if any impacts within 1 to 1½ years after the effective date of the final rule for the NS1 guidelines. Under the PA for BL, for FMPs that do not have any stocks that are overfished, the impacts on EFH "in the longer term" would be "N" for none. Under the PA for BL, for FMPs that have one or more stocks that are overfished, the impacts on EFH "in the longer term" are unknown (U) at this time. Any impacts on EFH in the longer-term (e.g., beginning about 1½ to 2 years after the effective date of the NS1 final rule) would be analyzed at the time that new management measures are proposed to manage such a fish stock with a revised stock size thresholds.

4.2.5 Rebuilding time horizons. See section 2.5. See the first three paragraphs of section 4.1.5.

4.2.5.1 No action alternative. See section 2.5.1. The no action alternative should have no immediate impacts on EFH, or impacts on EFH in the first year or so after the effective date of this action. If a given stock is rebuilt more rapidly under the method for calculating a rebuilding time horizon that has a discontinuity but a shorter rebuilding period, there could be some positive benefits (Pos) for the physical environment or EFH.

4.2.5.2 Proposed action alternative. See section 2.5.2. This proposed revision should have no immediate impacts on EFH, or impacts on EFH in the first year or so after the effective date of

this action. Any impacts on EFH in the longer-term would be analyzed at the time that new management measures are proposed to manage such a fish stock with a revised rebuilding time horizon. If a given stock is rebuilt more slowly under the method for calculating a rebuilding time horizon that has no discontinuity but a longer rebuilding period, there could be some negative (Neg) impacts of the fishing gear on the physical environment or EFH.

4.2.6 Rebuilding targets. See Section 2.6. See the first three paragraphs in section 4.1.6.

4.2.6.1 No action alternative. See section 2.6.1. There are no known impacts (U) of the NA "in the longer term" on the physical environment or EFH.

4.2.6.2 Proposed action alternative. See section 2.6.2. This proposed revision should have no immediate impacts on EFH, or impacts in the first year or so after the effective date of the final rule for revisions to the NS1 guidelines. There are no known impacts (U) of the PA "in the longer term" on the physical environment or EFH Any impacts on EFH in the longer-term would be analyzed at the time that new management measures are proposed to manage such a fish stock because of a decision to control F below F_{lim} for two GT.

4.2.7 Revision of rebuilding plans. See section 2.7. See the first three paragraphs of section 4.1.7.

4.2.7.1 No action alternative. See section 2.7.1. Under this alternative, some rebuilding plans could undergo revision because of the Magnuson-Stevens Act's requirement to review rebuilding plans every two years for their adequacy of progress. It is unknown (U) how often any rebuilding plans would be revised and what their effects would be on the physical environment and EFH.

4.2.7.2 Proposed action alternative. See section 2.7.2. This proposed revision should have no immediate impacts on EFH or impacts in the first year or so after the effective date of the final rule for the revisions to the NS1 guidelines. It is unknown (U) how often any rebuilding plans would be revised and what their effects would be on the physical environment and EFH under the PA. Any impacts on EFH in the longer-term would be analyzed at the time that new management measures are proposed to manage such a fish stock because of a change in the rebuilding plan.

4.2.8 OY control rules. See section 2.8. See first two paragraphs for section 4.1.8.

4.2.8.1 No action alternative. See section 2.8.1. Under this alternative, it does not seem likely that many new OY control rules would be implemented in the near future. There should be no impacts on EFH in the short term on long term.

4.2.8.2 Proposed action alternative. See section 2.8.2. This proposed revision should have no immediate impacts on EFH or impacts in the first year or so after the effective date of the final rule for the revisions to the NS1 guidelines. However, it is believed that generally, implementation of OY control rules in place of MSY control rules, would result in a small

reduction in fishing effort and less of an impact on EFH from reduced fishing activity compared to the "no action alternative." Any impacts on EFH in the longer term would be analyzed once an FMP amendment is prepared that contains a specific OY control rule, and accompanying management measures and analyses. Maintaining stocks at a slightly higher than B_{msy} level should be beneficial to the marine ecosystem.

4.2.9 International fisheries. See section 2.9. Proposed revised guidelines provide more specific guidance than current guidelines about how to manage the U.S. portion of a stock shared with other countries depending upon whether an international organization manages such a stock throughout its range.

4.2.9.1 No action alternative. See section 2.9.1. There are no known (Unknown – U) impacts of the NA for IF in the longer term on the physical environment or EFH (see Table 6 (Parts 1 and 2).

4.2.9.2 Proposed action alternative. See section 2.9.2. This proposed revision should not have any immediate impacts on EFH or impacts on EFH in the first year or so after the effective date of the final rule for revisions to the NS1 guidelines. Any impacts on EFH in the longer-term would be analyzed at the time that new management measures are proposed to manage such a fish stock or stock assemblage. For IF, there are no known (Unknown-U) impacts of this alternative in the longer term on the physical environment (see Tables 6, Parts 1 and 2).

4.3 Economic impacts. Refer to Table 7 (Parts 1 and 2) for qualitative summaries of estimated economic impacts in the longer term (beginning 1½ to 2 years and beyond) by FMP.

4.3.1 Terminology. See section 2.1.

4.3.1.1 No action alternative. See section 2.1.1. There should be no economic impacts on fishermen or dealers and processors immediately (the effective date of the final rule for the NS1 guidelines) or within the first year or so after the effective date of the final rule, and beyond in the longer term, if the terminology remains unchanged.

4.3.1.2 Proposed action alternative. See section 2.1.2. There should be no economic impacts on fishermen or dealers and processors immediately (the effective date of the final rule for NS1 guidelines) or within the first year or so after the effective date of the final rule, and beyond in the longer term, if the terminology is changed.

4.3.2 Stock, fisheries and species assemblages. See section 2.2. See the first two paragraphs in section 4.2.2.

4.3.2.1 No action alternative. See section 2.2.1. For the NA, there should be no economic impacts on vessel owners, dealers and processors immediately or for the first year or so after the effective date of the final rule for the NS1 guidelines. In the longer term, the lack of additional management of some stocks having unknown status compared to the PA could result in some

negative (Neg) economic impacts, compared to management under the PA. If the FMP is likely to have only core stocks, then the estimated impacts under the NA are None (N).

4.3.2.2 Proposed action alternative. See section 2.2.2. Under the PA, there should be no economic impacts on vessel owners, dealers and processors immediately or for the first year or so after the effective date of the final rule for the NS1 guidelines. In the longer term, the additional management of some stocks having unknown status compared to the NA could result in some positive (Pos) economic impacts compared to management under the NA. If the FMP is likely to have only core stocks, then the estimated impacts under the PA are None (N).

4.3.3 Fishing mortality limits. See section 2.3. See first two paragraphs of section 4.1.3.

4.3.3.1 No action alternative. See section 2.3.1. For the NA, there should be no economic impacts on vessel owners, dealers and processors immediately or for the first year or so after the effective date of the final rule for the NS1 guidelines. Under NA compared to the PA, some fish stocks managed by revised rebuilding plans might continue to undergo overfishing longer (and rebuilding would be postponed). Short-term revenues might be greater, but higher average annual yields would be postponed; therefore, those fish stocks for a given FMP could have Short-term Positive (SP) economic impacts, but foregone higher annual yields (FAY), later (SPFAY).

4.3.3.2 Proposed action alternative. See section 2.3.2. Under the PA, there should be no economic impacts on vessel owners, dealers and processors immediately or for the first year or so after the effective date of the final rule for the NS1 guidelines. Under the PA compared to the NA, in the longer-term, revenues might be reduced on the first year or so (SN) if overfishing is ended sooner for some fish stocks, but substantial rebuilding of some fish stocks could begin sooner, and higher annual yields (HAY) would also occur sooner (i.e., SNHAY).

4.3.4 Stock size limits. See section 2.4. See first eight paragraphs of section 4.1.4.

4.3.4.1 No action alternative. See section 2.4.1. There are no known economic impacts under the NA. However, the default B_{lim} is less flexible in terms of dealing in practical terms with stocks that have different life history characteristics (e.g., very short life spans or high natural fluctuations in abundance). It seems likely that under the NA, some stocks of FMPs that do not have SFA-approved "overfished" definitions yet, could have SFA-approved depleted definitions later, so the economic impacts would be positive (Pos).

4.3.4.2 Proposed action alternative. See section 2.4.2. This proposed revision should have no immediate economic impacts on vessel owners and dealers and few if any economic impacts in the first year or so after the effective date of the final rule for the NS1 guidelines. Any economic impacts on vessel owners and dealers in the longer-term would be analyzed at the time that new management measures are proposed to manage such a fish stock or stock assemblage as a result of a new or revised SDC such as B_{lim}. Unknown (U) is designated for FMPs that do not have SFA-approved "overfished" definitions yet.

4.3.5 Rebuilding time horizons. See section 2.5. See the first three paragraphs of section 4.1.5.

4.3.5.1 No action alternative. See section 2.5.1. If a given stock is rebuilt more rapidly under the method for calculating a rebuilding time horizon because of a shorter rebuilding period, there could be a decrease in annual revenues in the first few years of the plan, but sustained increases in revenues might also occur earlier in the rebuilding plan compared to the proposed action. Table 7 (Part 2) lists projected economic impacts for the NA in the longer term, for vessel owners and dealers and processors. For FMPs that have one or more stocks that have GT of about 9 to 10 years, if that stock's rebuilding plan remains in effect or it had to be revised because it failed to make adequate progress under section 304(e)(7) of the Magnuson-Stevens Act, the designation for this alternative in Table 7 (Part 1) is Short-term Negative, but higher annual yield sooner (SNHAY).

4.3.5.2 Proposed action alternative. See section 2.5.2. This proposed revision should have no immediate or near-term economic impacts on vessel owners, dealers or processors. Any economic impacts on vessel owners and dealers and processors in the longer-term would be analyzed at the time that new management measures are proposed to manage such a fish stock with a revised rebuilding time horizon.

If a given stock is rebuilt more slowly under the method for calculating a rebuilding time horizon that has no discontinuity but a longer rebuilding period, there could be less economic impacts (i.e., higher annual revenues) on vessel owners during the beginning of a rebuilding plan. Under the longer rebuilding period, it would probably take longer to reach the B_{msy} for the fish stock so that the fishery would likely experience foregone annual yield (FAY). For the FMPs that have one or more stocks that have a GT of about 9 to 10 years, if that stock's rebuilding plan had to be revised due to inadequate progress under section 304(e)(7) of the Magnuson-Stevens Act, the designation for the PA in Table 7 (Part 2) is Short Term Positive (SP), but foregone annual yield later (SPFAY).

4.3.6 Rebuilding targets. See section 2.6. See the first three paragraphs in section 4.1.6.

4.3.6.1 No action alternative. See section 2.6.1. Under the NA, for FMPs that have only SDC-known stocks that are not overfished, there would be no economic impacts ("N" for None) on vessel owners, dealers, and processors. Under the NA, the designation is potentially negative (Neg) economic and social impacts compared to the PA if some of the stocks in the FMP are thought to be overfished and the F_{lim} for one or more of those stocks is known or may become known later (see Table 7 (Part 2)).

4.3.6.2 Proposed action alternative. See section 2.6.2. Under the PA, for FMPs that have only SDC-known stocks that are not overfished, there would be no economic impacts ("N" for None) on vessel owners, dealers, and processors. Also, in general, under the PA there should be no immediate economic impacts on vessel owners, dealers, or processors, and few, if any economic impacts for the first year or so after the effective date of the final rule for the NS1 guidelines.

For the PA, the designation is potentially positive (Pos) if some of the stocks in the FMP are thought to be overfished and the F_{lim} for one or more of those stocks is known or may become known later (see Table 7 (Part 2)).

4.3.7 Revision of rebuilding plans. See section 2.7. See the first two paragraphs of section 4.1.7.

4.3.7.1 No action alternative. See section 2.7.1. If some rebuilding plans are not revised due to the lack of specific guidance in the NS1 guidelines, then a higher annual yield in a given fishery might be postponed. Under the NA, For FMPs with only stocks that are not overfished and not under rebuilding plans, the designation for economic impacts in Table 7 (Part 2) is None (N), and for FMPs that have rebuilding plans that could be revised later if necessary, the designation for economic impacts is unknown (U) because of the lack of better guidance under the no action alternative.

4.3.7.2 Proposed action alternative. See section 2.7.2. This proposed revision should have no immediate or near-term economic impacts on vessel owners and dealers. Any economic impacts on vessel owners and dealers in the longer-term would be analyzed at the time that new management measures are proposed to manage such a fish stock because of a change in the rebuilding plan. If rebuilding plans are revised so that F is reduced, then fishermen and processors would experience losses in revenues in the short term, but increases in revenues annually, in the longer term. For FMPs with only stocks that are not overfished and not under rebuilding plans, the designation in Table 7, Part 2 for economic impacts is None (N), and for FMPs that have rebuilding plans that could be revised later, if necessary, the designation for economic impacts is likely to be positive (Pos) compared to the NA.

4.3.8 OY control rules. See section 2.8. See first two paragraphs of section 4.1.8.

4.3.8.1 No action alternative. See section 2.8.1. Under this alternative, it is unknown how often OY control rules would be implemented in the future. In the longer term, under the NA in Table 7, Part 2, for FMPs that only have fish stocks that have OY control rules resulting in less harvest than the MSY control rules, the economic impacts of this alternative NA are none (N). For FMPs that have no OY control rules for one or more rebuilding plans or OY control rules that do not result in less harvest than their corresponding MSY control rules for one or more rebuilding plans, the economic impacts *could* be short term positive (SP) revenues compared to the PA, but foregone annual revenues (FAR) later --SPFAR.

4.3.8.2 Proposed action alternative. See section 2.8.2. This proposed revision would have no immediate economic impacts on vessel owners, dealers and processors, and few if any for the first year or so after the effective date of the final rule for the NS1 guidelines. For the PA in the longer term, for FMPs that have fish stocks that have OY control rules that already would result in less harvest than their corresponding MSY control rule, the economic impacts would be none (N) (see Table 7 (Part 2)). For FMPs that have no OY control rules or OY control rules that result in the same harvest levels as the MSY control rules for that stock rather than smaller harvest levels, the economic impacts *could* be short-term negative (SN) in terms of some loss of

revenues, but higher annual economic revenues (HAR) earlier (possibly just a few years after the rebuilding plan begins); therefore the designation for these stocks is SNHAR.

4.3.9 International fisheries. See section 2.9.

4.3.9.1 No action alternative. See section 2.9.1. For FMPs that do not have any stocks managed by international agreements, the economic impacts of this issue under the no action alternative are none (N). For FMPs that have some fish stocks managed under international agreements the economic impacts of this no action alternative are unknown (U).

4.3.9.2 Proposed action alternative. See section 2.9.2. For FMPs that do not have any stocks managed by international agreements, the economic impacts of this issue under the proposed action alternative are none (N). For FMPs that have some fish stocks managed under international agreements the economic impacts of this proposed action alternative are unknown (U). However, this proposed action does provide more specific guidance than current guidelines about how to manage the U.S. portion of a stock shared with other countries depending upon whether an international organization manages such a stock throughout its range.

This proposed revision should have no immediate or near-term economic impacts on vessel owners and dealers. Any economic impacts on vessel owners or dealers in the longer-term would be analyzed at the time that new management measures are proposed to manage such a fish stock or stock assemblage.

4.4 Social impacts. Refer to Table 7 (Parts 1 and 2) for qualitative summaries of estimated economic impacts in the longer term (beginning 1½ to 2 years and beyond) by FMP because those impacts are often related to social impacts on fishing communities.

4.4.1 Terminology. See section 2.1.

4.4.1.1 No action alternative. See section 2.1.1. There should be no social impacts on fishing communities in the short term on long term as a result of keeping the terminology unchanged.

4.4.1.2 Proposed action alternative. See section 2.1.2. There should be no social impacts on fishing communities in the short term on long term as a result of changing the terminology.

4.4.2 Stock, fisheries and species assemblages. See section 2.2. See the first two paragraphs in section 4.2.2.

4.4.2.1 No action alternative. See section 2.2.1. In the longer term, the lack of additional management of some stocks having unknown status could result in overfishing and foregone revenues, but impacts on industry infrastructure in the community are unknown.

4.4.2.2 Proposed action alternative. See section 2.2.2. This proposed revision should have no immediate social impacts on fishing communities, and no social impacts on fishing communities for the first year or so after the effective date of the final rule for the NS1 guidelines. Any social

impacts on fishing communities in the longer-term would be analyzed at the time that new management measures are proposed to manage such a fish stock or stock assemblage. In the longer term, additional management of some stocks having unknown status could result in higher annual revenues that would presumably benefit industry infrastructure in some fishing communities.

4.4.3 Fishing mortality limits. See section 2.3. See first two paragraphs of section 4.1.3.

4.4.3.1 No action alternative. See section 2.3.1.
Under this alternative compared to the proposed action, some fish stocks might continue to undergo overfishing longer (and the beginning of rebuilding would be postponed). Positive social impacts might be greater in the interim period, but higher average annual yields, in the long term, and greater long-term positive social impacts would be postponed.

4.4.3.2 Proposed action alternative. See section 2.3.2. This proposed revision should have no immediate social impacts on fishing communities and no social impacts on fishing communities for the first year or so after the effective date of the final rule for the NS1 guidelines. Any social impacts on fishing communities in the longer-term would be analyzed at the time that new management measures are proposed to manage such a fish stock or stock assemblage.

If overfishing were ended sooner for some fish stocks, because conditions under which overfishing can continue are more limited, there would be short-term negative impacts but then rebuilding of some stocks would begin sooner, and higher annual yields could also occur sooner and greater long-term positive social impacts might occur.

4.4.4 Stock size limits. See section 2.4. See first eight paragraphs of section 4.1.4.

4.4.4.1. No action alternative. See section 2.4.1.
It seems unlikely that this alternative would have any social impacts that are different from the social impacts for the proposed alternative, with the possible exception that a fish stock that is declared overfished based on one year of data versus several fishery years under the proposed action (depending on the biology of the species), could cause some short-term negative impacts on revenues and negative impacts on the fishing community, but positive impacts or revenues and the community later.

4.4.4.2. Proposed action alternative. See section 2.4.2.
This proposed revision should have no immediate social impacts on fishing communities and no social impacts on fishing communities for the first year or so after the effective date of the final rule for the NS1 guidelines. Any social impacts on fishing communities in the longer-term would be analyzed at the time that new management measures are proposed to manage such a fish stock or stock assemblage. It seems unlikely that this alternative would have any social impacts that are different from the social impacts for the proposed alternative, with the possible exception that a fish stock that is declared overfished based on more than one fishery year (depending on the biology of the species) versus one year under the no action alternative, could

cause some short-term positive impacts on revenues and positive impacts on the fishing community, but some negative impacts on revenues and the community later.

4.4.5 Rebuilding time horizons. See section 2.5. See the first three paragraphs of section 4.1.5.

4.4.5.1 No action alternative. See section 2.5.1. Under the no action alternative compared to the proposed action, if a given stock is rebuilt more rapidly under the method for calculating a rebuilding time horizon that has a discontinuity, but a shorter rebuilding period, there could be a decrease in annual revenues (i.e., some negative social impacts on fishing communities in the first few years of the plan), but sustained increases in revenues earlier, because rebuilding of the fish stock would occur more rapidly than under a slower pace of rebuilding.

4.4.5.2 Proposed action alternative. See section 2.5.2. This proposed revision should have no immediate social impacts on fishing communities or impacts on social communities in the first year or so after the effective date of the final rule for the NS1 guidelines. Any social impacts on fishing communities in the longer-term would be analyzed at the time that new management measures are proposed to manage such a fish stock with a revised rebuilding time horizon.

If a given stock is rebuilt more slowly under the method for calculating a rebuilding time horizon that has no discontinuity but a longer rebuilding period, there could be less negative social impacts on fishing communities during the beginning of a rebuilding plan. This feature of the proposed action would provide some flexibility (e.g., for mixed stock fisheries), thereby addressing concerns by members of Congress for the need of more flexibility in fisheries management under the SFA.

4.4.6 Rebuilding targets. See section 2.6. See the first three paragraphs in section 4.1.6.

4.4.6.1 No action alternative. See section 2.6.1. Under the no action alternative, it's possible that for some stocks having unknown status related to B_{lim} and T_{min}, there would be foregone revenues (some negative social impacts for fishing communities) until fishery managers better understand the biology of such stocks and their ability to withstand fishing effort.

4.4.6.2 Proposed action alternative. See section 2.6.2. This proposed revision should have no immediate social impacts on fishing communities or impacts on social communities in the first year or so after the effective date of the final rule for the NS1 guidelines. Any social impacts on fishing communities in the longer-term would be analyzed at the time that new management measures are proposed as a result of revisions to a rebuilding target, or later, at such time that a fishery is determined to be rebuilt, and greater harvest of a given stock is finally allowed.

Under the proposed action, it's possible that for some stocks having an unknown status related to B_{lim} or T_{min}, there would be higher annual revenues (some positive social impacts for fishing communities) after a prolonged period of rebuilding (two generation times) for a given fish stock for which B_{lim} is unknown but a reasonably good estimate of F_{lim} exists.

4.4.7 Revision of rebuilding plans. See section 2.7. See first three paragraphs of section 4.1.7.

4.4.7.1 No action alternative. See section 2.7.1. If some rebuilding plans are not revised due to the lack of specific guidance in the NS1 guidelines, then a higher annual yield (i.e., positive social impacts in the long term) in a given fishery might be postponed, or the rebuilding target may not be achieved thus prolonging the rebuilding plan.

4.4.7.2 Proposed action alternative. See section 2.7.2. This proposed revision should have no immediate or near-term economic impacts on vessel owners and dealers. Any economic impacts on vessel owners and dealers in the longer-term would be analyzed at the time that new management measures are proposed to manage such a fish stock because of a change in the rebuilding plan.

If rebuilding plans are revised so that F is reduced, then fishermen and processors would experience losses in revenues (i.e., negative social impacts) in the first few years of the plan, but they would benefit from greater revenues annually, at an earlier point in the rebuilding plan. On the other hand, it's possible that a fishery-rebuilding plan may be designed to rebuild more slowly than originally planned, to try to some extent to preserve the fishing industry infrastructure and some degree of economic stability of the fishing community.

4.4.8 OY control rules. See section 2.8. See first two paragraphs of section 4.1.8.

4.4.8.1 No action alternative. See section 2.8.1. Under this alternative, it does not seem likely that many, or any, new OY control rules would be implemented in the future. There should be no social impacts on fishing communities in the short term on long term.

4.4.8.2 Proposed action alternative. See section 2.8.2. The proposed revision for OY control rules would have no immediate social impacts on fishing communities or social impacts on fishing communities in the first year or so, after the effective date of the final rule for revisions to the NS1 guidelines. It is difficult to predict the extent of any social impacts that might occur later, if an OY control rule is adopted and implemented for a given fishery. Minor losses in revenues (negative social impacts) at the outset of implementing an OY control rule would be offset by the increase in average abundance of the fish stock, followed by more stable annual and greater revenues (positive social impacts) than would occur without an OY control rule. Any social impacts on fishing communities in the longer term would be analyzed at the time that an OY control rule and accompanying measures are adopted.

4.4.9 International fisheries. See section 2.9.

4.4.9.1 No action alternative. See section 2.9.1. There no known social impacts on fishing communities in the short or long term.

4.4.9.2 Proposed action alternative. Proposed revised guidelines provide more specific guidance than current guidelines about how to manage the U.S. portion of a stock shared with

other countries depending upon whether an international organization manages such a stock throughout its range. This proposed revision should have no immediate social impacts on fishing communities, and no social impacts on fishing communities in the first year or so after the effective date of the final rule for revisions to the NS1 guidelines. Any social impacts on fishing communities in the longer-term would be analyzed at the time that new management measures are proposed to manage such a fish stock or stock assemblage. This alternative is likely to have positive social impacts since it directs the U.S. to lead international efforts to rebuild, but does not put the onus or burden on U.S. fisheries.

4.5 Cumulative impacts

For discussion of cumulative impacts, NMFS considers that *past actions* would be those actions of the last several years, and in part, those undertaken under the NS1 guidelines as revised and effective June 1, 1998.

Present actions would be this rule that proposes to revise the NS1 guidelines, along with any other actions NMFS is preparing to implement in the near future that would affect fishing effort, marine mammal or protected species protection or conservation of EFH, especially nationwide actions. NMFS is in the early stages of development of revisions to the guidelines for identification and description of EFH, but probably will issue that action as technical advice or guidance.

Other present actions include the proposed rule for Amendment 6 to the South Atlantic Shrimp FMP and the Draft Supplemental Environmental Impact Statement (DSEIS) for Caribbean FMPs: Amendment 2 to the Spiny Lobster FMP; Amendment 1 for the Queen Conch resources; Amendment 3 for the Reef Fish Fishery; and Amendment 2 to the Corals and Reef Associated Invertebrate U.S. Caribbean FMP. The notice of availability for the DSEIS was published in the Federal register on March 18, 2005 with a comment period ending date of May 2, 2005. This action's measures related to NS1 guidelines could be consistent with the current or proposed guidelines, whatever the Caribbean Fishery Management Council chooses (see section 1.1.3). Amendmen6 to the South Atlantic Shrimp FMP would follow the current NS1 guidelines.

Reasonably foreseeable actions would include actions that would have the biological, economic and social impacts and impacts on the physical environment (especially EFH) in the longer-term (beginning about 1 and ½ to 2 years after the effective date of the final rule for these revisions to the NS1 guidelines) of management actions taken for fisheries managed under the Magnuson-Stevens Act that also use the new NS1 guidelines; and the likelihood that NMFS will undertake a more ambitious policy towards ecosystem management in the near future.

4.5.1 Past actions

A review of recent past actions indicates that the current NS1 guidelines in combination with other factors have had a positive impact on rebuilding of some overfished stocks, especially some SDC-known stocks. However, progress in the conservation and management of many stocks having an unknown status related to F_{lim}, B_{lim} or both, has been slow due the lack of data, and in some cases, confusion about how to proceed. Councils have had great difficulty in

developing estimates of SDC or $B_{targets}$ for some stocks have confounded management. The fact that some rebuilding plans are very long (e.g., some Pacific Coast groundfish stocks due to low stock productivity) makes it difficult and sometimes impossible to evaluate the success or failure of a plan in its first few years. Also, it is difficult to separate the effect of the guidelines themselves and from the impacts of the management measures.

For some fish stocks, it is often not possible to attribute recent rebuilding of fish stocks as resulting strictly from the current NS1 guidelines. The first NMFS Report to Congress on the Status of the Fisheries of the U.S. was issued in September 1997. At that time there were 39 FMPs and five under development. The overfishing definitions were based largely on an F value that should not be exceeded, so that few overfishing definitions also included a minimum biomass limit or threshold or proxy. The NMFS September 1997 Report relied on pre-SFA overfishing definitions (i.e., in large part the 1995 edition of Our Living Oceans issued by NMFS). Similarly, the NMFS October 1998 Report was also based largely on pre-SFA overfishing definitions for various FMPs and information in the 1999 edition of Our Living Oceans. The NMFS October 1999 Report to Congress was the first annual Report issued under section 304(e)(1) of the Magnuson-Stevens Act, that included some overfished and overfishing definitions (SDC) for FMPs that were approved under the SFA and followed the current NS1 guidelines.

4.5.1.1 New England FMC fisheries

The Atlantic sea scallop fishery was deemed "overfished" in the NMFS October 1999 Report and the stock was determined "rebuilt" in the NMFS April 2002 Report. The rebuilding of sea scallops was partly attributable to the closure areas in New England waters stemming from Amendment 6 to the FMP for the Northeast Multispecies Fishery (implemented in 1994), along with the action taken in scallop management aimed at reduction in fishing effort as a result of Amendment 7 to the FMP for sea scallop. For the Northeast multispecies fishery (groundfish), many SDC were approved under SFA before the October 1999 Report, but management measures were not adopted by the Council to implement those definitions. Updated SFA-approved SDC were implemented by management measures that accompanied them by the final rule for Amendment 13, which became effective in May 1, 2004. Interim measures that were more conservation oriented than Amendment 7 to the Northeast Multispecies FMP, first became effective in 2001, but were probably not SFA-approvable. These measures served a function similar to those that would be implemented strictly under section 305(c) of the Magnuson-Stevens Act, and were replaced by Amendment 13 in 2004. Therefore, rebuilding that has occurred between June 1, 1998, and 2003 for the sea scallop fishery and the Northeast multispecies fishery can only be partly attributed to the current NS1 guidelines.

No known progress has been made in rebuilding the Atlantic salmon stock since it was determined "overfished" for 2000 (NMFS January 2001 Report). The Monkfish stocks (north and south) were determined "overfished" in 1998 (NMFS October 1999 Report) and the northern stock was determined "not overfished" in 2001 (NMFS April 2002 Report). Atlantic herring has never been determined "overfished" since the Atlantic Herring FMP and its SDC were approved under SFA in 1999. The Atlantic Deep-Sea-Red Crab FMP and its SDC were approved under SFA in October 2002, but its overfished status is unknown. The FMP for Skates of the Northeast

Region was approved in September 2003 and barndoor and thorny skates were determined "overfished" in the 2003 (NMFS May 2004 Report); the rebuilding period for these skate stocks has been too short thus far, to attribute any rebuilding as resulting from management measures stemming from SDC approved under the SFA.

4.5.1.2 Mid-Atlantic FMC fisheries

The summer flounder, scup and black sea bass SDC were approved by NMFS under SFA, but no new management measures were necessary to implement the SDC approved under SFA; therefore, the current NS1 guidelines had no effect on rebuilding plans for summer flounder and black sea bass. The NMFS May 2004 Report listed summer flounder as no longer overfished and continuing to rebuild. Scup is listed as overfishing still occurring, but not overfished in the NMFS May 2004 Report, but many managers and biologists feel that the stock is still overfished, some rebuilding is occurring, but the overfishing status is unknown due in large part to an unknown amount of bycatch mortality in other fisheries. Black sea bass north of Cape Hatteras, NC, is still undergoing overfishing and the stock is overfished, but rebuilding. Summer flounder and scup have rebuilding plans that were approved under the SFA and are the same rebuilding plans that were in the FMP before the SFA. Scup does not have an SFA-approved rebuilding plan. Therefore, rebuilding is occurring in the summer flounder, scup and black sea bass fisheries, but that rebuilding cannot be attributed to the current NS1 guidelines. The bluefish fishery was determined "overfished" for 1998 (NMFS October 1999 Report) under SFA-approved SDC, and the annual quotas are now based on annual $F_{targets}$ that seem to be achieving some rebuilding of this stock, but assessments have varied in their results and more evaluation is necessary before drawing any conclusions about the success of rebuilding thus far; therefore, the current NS1 guidelines' effects on the rebuilding for bluefish is not known yet. The golden tilefish fishery was determined "overfished" under SFA-approved SDC in 2001 (NMFS April 2002 Report). It is not known how much, if any rebuilding thus far is attributable to the SFA-approved SDC and rebuilding plan that became effective in November 2001. For the Spiny Dogfish FMP, the overfished status of spiny dogfish remains "undefined" because the overfished portion of the SDC for that stock has not yet been approved under the SFA, and it didn't have a pre-SFA approved overfishing definition because the FMP did not exist then. Generally, fishery scientists agree that the spiny dogfish stock is overfished; some rebuilding may be occurring, but progress is slow, and the FMP does not have an approved B_{target} yet.

4.5.1.3 South Atlantic FMC fisheries

For the Atlantic Red Drum FMP, Shrimp FMP, most of the fish stocks in the Snapper-Grouper FMP, and the Coral, Coral Reefs, and Live Hard Bottom Habitats FMP the overfished definitions are not SFA-approved. For the Atlantic component of the FMP for Coastal Migratory Pelagic Resources of the Gulf of Mexico and South Atlantic, the Spanish mackerel and king mackerel stocks are *not* overfished. For the FMP for the Spiny Lobster Fishery of the Gulf of Mexico and South Atlantic the overfished definition is not SFA-approved. Therefore, progress in rebuilding of overfished stocks in the South Atlantic fisheries is not measurable yet in terms of evaluating success of rebuilding plans under the Magnuson-Stevens Act as amended by the SFA along with current NS1 guidelines.

4.5.1.4 Caribbean FMC fisheries

For the FMP for the Spiny Lobster Fishery, the FMP for the Shallow Water Reeffish Fishery, the FMP for Corals and Reef Associated Invertebrates, and the FMP for Queen Conch (all FMPs being for the Puerto Rico and U.S. Virgin Islands Region), SDC for "overfished" are not SFA-approved. Therefore, progress in rebuilding of overfished stocks in the Caribbean fisheries is not measurable yet in terms of evaluating success of rebuilding plans under the Magnuson-Stevens Act as amended by the SFA along with current NS1 guidelines.

4.5.1.5 Gulf of Mexico FMC fisheries

For the FMP for Reeffish Resources, the FMP for Corals and Coral Reef Management in the GOM, the FMP for GOM Red Drum, the FMP for Stone Crab, the GOM component of the Coastal Migratory Pelagics for the GOM and South Atlantic, SDC for "overfished" are not SFA-approved. For the FMP for GOM Shrimp--brown shrimp, white shrimp, and pink shrimp are "not overfished" under a definition that was SFA-approved for the 2000 fishery (NMFS January 2001 Report). Therefore, progress in rebuilding of overfished stocks in the GOM fisheries is not measurable yet in terms of evaluating success of rebuilding plans under the Magnuson-Stevens Act as amended by the SFA along with the current NS1 guidelines.

4.5.1.6 Pacific FMC fisheries

For the Pacific Coast Groundfish FMP, the following stocks have been declared, "not overfished" under SFA-approved definitions since October 1999—shortspine thornyhead, yellowtail rockfish, sablefish, Dover sole, petrale sole, chilipepper rockfish, shortbelly rockfish, and longspine thornyhead. As of the NMFS May 2004 Report that reviewed the 2003 fisheries, lingcod, Pacific Ocean perch, boccacio, darkblotched rockfish, cowcod, widow rockfish, yelloweye rockfish, and canary rockfish were overfished under SFA – approved definitions and in SFA-approved rebuilding plans as follows: Lingcod – fourth year of 10-year plan, Pacific Ocean perch – fourth year of 42-year plan, boccacio – fourth year of 21-year plan, darkblotched rockfish in the second year of a 42-year rebuilding plan, canary rockfish in the third year of 73-year plan, and widow rockfish in the second year of 35-year rebuilding plan. Pacific whiting was still listed as overfished in the NMFS May 2004 Report, but recent stock assessment information that became available after the cutoff point for inclusion in that Report indicates that that stock was no longer overfished despite not having a formal rebuilding plan approved under the SFA. For the Coastal Pelagics FMP, two stocks are not overfished, three stocks (jack mackerel and northern anchovy, northern and southern subpopulations) are undefined, and market squid's overfished condition is unknown. None of the stocks of West Coast salmon for which sufficient information is available are overfished. Therefore for the overfished stocks that have an overfished definition and rebuilding plan under the current NS1 guidelines, it is too early tell whether or not the rebuilding plans have been successful under the Magnuson-Stevens Act as amended by the SFA along with the current NS1 guidelines.

For the Coastal Pelagics Species FMP, jack mackerel and Northern anchovy (central population) and Northern anchovy (northern population) do not have SFA-approved SDC yet. Pacific (chub) mackerel and Pacific sardine are not overfished now and were not considered "overfished" when their overfished definitions were first approved under SFA as listed in the NMFS October 1999 Report. The FMP for West Coast Highly Migratory Species was approved in February 2004, so

there hasn't been sufficient time to determine the effects of the Magnuson-Stevens Act as amended by the SFA along with the current NS1 guidelines on rebuilding of any overfished stocks in that FMP.

4.5.1.7 Western Pacific FMC fisheries

For the Western Pacific Pelagics FMP, bigeye tuna (Pacific), yellowfin tuna (Central Western Pacific), yellowfin tuna (Eastern Tropical Pacific), albacore (South Pacific), skipjack tuna (Central Western Pacific), striped marlin (Eastern Pacific), swordfish (North Pacific), and blue marlin (Pacific) are considered "not overfished" in the NMFS May 2004 Report on the 2003 fishery. This is the first time that SFA-approved SDC have existed for this FMP, so no analysis is necessary to describe impacts of the current NS1 guidelines on rebuilding for fish stocks in this FMP. For the Western Pacific Crustaceans FMP, SFA-approved overfished definitions exist, but the status of two species of spiny lobster and three species of slipper lobster are unknown. For the Western Pacific Precious Corals FMP, SFA-approved definitions exist, but the status of the 12 species/stocks groups is unknown. For the Western Pacific Bottomfish and Seamount Groundfish FMP, 21 of 22 stocks have SFA-approved "overfished" definitions, but their stock status is unknown. Therefore, progress in rebuilding of overfished stocks in the Western Pacific fisheries is not measurable yet in terms of evaluating success of rebuilding plans under the Magnuson-Stevens Act as amended by the SFA, along with the current NS1 guidelines.

4.5.1.8 North Pacific FMC fisheries

None of the salmon stocks in the High Seas Salmon FMP, and none of the groundfish stocks under the Bering Sea and Aleutian Islands FMP and the Groundfish Of the Gulf of Alaska FMP are considered "overfished," so that none of those stocks are under any rebuilding plans. Therefore, there are no stocks in these FMPs that can be evaluated yet, in terms of the Magnuson-Stevens Act as amended by the SFA along with the current NS1 guidelines.

Two stocks of crabs in the Bering Sea and Aleutian Islands Crab FMP are known to be overfished, but rebuilding has not been occurring long enough to evaluate the success of management under the Magnuson-Stevens Act as amended by the SFA, along with the current NS1 guidelines (these crab fisheries are actually managed directly by the State of Alaska).

4.5.1.9 Secretary of Commerce fisheries

For the Atlantic Tunas, swordfish, and Sharks FMP, bigeye tuna does not have a rebuilding plan that is internationally implemented, albacore's (North Atlantic) rebuilding plan has not yet been submitted, bluefin tuna is in the sixth year of a 20-year rebuilding plan and is still undergoing overfishing and is overfished, swordfish of the North Atlantic and sandbar shark are no longer overfished and both are rebuilding. Swordfish is in the 6th year of a 20-year plan and sandbar shark is under a 26-year plan. Bull shark is overfished and under a 26-year plan, and blacktip shark is rebuilt. Finetooth shark, bonnethead shark, Atlantic sharpnose shark, and blacknose shark are not overfished, and the overfished status of shortfin mako shark, and smooth dogfish are undefined. Therefore, there has been mixed success in rebuilding a few stocks under this FMP, but it is difficult to evaluate how much success is attributable directly to the Magnuson-Stevens Act as amended by the SFA, along with the current NS1 guidelines.

4.5.2 Present actions

Present impacts include the projected impacts of the proposed NS1 guidelines. Proposed changes pertaining to "Terminology (section 2.1)" would not have any environmental consequences. None of the other proposed revisions would have environmental consequences upon the effective date of the final rule for the NS1 guidelines. The proposed revisions for "Biomass limits (section 2.4)" revises the default value for B_{lim} and provide more practical guidance on how the value for B_{lim} can vary from the default value depending on circumstances related to a fish stock's life history. This measure should have little or no environmental consequences. The proposed revisions related to "International fisheries (section 2.9)" provide clarification on how to manage straddling stocks and highly migratory species that we share with other countries and gives advice on how the U.S. should manage such a shared resource in the absence of an International agreement for management. Biological consequences of this proposed revision in the longer term are unknown but the additional guidance contained in this revision, satisfies requirements of the Magnuson-Stevens and deals better than the current NS1 guidelines with management of International fisheries in practical terms. The proposed revisions related to "Stocks, fisheries, and assemblages (section 2.2)," fishing mortality limits (section 2.3)," rebuilding time horizons (section 2.5)," revision of rebuilding plans (section 2.7)," and "OY control rules (section 2.8)," would not affect current FMPs' SFA-approved SDC and rebuilding plans, unless the rebuilding plan fails to make adequate progress under section 304(e)(7) of the Magnuson-Stevens Act, or estimated values of the rebuilding target, or SDC change substantially, thereby necessitating revision of a rebuilding plan. If a rebuilding plan has to be revised, then that stock should satisfy new NS1 guidelines as described in sections 2.2.2 2.3.2, 2.4.2, 2.5.2, 2.6.2, 2.7.2, and 2.8.2. A given fish stock may already satisfy the new guidelines or it may not, but environmental consequences would only be known when such an action is submitted for Secretarial review. It is not known how often, and when, rebuilding plans would need to be revised. The proposed revisions related to rebuilding targets (section 2.6.2) could affect conservation and management of stocks for which an F_{msy} value or proxy is known, but a B_{lim} or proxy is unknown. However, it is not known how often Councils would take advantage of the method described in section 2.6.2 for determining when such a stock is no longer depleted.

The Caribbean FMC plans in 2005 to submit amendments to the FMPs for the Spiny Lobster Fishery; the Shallow Water Reeffish Fishery; the Corals and Reef Associated Invertebrates; and the Queen Conch Fishery, intended to comply with SFA. Those Amendments have the "stock assemblage" method of management as one of their alternatives, so that it's possible that the FMPs would have an enhanced method for conserving some of their data poor stocks. A Council could use the stock assemblage approach to management even if the proposed NS1 guidelines are not yet in effect.

4.5.3 Reasonably foreseeable actions in the future

Biological, economic, and social impacts and physical impacts on the environment (especially EFH) in the longer term, beginning about 1½ to 2 years after the effective date of the final rule

for revisions to the NS1 guidelines are discussed in qualitative terms in sections 4.1, 4.2, 4.3, and 4.4, and Tables 5, 6, and 7 (Parts 1 and 2 of each Table). NMFS believes that these impacts are mostly attributable to the Magnuson-Stevens Act as amended by the SFA, whereas the NS1 guidelines (current and proposed revisions) give guidance on how to satisfy the SFA, but do not themselves have the force and effect of law. Nevertheless, the impacts of Magnuson-Stevens Act actions *in the longer term* are very difficult to discuss beyond qualitative terms because it is not known how often, how frequently, or in what order Magnuson-Stevens Act actions would be implemented in the future that are also designed to satisfy the proposed revisions to the NS1 guidelines.

Any new FMPs or FMP amendments other than those type of actions already under development as described in section 1.1.3, would attempt to satisfy the new NS1 guidelines if they contain SDC, OY control rules or rebuilding plans for stocks that don't have SFA-approved SDC or rebuilding plans if they are submitted for Secretarial review late in 2005 and beyond (assuming that the final rule for the proposed revisions to the NS1 guidelines is published early in 2005). No such actions are anticipated as being submitted by the New England or Mid-Atlantic Councils in 2005 or 2006. Such actions that might be submitted by the Gulf of Mexico Council in 2005 or 2006 include Gulf Reeffish Amendment 22 (red snapper rebuilding plan), and Gulf Reeffish Amendment 23 (vermilion snapper rebuilding plan). Amendment 13B (rebuilding plans) to the Snapper-Grouper FMP will likely be submitted by the South Atlantic Council. No such actions are likely to be submitted by the Pacific or North Pacific Councils during 2005 and 2006. The Western Pacific Council is likely to submit: (1) An action related to the Pelagics FMP to address overfishing of Pacific bigeye tuna, (2) an action that would add three new species of squid; (3) an action related to the Bottomfish FMP to address overfishing of some of the bottomfish multispecies complex in the Hawaiian Archipelago and Guam, and a separate action to add 48 species to the same FMP; and (4) an action related to the Crustaceans FMP to add three species to the management unit.

Councils that have fisheries with pre-SFA approved overfished or overfishing definitions or both) rather than post-SFA approved overfished or overfishing definitions (or both) continue to pursue development of SFA approvable overfished and overfishing definitions. Those fisheries are as follows:

South Atlantic shrimp (four species) –overfished and overfishing (***new FMP amendment under Secretarial review—approved June 3, 2005***)

Snapper-Grouper (13 stocks)—overfished

Red drum (South Atlantic)—overfished; being proposed for withdrawal from Council management and transfer to management primarily under the Atlantic States Marine Fisheries Commission

King mackerel (GOM)—overfished

Spanish mackerel (GOM)—overfished

Little tunny (GOM)—overfished

Spiny lobster (GOM combined with South Atlantic)—overfished

Reef fish of GOM (16 stocks)—overfished

Red drum (GOM)—overfished

Caribbean spiny lobster—overfished and overfishing

Caribbean Queen conch—overfished and overfishing
Bluefish (GOM)—overfished
Stone crab (GOM)—overfished

Given the increased attention and interest within NMFS, recent reports by independent studies, and interest by Congress and environmental organizations, NMFS and the Councils will likely become more involved in ecosystem approaches to fisheries management in the near future. Early efforts to convert fisheries management to take more of an ecosystem approach will likely evaluate the status of availability of pertinent data for various fisheries in the EEZ. Two Ecosystem Plan approaches being discussed by the Western Pacific Council include the Archipelagic Fishery Ecosystem Plan and the Pelagic Ecosystem Plan.

NMFS believes that the revised NS1 guidelines make for a better transition from current management schemes to ecosystem management. For example, stocks having an unknown status related to F_{lim} or B_{lim}, or both, should begin to receive better protection under stock assemblage management under the revised NS1 guidelines and be managed together on the principle that they occur together, and are often caught together with same gear. Also, there would be beneficial impacts for affected stocks and their ecosystem from the increased emphasis on ending overfishing in the first year of a new plan, on setting target time to rebuild that is less than the maximum time to rebuild, and on setting the target level of fishing mortality less than the F_{lim}.

5.0 Consistency with other applicable laws

5.1 Coastal Zone Management Act

NMFS has initially determined that this action is consistent to the maximum extent practicable with the enforceable policies of the approved coastal management programs of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Wisconsin, Michigan, Ohio, Indiana, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, Florida, the Commonwealth of Puerto Rico, U.S. Virgin Islands, Alabama, Mississippi, Louisiana, Texas, California, Oregon, Washington, Alaska, Hawaii, American Samoa, Northern Mariana Islands, and Guam. NMFS will send letters to the aforementioned coastal zone management programs on about April 28, 2005.

5.2 Data Quality Act

NMFS conducted a Data Quality review for these proposed revisions to the NS1 guidelines and certified that this action complies with the Data Quality Act on February 3, 2005. This review is available upon request.

5.3 Regulatory Impact Review

NMFS requires that a regulatory impact review (RIR) be prepared for actions that have a proposed and final rule, and actions that have a final rule only, to address requirements of the Executive Order (E.O.) 12866. This section constitutes the RIR for the proposed revisions for NS1.

5.3.1 Executive Order 12866

The objectives of E.O. 12866 are to enhance planning and coordination with respect to both new and existing regulations. Chief goals include designing regulations in a cost-effective manner. NMFS believes that the benefits of this action justify the known costs that might be incurred. The proposed revisions should be instrumental in improved ability to construct "depleted" and "overfishing" definitions and rebuilding plans that would satisfy the objectives of the Magnuson-Stevens Act to rebuild overfished fisheries.

5.3.1.1 Description of management objectives

See section 1.2.

5.3.1.2 Description of the fishery

The fisheries in the EEZ are described in detail in each FMP. For more detailed information about a fishery, a copy of a given FMP can be obtained from the Councils or NMFS as listed in Appendix 8. Often, the most recent Amendment to a given FMP contains the most updated information for that fishery.

5.3.1.3 Statement of the Problem

NMFS, the Councils, the public, and various stakeholders in fisheries in the EEZ have worked with the current version of the NS1 guidelines since June 1998, while developing SDC and rebuilding plans for various fisheries. Therefore, NMFS has been made aware of strengths and weaknesses in the current NS1 guidelines, and has decided to propose several revisions to them.

5.3.1.4 Description of each alternative, including the no action alternative

See section 2.0.

5.3.1.5 Economic analysis of the expected effects of each selected alternative relative to the baseline. As described in section 5.4.2, the proposed revisions to the NS1 guidelines (Alternatives 2.1.2, 2.2.2, 2.3.2, 2.4.2, 2.5.2, 2.6.2, 2.7.2, 2.8.2, and 2.9.2) would not have any economic impacts on fishermen and dealers on the effective date of the final rule for revisions to the NS1 guidelines. Few, if any actions would have any economic impacts within the first year or so, after the effective date of the final rule (see section 1.1.3).

After the effective date of the NS1 final rule, a new FMP or an FMP amendment, on average, *would not begin to have any impacts* until approximately 1½ to 2 years later. This is because most new FMPs and FMP amendments take more than one year to prepare and complete, before being submitted by the Councils for Secretarial review, and most FMP amendments, if approved, take about five more months after submission for Secretarial review, before the final rule becomes effective. Therefore, such impacts can only be discussed in this action on a qualitative

basis (i.e., positive, negative or no change), because none of the actual management measures that could eventually result from these proposed revisions are known.

The proposed revision would require that for new overfished stocks added to an FMP, that their rebuilding plans contain OY control rules that result in lower annual harvests than their corresponding MSY control rules throughout their range of values (e.g., biomass of the stock at beginning of the year). Likewise, if an existing rebuilding plan is revised for an overfished stock, then the OY control rule should result in less harvest than its corresponding MSY control rule. A Council would not need to prepare any new control rules unless rebuilding plans are not making adequate progress, or new data indicate that SDC or the rebuilding target needs revision. If new or revised OY control rules and their associated management measures are proposed at a later date, an economic analysis would accompany the proposed action at that time.

Some fisheries are already managed under OY control rules (e.g. some Pacific coast groundfish stocks) and others are managed under target or harvest control rules comparable to OY control rules (Alaskan groundfish). See Appendices 9 through 14.

If new OY control rules are implemented for a given fishery that is overfished, then there would likely be some short-term losses in revenues the first year or so, compared to harvest under an MSY control rule. However, overall stock abundance would likely increase faster under an OY control rule than an MSY control rule, meaning annual landings and revenues would probably increase and stabilize earlier.

Several of the proposed action alternatives, "Stocks, fisheries and species assemblages (section 2.2.2)", "Rebuilding targets (section 2.6.2)", "Revision of rebuilding plans (section 2.7.2)", and "International fisheries (section 2.9.2)", could eventually result in changes to current management measures, but only "in the longer term." These alternatives clarify when it is appropriate to manage with a stock assemblage and when to use indicator stocks to help manage a stock assemblage (section 2.2.2), provide another method to rebuild a fish stock it is impossible to estimate biomass-based reference points reliably (section 2.6.2), clarify what parameters should be adjusted in rebuilding plans (section 2.7.2), and clarify how to manage International fisheries (section 2.9.2).

For several other proposed revisions, it appears that current management measures would be revised in the longer term, in only a few instances. Examples would be proposed alternatives for "fishing mortality limits" (section 2.3.2), "biomass limits" (section 2.4.2), and "maximum rebuilding time horizons" (section 2.5.2).

Proposed alternative 2.3.2 clarifies the expectation that overfishing would be ended in the first year of a rebuilding plan, especially a revised rebuilding plan, unless certain conditions are satisfied under the Magnuson-Stevens Act. It is hoped that by establishing these conditions, the incidence of not ending overfishing for revised rebuilding plans and new rebuilding plans would be reduced, and overfishing could continue only under limited circumstances (listed in alternative 2.3.2). It is not possible to predict how often F would be reduced under the proposed revision; therefore, it is not possible to predict economic impacts on small entities at this time.

Proposed alternative 2.4.2 would revise the B_{lim} default value to be $\frac{1}{2}B_{msy}$. Until recently, sea scallops and some New England groundfish stocks had a B_{lim} of $1/4B_{msy}$. Amendment 10 to the Sea Scallop FMP, and Amendment 13 to the Northeast Multispecies FMP revised those stocks' B_{lims} to be $\frac{1}{2}B_{msy}$, or its proxy. The proposed revision to the NS1 guidelines provides guidance as to when exceptions to the $\frac{1}{2}B_{msy}$ value or its proxy are acceptable. It does not appear that these revisions would result in changes to many, if any current values. Some FMPs in the Southeast have set B_{lim} equal to $(1\text{-}M)*B_{msy}$ which could be more than $\frac{1}{2}B_{msy}$. The Pacific Coast groundfish FMP set B_{lim} at 25 percent of the estimated unfished biomass level, so this B_{lim} could be greater than $\frac{1}{2}B_{msy}$. These definitions could be revised to $\frac{1}{2}B_{msy}$, or could be kept at their current, more conservative, level. The proposed exceptions to the $\frac{1}{2}B_{msy}$ value could encompass some of the stocks that have short life spans such as some squid and salmon stocks/species.

Proposed alternative 2.5.2 would remove the discontinuity that currently exists in the formula for calculating maximum permissible rebuilding time (T_{max}). It seems likely that a few fish stocks would have a longer T_{max} under Alternative 2.5.2 than the no action alternative. In such an instance, the rebuilding F could be higher than the current F, so rebuilding of that fish stock could occur more slowly. Such an action would likely cause fewer short-term losses in revenue, but the beginning of higher average yield of that stock over an extended period of time would be delayed. Any changes in F to accommodate a longer T_{max} in the future would be accompanied by economic analyses for those specific actions.

The proposed action alternative for Terminology (section 2.1.2) would not result in any changes to current management measures; therefore the revisions in terminology would not have any economic impacts on small entities at anytime after the effective date of the final rule.

5.3.1.6 Changes in Net Benefits

Proposed alternative 2.8.2 would require that FMPs designate OY control rules for fish stocks with known SDC. OY control rules under alternative 2.8.2 would likely result in lower allowable annual harvests of fish stocks in the short-term (for a short time period after the OY control rule is first implemented) compared to alternative 2.8.1, especially for stocks that are managed by total allowable landings (TALs) and total allowable catches (TACs). However, this would not be the case for stocks unless a rebuilding plan has to be revised after the effective date for any final rule for the NS1 guidelines. FMPs that already have approved rebuilding plans and MSY or OY control rules do not have to be revised so that the OY control rule results in less harvest than its corresponding MSY control rule until rebuilding plans need to be revised because adequate progress is not being made.

For stocks not managed by TALs and TACs, other annual management measures that control fishing effort such as days-at sea, would still have the goal of attaining a harvest level that corresponds to an OY control rule, rather than an MSY control rule. It is not known what the difference in allowable harvest would be for various stocks managed under an OY control rule instead of an MSY control rule, because the proposed NS1 guidelines do not specify the degree

to which the OY control rule must be set below the MSY control rule. Also, it is unknown how frequently rebuilding plans would have to be revised after the effective date of the final rule for the NS1 guidelines, and which stocks' rebuilding plans would have to be revised. For stocks that are assigned OY control rules with values less than their corresponding MSY control rules, the better the database for a given stock, the more likely the OY control rule would have an allowable harvest level that is closer to the allowable harvest provided if the stock was managed under the MSY control rule. Any changes in management measures and TALs and TACs in the future, would be accompanied by economic analyses for those specific actions.

It is unknown how often rebuilding plans will be revised in the future (refer to section 2.7), which fisheries would use F_{lim} as the basis for a rebuilding plan if B_{lim} or its proxy is unknown (refer to section 2.6.2), how often a rebuilding plan is revised so that some T_{max} values are longer under Alternative 2.5.2 than under Alternative 2.5.1, or how often a stock will be no longer depleted, but not yet rebuilt (see Alternative 2.7.2) so that it would benefit from guidance about limiting F until such a stock is rebuilt. Also, it is unknown how often stocks will be made part of stock assemblages in various FMPs (see section 2.2), thereby benefiting from closer management because stocks having unknown status related to SDC are likely to receive greater protection. However, to the extent that any of these instances occur, NMFS believes that the proposed alternatives represent improvements in the NS1 guidelines that should contribute to the conservation of stocks, more rapid rebuilding and greater long-term economic benefits.

5.3.1.7 Overall benefits to the Nation

5.3.1.7.1 Benefits of the action

While a new rule with revised biological reference points and time horizons would have no immediate economic impact to individuals or the economy, the implementation of new or revised rebuilding plans would likely have economic impacts at a later date. The intensity of those impacts would vary depending upon stock, ecological, and economic conditions unique to each fishery.

Implementation of rebuilding plans for depleted fisheries may cause negative economic impacts to the economy in the short term after a rebuilding plan is implemented, where general economic welfare, as measured by the aggregate effect of consumer and producer surplus may decrease due to decreases in supply accompanied by higher prices. Consumer surplus is defined as the difference between what consumers must pay for a good and what they are willing to pay, and producer surplus measures the amount of rents or economic profits available to fishing vessels. In addition to short and near term reductions in general economic welfare, employment and economic growth may decrease in other indirectly affected sectors of the economy such as dockside services, food and fuel suppliers for fishing vessels and fish processors and dealers.

In the long term, these revisions to the NS1 guidelines should yield net positive benefits to the Nation as the aggregate of consumer surplus and producer surplus increase based upon higher sustainable quantities of product entering the market at reduced prices. These revisions to the

NS1 guidelines should result in shorter rebuilding times and more rapid rebuilding programs, thus, increasing net benefits at a more rapid pace as compared to present rules (no-action). In addition, increased sustainable supplies of fish should increase employment in various sectors related to fishing and accompanying economic growth should occur in sectors such as fishing vessels, suppliers of food and fuel for fishing vessels, fish processors and dealers, wharf owners and stevedores. For a more specific qualitative discussion of the effects of various proposed revisions beginning in the longer term (i.e., beginning about 1½ to 2 years after the effective date of the final rule for the NS1 guidelines), refer to Table 7 (Parts 1 and 2).

5.3.1.7.2 Costs of the action

Under the proposed rule, the Councils would not be requested make immediate changes to their FMPs, in part to reduce extra administrative costs that they would incur. The proposed terminology changes could result in some minor administrative costs in terms of constructing "correcting amendments" to update the Code of Federal Regulations, but such changes do not require accompanying analyses, so costs would be minimal.

New FMPs or FMP Amendments that contain new or revised SDC or rebuilding plans would already have administrative costs associated with them. Therefore, requiring that any such FMP actions satisfy the new NS1 guidelines, only when rebuilding plans have to be revised because they were substantially behind schedule, or due to receipt of new data (calculation of a new rebuilding target or the need to revise an SDC), should not change administrative costs for the Councils and NMFS.

5.3.1.8 Determination of significance under Executive Order 12866

Section 3(f)(1) through (4) of Executive Order (E.O.) 12866 defines a "significant regulatory action." E.O. 12866 requires a review of proposed regulations to determine whether the expected effects would be significant. A "significant regulatory action" under E.O. 12866 is any regulatory action that may:

(1) Have an annual effect on the economy of $100 million or more, or adversely affect in a material way the economy, a sector of the economy, productivity, jobs, the environment, public health or safety, or State, local or tribal governments or communities;
(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of the recipients thereof, or
(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

The Office of Management and Budget determined during the advance notice of proposed rule stage that this action is significant for purposes of E.O. 12866. This is because the proposed action is likely to result in a rule that may "raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in E.O. 12866." Because the NS1

guidelines form the basis for how to construct "depleted" and "overfishing" definitions and rebuilding plans, any proposed revisions are of great concern to various members of the public, the fishing industry and environmental organizations.

5.4 Analysis pertaining to the Regulatory Flexibility Act (RFA)

5.4.1 Requirements of the RFA. Section 603 of the Regulatory Flexibility Act (RFA) requires that whenever an agency is required to publish general notice of proposed rulemaking for any proposed rule, the agency shall prepare and make available for public comment an initial regulatory flexibility analysis (IRFA) or an agency certify to the Small Business Administration under section 605(b) of the RFA, that a rule would not, if promulgated, have a significant economic impact on a substantial number of small entities. In such a case, it is not necessary to prepare an IRFA for the proposed rule and a final regulatory flexibility analysis for the final rule.

5.4.2 Certification of this action under the RFA. This proposed rule, if promulgated, would not have any significant economic impact on a substantial number of small entities, because the rule would not have economic impacts on small entities immediately (upon the effective date of the final rule for NS1), and few, if any economic impacts within the first year or so after the effective date of the final rule for revisions to the NS1 guidelines. This is because upon the effective date of the final rule for the proposed revisions, no management measures for any fisheries would change immediately. The revisions to the NS1 guidelines (and the NS1 guidelines themselves) are general in nature, in that they provide guidance on how to address requirements to designate depleted fisheries, overfishing in a fishery, and develop rebuilding plans, or revise them if needed, for such fisheries under section 304 of the Magnuson-Stevens Act.

After the final rule containing revisions to the NS1 guidelines is effective, Councils would use the revised NS1 guidelines if they are preparing FMP amendments that contain new or revised SDC, or new or revised rebuilding plans. The process for development and preparation of an FMP amendment and submission for Secretarial review would take on average, at least a couple of years (the time for preparation of the plan before submission would usually be at least 1½ years and the time for Secretarial review and rule implementation would be another five months). Any such FMP amendments or other regulatory actions that implement management measures associated with new definitions for depleted or overfishing and new or revised rebuilding plans, would be accompanied by economic and environmental analyses by the time that a Council adopts the amendment and sends it to NMFS for Secretarial review. Each of those actions would address the requirements of the Regulatory Flexibility Act beginning with the proposed rule stage of those actions.

NMFS does not believe that a substantial number of small entities would be placed at a disadvantage compared to large entities if this rule for NS1 revisions is implemented. Also, this rule, if implemented should not reduce profit significantly for a substantial number of small entities for the reasons stated above. Therefore, an IRFA has not been prepared for this action. NMFS is recommending that the Office of General Counsel for Department of Commerce certify to the Chief Counsel for Advocacy of the Small Business Administration that the proposed rule

for this action would not have a significant economic impact on a substantial number of small entities. Following NMFS Guidelines for Economic Analysis of Fishery Management Actions, the information in section 5.4.3 provides the factual basis for the certification.

5.4.3 Information for this action related to sections 605(b) of the RFA.

5.4.3.1 Description of the reasons why agency action is being considered:

After working with the NS1 guidelines since June 1, 1998, NMFS has developed new perspectives, and become aware of new issues and problems regarding the application of the guidelines (see section 5.3.1.3).

NMFS announced in an ANPR in the Federal Register on February 14, 2003, that it was considering revisions to the NS1 guidelines that provide advice on how to develop SDC for overfishing definitions and how to construct rebuilding plans for overfished stocks. The ANPR identified several concerns, but did not limit what portion of the NS1 guidelines could be revised. The five concerns listed in the ANPR were as follows:

1. The definition and use of the MSST for determining when a stock is overfished.
2. Calculation of the rebuilding targets appropriate to the environmental regime.
3. Calculation of the maximum permissible rebuilding time for overfished fisheries.
4. The definitions of overfishing as they relate to a fishery as a whole, or a stock of fish within that fishery.
5. Procedures to follow when rebuilding plans require revision after initiation, especially with regard to modification of a rebuilding schedule.

In the ANPR, NMFS also solicited comments from the public related to: (1) whether or not the NS1 guidelines should be revised, (2) if revisions are desired, what parts of the NS1 guidelines should be revised, how they should be revised, and why.

A NMFS Working Group made recommendations (see the proposed alternatives in section 2 of the environmental assessment for this action) to the Assistant Administrator for Fisheries in November 2003, following: (1) review of public comments received through the ANPR on the current usefulness of the guidelines for NS1, (2) conducting an agency workshop in April 2003, and (3) further discussions by the Working Group. Also, NMFS gave further consideration to comments received before making further revisions to the proposed action alternatives replacing Alternative 2.2.3 (old 2.2.2.) with new Alternative 2.2.2, Alternative 2.3.3 (old 2.3.2) with new Alternative 2.3.2, Alternative 2.5.3 (old 2.5.2) with new Alternative 2.5.2, Alternative 2.6.3 (old 2.6.2) with new Alternative 2.6.2, Alternative 2.7.3 (old 2.7.2) with new Alternative 2.7.2, and Alternative 2.8.3 (old 2.8.2) with new Alternative 2.8.2.

5.4.3.2 Succinct statement of the objectives of, and the legal basis for, the proposed rule

NMFS believes that the proposed revisions to the NS1 guidelines will improve the ability of fishery management councils to choose meaningful SDC for definitions of "depleted" and "overfishing" and rebuilding plans that comply better with the requirements of section 304 of the

Magnuson-Stevens Act. In some instances, the proposed revisions to the NS1 guidelines also provide better flexibility in determining SDC and rebuilding plans that balance the requirements to prevent overfishing and rebuild fish stocks along with the need to consider impacts of fishery management actions on fishing communities. The authority of this action is the Magnuson-Stevens Act.

5.4.3.3 Description of and, where feasible, an estimate of small entities to which the proposed rule will apply

An estimated number Federal vessel permits by FMP are listed in Table 8. Dealer permits are not included in this list. All the vessels included in the total vessel permits for each fishery are considered to be small entities for the purposes of the Regulatory Flexibility Analysis. The data for fisheries listed in Table 8 is not further subdivided to describe instances that commercial vessel permits are actually divided into one of several categories (e.g., full-time, part-time and occasional), because such information is not necessary for this discussion.

5.4.3.4 Description of the projected reporting, recordkeeping and other compliance requirements of the proposed rule

This proposed rule does not contain any new recordkeeping or reporting requirements subject to the Paperwork Reduction Act. See section 5.6.

5.4.3.5 Identification, to the extent practicable, of all relevant Federal rules which may duplicate, overlap or conflict with the proposed rule

NMFS is not aware of any other relevant Federal rules that may duplicate, overlap or conflict with the proposed rule.

5.4.3.6 Estimate of economic impacts on small entities by entity size and industry

As indicated earlier in section 5.4.2, the proposed revisions to the NS1 guidelines would not have any immediate economic impacts on small entities, and few, if any economic impacts on small entities within the first year or so, after the effective date of the final rule for revisions to the NS1 guidelines. Any economic impacts on vessel owners or dealers "in the longer term," would be analyzed when management measures are proposed that are associated with new or revised OY control rules or rebuilding plans that are based on the revised NS1 guidelines, at which time specific economic impacts on small entities would be known for a given action.

5.5 Magnuson-Stevens Act

5.5.1 National Standards

5.5.1.1 National Standard 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. This proposed action enhances the guidelines for NS1 published in section 600.310.

5.5.1.2 National Standard 2 - Conservation and management measures shall be based on the best scientific information available. Current overfishing and overfished definitions and rebuilding schedules for various fish stocks for Federal FMPs were reviewed. NMFS' 2003 Report to Congress: The Status of the U.S. Fisheries is a key reference document for this action that proposes revisions to the NS1 guidelines.

5.5.1.3 National Standard 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. The proposed revisions in terms of how to manage interrelated stocks assigned to stock assemblages (as compared to the current lack of guidance in the NS1 guidelines on how to manage stock complexes) should enhance fishery management under national standard 3.

5.5.1.4 National Standard 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 U.S. 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. The proposed revisions to the NS1 guidelines do not change the interaction of the NS1 guidelines with National Standard 4.

5.5.1.5 National standard 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. The proposed revisions to the NS1 guidelines enhance conservation and management in terms of OY by requiring OY (target control rules. Such management should improve the efficiency in the utilization of fishery resources.

5.5.1.6 National Standard 6 - Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches. The proposed revision for B_{lim} takes into account exceptions to the default value for fish stocks that have high variation and recruitment and short life spans by allowing that B_{lim} be higher or lower than the default B_{lim} of ½ B_{msy}, as long as a Council provides adequate justification for the exception. The exception to base "overfishing" occurring or a "depleted" condition of abundance as being reached based on more than one year for certain stocks with very short life spans and high recruitment variability accounts for variations among fishery resources.

5.5.1.7 National Standard 7 - Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication. This proposed action would minimize costs for Councils by not requiring immediate revision of their FMPs, rather, management of given fish stocks would need to fit under the revised NS1 guidelines once an

FMP amendment included revisions to SDC (or the rebuilding target because of new data (e.g., new assessments that included new estimates of SDC or rebuilding targets), or rebuilding plans needed to be revised because the plan failed to make adequate progress under section 304 (e)(7) of the Magnuson-Stevens Act.

5.5.1.8 National Standard 8 - Conservation and management measures shall, consistent with the conservation requirements of the Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for sustained participation in such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities. The proposed revisions to the NS1 guidelines do not change the interaction of the NS1 guidelines with National Standard 8.

5.5.1.9 National Standard 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. The proposed revisions to the NS1 guidelines do not change the interaction of the NS1 guidelines with National Standard 9.

5.5.1.10 National Standard 10 - Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea. The proposed revisions to the NS1 guidelines do not change the interaction of the NS1 guidelines with National Standard 10.

5.5.2 Essential fish habitat

Section 305(b)(2) of the Magnuson-Stevens Act requires each federal agency to consult with the Secretary of Commerce (delegated to NMFS) with respect to any action authorized, funded, or undertaken, by such agency that may adversely affect any essential fish habitat. This includes NMFS. NMFS had determined that the proposed revisions to NS1 would not adversely affect EFH.

5.6 Paperwork Reduction Act

The proposed revisions to NS1 guidelines would not result in any new collection-of-information requirements subject to the Paperwork Reduction Act. Beginning approximately two to three years after the effective date of the final rule for this action, some FMP amendments could conceivably revise some overfishing definitions and rebuilding schedules or implement OY control rules. It is not known if such actions would sometimes result in any proposed new collection-of-information requirements. In the event that new collection-of-information requirements are proposed, a specific analysis regarding the public's reporting burden would accompany such an action.

5.7 Endangered Species Act

NMFS has determined that the proposed revisions to the NS1 guidelines would have no effect on species or their habitat under the Endangered Species Act (16 U.S.C. section 1531 et seq.). Any

future action that is based in part on these guidelines will consider its specific measures' effects on endangered and threatened species and their critical habitat.

5.8 Marine Mammal Protection Act

NMFS has determined that implementation of these revised guidelines would have no adverse impact on marine mammals. Any future action that is based in part on these guidelines will consider it fishing activities' effects on marine mammals and potential biological removals.

5.9 Executive Orders other than E.O. 12866

5.9.1 Executive Order 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

The proposed revisions to the NS1 guidelines would not have any immediate impacts related to E.O. 12898 after they are implemented. Some future fishery management actions issued under authority of the Magnuson-Stevens Act that use the revised NS1 guidelines could have impacts related to E.O. 12898; such actions will be accompanied by the appropriate analysis and discussion.

5.9.2. Executive Order 13089 Coral Reef Protection

The proposed revisions to the NS1 guidelines would not have any immediate impacts related to E.O. 13089 after they are implemented. Some future fishery management actions issued under authority of the Magnuson-Stevens Act that use the revised NS1 guidelines could have impacts related to E.O. 13089; such actions will be accompanied by the appropriate analysis and discussion.

5.9.3 Executive Order 13112 Invasive Species

The proposed revisions to the NS1 guidelines would not have any immediate impacts related to E.O. 13112 after they are implemented. Some future fishery management actions issued under authority of the Magnuson-Stevens Act that use the revised NS1 guidelines could have impacts related to E.O. 13112; such actions will be accompanied by the appropriate analysis and discussion.

5.9.4 Executive Order 13158--Marine Protected Areas

The proposed revisions to the NS1 guidelines would not have any immediate impacts related to E.O. 13158 after they are implemented. Some future fishery management actions issued under authority of the Magnuson-Stevens Act that use the revised NS1 guidelines could have impacts related to E.O. 13158; such actions will be accompanied by the appropriate analysis and discussion.

5.9.5 Executive Order 13186--Responsibilities of Federal Agencies to Protect Migratory Seabirds

The proposed revisions to the NS1 guidelines would not have any immediate impacts related to E.O. 13186 after they are implemented. Some future fishery management actions issued under authority of the Magnuson-Stevens Act that use the revised NS1 guidelines could have impacts

related to E.O. 13186; such actions will be accompanied by the appropriate analysis and discussion.

6.0 List of preparers

Mark R. Millikin, NMFS Office of Sustainable Fisheries, Silver Spring, Maryland 20910.
Richard Methot, NOAA Fisheries, 2725 Montlake Blvd. E., Seattle, Washington 98112.
Pamela Mace served as Chairperson of the NMFS NS1 Working Group from April 2003 through December 2003. In that capacity she drafted the Working Group Report thereby providing the foundation for most of the material in this environmental assessment. Dr. Mace has been employed by the New Zealand Ministry of Fisheries since January 2004.

The NMFS NS1 Working Group consists of Richard Methot (chairperson), Roy Crabtree, Jack Dunnigan, Steven Cadrin, Alec Maccall, Alvin Katekaru, George Darcy, Grant Thompson, and Mariam McCall.

NMFS participants at the May 2003 National Standard 1 Workshop:
John Brodziak, Steve Cadrin, Liz Brooks, Elizabeth Clarke, Roy Crabtree, George Darcy, Dave Detlor, Gerard Dinardo, Martin Dorn, Jay Ginter, Alvin Katekaru, Robert Kope, Rebecca Lent, Alec Maccall, Mariam McCall, Pamela Mace, Rick Methot, Mark Millikin, Steve Murawski, Bill Robinson, Kyle Shertzer, Allen Shimada, Mike Sissenwine, Terry Smith, Heather Stirratt, Richard Surdi, Grant Thompson, and Eric Thunberg.

We appreciate the assistance of Rebecca Lent (Deputy Assistant Administrator for Fisheries, NOAA), Steve Davis (NMFS, AK Regional Office), Heather Blough (NMFS SE Regional Office), Rachel O'Malley (NMFS HQ Office of Constituent Affairs), Kellie Foster (NMFS HQ Office of Protected Resources), David McDuffee (NMFS HQ Office of Habitat Protection), and Regina Spallone (NMFS Office of Sustainable Fisheries).

Paul Perra (NMFS, NE Regional Office), Virginia Fay (NMFS, SE Regional Office), Yvonne deReynier (NMFS, NW Regional Office), Peter Dygert (NMFS NW Regional Office) and Tom Graham (NMFS Pacific Islands Regional Office), prepared information on current OY control rules in Federal fisheries.

7.0 List of agencies and persons consulted

(Note: this list is not meant to imply that all recommendations made by the listed regional fishery management councils before publication of the proposed rule are included in the proposed revisions; however, those recommendations will be taken into consideration, again, along with comments that NMFS receives during the proposed rule stage before NMFS makes any final decision on the content of revised NS1 guidelines and planned steps for implementation.)

New England Fishery Management Council
Mid-Atlantic Fishery Management Council
South Atlantic Fishery Management Council
Gulf of Mexico Fishery Management Council
Caribbean Fishery Management Council

Pacific Fishery Management Council
Western Pacific Fishery Management Council
North Pacific Fishery Management Council

8.0 Glossary

Approaching overfishing or a depleted condition – a limit, either fishing mortality or minimum biomass, is projected to be breached within 2 years, based on trends in fishing effort, stock abundance, and other appropriate factors.

Assessment – a stock assessment as defined in section 600.10. Assessments provide quantitative evaluation of a stock's status with respect to the established SDC. Assessments also provide the technical basis for implementing the OY control rule.

Average – the central tendency of a measure over time, including arithmetic mean, median and other appropriate statistics as developed through technical guidance.

Biomass – the total quantity of fish in a stock and is used synonymously with stock abundance. Biomass is usually measured as a total tonnage of fish, but could be in numbers or other units to be synonymous with stock abundance.

Biomass limit (B_{lim}) - the quantity of biomass below which a stock is considered depleted and in need of a rebuilding plan to increase the stock's abundance until it reaches B_{msy}.

Biomass at MSY (B_{msy}) - the same as MSY stock size.

Biomass target - the target biomass of a rebuilding plan (i.e., B_{msy})

Core stock - a stock that is the principal target stock of a fishery and may also include historically important bycatch stocks, highly vulnerable stocks and indicator stocks. Core stocks should have sufficient information available to be managed on the basis of stock-specific SDC and OY control rules, or their proxies.

Depleted - status of a fish stock or stock assemblage whose biomass has been determined to be less than B_{lim} or its proxy. Determination of a depleted status triggers requirement for development of a rebuilding plan.

First year of a rebuilding plan – The first year after a stock is determined to be depleted that a final rule to implement the rebuilding plan becomes effective.

Fishery management plan (FMP) – means a plan developed by a Regional Fishery Management Council or the Secretary of Commerce in the case of Atlantic highly migratory species, to comply with requirements and responsibilities described in the Magnuson-Stevens Act.

Fishery management unit (FMU) – means a list of fish species or stocks in an FMP that have been determined to be in need of conservation and management. These stocks constitute the FMP's set of regulated stocks and are the stocks for which MSY, OY, and SDC are required.

Fishing mortality rate (F) – the rate of mortality imposed on the stock or stock assemblage due to fishing activities. The term F is used to abbreviate fishing mortality rate.

Fishing mortality target (F_{target}) – the level of fishing mortality that corresponds to the OY control rule.

Fishing mortality rate at MSY (F_{msy}) – the target fishing mortality value that should not be exceeded when the biomass for a given stock is rebuilt.

Fishing mortality threshold - a fishing mortality value for a given fish stock that if attained or exceeded in a given fishing year alerts fishery managers that F is approaching F_{lim} for that fishery.

F_{lim} – the same as maximum fishing mortality rate limit.

Generation time – the average age of spawners. This biological factor is related to the time scale for stock rebuilding. It is calculated as the mean age of spawners, under constant recruitment, when experiencing only natural mortality and weighted by the amount of spawn production at each age.

Indicator stock - a core stock that has known SDC for "depleted" or "overfishing" or both that are also used to help manage other species or stocks in a given stock assemblage that has been selected as a representative for a stock assemblage because of similarity in geographic distribution, occurrence in fisheries and life history to other assemblage members. Indicator stocks must have SDC and sufficient data to measure their status relative to their SDC. Indicator stocks should also be managed as a core stock while serving as an indicator for the assemblage.

Limit control rule – the MSY control rule.

Maximum Fishing mortality limit (F_{lim}) – the level of F, on an annual basis, above which overfishing is occurring for a given stock. This level is abbreviated as F_{lim} and is set to be no greater than the MSY control rule.

Maximum fishing mortality threshold (MFMT) - the fishing mortality threshold may be expressed either as a single number or as a function of spawning biomass or other measure of productive capacity. The fishing mortality threshold must not exceed the fishing mortality rate or level associated with the relevant MSY control rule. Exceeding the maximum fishing mortality threshold for a period of 1 year or more constitutes overfishing.

Maximum sustainable yield (MSY) – is calculated as the largest potential long-term average catch or yield that can be taken from a core stock or stock assemblage under prevailing conditions while fishing according to the MSY control rule.

Minimum biomass limit – the level of biomass below which the stock is considered depleted. The default level is ½ B_{msy} and the abbreviated term is B_{lim} should take into account the expected range of natural fluctuation in biomass while fishing according to the MSY control rule and scientific evidence regarding the biomass level below which stock productivity is more impaired.

Minimum stock size threshold (MSST) – the stock size threshold should be expressed in terms of spawning biomass or other measure of productive capacity. To the extent possible, the stock size threshold should equal whichever of the following is greater: One-half the MSY stock size, or the minimum stock size at which rebuilding to the MSY level would be expected to occur within 10 years if the stock or stock complex were exploited at the MFMT. Should the actual size of the stock or stock complex in a given year fall below this threshold, the stock or stock complex is considered overfished.

MSY control rule – a harvest strategy that, if implemented, would be expected to result in a long-term future potential average catch approximating MSY.

Natural mortality rate (M) – the rate at which fish die from non-fishery related causes such as disease and predation. This rate is directly in calculation of generation time, and influences T_{min} and F_{msy}.

Optimum yield (OY) – the amount of fish that (1) will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities and taking into account protection of the marine ecosystems; (2) is prescribed on the basis of the maximum sustainable yield from the fishery, as educed by any relevant economic, social, or ecological factor; and (3) in the case of an overfished (e.g., depleted) fishery, that provides for rebuilding to a level consistent with producing the MSY in such fishery.
Overfishing – to fish at a level that jeopardizes the capacity of the stock to produce MSY.
OY control rule – a specified approach to setting the target annual catch or F for each stock or stock assemblage such that overfishing is prevented and OY is achieved for the fishery as a whole.
Rebuilding parameters – B_{msy}, SDC, T_{min}, and T_{max}.
Rebuilding plan – that portion of an OY control rule that addresses the management objective to rebuild a depleted (i.e., currently called "overfished") stock's abundance until it reaches B_{msy} (or its proxy), in as short a time as possible, taking into account the circumstances described under section 304(e)(4)(A) of the Magnuson-Stevens Act. A rebuilding plan should contain: a target time for rebuilding to be completed (T_{target}) based upon a calculation of T_{min} and T_{max}, the stock abundance (B_{msy} or proxy) to be reached before a stock is considered "rebuilt," a control rule that specifies how the target fishing mortality would change during the course of the rebuilding plan, and sufficient information to track progress towards controlling fishing mortality and rebuilding the stock abundance. In the case of a fish stock for which B_{msy} or a proxy is unknown, but F_{lim} or a good estimate is known, a "rebuilding plan" would consist of keeping fishing mortality less than a default value of 75 percent of F_{lim} for two generation times, after which that stock could be considered "rebuilt."
Rebuilding target – the target biomass for rebuilding depleted stocks. This target is set equal to B_{msy}, or suitable proxy.
Rebuilt – status of a stock when an assessment or other analysis finds that a previously depleted stock has at least a 50-percent probability of being at or above B_{msy} in the current year.
Status determination criteria (SDC) - quantifiable factors used to determine if overfishing or stock depletion has occurred. MFMT and MSST are SDC under the current guidelines; B_{lim} and F_{lim} would be SDC under the proposed guidelines.
SDC-known - a fish stock for which one or both SDC (F_{lim} and B_{lim}) are known
Stock abundance – the total quantity of fish in a stock. Used synonymously with biomass in this analysis. Usually measured as total tonnage of fish, but could be in numbers or other units.
Stock assemblage – a group stocks in an FMP, that are sufficiently similar in geographic distribution, co-occurrence in fisheries, and life history so that SDC measured on an assemblage-wide basis or for an indicator stock in the assemblage would satisfy the Magnuson-Stevens Act requirements to achieve OY and prevent overfishing. Most stocks in an assemblage will not have sufficient information to measure stock-specific SDC and will not be important in the sense that core stocks are important.
T_{max} – the latest year that can be used as the target time to rebuild a depleted stock. If T_{min} plus one GT is greater than 10 years, then T_{max} is equal to T_{min} plus one GT; otherwise, T_{max} equals 10 years.

T_{min} – the earliest year with a 50-percent chance that the stock will have rebuilt to B_{msy}. T_{min} is calculated under conditions of zero fishing mortality beginning in the first year of a rebuilding plan.
T_{target} – the year by which there is a 50-percent chance that the stock will have reached B_{msy} while being fished according to the F prescribed in the rebuilding plan. T_{target} is between T_{min} and T_{max}.
Target control rule – OY control rule.
Unknown status - a fish stock for which either B_{lim} or F_{lim} or both are unknown. This includes two situations: (1) the actual numeric level of B_{lim} or F_{lim} or their proxies cannot be calculated, or (2) the numeric level of B_{lim} and F_{lim} or their proxies can be calculated, but the current level of the stock's F or its proxy or biomass or its proxy, is not known relative to the SDC.

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Table 1. Comparison of T_{max} values for current rebuilding time formula and proposed rebuilding time formula (generation time (GT) = 5 years).

Fish	Current formula		Proposed formula		
Stock	T_{min}	T_{max}	T_{min}	T_{min} + one GT	T_{max}
A	2	10	2	7	10
B	3	10	3	8	10
C	4	10	4	9	10
D	5	10	5	10	10
E	6	**10**	6	11	**11**
F	7	**10**	7	12	**12**
G	8	**10**	8	13	**13**
H	9	**10**	9	14	**14**
I	10	15	10	15	15
J	11	16	11	16	16
K	12	17	12	17	17

Current formula: If $T_{min} \geq 10$ yrs., $T_{max} = T_{min}$ plus one GT
If $T_{min} < 10$ yrs, T_{max} may not exceed 10 yrs.

Proposed formula: If T_{min} + one GT > 10 yrs, $T_{max} = T_{min}$ plus one GT
If T_{min} + one GT $\leq$ 10 yrs, $T_{max} = 10$

Table 2. Comparison of Tmax values for current rebuilding time formula and proposed rebuilding time formula (generation time = 3 years).

Current formula		Proposed formula		
Tmin	Tmax	Tmin	Tmin + one GT	Tmax
2	10	2	5	10
3	10	3	6	10
4	10	4	7	10
5	10	5	8	10
6	10	6	9	10
7	10	7	10	10
8	10	8	11	11
9	10	9	12	12
10	13	10	13	13
11	14	11	14	14
12	15	12	15	15

Table 3. Comparison of Tmax values for current rebuilding time formula and proposed rebuilding time formula (generation time (GT) = 6 years).

Current formula		Proposed formula		
Tmin	Tmax	Tmin	Tmin + one GT	Tmax
2	10	2	8	10
3	10	3	9	10
4	10	4	10	10
5	10	5	11	11
6	10	6	12	12
7	10	7	13	13
8	10	8	14	14
9	10	9	15	15
10	16	10	16	16
11	17	11	17	17
12	18	12	18	18

Table 4. Comparison of Tmax values for current rebuilding time formula and proposed rebuilding time formula (generation time (GT) = 9 years).

Current formula		Proposed formula		
Tmin	Tmax	Tmin	Tmin + one GT	Tmax
2	10	2	11	11
3	10	3	12	12
4	10	4	13	13
5	10	5	14	14
6	10	6	15	15
7	10	7	16	16
8	10	8	17	17
9	10	9	18	18
10	19	10	19	19
11	20	11	20	20
12	21	12	21	21

Table 5 (Part 1). Qualitative Summary of Potential Biological Impacts in the Longer Term[1] of Current Guidelines (NA) Compared to Proposed Revisions (PA) for Various FMPs (Stocks (ST), Fishing mortality limits (FML), Biomass limits (BL) and Rebuilding time horizons (RTH)).

	ST		FML		BL		RTH	
	NA	PA	NA	PA	NA	PA	NA	PA
New England FMC								
NE Multispecies	N	N	*Neg*	*Pos*	N	N	*Pos*	*Neg*
Atl. Sea Scallops	N	N	N	N	N	N	N	N
Atl. Salmon	N	N	N	N	N	N	N	N
Monkfish	N	N	Neg	Pos	N	N	N	N
Atl. Herring	N	N	N	N	N	N	N	N
Atl. Red Crab	N	N	N	N	U	U	U	U
Skates NE Reg	N	N	N	N	U	U	U	U
Mid-Atlantic FMC								
Atl. MSB	N	N	*Neg*	*Pos*	Neg	Pos	N	N
Atl. SC and OC	N	N	N	N	N	N	N	N
SF, Scup, and BSB	N	N	Neg	Pos	N	N	N	N
Atl. Bluefish	N	N	N	N	N	N	N	N
Spiny Dogfish	N	N	Neg	Pos	Pos	Pos	N	N
Golden Tilefish	N	N	Neg	Pos	N	N	N	N
South Atlantic FMC								
Snapper-Grouper	Neg	Pos	*Neg*	*Pos*	Pos	Neg	*Pos*	*Neg*
Atl. Coast Red Drum	N	N	Neg	Pos	Pos	Neg	N	N
Shrimp Fishery	N	N	N	N	Neg	Pos	N	N
Coral, Coral Reefs, & Live Hard Bottom	Neg	Pos	N	N	N	N	N	N
Golden Crab	N	N	N	N	N	N	N	N
Sargassum	N	N	N	N	N	N	N	N
Dolphin and Wahoo	N	N	N	N	N	N	N	N

Spiny Lobster (GOM and SA)	N	N	N	N	Pos	Pos	N	N
Coastal Migratory Pelagic GOM and SA	N	N	N	N	N	N	N	N
Gulf of Mexico FMC								
Coral and Coral Reefs	Neg	Pos	N	N	N	N	N	N
Red Drum	N	N	Neg	Pos	N	N	N	N
Stone Crab	N	N	N	N	Pos	Pos	N	N
Shrimp	N	N	N	N	Neg	Pos	N	N
Reef Fish	Neg	Pos	*Neg*	*Pos*	Pos	Pos	*Pos*	*Neg*
Caribbean FMC								
Spiny Lobster (PR and USVI)	N	N	N	N	Pos	Pos	N	N
Shallow Water Reeffish (PR and USVI)	Neg	Pos	N	N	Pos	Pos	*Pos*	*Neg*
Corals and Reef Invert. (PR and VI)	Neg	Pos	N	N	Pos	Pos	N	N
Queen Conch (PR and VI)	Neg	Pos	Neg	Pos	Pos	Pos	N	N
Pacific FMC								
Pac Coast Grdfish	*Neg*	*Pos*	*Neg*	*Pos*	N	Neg	N	*Neg*
Ocean Salmon	*Neg*	*Pos*	N	N	Neg	Pos	N	N
Coastal Pelagics	N	N	N	N	N	N	N	N
West Coast HMS	*Neg*	*Pos*	N	N	Pos	Pos	N	N
Western Pacific FMC								
Crustacean	Neg	Pos	N	N	N	N	N	N
Precious Corals	Neg	Pos	N	N	N	N	N	N
Bottomfish & Seamount Grdfish	Neg	Pos	N	N	Pos	Pos	N	N
Pelagics	*Neg*	*Pos*	*Neg*	*Pos*	Pos	Pos	N	N
Coral Reef Ecosystems	Neg	Pos	N	N	N	N	N	N
North Pacific FMC								

Grdfish BSAI	*Neg*	*Pos*	N	N	N	N	N	N
Grdfish GOA	*Neg*	*Pos*	N	N	N	N	N	N
BSAI King & Tanner Crab	N	N	N	N	N	N	N	N
Weathervane Scallop	Neg	Pos	N	N	N	N	N	N
High Seas Salmon	N	N	N	N	N	N	N	N
Secretary of Commerce								
Atl. Tunas, Swordfish & Sharks	*Neg*	*Pos*	Neg	Pos	N	N	*Pos*	*Neg*
Atl. Billfish	N	N	Neg	Pos	N	N	N	N

[1] Biological impacts "*in the longer term*" in Table 5 (Part 1) and Table 5 (Part 2), means impacts that will be known at the time a new FMP amendment or other rulemaking authorized by a given FMP is submitted for Secretarial review with accompanying analyses. Such an action, on average, would not occur before 1½ to 2 years after the effective date of the final rule for any revisions to the NS1 guidelines. *Italicized* designations such as *Neg* or *Pos* denote that the minority or only a few of the stocks in the fishery being described would be affected by a given proposed revision to RTH, BML, FML, etc.

NA means "No action alternative"
PA means "Proposed action"
N means "None" in terms of biological impacts
Neg means "Negative" biological impacts
U means "Unknown," but possible impact
Pos means "Positive" biological impact, that is, a likely increase in stock abundance and greater likelihood that stock abundance will remain stable if already at B_{msy}, or likely that abundance will remain stable once it reaches B_{msy}

Working assumptions:
ST: The working assumptions under stocks (ST) for the PA are: (1) for FMPs that contain major stocks, only, and would likely be made up of core stocks, only, the projected biological impacts in the longer term would be "N," and for FMPs that contain major and minor stocks, and would likely contain core stocks and stock assemblages, the projected biological impacts in the longer term would be "Pos" because stocks grouped in stock assemblages would likely include some that were not previously managed directly, and indicator stocks for stock assemblages will often benefit from better data management (improved data and information). The working assumptions for the NA for the "stocks" (ST) proposed revision are: (1) for FMPs that contain major stocks, only, the projected biological impacts in the longer term would be "N," and (2) for FMPs that are made up of major and minor stocks, the projected biological impacts in the longer term also would be "Neg," due to the lack of specific guidance in the current NS1 guidelines on how to manage stock complexes.

FML: (See Appendices 2 through 7)-- The working assumptions under fishing mortality limits (FML) for the NA are: (1) for stocks *not* undergoing overfishing (see Appendices 2 through 7), the biological impacts in the longer term would be "N," (2) for stocks undergoing overfishing, it could be Neg, but it is unknown how often measures would be implemented to end overfishing under the PA compared to the NA. The working assumptions under fishing mortality limits (FML) for the PA are: (1) for stocks not undergoing overfishing (see Appendices 2 through 7), the biological impact in the longer term would be "N," and (2) for stocks undergoing overfishing, the biological impacts in the longer term *could* be "Pos" because overfishing will undergo closer scrutiny and can no longer continue unless the conditions in this proposed revision are met. Therefore, measures would be developed to end overfishing unless conditions in the proposed action to allow overfishing to continue in the short term are met.

BL: The working assumptions under the NA for the biological impacts in the longer term (beginning 1½ to 2 years after the effective date of the final rule) are: "N," for stocks that are not overfished. For FMPs that don't have SFA-approved overfished definitions yet, the designation is "Pos." Also, FMPs that have short-lived species that might qualify for "depleted" status based on a multi-year period (if justified from a biological point of view) would be designated "Neg" for "Negative" because biological impacts would likely be negative if sound science available indicates that the depleted status should be based on a multi-year

period (e.g., possibly squids in the Atlantic Mackerel, Squid, and Butterfish FMP, possible some shrimp species in the South Atlantic Shrimp FMP, some salmon in the West Coast Salmon FMP).
The working assumptions under the PA are: the biological impacts in the longer term are: "N," for stocks that are not overfished. For FMPs that don't have SFA-approved overfished (B_{lim}) definitions yet, the designation is "Pos," and for FMPs that may have short-lived species, the designation is "Pos" because some stocks could have their depleted status based on a multi-year period (if justified from a scientific point of view) instead of any one year (e.g., possibly squids in the Mackerel, Squid, and Butterfish FMP, some shrimp species in the South Atlantic Shrimp FMP and GOM Shrimp FMP, and some salmon stocks in the West Coast Salmon FMP). In other words, under the PA, the overfished determination for some short-lived stocks based on a multi-year period could make "better sense" from a biological standpoint; the biology of the species (i.e., short life span and high fecundity) should allow for rapid recovery of abundance.

Nevertheless, the proposed action alternative provides reasonable exceptions to the current overfishing definition default of ½B_{msy} for FMPs that already have SFA approved overfishing definitions, and *FMPs that don't have SFA approved overfishing definitions. The PA describes under what conditions OY control rules can be used as a proxy for ½B_{msy} (i.e., OY control rules that are implemented that result in F at least as conservative as would have been the case if a B_{lim} was used) and under what conditions the B_{lim} can be a value different from ½B_{msy}.*

RTH: Under the PA "Neg" if it is likely that one or more stocks in the FMP's management unit could be effected by the removal of the discontinuity (i.e., rebuilding period could be longer than under the NA). Under the NA, "Pos" if it is likely that one or more stocks in the FMP's management unit could be affected by a shorter RTH under the current formula with the discontinuity. Stocks with a short T_{min} (say 1-5 years) and a short GT, say 1-5 years will be unaffected and remain constrained by the 10-year RTH. Stocks with T_{min} greater than 10 years will be unaffected and remain constrained by a RTH of T_{min} minus one GT. Only stocks with T_{min} less than 10 years and T_{min} plus one GT greater than 10 years will experience an increase in RTH from 10 years to T_{min} plus one GT.

Note: Independent of the biological impacts predicted in this table for each alternative, most PA measures are likely to improve the ability of fishery managers/scientists to develop SDC appropriate for a given stock dependent upon the quality of data available for that stock and related stocks

Table 5 (Part 2). Qualitative Summary of Potential Biological Impacts in the Longer Term[1] of Current Guidelines (NA) Compared to Proposed Revisions (PA) for Various FMPs (Rebuilding targets (RT), revision of rebuilding plans (RRB), OY control rules (OY), and International fisheries (IF)).

	RT		RRB		OY		IF	
	NA	PA	NA	PA	NA	PA	NA	PA
New England FMC								
NE Multispecies	N	N	U	Pos	Neg	Pos	N	N
Atl. Sea Scallops	N	N	N	N	N	N	N	N
Atl. Salmon	N	N	N	N	N	N	N	U
Monkfish	N	N	U	Pos	Neg	Pos	N	N
Atl. Herring	N	N	N	N	N	N	N	U
Atl. Red Crab	N	N	N	N	Neg	Pos	N	N
Skates NE Reg	N	N	N	N	N	N	N	N
Mid-Atlantic FMC								
Atl. MSB	N	N	N	N	Neg	Pos	N	N
Atl. SC and OC	N	N	N	N	N	N	N	N
SF, Scup, and BSB	N	N	U	Pos	Neg	Pos	N	N
Atl. Bluefish	N	N	U	Pos	Neg	Pos	N	N
Spiny Dogfish	N	N	U	Pos	Neg	Pos	N	N
Golden Tilefish	N	N	U	Pos	N	U	N	N
South Atlantic FMC								
Snapper-Grouper	Neg	Pos	U	Pos	Neg	Pos	N	N
Atl. Coast Red Drum	Neg	Pos	U	Pos	N	U	N	N
Shrimp Fishery	N	N	N	N	Neg	Pos	N	N
Coral, Coral Reefs, & Live Hard Bottom	N	N	N	N	N	N	N	N
Golden Crab	N	U	N	N	N	U	N	N
Sargassum	N	N	N	N	N	N	N	N
Dolphin and Wahoo	N	U	N	N	Neg	Pos	N	N

Spiny Lobster (GOM and SA)	N	U	N	N	N	U	N	N
Coastal Migratory Pelagic (GOM and SA)	*Neg*	*Pos*	U	Pos	Neg	Pos	N	N
Gulf of Mexico FMC								
Coral & Coral Reefs	N	N	N	N	N	N	N	N
Red Drum	Neg	Pos	U	Pos	Neg	Pos	N	N
Stone Crab	Neg	Pos	N	N	Neg	Pos	N	N
Shrimp	N	N	N	N	Neg	Pos	N	N
Reef Fish	N	N	U	Pos	Neg	Pos	N	N
Caribbean FMC								
Spiny Lobster (PR and USVI)	N	N	N	N	N	N	N	N
Shallow Water Reeffish PR and USVI	N	N	N	N	N	N	N	N
Corals and Reef Invert. PR and VI	N	N	N	N	N	N	N	N
Queen Conch PR and VI	N	N	N	N	N	N	N	N
Pacific FMC								
Pac Coast Grdfish	N	N	U	Pos	N	N	N	Pos
Ocean Salmon	N	N	U	Pos	N	N	N	Pos
Coastal Pelagics	N	N	N	N	N	N	N	N
West Coast HMS	N	N	N	N	N	N	N	N
Western Pacific FMC								
Crustacean	N	N	N	N	N	N	N	N
Precious Corals	N	N	N	N	N	N	N	N
Bottomfish and Seamount Grdfish	N	N	U	Pos	N	N	N	N
Pelagics	N	N	N	N	N	N	N	N
Coral Reef Ecosystems	N	N	N	N	N	N	N	N
North Pacific FMC								

Grdfish BSAI	N	N	N	N	N	N	N	N
Grdfish GOA	N	N	N	N	N	N	N	N
BSAI King & Tanner Crab	N	N	U	Pos	Neg	Pos	N	N
Weathervane Scallop	N	N	N	N	Neg	Pos	N	N
High Seas Salmon	N	N	N	N	N	N	N	N
Secretary of Commerce								
Atl. Tunas, Swordfish & Sharks	N	N	U	Pos	Neg	N	N	Pos
Atl. Billfish	N	N	U	Pos	Neg	N	N	Pos

[1] Biological impacts "*in the longer term*" in Table 5 (Part 1) and Table 5 (Part 2), means impacts that will be known at the time a new FMP amendment or other rulemaking authorized by a given FMP is submitted for Secretarial review with accompanying analyses. Such an action, on average, would not occur before 1½ to two years after the effective date of the final rule for any revisions to the NS1 guidelines. *Italicized* designations such as *Neg* or *Pos* denote that the minority or only a few of the stocks in the fishery being described would be affected by a given proposed revision to RTH, BML, FML, etc.

NA means "No action alternative"
PA means "Proposed action"
N means "None" for biological impacts
Neg means "Negative" biological impact
U means "Unknown," but possible impact
Pos means "Positive" biological impact, that is, a likely increase in stock abundance and greater likelihood that stock abundance will remain stable if already at B_{msy}, or likely that abundance will remain stable once it reaches B_{msy}.

Working assumptions:
RT: Under the NA, the working assumptions are that (1) for FMPs with SDC-known stocks, only, this issue is not pertinent so that potential biological impacts in the long term are "N," and for FMPs with stocks having unknown status as related to B_{lim} and T_{min} ,the potential biological impacts in the long term are "Neg" because the current guidelines offer no alternatives to a rebuilding target of B_{msy} or a biomass based proxy. Under the PA, the working assumptions are that (1) for FMPs with SDC-known stocks, only, this issue is not pertinent so that potential biological impacts in the long term are "N," and (2) for FMPs with stocks having unknown status related to B_{lim} and T_{min} (in this case, stocks for which we cannot estimate T_{min} and B_{msy}) the potential biological impacts in the long term are "Pos" because the proposed revisions offer another method (keeping F below $0.75F_{lim}$ for at least two GT for a given fish stock) to estimate that rebuilding has occurred.

RRB: The working assumptions for revision of rebuilding plans (RRB) under the NA are: If the stock is not overfished, then the potential biological impact in the longer term is "N." If one or more stocks in an FMP are in a rebuilding phase of a plan and review of the plan indicates that revision of the rebuilding plan is necessary, then the likelihood of revising a successful rebuilding plan is designated as "U" because of the lack of specific guidance in the guidelines about how to revise rebuilding plans. The working assumptions for revision of rebuilding plans (RRB) under the PA are as follows: If the stock is not overfished, then the potential biological impact in the longer term is "N." If one or more stocks in an FMP are in a rebuilding phase of a plan and review of the plan indicates that revision of the rebuilding plan is necessary, then the likelihood of constructing a successful rebuilding plan is designated as "Pos." This is because the likelihood of revising a rebuilding plan that becomes successful is greater under the PA because guidance for revising rebuilding plans is more specific.

OY: In Table 5 (Part 2), the working assumptions for describing potential biological impacts in the long term for the no action alternative (NA) for OY control rules are: (1) there could be "Neg" biological impacts for FMPs that do not currently have OY control rules, or have OY control rules that equal MSY control rules, because OY control rules less than MSY control rules would usually be more effective at preventing overfishing of a given fish stock. Also, under the NA, biological impacts would be "N" for stocks in FMPs that already have an OY control rule that is less than its corresponding MSY control rule. The working assumptions for describing potential biological impacts in the long term for the PA for OY control rules are: (1) there would

eventually be "Pos" biological impacts in FMPs for fish stocks that do not currently have OY control rules, or have OY control rules that are not less than their corresponding MSY control rules because preparation and implementation of OY control rules that are less than their MSY control rules would be required for stocks in new FMPs or new stocks in a current FMP. Fish stocks that have an OY control rule would have less chance of experiencing overfishing than in the absence of OY control rules. Biological impacts would be "N" under the PA for a stocks that have an OY control rule that is less than its corresponding MSY control rule (Refer to Appendices 9 through 14).

IF: If an FMP is not involved in management of straddling stocks or highly migratory stocks then the designation for NA and PA is "N." It is unknown (U) whether or not the NA for IF would have any impacts on the physical environment or EFH in the longer term.

Note: Independent of the biological impacts predicted in this table for each alternative, most PA measures are likely to improve the ability of fishery managers/scientists to develop SDC appropriate for a given stock dependent upon the quality of data available for that stock and related stocks

Table 6 (Part 1). Qualitative Summary of Potential Physical Impacts on EFH in the Longer-term[1] of Current Guidelines (NA) Compared to Proposed Revisions (PA) for Various FMPs' Stocks (ST), Fishing mortality limits (FML), Biomass limits (BL) and Rebuilding time horizons (RTH).

	ST		FML		BL		RTH	
	NA	PA	NA	PA	NA	PA	NA	PA
New England FMC								
NE Multispecies	N	N	*Neg*	*Pos*	N	N	*Pos*	*Neg*
Atl. Sea Scallops	N	N	N	N	N	N	N	N
Atl. Salmon	N	N	N	N	N	N	N	N
Monkfish	N	N	Neg	Pos	N	N	Pos	Neg
Atl. Herring	N	N	N	N	N	N	N	N
Atl. Red Crab	N	N	N	N	U	U	U	U
Skates NE Reg	N	N	N	N	U	U	U	U
Mid-Atlantic FMC								
Atl. MSB	N	N	N	N	N	N	N	N
Atl. SC and OC	N	N	N	N	N	N	N	N
SF, Scup, and BSB	N	N	Neg	Pos	N	N	N	N
Atl. Bluefish	N	N	N	N	N	N	N	N
Spiny Dogfish	N	N	Neg	Pos	U	U	N	N
Golden Tilefish	N	N	Neg	Pos	U	U	U	U
South Atlantic FMC								
Snapper-Grouper	Neg	Pos	*Neg*	*Pos*	U	U	*Pos*	*Neg*
Atl. Coast Red Drum	N	N	Neg	Pos	U	U	N	U
Shrimp Fishery	N	N	N	N	U	U	N	N
Coral, Coral Reefs, & Live Hard Bottom	N	N	N	N	N	N	N	N
Golden Crab	N	N	N	N	N	N	N	N
Sargassum	N	N	N	N	N	N	N	N
Dolphin and Wahoo	N	N	N	N	N	N	N	N
Gulf of Mexico FMC and South Atlantic FMC Joint								

Spiny Lobster (GOM and SA)	N	N	N	N	N	N	N	N
Coastal Migratory Pelagic GOM and SA	N	N	N	N	N	N	N	N
Gulf of Mexico FMC								
Coral and Coral Reefs	N	N	N	N	N	N	N	N
Red Drum	N	N	Neg	Pos	N	N	N	N
Stone Crab	N	N	N	N	N	N	N	N
Shrimp	N	N	N	N	N	N	N	N
Reef Fish	N	N	Neg	Pos	U	U	N	N
Caribbean FMC								
Spiny Lobster (PR and USVI)	N	N	N	N	U	U	N	N
Shallow Water Reeffish (PR and USVI)	N	N	N	N	U	U	N	N
Corals and Reef Invert. (PR and VI)	N	N	N	N	N	N	N	N
Queen Conch (PR and VI)	N	N	N	N	N	N	N	N
Pacific FMC								
Pac Coast Grdfish	Neg	Pos	N	N	N	N	N	N
Ocean Salmon	N	N	N	N	N	N	N	N
Coastal Pelagics	N	N	N	N	N	N	N	N
West Coast HMS	N	U	N	N	N	N	N	N
Western Pacific FMC								
Crustacean	N	N	N	N	N	N	N	N
Precious Corals	N	N	N	N	N	N	N	N
Bottomfish & Seamount Grdfish	Neg	Pos	N	N	U	U	N	N
Pelagics	N	U	N	N	N	N	N	N
Coral Reef Ecosystems	N	U	N	N	N	N	N	N
North Pacific FMC								
Grdfish BSAI	Neg	Pos	N	N	N	N	N	N

Grdfish GOA	Neg	Pos	N	N	N	N	N	N
BSAI King & Tanner Crab	N	N	N	N	N	N	N	N
Weathervane Scallop	N	N	N	N	N	N	N	N
High Seas Salmon	N	N	N	N	N	N	N	N
Secretary of Commerce								
Atl. Tunas, Swordfish & Sharks	N	N	N	N	N	N	N	N
Atl. Billfish	N	N	N	N	N	N	N	N

[1] Impacts on the physical environment (EFH) "*in the longer term*" in Table 6 (Parts 1 and 2), means impacts that will be known at the time a new FMP amendment or other rulemaking authorized by a given FMP is submitted for Secretarial review with accompanying analyses. Such an action, on average, would not occur before 1½ to 2 years after the effective date of the final rule for any revisions to the NS1 guidelines. *Italicized* designations such as *Neg* or *Pos* denote that the minority or only a few of the stocks in the fishery being described would or could be affected by a given proposed revision to RTH, BML, FML, etc.

NA means "No action alternative"
PA means "Proposed action"
N means "None" in terms of impacts on the physical environment
Neg means "Negative" impacts on the physical environment
U means "Unknown," but possible impact on the physical environment
Pos means "Positive" impact on the physical environment, that is, a likely increase in quality of EFH or protection of some EFH from damage compared to other alternatives.

Working assumptions:
ST: Under the NA for stocks having unknown status related to B_{lim} or F_{lim} that are caught by bottom tending gear (i.e., trawl or dredge gear), EFH for these stocks *might* not benefit from sufficient management, so that the designation in Table 6 (Part 1) is "Neg". For FMPs that are likely to have only core stocks the designation for impacts of the NA on the physical environment is N for none. The working assumptions for the PA for the "stocks" (ST) proposed revision are:
Under the PA for stocks having unknown status related to B_{lim} or F_{lim} that are caught by bottom tending gear (i.e., trawl or dredge gear), EFH for these stocks *might* benefit from sufficient management, so that the designation in Table 6 (Part 1) is "Pos". For FMPs that are likely to have only core stocks, the designation for impacts of the PA on the physical environment is N for none.

FML: The working assumptions under fishing mortality limits (FML) for the NA are: (1) for stocks not undergoing overfishing (see Appendices 2 through 7), impacts on the physical environment in the longer term would be "N". Under the NA, for FMPs in which one or more stocks are undergoing overfishing, the designation in Table 6 (Part 1) is "Neg" (negative) for possible impacts on EFH that would likely be short term in duration and only begin to occur "in the longer term," if a fishery has bottom-tending gear such as trawls or dredges. For FMPs for which the overfishing status is unknown for some stocks and not undergoing overfishing for the other stocks, the designation is "U" for unknown.
The working assumptions under fishing mortality limits (FML) for the PA are: (1) for stocks not undergoing overfishing (see Appendices 2 through 7), there will be no (N) impacts on the physical environment in the longer term. Under the PA, for FMPs in which one or more stocks are undergoing overfishing, the designation in Table 6 (Part 1) is "Pos" (positive) for possible impacts on EFH that would likely be short term in duration and only begin to occur "in the longer term," if a fishery has bottom-tending gear such as trawls or dredges. Under the PA, for FMPs that don't have stocks currently undergoing overfishing, the designation for FML is "N" for none; for FMPs for which the overfishing status is unknown for some stocks and not undergoing overfishing for the other stocks, the designation is "U" for unknown.

BL: Under the NA for BL, for FMPs that do not have any stocks that are overfished, the impacts on EFH "in the longer term" would be "N" for none. Under the NA for BL, for FMPs that have one or more stocks that are overfished, the impacts on EFH "in the longer term" are unknown (U) at this time.
Under the PA for BL, for FMPs that do not have any stocks that are overfished, the impacts on EFH "in the longer term" would be "N" for none. Under the PA for BL, for FMPs that have one or more stocks that are overfished, the impacts on EFH "in the longer term" are unknown (U) at this time. Any impacts on EFH in the longer-term (e.g., beginning about 1½ to 2 years after the

effective date of the NS1 final rule) will be analyzed at the time that new management measures are proposed to manage such a fish stock with a revised stock size thresholds.

RTH: Under the NA the designation is "Pos" if it is possible that one or more stocks in the FMP's management unit might have a shorter RTH and less fishing activity so less effect on EFH. Under the PA, the designation is "Neg" if it is possible that one or more stocks in the FMP might have a longer RTH (by the removal of the discontinuity (i.e., rebuilding period could be longer than under the NA)) and more interaction with bottom habitat than under the NA. Stocks with a short T_{min} (say 1-5 years) and a short GT say 1-5 years will be unaffected and remain constrained by the 10-year RTH. Stocks with T_{min} greater than 10 years will be unaffected and remain constrained by a RTH of T_{min} minus one GT. Only stocks with T_{min} less than 10 years and T_{min} plus one GT greater than 10 years will experience an increase in RTH from 10 years to T_{min} plus one GT.

Table 6 (Part 2). Qualitative Summary of Potential Physical Impacts on EFH in the Longer-Term[1] of Current Guidelines (NA) Compared to Proposed Revisions (PA) for Various FMPs (Rebuilding targets (RT), revision of rebuilding plans (RRB), OY control rules (OY), and International fisheries (IF)).

	RT		RRB		OY		IF	
	NA	PA	NA	PA	NA	PA	NA	PA
New England FMC								
NE Multispecies	N	N	*Neg*	*Pos*	*Neg*	*Pos*	N	N
Atl. Sea Scallops	N	N	N	N	Neg	Pos	N	N
Atl. Salmon	N	N	N	N	N	N	U	U
Monkfish	N	N	*Neg*	Pos	Neg	Pos	N	N
Atl. Herring	N	N	N	N	N	N	U	U
Atl. Red Crab	N	N	N	N	N	U	N	N
Skates NE Reg	N	N	N	N	N	U	N	N
Mid-Atlantic FMC								
Atl. MSB	N	N	N	N	N	N	N	N
Atl. SC and OC	N	N	N	N	N	N	N	N
SF, Scup, and BSB	N	N	*Neg*	*Pos*	*Neg*	*Pos*	N	N
Atl. Bluefish	N	N	N	N	Neg	Pos	N	N
Spiny Dogfish	N	N	*Neg*	Pos	Neg	Pos	U	U
Golden Tilefish	N	N	*Neg*	Pos	N	U	N	N
South Atlantic FMC								
Snapper-Grouper	*Neg*	*Pos*	*Neg*	*Pos*	*Neg*	*Pos*	N	N
Atl. Coast Red Drum	Neg	Pos	Neg	Pos	*Neg*	Pos	N	N
Shrimp Fishery	N	N	N	N	N	N	N	N
Coral, Coral Reefs, & Live Hard Bottom	N	N	N	N	N	N	N	N
Golden Crab	N	N	Neg	Pos	N	U	N	N
Sargassum	N	N	N	N	N	N	N	N
Dolphin and Wahoo	N	N	N	N	N	N	N	N

Gulf of Mexico FMC and South Atlantic FMC Joint								
Spiny lobster (GOM and SA)	N	N	N	N	N	N	N	N
Coastal Migratory Pelagic (GOM and SA)	N	N	N	N	N	N	N	N
Gulf of Mexico FMC								
Coral & Coral Reefs	N	N	N	N	N	N	N	N
Red Drum	N	N	Neg	Pos	Neg	Pos	N	N
Stone Crab	N	N	N	N	N	N	N	N
Shrimp	N	N	N	N	N	N	N	N
Reef Fish	N	N	Neg	Pos	Neg	Pos	N	N
Caribbean FMC								
Spiny Lobster (PR and USVI)	N	N	N	N	N	N	N	N
Shallow Water Reeffish PR and USVI	N	N	N	N	N	N	N	N
Corals and Reef Invert. PR and VI	N	N	N	N	N	N	N	N
Queen Conch PR and VI	N	N	Neg	Pos	N	N	N	N
Pacific FMC								
Pac Coast Grdfish	N	N	*Neg*	*Pos*	N	N	U	U
Ocean Salmon	N	N	N	N	N	N	U	U
Coastal Pelagics	N	N	N	N	N	N	N	N
West Coast HMS	N	N	N	N	N	N	U	U
Western Pacific FMC								
Crustacean	N	N	N	N	N	N	N	N
Precious Corals	N	N	N	N	N	N	N	N
Bottomfish and Seamount Grdfish	N	N	*Neg*	*Pos*	N	N	N	N
Pelagics	N	N	N	N	N	N	N	N
Coral Reef Ecosystems	N	N	N	N	N	N	N	N
North Pacific FMC								

Grdfish BSAI	N	N	N	N	N	N	N	N
Grdfish GOA	N	N	N	N	N	N	N	N
BSAI King & Tanner Crab	N	N	*Neg*	*Pos*	N	N	N	N
Weathervane Scallop	N	N	N	N	N	N	N	N
High Seas Salmon	N	N	N	N	N	N	U	U
Secretary of Commerce								
Atl. Tunas, Swordfish & Sharks	N	N	N	N	N	N	U	U
Atl. Billfish	N	N	N	N	N	N	U	U

[1] Impacts on the physical environment (EFH) *"in the longer term"* in Table 6 (Parts 1 and 2), means impacts that will be known at the time a new FMP amendment or other rulemaking authorized by a given FMP is submitted for Secretarial review with accompanying analyses. Such an action, on average, would not occur before 1½ to 2 years after the effective date of the final rule for any revisions to the NS1 guidelines. *Italicized* designations such as *Neg* or *Pos* denote that the minority or only a few of the stocks in the fishery being described would be affected by a given proposed revision to RTH, BML, FML, etc.

NA means "No action alternative"
PA means "Proposed action"
N means "none" in terms of impacts on the physical environment
U means unknown, but possible impact on the physical environment
Neg means "Negative" impacts on the physical environment
Pos means "Positive" impacts on the physical environment, that is, a likely increase in stock abundance and greater likelihood that stock abundance will remain stable if already at Bmsy, or likely that abundance will remain stable once it reaches Bmsy

Working assumptions:
RT: Under the NA, the working assumptions are that (1) for FMPs with SDC-known stocks, only, this issue is not pertinent so that potential impacts on the physical environment (bottom habitat) in the long term are "N," and for FMPs with stocks having an unknown status related to B_{lim} or F_{lim} the potential impacts on the physical environment (bottom habitat) in the long term are "N" because the current guidelines offer no alternatives to a rebuilding target of Bmsy or a biomass based proxy.
Under the PA, the working assumptions are that (1) for FMPs with SDC-known stocks, only, this issue is not pertinent so that potential impacts on the physical environment (bottom habitat) in the long term are "N" and (2) for FMPs with stocks having an unknown status related to B_{lim} or F_{lim} (in this case, stocks for which we cannot estimate T_{min} and B_{msy}) the potential impacts on the physical environment (bottom habitat) in the long term are potentially positive "Pos" because the proposed revisions offer another method (keeping F below $0.75F_{lim}$ for at least two GTs for a given fish stock) to estimate that rebuilding has occurred which also should result in more control in fishing effort.

RRB: The working assumptions for revision of rebuilding plans (RRB) under the no action alternative (NA) are: If the stock is not overfished, then the potential impact on the physical environment (bottom habitat) in the longer term is "N." If one or more stocks in an FMP are in a rebuilding phase of a plan and review of the plan indicates that revision of the rebuilding plan is necessary, then the likelihood of revising a successful rebuilding plan is designated as "Neg" (Negative) because of the lack of specific guidance in the guidelines about how to revise rebuilding plans and how the rebuilding plan would affect the physical environment.
The working assumptions for revision of rebuilding plans (RRB) under the PA are as follows: If the stock is not overfished, then the potential impact on the physical environment in the longer term is "N." If one or more stocks in an FMP are in a rebuilding phase of a plan and review of the plan indicates that revision of the rebuilding plan is necessary, then the likelihood of constructing a successful rebuilding plan that also benefits the physical environment is designated as positive (Pos). This is because the likelihood of revising a rebuilding plan that becomes successful is greater under the PA because guidance for revising rebuilding plans is more specific.

OY: In Table 6 (Part 2), the working assumptions for describing potential impacts on the physical environment "in the long term" for the NA for OY control rules are: (1) there could be "Neg" impacts for FMPs that have gear that affect EFH and do not currently have OY control rules, or have OY control rules that equal MSY control rules This is because OY control rules that are *less* than MSY control rules would usually provide less fishing effort so less potential impact on EFH. Also, under the NA, biological impacts would be "N" for stocks in FMPs that already have an OY control rule that is less than its corresponding MSY control rule. The working assumptions for describing potential biological impacts in the long term for the PA for OY control rules are: (1) there would eventually be "Pos" impacts on the physical environment for FMPs that have fish stocks that do not currently have OY control rules, or have OY control rules that are not less than their corresponding MSY control rules. This is because preparation and implementation of OY control rules that are less than their MSY control rules would likely benefit EFH by reducing the amount of fishing effort required to catch OY. Biological impacts would be "N" under the PA for a stocks that have an OY control rule that is less than its corresponding MSY control rule (Refer to Appendices 9 through 14).

IF: If an FMP is not involved in management of straddling stocks or highly migratory stocks (HMS) then the designation for NA and PA is "N." For FMPs that have straddling stocks or HMS, it is unknown (U) whether or not the NA or the PA for IF would have any impacts on the physical environment or EFH in the longer term.

Table 7 (Part 1). Qualitative Summary of Potential Economic and Social Impacts in the Longer Term[1] of Current Guidelines (NA) Compared to Proposed Revisions (PA) for Various FMPs (Stocks (ST), Fishing mortality limits (FML), Biomass limits (BL) and Rebuilding time horizons (RTH)).

	ST		FML		BL		RTH	
	NA	PA	NA	PA	NA	PA	NA	PA
New England FMC								
NE Multispecies	N	N	SPFAY	SNHAY	N	N	SNHAY	SPFAY
Atl. Sea Scallops	N	N	N	N	N	N	N	N
Atl. Salmon	N	N	N	N	N	N	N	N
Monkfish	N	N	SPFAY	SNHAY	N	N	SNHAY	SPFAY
Atl. Herring	N	N	N	N	N	N	N	N
Atl. Red Crab	N	N	N	N	Pos	Pos	U	U
Skates NE Reg	N	N	N	N	Pos	Pos	U	U
Mid-Atlantic FMC								
Atl. MSB	N	N	N	N	N	N	N	N
Atl. SC and OC	N	N	N	N	N	N	N	N
SF, Scup, and BSB	N	N	SPFAY	SNHAY	N	N	N	N
Atl. Bluefish	N	N	N	N	N	N	N	N
Spiny Dogfish	N	N	SPFAY	SNHAY	Pos	Pos	N	N
Golden Tilefish	N	N	SPFAY	SNHAY	N	N	N	N
South Atlantic FMC								
Snapper-Grouper	*Neg*	*Pos*	SPFAY	SNHAY	*Pos*	*Pos*	SNHAY	SPFAY
Atl. Coast Red Drum	N	N	SPFAY	SNHAY	Pos	Pos	N	N
Shrimp Fishery	N	N	N	N	Pos	Pos	N	N
Coral, Coral Reefs, & Live Hard Bottom	N	N	N	N	*Pos*	*Pos*	N	N
Golden Crab	N	N	N	N	N	N	N	N
Sargassum	N	N	N	N	N	N	N	N
Dolphin and Wahoo	N	N	N	N	N	N	N	N

Gulf of Mexico FMC and South Atlantic FMC Joint								
Spiny Lobster (GOM and SA)	N	N	N	N	Pos	Pos	N	N
Coastal Migratory Pelagic GOM and SA	N	N	N	N	N	N	N	N
Gulf of Mexico FMC								
Coral and Coral Reefs	N	N	N	N	*Pos*	*Pos*	N	N
Red Drum	N	N	SPFAY	SPHAY	Pos	Pos	N	N
Stone Crab	N	N	N	N	Pos	Pos	N	N
Shrimp	N	N	N	N	N	N	N	N
Reef Fish	Neg	Pos	SPFAY	SNHAY	*Pos*	*Pos*	N	N
Caribbean FMC								
Spiny Lobster (PR and USVI)	N	N	N	N	*Pos*	*Pos*	N	N
Shallow Water Reeffish (PR and USVI)	Neg	Pos	N	N	*Pos*	*Pos*	N	N
Corals and Reef Invert. (PR and VI)	N	N	N	N	*Pos*	*Pos*	N	N
Queen Conch (PR and VI)	N	N	SPFAY	SNHAY	Pos	Pos	N	N
Pacific FMC								
Pac Coast Grdfish	*Neg*	*Pos*	*SPFAY*	*SNHAY*	N	N	N	N
Ocean Salmon	N	N	N	N	N	N	N	N
Coastal Pelagics	N	N	N	N	N	N	N	N
West Coast HMS	N	N	*SPFAY*	*SNHAY*	N	N	N	N
Western Pacific FMC								
Crustacean	N	N	N	N	N	N	N	N
Precious Corals	N	N	N	N	N	N	N	N
Bottomfish and Seamount Grdfish	*Neg*	*Pos*	U	Pos	N	N	N	N
Pelagics	N	N	N	N	N	N	N	N
Coral Reef Ecosystems	N	N	N	N	N	N	N	N

North Pacific FMC

Grdfish BSAI	*Neg*	*Pos*	N	N	N	N	N	N
Grdfish GOA	*Neg*	*Pos*	N	N	N	N	N	N
BSAI King & Tanner Crab	N	N	N	N	N	N	N	N
Weathervane Scallop	N	N	N	N	N	N	N	N
High Seas Salmon	N	N	N	N	N	N	N	N

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Atl. Tunas, Swordfish & Sharks	N	N	SPFAY	SNHAY	N	N	SNFAY	SPHAY
Atl. Billfish	N	N	SPFAY	SNHAY	N	N	N	N

[1] Economic and social impacts "*in the longer term*" in Table 7 (Parts 1 and 2), means impacts that will be known at the time a new FMP amendment or other rulemaking authorized by a given FMP is submitted for Secretarial review with accompanying analyses. Such an action, on average, would not occur before 1½ to 2 years after the effective date of the final rule for any revisions to the NS1 guidelines. *Italicized* designations such as *Neg* or *Pos* denote that the minority or only a few of the stocks in the fishery being described would be affected by a given proposed revision to RTH, BML, FML, etc.

NA means "No action alternative"
PA means "Proposed action"
N means "none" in terms of economic and social impacts
SNeg means "negative in the near term, but LPos earlier" economic and social impacts
U means "unknown," but possible impact
SPos means "short term-positive" economic and social impacts, that is, a likely increase in revenues
LPos means "longer term positive" economic and social impacts
HAY means higher average yields (value) in the longer-term
FAY means foregone average yields (value) in the longer-term

Working assumptions:

ST: The working assumptions for the NA for the "stocks" (ST) proposed revision are: (1) for FMPs that contain major stocks so that they would likely be made up of core stocks only, the projected economic and social impacts in the longer term would be "N", and (2) for FMPs that are made up of major and minor stocks, the projected economic and social impacts in the longer term also would be Negative (Neg) for stocks that might have been grouped into stock assemblages under the PA.
The working assumptions under stocks (ST) for the PA are: (1) for FMPs that contain major stocks and would likely be made up of core stocks, only, the projected economic and social impacts in the longer term would be "N," and for FMPs that contain major and minor stocks, and would likely contain core stocks and stock assemblages, the projected economic and social impacts in the longer term would be "Pos" sooner for the stocks grouped in stock assemblages that were not previously managed directly.

FML: (See Appendices 2 through 7)-- The working assumptions under fishing mortality limits (FML) for the NA are: (1) for stocks *not* undergoing overfishing (see Appendices 2 through 7), the economic and social impacts in the longer term would be none (N), (2) for stocks undergoing overfishing, it ***could*** be Positive at first (SP), but Negative later because of foregone annual yield later (SPFAY), compared to PA. Nevertheless, measures would not likely be implemented to end overfishing sooner all the time under the PA compared to the NA.
The working assumptions under FML for the proposed alternative (PA) are: (1) for stocks *not* undergoing overfishing (see Appendices 2 through 7), there will be no (N) economic and social impacts in the longer term, and (2) for stocks undergoing overfishing, the economic and social impacts in the longer term ***could*** be Negative at first (SN), but Positive later because of higher annual yield (SNHAY) compared to the NA.

BL: The working assumptions under the NA for the economic and social impacts in the longer term (beginning 1½ to 2 years after the effective date of the final rule) are none (N) for FMPs that don't have overfished stocks; for FMPs that don't have SFA-approved overfished definitions yet, the designation is Positive (Pos) because economic impacts should accrue once "depleted" is defined and a rebuilding plan begins to take effect.
The working assumptions under the PA, are: the economic and social impacts in the longer term are none (N) for FMPs that don't have overfished stocks; for FMPs that don't have SFA-approved overfished (B_{lim}) definitions yet, the designation is Positive (Pos) because economic impacts should accrue once "depleted" is defined and a rebuilding plan begins to take effect

RTH: If an FMP currently does not have rebuilding periods for any stocks, then the economic and social impacts of this issue under both the NA and PA is none (N).
Under this issue, some fish stocks could have a longer rebuilding period under the PA compared to the NA. If a fish stock has a longer rebuilding period under the PA, than under the NA, then the economic and social impacts could be short term positive (SP) but foregone annual yield (FAY) for the PA compared to short term negative (SN) but higher annual yield (HAY) sooner under the NA.

Table 7 (Part 2). Qualitative Summary of Potential Economic and Social Impacts in the Longer Term[1] of Current Guidelines (NA) Compared to Proposed Revisions (PA) for Various FMPs (Rebuilding targets (RT), revision of rebuilding plans (RRB), OY control rules (OY), and International fisheries (IF)).

	RT		RRB		OY		IF	
	NA	PA	NA	PA	NA	PA	NA	PA
New England FMC								
NE Multispecies	N	N	U	Pos	SPFAR	SNHAR	N	N
Atl. Sea Scallops	N	N	N	N	N	N	N	N
Atl. Salmon	N	N	N	Pos	N	N	N	N
Monkfish	N	N	U	Pos	SPFAR	SNHAR	N	N
Atl. Herring	N	N	N	N	N	N	N	N
Atl. Red Crab	N	N	N	N	U	U	N	N
Skates NE Reg	N	N	*U*	*Pos*	SPFAR	SNHAR	N	N
Mid-Atlantic FMC								
Atl. MSB	N	N	N	N	SPFAR	SNHAR	N	N
Atl. SC and OC	N	N	N	N	N	N	N	N
SF, Scup, and BSB	N	N	*U*	*Pos*	SPFAR	SNHAR	N	N
Atl. Bluefish	N	N	U	Pos	SPFAR	SNHAR	N	N
Spiny Dogfish	N	N	U	Pos	SPFAR	SNHAR	N	N
Golden Tilefish	N	N	U	Pos	SPFAR	SNHAR	N	N
South Atlantic FMC								
Snapper-Grouper	Neg	Pos	U	Pos	SPFAR	SNHAR	N	N
Atl. Coast Red Drum	Neg	Pos	U	Pos	SPFAR	SNHAR	N	N
Shrimp Fishery	N	N	N	N	N	N	N	N
Coral, Coral Reefs, & Live Hard Bottom	N	N	N	N	N	N	N	N
Golden Crab	N	N	N	N	N	N	N	N
Sargassum	N	N	N	N	N	N	N	N
Dolphin and Wahoo	N	N	N	N	N	N	N	N
Gulf of Mexico FMC and South Atlantic FMC Joint								
Spiny Lobster	N	N	N	N	N	N	N	N

(GOM and SA)								
Coastal Migratory Pelagic (GOM and SA)	N	N	U	Pos	SPFAR	SNHAR	N	N
Gulf of Mexico FMC								
Coral & Coral Reefs	N	N	N	N	N	N	N	N
Red Drum	Neg	Pos	U	Pos	SPFAR	SNHAR	N	N
Stone Crab	N	N	N	N	N	N	N	N
Shrimp	N	N	N	N	N	N	N	N
Reef Fish	Neg	Pos	U	Pos	SPFAR	SNHAR	N	N
Caribbean FMC								
Spiny Lobster (PR and USVI)	N	N	N	N	N	N	N	N
Shallow Water Reeffish PR and USVI	N	N	U	Pos	N	N	N	N
Corals and Reef Invert. PR and VI	N	N	N	N	N	N	N	N
Queen Conch PR and VI	Neg	Pos	U	U	SPFAR	SNHAR	N	N
Pacific FMC								
Pac Coast Grdfish	N	N	U	Pos	N	N	U	U
Ocean Salmon	N	N	N	N	N	N	U	U
Coastal Pelagics	N	N	N	N	N	N	N	N
West Coast HMS	*Neg*	*Pos*	U	Pos	SPFAR	SNHAR	N	N
Western Pacific FMC								
Crustacean	*Neg*	*Pos*	N	N	N	U	N	N
Precious Corals	N	N	N	N	N	N	N	N
Bottomfish and Seamount Grdfish	N	N	U	Pos	N	N	N	N
Pelagics	N	N	N	N	SPFAR	SNHAR	N	N
Coral Reef Ecosystems	N	N	N	N	N	N	N	N
North Pacific FMC								
Grdfish BSAI	N	N	N	N	N	N	N	N

Grdfish GOA	N	N	N	N	N	N	N	N
BSAI King & Tanner Crab	N	N	U	Pos	N	N	N	N
Weathervane Scallop	N	N	N	N	N	N	N	N
High Seas Salmon	N	N	N	N	N	N	N	N
Secretary of Commerce								
Atl. Tunas, Swordfish & Sharks	*Neg*	*Pos*	U	Pos	SPFAR	SNHAR	U	U
Atl. Billfish	*Neg*	*Pos*	U	Pos	SPFAR	SNHAR	U	U

[1] Economic and social impacts "*in the longer term*" in Table 7 (Parts 1 and 2), means impacts that will be known at the time a new FMP amendment or other rulemaking authorized by a given FMP is submitted for Secretarial review with accompanying analyses. Such an action, on average, would not occur before 1½ to 2 years after the effective date of the final rule for any revisions to the NS1 guidelines. *Italicized* designations such as *Neg* or *Pos* denote that the minority or only a few of the stocks in the fishery being described would be affected by a given proposed revision to RTH, BML, FML, etc.

NA means "No action alternative"
PA means "Proposed action"
N means "none" in terms of economic and social impacts
Neg means "negative" economic and social impacts
U means "unknown," but possible impact
SPos means "short term-positive" economic and social impacts, that is, a likely increase in revenues
LPos means "longer term positive" economic and social impacts

Working assumptions:
RT: Under the no action alternative (NA), the working assumptions are that (1) for FMPs that only have stocks that have B_{lim} values or a proxy for B_{lim}, this issue is not pertinent so that potential economic and social impacts in the long term are none (N). If F_{lim} becomes known for some stocks for which B_{lim} or its proxy are not known for certain FMPs, the potential economic and social impacts in the long term are negative (Neg). This is because the current guidelines offer no alternatives to a rebuilding target of B_{msy} or a biomass based proxy compared to the use of F_{lim} in place of a proxy to determine if a stock is rebuilt under the PA.
Under the proposed action alternative (PA), the working assumptions are that for FMPs with SDC-known stocks, only, this issue is not pertinent so that potential economic and social impacts in the long term are none (N). If F_{lim} becomes known for some stocks for which B_{lim} or its proxy are not known for certain FMPs, the potential economic and social impacts in the long term are positive (pos). This is because the current guidelines offer no alternatives to a rebuilding target of B_{msy} or a biomass based proxy compared to the use of F_{lim} in place of a proxy to determine if a stock is rebuilt under the PA.

RRB: The working assumptions for revision of rebuilding plans (RRB) under the no action alternative (NA) are: If the FMP has no overfished stocks, then the potential economic impacts in the longer term are none (N). If one or more stocks in an FMP are in a rebuilding phase of a plan and review of the plan indicates that revision of the rebuilding plan is necessary, then the likelihood of revising a successful rebuilding plan and having positive economic impacts is designated as unknown (U) because of the lack of specific guidance in the guidelines about how to revise rebuilding plans.
The working assumptions for revision of rebuilding plans (RRB) under the proposed action are as follows: If the FMP only has stocks that are not overfished, then the potential economic impacts in the longer term are none (N). If one or more stocks in an FMP are in a rebuilding phase of a plan and review of the plan indicates that revision of the rebuilding plan is necessary, then the likelihood of constructing a successful rebuilding plan and having positive economic impacts is designated as positive (Pos). This is because the likelihood of revising a rebuilding plan that becomes successful is greater under the PA because guidance for revising rebuilding plans is more specific.

OY: In Table 7 (Part 2), the working assumptions for describing potential economic impacts in the long term for the no action alternative (NA) for OY control rules are: (1) there could be short-term positive (SP) economic impacts followed by foregone annual revenues (FAR) for FMPs that do not currently have OY control rules, or have OY control rules that equal MSY control

rules. This is because OY control rules that are the same as their corresponding MSY control rules would usually provide for slower rebuilding of a given fish stock (i.e., smaller reductions in revenue in the short term, but foregone revenue later because of foregone annual revenues). Also, under the NA, economic impacts would be none (N) for stocks in FMPs that already have an OY control rule that is less than its corresponding MSY control rule, and N for FMPs that do not have any depleted stocks. The working assumptions for describing potential economic impacts in the long term for the proposed action alternative (PA) for OY control rules are: (1) there would eventually be short-term negative (SN) economic impacts, followed by higher annual revenues (HAR) in FMPs that have fish stocks that do not currently have OY control rules, or have OY control rules that are not less than their corresponding MSY control rules. This is because implementation of OY control rules that are less than their MSY control rules would be required for new rebuilding plans, revised rebuilding plans, or for stocks in new FMPs or new stocks in a current FMP. Fish stocks that have OY control rules that are less than their corresponding MSY control rule would probably begin rebuilding more rapidly (i.e., there could be short term losses in revenue compared to the NA, but higher annual revenues soon after the initial rebuilding period). Economic and social impacts would be none (N) under the PA for a stocks that have an OY control rule that is less than its corresponding MSY control rule (Refer to Appendices 9 through 14) and For FMPs that do not have depleted stocks.

IF: If an FMP is not involved in management of straddling stocks or highly migratory stocks then the designation for NA and PA is N. If the FMP is involved in management of straddling stocks or highly migratory stocks then the designation for economic and social impacts under the NA are unknown (U) and under the PA the economic and social impacts are unknown (U).

Note: Independent of the biological impacts predicted in this table for each alternative, most PA measures are likely to improve the ability of fishery managers/scientists to develop SDC appropriate for a given stock dependent upon the quality of data available for that stock and related stocks

Table 8. Federal Commercial Vessel Permits by FMP.

Council/FMP	Vessels/permits	Gear
New England Council		Northeast Commercial
multispecies		
3,772	Trawl, Longline, gillnet	
		H&L
Recreational	687	H&L
Atl. Sea Scallops (C)	2,837	Dredge and trawl
Atl. salmon	None	None
Deep-sea red crab (C)	879	Traps
Atl. herring (C)	2,197	Mid-water trawls Purse seines
Monkfish (C)	2,855	Gillnets, trawls, dredges
Mid-Atlantic Council		
Mackerel, squids and butterfish		
Atl. mackerel		
Commercial	2,805	Otter trawl, trap, gillnet
Recreational	641	
Squids (C)		Otter trawl
Butterfish (C)		Otter trawl
Surf clams and ocean quahogs (C)		
Surf clams	1,745	Dredge
Ocean quahogs	1,711	Dredge
Summer flounder, scup and black sea bass		
Commercial		
Summer flounder	982	Trawl, H&L, trap, gillnet
Scup	866	Trawl, H&L, trap, gillnet
Black sea bass	938	Trawl, H&L, trap, gillnet
Recreational		
Summer flounder	711	
Scup	627	
Black sea bass	667	
Tilefish (C)	1,749	Longline, H&L
Bluefish		
Commercial	3,424	H&L, gillnet, otter trawl
Recreational	805	H&L
Spiny dogfish (C)	3,055	Trawl, gillnet
South Atlantic Council		
Red drum	None	None
Golden crab (C)	12	Traps
Snapper/Grouper		
Commercial	998	Rod and reel, Bandit gear, longline, handline
Recreational	1,228	Handline, rod and reel, bandit, spear, powerhead
Shrimp (C)	None (State only)	Trawls
Coral, Coral reefs and Live Hard Bottoms		
Commercial	Florida-35	Hand harvest

Gulf of Mexico Council		
lobster (joint w/SA Council)		Spiny
Commercial	132 comm.	Traps, trawl, scuba
Recreational	353 tailing	
Coastal Migratory Pelagics		
Commercial		
King mackerel	1,822	Gillnets, H&L
Spanish mackerel	1,531	Gillnets, H&L
Recreational		
King mackerel	None	H&L
Spanish mackerel	None	H&L
	(1,657 for-hire vessels)	
Stone crab		
Commercial	1,358	Traps
Recreational	None	Traps, scuba
	(State only)	
Red drum		
Commercial	None	None
Recreational	None	None
Reef Fish Fishery (C)	1,161	Longline, fish trap, H&L
Red snapper	618	
Shrimp fishery		
Commercial	2,283	Otter trawls
Recreational	None	Cast and dip nets
	(State only)	
Coral and Coral reefs		
Commercial		
Octocorals	FL: 35	Scuba
Recreational	None	
Caribbean Council		
Spiny Lobster		
Commercial	None	Trap, pot, dip net, trammel net, Hand harvest, snare
Recreational	None	(Same as commercial)
Reef fish		
Commercial	None	Longline, H&L, traps pot, gillnet, trammel
Recreational	None	Dip net, handline, rod and reel, slurp gun, spear
Coral Reef		
Commercial	None	Dip net, slurp gun, hand harvest
Recreational	None	Dip net, slurp gun, hand harvest
Queen conch		
Commercial	None	Hand harvest
Recreational	None	Hand harvest
Pacific Council		
Ocean salmon		
Commercial	1,240	troll
(Chinook, coho, and pink salmon)		
Recreational	403,500	H&L

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      (Chinook, coho, and pink salmon)
  Groundfish
    Commercial        Limited entry: 410     trawl, H&L, pots, set nets
                      Open access: 1,150
  Coastal Pelagic Species (C)
            Limited entry (Southern Cal): 65 purse seine
            Open access (north): 20
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North Pacific Council

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  Groundfish of Gulf of Alaska (C)
            1,849 Federal fishing permits   trawl, pots, H&L, jigs
            1,755 LLP permits
  Groundfish of the Bering Sea and Aleutian Islands (C)
              879 Federal fishing permits   trawl, pots, H&L, jigs
              580 LLP permits
  Commercial King and Tanner crab (C)
              383 LLP permits               pots
  Salmon off Alaska (C)
            2,098 permit holders            troll
  Scallop off Alaska (C)
       9 LLP permits       dredge
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Western Pacific Council

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 Bottomfish and seamount groundfish (C)
                      3,600                 handline, rod and reel
  Crustaceans (C)        15                 traps
  Pelagics (C)        8,000                 troll, handline, longline
  Precious Corals      None                 manned submersible
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Secretary of Commerce

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  Billfishes (R)   Charter and recreational  rod and reel, longline
  Atlantic Tunas, Swordfish, and Sharks
    Tunas
      Commercial      5,725                 rod and reel, handline,
                                              bandit gear, longline
                                              harpoon, purse seine
                                              pound nets, weirs
      Recreational   13,263                 rod and reel, handline
    Sharks
      Commercial      251 directed          longline, gillnets, rod and
                      359 incidental          reel
      Recreational    Charter               rod and reel
                      Recreational
    Swordfish
      Commercial      206 directed          handline, harpoon,
                       99 incidental          longline, rod and reel,
                       95 handgear            otter trawl (incidental)
      Recreational    Charter               Rod and reel only
         Recreational
```

(C) means commercial only
(State only) means no Federal permits, just state permits for this fishery
LLP means license limitation program

APPENDIX 1. REPORT OF THE NMFS NATIONAL STANDARD 1 GUIDELINES WORKING GROUP

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10 November 2003

NOTE: this Working Group Report represents the opinions of Working Group members; it has not undergone formal legal review, nor does it represent agency policy

Introduction

The National Standard 1 Working Group (NS1WG) was formed in April 2003 with Terms of Reference to develop recommendations as to:

(i) whether the NS1 guidelines should be revised at all;
(ii) if revisions are desired, what parts of the NS1 guidelines should have priority for revision, and why;
(iii) suggested revisions consistent with the objectives that they be technically sound, increase comprehensiveness (i.e., provide guidance for a broader range of situations), add specificity (i.e., provide more guidance on how to handle particular situations), improve clarity (i.e., are easier for non scientists to understand), and recognize scientific and biological constraints.

The Terms of Reference also suggested which parts of the current NS1 guidelines the group should focus on, but did not limit the scope of the review.

The recommendations provided in this report reflect ideas exchanged during numerous teleconferences between NS1WG members, along with input from (i) public comments received in response to an Advanced Notice of Proposed Rulemaking published in the Federal Register on 14 February 2003; (ii) a NMFS-wide workshop held in Kansas City, MO on 7-9 May 2003, (iii) a Science Board meeting held in St. Thomas, VI on 26-29 May 2003, (iv) a meeting with Front Office staff held in Silver Spring, MD on 3 July 2003, (v) a Leadership Council meeting held in Providence, RI on 19-21 August 2003, and (vi) a video-conference held with Headquarters and the Regions and Science Centers on 10 September 2003. Comments from MAFAC were also received and taken into account. At all points in this process, proposed recommendations were evaluated for their ability to clarify, simplify, or amplify sections of the current National Standard 1 (NS1) guidelines, as necessary, in accordance with item (iii) in the above Terms of Reference.

The most substantive recommended changes in terms of their influence on fishery management practices are to strengthen the requirements for quickly ending overfishing, but at the same time to simplify and, within limits, to increase the flexibility of rebuilding time horizons. However, increased flexibility for rebuilding time horizons cannot be used to justify continued overfishing. The rationale behind this overarching recommendation is that reducing fishing mortality is within human control, whereas the rate at which rebuilding takes place is not fully within our control – it also depends on a stock's life history characteristics and the environmental conditions pertaining during the period of rebuilding. More importantly, elimination of overfishing is a *precursor* to permanent rebuilding of overfished stocks.

For similar reasons, the recommendations also increase the emphasis on controlling fishing mortality and reduce, but do not eliminate, the emphasis on minimum stock size thresholds. In a well-managed fishery in which overfishing is a rare occurrence, it is unlikely that a stock or assemblage will become so depleted that it requires radical changes in management measures to rebuild to a level consistent with producing the maximum sustainable yield (MSY). Therefore, keeping fishing mortality below the overfishing threshold is a "first line of defense" against a stock or assemblage becoming depleted. The minimum stock size threshold is a "second line of defense" for a stock or assemblage that has either not been managed so as to prevent overfishing, or has become depleted for other reasons, or a combination of these. In well-managed fisheries, the minimum stock size threshold should rarely need to be invoked.

The body of the text consists of issues considered, Problem Statements pertaining to the issues, and Recommended Solutions. Where needed, additional explanation is provided in square brackets. Alternative solutions discussed and analyzed by the NS1WG and others are included in Appendix 1, along with a brief rationale explaining why they were not incorporated into the Recommended Solutions.

Recommendations

OVERALL

The NS1WG believes that there is a sufficient need for clarification, simplification, or amplification of various aspects of the current version of the NS1 guidelines to warrant revision. However, the NS1WG also believes that the basic tenets represented in the current NS1 guidelines reflect well the intent of the Magnuson-Stevens Act (MSA), as amended by the Sustainable Fisheries Act of 1996, particularly in terms of ensuring an appropriate balance between maximizing fishery yields and minimizing the risk of stock collapse. Therefore, a major overhaul of the current NS1 guidelines is not required. While the NS1WG does acknowledge that further technical guidance is needed on several issues, it does not believe that the NS1 guidelines are the place to provide such details, and recommends the creation of a different forum for this purpose.

Further, if revisions to the NS1 guidelines proceed, they should include a "grandfather clause" that allows (but does not require) NMFS and the Councils to retain any rebuilding plans they have already adopted if such plans have been approved. With respect to rebuilding plans, the new guidelines should be mandatory for stocks and assemblages for which rebuilding plans have not been submitted within a six month period after a Final Rule is published in the Federal Register. At the same time, implementation of modifications to the NS1 guidelines other than those pertaining to rebuilding plans would also become mandatory, but NMFS and the Councils will be allowed three years to complete the necessary plan amendments.

The NS1WG recommends that the NS1 guidelines themselves should be modified in the following specific areas only.

1. Stocks, Fisheries and Species Assemblages

Problem Statement: The current authorization of the MSA clearly allows "overfishing" and "overfished" to be specified on the basis of fisheries, where a "fishery" is defined, *inter alia*, as "one or more stocks of fish which can be treated as a unit for purposes of conservation and management and which are identified on the basis of geographical, scientific, technical, recreational, and economic characteristics". However, for the most part, NMFS and the Councils have specified maximum fishing mortality thresholds (MFMTs), minimum stock size thresholds (MSSTs), and rebuilding plans on a stock-by-stock basis. NMFS also generally uses stocks as the unit for reporting on the status of U.S. fisheries in the congressionally-mandated annual Report to Congress and the Councils on the status of fisheries within each Council's geographical area of authority. By far the majority of these "stocks" are of unknown status (658 of 932, or 70.6%, in 2002), and this tends to be the main statistic quoted back to NMFS and the Councils by our critics. This fuels the belief that one of the agency's highest priorities should be to move as many species as possible from "unknown" to "known" status. Yet, with a few exceptions, improving the quality, frequency, or timeliness of stock assessments for key target species (and other species heavily impacted by fishing), which are often of "known" status, is likely be a higher priority both within and outside the agency. Even with a substantial increase in the agency's budget, a goal of ultimately having 932 separate stock assessments and 932 different sets of management measures is probably unrealistic, unworkable, and not the best use of public funds (especially since the true number of fish and invertebrate stocks captured in U.S. fisheries is probably closer to 3,000+ rather than 932). On the other hand, situations where a limited degree of overfishing may be tolerated for some stocks for the sake of achieving optimum yield (OY) for other stocks need to be strictly controlled. This is achieved through application of a mixed stock exception, which requires that several rigorous conditions be satisfied.

Recommended Solution: The NS1WG recommends that the NS1 Guidelines be clarified and simplified to allow each FMP to classify stocks into two categories: (i) "core" stocks (which may include key target species, historically-important species that may now be relatively rare, important by-catch species, and highly vulnerable species) that will be assessed and managed based on individual MFMTs, MSSTs and OYs, and (ii) stock "assemblages" that will be assessed and managed based on either aggregate MFMTs, MSSTs and OYs, or stock-specific measures for one or more indicator stocks.

Ideally, "core" and "assemblage" stocks will be defined as part of an overall fishery ecosystem plan. Species that are or have been key target species, important bycatch species, or highly vulnerable species cannot be managed as part of an assemblage simply as a means of avoiding the MSA requirement to end overfishing. "Core" and "assemblage" categorizations should be reviewed periodically and modified as appropriate.

For core stocks, a mixed stock exception similar to that in the current NS1 guidelines may be applied, provided analyses are conducted to demonstrate that three conditions are satisfied: (i) this action will result in long-term net benefits to the Nation, (ii) the same benefits cannot be achieved by other actions that would not result in overfishing, and (iii) the stock must have at least a 50% chance of being above its MSST under prevailing environmental conditions. (The latter condition would substitute for, and be more specific than, the current NS1 guidelines condition

which states that a species or evolutionarily significant unit should never be subjected to a fishing mortality rate so high that it requires protection under the Endangered Species Act, ESA; the first two conditions are similar to those in the current NS1 guidelines).

For assemblages, the available quantitative or qualitative evidence should be examined periodically to ensure that no individual stock becomes severely depleted, as may be indicated by, for example, a substantial reduction in the proportional representation of the stock in the total assemblage biomass or the total assemblage landings.

2. Fishing Mortality Thresholds

Problem Statement: It has been seven years since passage of the Sustainable Fisheries Act of 1996, yet there are still several major fisheries where overfishing persists. While it would be unreasonable to expect that all previously-depleted stocks should be rebuilt by now, it is quite reasonable to expect that overfishing should have ended by now in almost all cases, except those where a mixed stock exception or some other exception has explicitly been made and justified, or cases where overfishing has only recently been identified. To date, rebuilding plans have often included a "phasing-in" period to gradually bring fishing mortality rates below the MFMT in order to ease the short-term burden on fishing communities. However, in the medium and long term, it is better for both fish stocks and fishing communities if fishing mortality is somewhat below the MFMT, because this results in high average yields at less risk to the stock. Therefore, with very few exceptions, efforts to eliminate cases of protracted overfishing should be intensified. Strengthening the requirement to eliminate overfishing is in conformance with National Standard 1 of the MSA which states, "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".

Recommended Solution: The NS1WG recommends that the definition of MFMT should remain as it is in the current NS1 guidelines but, where appropriate, requirements for maintaining or reducing fishing mortality below the MFMT should be strengthened; i.e., there should be a lower tolerance for overfishing. Other than cases where a mixed stock exception or some other exception has explicitly been made and justified, or cases where overfishing has only recently been identified, overfishing should be eliminated as soon as possible in order to promote stock rebuilding and, in particular, to prevent further stock depletion. Phase-in periods for reducing fishing mortality down to the level of the MFMT should only be permitted if the following two conditions are met: (i) the maximum permissible rebuilding time is no greater than it would have been without the phase-in period, and (ii) fishing mortality levels must, at the least, be reduced by a substantial (e.g., measurable) amount each year. Progress toward eliminating overfishing should not await approval of a formal rebuilding plan.

3. Stock Size Thresholds

Problem Statement: The requirement for minimum stock size thresholds (MSSTs) is one of the most contentious parts of the NS1 guidelines. There are several contradictory reasons for the controversy. On the one hand, some have perceived the introduction of a minimum stock size criterion as a mechanism for imposing unduly restrictive management measures on the fishing industry. However, others have perceived it as signaling that rebuilding plans may not be required until stocks have become severely depleted. In addition, the current definition of the MSST (½ B_{MSY} or the minimum stock size at which rebuilding to B_{MSY} would be expected within 10 years while fishing at the MFMT level, whichever is greater) is perceived by some as being

too complex, and by others as being unnecessarily restrictive since fishing is supposed to be restricted to the OY level which should be below the MFMT. Therefore, there is a need to (i) simplify the requirements for specifying and calculating MSST, and (ii) emphasize its role as a secondary, rather than a primary, consideration relative to the need to bring fishing mortality under control.

Recommended Solution: The NS1WG recommends that an MSST or proxy should continue to be required, either at the level of individual stocks for core stocks, or at the level of assemblages or indicators species for assemblage stocks, with limited exceptions (see below). A stock or assemblage that falls below the MSST shall be deemed to be overfished and require a rebuilding plan.

The NS1WG further recommends that quantification of MSST should continue to take account of the fact that fish stocks fluctuate naturally, even if fished at a constant rate. Therefore, it would not make sense to set the MSST at or above B_{MSY} because a stock fished at or somewhat below the MFMT could frequently flip between a state of being overfished (therefore requiring development of a rebuilding plan) and one of being rebuilt. Based on simulations of fish stocks with a variety of combinations of life history characteristics fished at or near F_{MSY}, the NS1WG determined that stocks for which overfishing did not occur would rarely fall below ½ B_{MSY} except when they have very high natural mortality (meaning that there are few age classes in the population), or very high recruitment variability, or are prone to runs of unusually low recruitments. Based on empirical evidence, it appears that stocks are typically able to rebound from ½ B_{MSY} to B_{MSY} with little difficulty so long as fishing mortality is suitably constrained. In other words, it is unlikely that depensatory effects (reduced per capita growth rates at low levels of abundance) are of consequence at population sizes near or above ½ B_{MSY}.

Therefore, the NS1WG recommends that the NS1 guidelines be simplified to define the default MSST to be ½ B_{MSY}. In rare cases, it may be possible to justify MSST levels below ½ B_{MSY} (e.g., for stocks with high natural fluctuations that result in biomass frequently falling below B_{MSY} even when overfishing does not occur; in this case, it may be reasonable to set the MSST near the lower end of some appropriate range (e.g., the lower 95% confidence interval) of the natural fluctuations that would result if the stock or assemblage was not subjected to overfishing. On the other hand, the MSST could be set higher than ½ B_{MSY} for stocks that are rarely expected to fall below some biomass level appreciably higher than ½ B_{MSY}.

For short-lived stocks with high annual fluctuations in productivity and abundance, it is permissible to define MSST relative to stock abundance over a multi-year period (as is currently done for Pacific salmon).

It is also permissible to use proxies for MSST, as stated in the current NS1 guidelines, particularly in data-poor situations. The NS1WG recommends that the current NS1 guidelines language about proxies should be retained (with the future possibility of further technical guidance provided in a different forum).

An MSST or proxy should always be specified, if possible, with the following exceptions. First, if an OY control rule is implemented that results in fishing mortalities at least as conservative as would have been the case if an MSST had been used, then explicit use of an MSST is not required. However, even in these circumstances, use of an explicit MSST is encouraged, at least as a "second line of defense". Second, if the Secretary determines that existing data are grossly

inadequate or insufficient for providing a defensible, albeit approximate, estimate of MSST or a reasonable proxy thereof, specification of such is not required. In such cases, it may be necessary to rely on qualitative evidence that the stock or assemblage is, or is not, sufficiently depleted as to require rebuilding. However, such cases should be rare, particularly for core stocks, and explicit justification should always be provided whenever an MSST or proxy is not specified. This sub-issue is addressed further under 5.

4. Rebuilding Time Horizons

Problem Statement: The definition of the maximum rebuilding time horizon in the current NS1 guidelines contains an inherent discontinuity. Define T_{min} to be the minimum rebuilding time based on the number of years it takes to achieve a 50% probability that biomass will equal or exceed B_{MSY} at least once when F = 0. Define T_{max} to be the maximum permissible rebuilding time. Using these terms, the current NS1 guidelines state that T_{max} may not exceed 10 years if T_{min} is less than 10 years, and T_{max} may not exceed T_{min} plus one generation time if T_{min} is greater than or equal to 10 years. The problem is that this results in a discontinuity in rebuilding times such that, for example, T_{max} equals 10 years when T_{min} equals 9 years, but T_{max} can be considerably greater than 10 years when T_{min} is only one year longer.

Recommended Solution: The NS1WG recommends that if T_{min} + one generation time exceed 10 years, then T_{max} = T_{min} + one generation time; otherwise T_{max} can be up to 10 years.

[The NS1WG and others put considerable effort into evaluating the efficacy of alternative rebuilding time horizons. Numerous alternative approaches were considered (see Appendix 1), but this approach was chosen because it is consistent with the provisions of the MSA, results in the least change to the existing definition and its justification, yet it does remove the discontinuity and will result in more flexible rebuilding time horizons in some cases. Other reasons for favoring this approach are discussed in Appendix 1].

5. Rebuilding Targets

Problem Statement: Under the current NS1 guidelines, once a stock or assemblage has been declared to be overfished (i.e., below its MSST), it must be rebuilt back to at least B_{MSY} before being declared to be fully rebuilt and no longer requiring a rebuilding plan. The reason for requiring rebuilding all the way to B_{MSY}, rather than just to the MSST level, is that a stock or assemblage that has been depleted to this extent is likely to have a distorted age distribution, and therefore both the age distribution and the biomass need to be rebuilt in order to meet the MSA mandate of "rebuilding to a level consistent with producing the MSY". While the NS1WG believes that this argument makes sense, it also recognizes the difficulties inherent in estimating the B_{MSY} target in certain situations. In particular, alternative approaches may be needed when the Secretary determines that biomass-based reference points cannot currently be reliably estimated due, for example, to a lack of appropriate biomass-related data, because B_{MSY} is probably beyond the range of quantified observations, or because an environmental regime shift has occurred.

Recommended Solution: The NS1WG recommends that when the Secretary determines that there are inadequate data to estimate biomass-based reference points reliably, it should be permissible to use appropriate fishing mortality proxies in certain situations. For example, when there are inadequate data to estimate MSST and/or a B_{MSY} rebuilding target reliably, but the available quantitative or qualitative evidence suggests that a stock or assemblage is sufficiently depleted

that it requires rebuilding, then it should be permissible to set a rebuilding fishing mortality at or below the MFMT that will result in a very low probability of the stock or assemblage declining further, and to evaluate rebuilding performance every two years as required by the MSA. In these circumstances, it may be reasonable to declare a stock or assemblage to be rebuilt if the realized running average fishing mortality has been below the MFMT for at least two generation times, provided there is no other strong evidence that biomass is still depleted. It would also be reasonable to expect that data on the stock or assemblage would accumulate during the two generation period, and this could ultimately be used to estimate the biomass-based reference points, and to re-evaluate the appropriateness of the MFMT. In this sense, the biomass rebuilding target is, in effect, an emergent property of the rebuilding plan.

However, in order to invoke this approach, National Standard 2 ("best scientific information available") must be brought to bear on the issue of the adequacy of the data for estimating biomass-based reference points. Here, scientific peer review has an obvious role to play. Additional provisions should apply for invoking a regime shift argument to apply the approach. A regime shift can only be inferred when there is a scientific basis to do so (e.g., changes in climatic indices that operate on decadal time scales, or persistence changes in a species' survival ratios). The distinction that needs to be made is between fluctuations that are within the range of natural variability normally encountered in a generation time of the fish stock, versus quasi-permanent or cyclical changes. In addition, the possibility that a switch to a low productivity regime may ultimately be followed by a switch a high productivity regime, and vice versa, needs to be acknowledged and accounted for. Other provisions in the current NS1 guidelines related to regime shifts will continue to apply; for example, thresholds are to be calculated with respect to prevailing environmental conditions and, in the event of a regime shift, such thresholds must be respecified.

6. Revision of Rebuilding Plans

Problem Statement: The current NS1 guidelines provide a template for the initial formulation of rebuilding plans, but do not include guidance on procedures to follow when rebuilding plans require revision after initiation. In addition, the MSA requires that progress towards ending overfishing and rebuilding affected fish stocks be evaluated for adequacy at least every two years, but does not define "adequate progress". The following example illustrates the type of paradox that can result when there is no guidance on revision of rebuilding plans after initiation. Consider a case where an initial rebuilding plan was based on a stock assessment that estimated T_{max} to be 30 years, but in the first five years of the plan rebuilding occurred substantially faster than anticipated and a new assessment indicates that T_{max} is now 10 years; however, in order to rebuild in 10 years, fishing mortality must be substantially reduced.

There are two different, but related, situations to address. The first is the situation where rebuilding has occurred substantially faster or slower than expected, and the second is the situation where estimates of assessment variables, such as the rebuilding target, are substantially modified based on a new or revised stock assessment.

Recommended Solution: The NS1WG noted that, by definition, fishing mortality targets should be achieved on average and therefore recommends that rebuilding plans should not be adjusted in response to each minor stock assessment update. However, if rebuilding plans are to be adjusted, then it may be permissible in some circumstances to modify either the sequence of rebuilding

fishing mortalities, or the time horizon, but not both. Rebuilding must continue until the biomass target is met.

The following two paragraphs apply for situations where rebuilding has occurred substantially faster or slower than expected (but estimates of stock assessment parameters and variables have not been substantially modified based on a new or revised stock assessment).

– If rebuilding proves to have occurred substantially faster than initially projected, the former[1]

[1]Here, "former" refers to something that was previously approved through the usual FMP process

sequence of rebuilding fishing mortalities should be retained until the stock or assemblage is rebuilt.
– If rebuilding proves to have occurred substantially slower than initially projected, even though the former[1] rebuilding fishing mortalities have **not** been exceeded, it is permissible to either retain the former[1] rebuilding time horizon and reduce the former[1] sequence of rebuilding fishing mortalities to meet it, or to keep the former[1] sequence of rebuilding fishing mortalities and lengthen the time horizon accordingly. If the former[1] rebuilding fishing mortalities have been exceeded, the former[1] rebuilding time horizon must be maintained, and future fishing mortalities must be reduced to the extent necessary to compensate for previous overruns.

The following two paragraphs apply for situations where estimates of stock assessment parameters and variables, such as the rebuilding target, have been substantially modified based on a new or revised stock assessment. The text is identical to that of the previous block, except for allowing greater flexibility in the case of new estimates that would permit substantial increases in rebuilding fishing mortalities.

– If estimates of assessment parameters and variables, such as the rebuilding target, change in such a way as to allow substantial increases in the former[1] sequence of rebuilding fishing mortalities in order to rebuild within the former[1] time horizon, it is permissible to either retain the former[1] rebuilding time horizon and increase the former[1] sequence of rebuilding fishing mortalities to meet it, or to keep the former[1] sequence of rebuilding fishing mortalities and either retain the time horizon or shorten it accordingly.
– If estimates of assessment parameters and variables, such as the rebuilding target, change in such a way as to require substantial reductions in the former[1] sequence of rebuilding fishing mortalities in order to rebuild within the former[1] time horizon, even though the former[1] sequence of rebuilding fishing mortalities have **not** been exceeded, it is permissible to either retain the former[1] rebuilding time horizon and reduce the former[1] sequence of rebuilding fishing mortalities to meet it, or to keep the former[1] sequence of rebuilding fishing mortalities (provided these are no greater than any new estimate of MFMT) and lengthen the time horizon accordingly (provided this is no greater then any new estimate of T_{max}). If the former[1] rebuilding fishing mortalities have been exceeded, the former[1] rebuilding time horizon must be maintained, and future fishing mortalities must be reduced to the extent necessary to compensate for previous overruns.

Note that "keeping the former[1] sequence of rebuilding fishing mortalities" when the former[1] rebuilding time horizon may be lengthened means that the average of the sequence of fishing mortalities, excluding any period of phasing-in of fishing mortality reductions, should be applied until the stock or assemblage is rebuilt.

7. OY Control Rules

Problem Statement: While most FMPs have defined threshold or limit reference points based on MSY control rules, few have specified OY control rules, or "target control rules". However, it could be argued that the need for an OY control rule is at least as implicit in the language of the MSA as the need for an MSY control rule. Furthermore, if both an MSY control rule and an OY control rule were required, we would have the tools necessary to determine compliance with the MSA's requirement that OY be no greater than MSY.

Recommended Solution: The NS1WG recommends that the requirement to develop target OY control rules, in addition to threshold or limit control rules, be strengthened; i.e., change "may" to "must". Targets should be achieved on average; e.g., with 50% probability. OY control rules must satisfy the condition that they are less than the MSY control rule over their entire range.

8. Terminology

First Problem Statement: The NS1 guidelines use the term "threshold" to indicate a property of control rules that is usually defined as a "limit" in much of the published scientific literature and in other fisheries forums, including international fisheries organizations. To be in conformance with common usage, "limit" should be used to denote a reference level that should be avoided with high probability and "threshold", if used at all, should denote a "red flag" or "warning zone". In addition, use of the phrase "minimum stock size threshold" implies that biomass thresholds (limits) are to be applied at the level of individual stocks, whereas the NS1WG has recommended that they may be applied at the level of species assemblages, where appropriate.

Recommended Solution: The NS1WG recommends that the term "minimum stock size threshold" (MSST) should be replaced with the term "biomass limit" (B_{lim}), and the term "maximum fishing mortality threshold" (MFMT) should be replaced with the term "fishing mortality limit" (F_{lim}). The NS1 guidelines should require limits to be defined in most cases, and could outline the utility of also having thresholds, but would not require them. The NS1 guidelines should also recognize that biomass is not the only metric that can be used to express the size of a stock or assemblage, and therefore other appropriate metrics, such as numbers or egg production, can be used in place of biomass.

Second Problem Statement: The word "overfished" is used in both the MSA and the NS1 guidelines to denote a stock or assemblage in need of rebuilding. However, stocks and assemblages can become depleted for reasons other than overfishing. The current terminology places an unfair onus on the fishing industry, the Councils and NMFS to classify all depleted stocks or assemblages as "overfished". In addition, stocks or assemblages that have been substantially reduced in size need to be rebuilt if possible, regardless of the cause of depletion. Continued use of the term "overfished" in inappropriate situations or in situations where both overfishing and environmental factors have contributed to stock decline has led to proposals (e.g., proposed legislation for reauthorization of the MSA) requiring NMFS and the Councils to differentiate between depletion caused by overfishing and depletion caused by other factors. Such a requirement is virtually impossible to satisfy from a scientific viewpoint, and is potentially counter-productive.

Recommended Solution: The NS1WG recommends that the word "overfished" be replaced with "depleted" in most, if not all, places within the NS1 guidelines. "Depleted" needs to be defined explicitly to avoid confusion with the definition used in the Marine Mammal Protection Act. Factors that can cause depletion will be listed and will include overfishing, environmental changes, pollution, and habitat destruction. Factors that result in permanent changes in stock productivity (e.g., irreversible habitat destruction) may

require recalculation of limits and rebuilding targets relevant to prevailing conditions, as is required for a regime shift.

9. Technical Issues

Problem Statement: There are many complex technical issues associated with the application of the NS1 guidelines. These include:

- methods for estimating MSY-based reference points;
- biological reference points for assemblages;
- acceptable procedures for special situations; e.g. "annual crop" species such as squids and some shrimps;
- how to address data-poor situations;
- stock size projection methods; and
- standardization of statistics (e.g., arithmetic means, geometric means, medians and probabilities) used to formulate and evaluate rebuilding plans.

Guidance on some of these items could be incorporated into the NS1 guidelines, but inclusion of guidance on all items would result in the guidelines becoming too cumbersome and convoluted, particularly if the objective is to provide guidance that can be applied to each and every existing fishery.

Recommended Solution: The NS1WG recommends that selected metrics or methods should be standardized across Regions, but that the NS1 guidelines not unduly constrain flexibility in applying alternative models, probability distributions, and other relevant methodologies. The NS1WG suggests that three methodological considerations should be standardized and incorporated in the NS1 guidelines: (i) B_{MSY} should be the long-term median (which may not be equal to the average) spawning biomass that is expected when fishing according to the MSY control rule; (ii) rebuilding control rules should have at least a 50% probability that biomass will achieve the B_{MSY} level on or before T_{max}; and (iii) stock productivity parameters used to calculate rates of rebuilding must be consistent with the rates used to calculate B_{MSY}, or an explicit accounting of environmental effects on productivity must be included in the rebuilding calculations. Regarding item (ii), the NS1WG recognizes that some Regions have used rebuilding criteria that are more conservative than this. However, the language "at least a 50% probability" means that more conservative rules are not precluded. Whatever the approach used, stocks or assemblages must continue under a rebuilding plan until they are rebuilt in practice, not just in theory. Also, use of (ii), and even some more conservative rules, could result in some stocks or assemblages being declared "fully-rebuilt" prematurely. However, this is not considered to be a major concern because stocks or assemblages prematurely declared to be rebuilt must continue to satisfy the constraint that fishing mortality does not exceed the MFMT.

To address other technical issues, the NS1WG recommends formation of a permanent Scientific Working Group to produce recommendations on individual concerns as they arise. This group might have a somewhat fluid membership and should meet at least twice per year, if required. Resulting recommendations should be provided to all Regions in written form.

10. International Fisheries

Problem Statement: Several MSA and NS1 guidelines requirements (particularly responsibility for determining overfished status, the need for rebuilding plans, and the process for implementation of rebuilding plans), are difficult to apply in international fisheries for straddling stocks, and for highly migratory species (HMS) such as tuna, swordfish, marlins and sharks. The greatest difficulties arise in cases where (i) there is no responsible international management authority, and (ii) the U.S. catches only a small portion of a stock or assemblage.

Recommended Solution: The NS1WG recommends that the NS1 guidelines be amplified with respect to international HMS and straddling stocks in which the U.S. has an interest. Principles to be incorporated are: (i) to generally rely on international organizations in which the U.S. participates to determine the status of HMS stocks or assemblages under their purview, including specification of status determination criteria and the process to apply them; (ii) if the international organization in which the U.S. is a participant does not have a process for developing a formal plan to rebuild a specific overfished HMS stock or assemblage, to use the MSA process for development of a rebuilding plan by a regional fishery management council or NMFS to be promoted in the international organization or arrangement; and (iii) to develop appropriate domestic fishery regulations to implement internationally agreed upon measures or appropriate U.S. fishery measures consistent with a rebuilding plan giving due consideration to the position of the U.S. domestic fleet relative to other participants in the fishery.

APPENDIX 1. Non-Preferred Alternative Solutions

Introduction

Under each of the issues identified in the main body of the text, several alternative approaches were examined. In particular, the status quo alternative ("Status quo; no change to the NS1 guidelines") was always discussed at length. Other alternatives were either rejected as being inferior to the Recommended Solution, unwieldy or unworkable, or not precluded by the Recommended Solution. Many of the alternatives considered were ultimately revised and folded into the Recommended Solutions, and therefore are not repeated here. Thus, some of the alternatives listed below only apply to specific parts of the Recommended Solutions. These lists of alternatives are presented to illustrate the diversity of options explored by the NS1WG.

A brief rationale for rejecting particular alternatives is included in square brackets after each alternative.

1. Stocks, Fisheries and Species Assemblages

Alternative 1: Status quo; no change to the NS1 guidelines. [Not recommended because the MSA clearly allows overfishing and overfished to be specified on the basis of individual stocks or on the basis of "fisheries". The current NS1 guidelines need to be clarified to reflect this.]

Alternative 2: Establish an MFMT for multispecies assemblages. MFMT can be greater than the MSY control rule for minor components of the assemblage as long as it does not drive any stock in the assemblage below its stock-specific MSST. [– This approach is not precluded by the Recommended Solution].

Alternative 3: Manage all multispecies fisheries as assemblages with overall MFMTs and MSSTs, or MFMTs and MSSTs based on one or more indicator stocks, but not individual MFMTs and MSSTs except that individual stocks must satisfy the current requirements in the NS1 guidelines (e.g., to not become subject to listing under ESA). [Not recommended because this alternative could result in important target species remaining in an overfished state indefinitely, an action that would likely compromise long-term net benefits to the Nation. If such an action did actually result in increased long-term benefits to the Nation, it would be covered by the mixed species exception contained in the Recommended Solution].

Alternative 4: Manage to the weakest stock in an assemblage. [Not recommended because this alternative would also compromise long-term net benefits to the Nation; however, it is recognized that weak stocks require special consideration and this is included in the Recommended Solution].

Alternative 5: Manage to the economically or biologically most important stock in an assemblage. [Not recommended because this alternative would likely lead to numerous stocks becoming overfished and is likely to compromise long-term net benefits to the Nation].

Alternative 6: Increase the flexibility of the current "mixed stock exception" in the guidelines. [The NS1WG was unable to determine how to accomplish this

objective without compromising the long-term viability of ecologically important stocks and assemblages].

Alternative 7: Decrease the flexibility of the current "mixed stock exception" in the guidelines. [This has already been accomplished in the Recommended Solution by replacing the current NS1 guidelines requirement that a stock not become eligible for an ESA listing with a higher standard].

2. *Fishing Mortality Thresholds*

Alternative 1: Status quo; no change to the NS1 guidelines. [Not recommended because the Recommended Solution will actually result in few substantive changes to the current NS1 guidelines, but it will further strengthen the emphasis on the need to eliminate overfishing].

3. *Stock Size Thresholds*

Alternative 1: Status quo; no change to the NS1 guidelines. [Not recommended because, at the least, the status quo needs to be changed to Alternative 2].

Alternative 2: Modify the current MSST definition from the greater of "One-half the MSY stock size, or the minimum stock size at which rebuilding to the MSY level would be expected to occur within 10 years if the stock or stock complex were exploited at the maximum fishing mortality threshold specified under paragraph ..." to the greater of "One-half the MSY stock size, or the minimum stock size at which rebuilding to the MSY level would be expected to occur within 10 years if the stock or stock complex were exploited at the target fishing mortality rate appropriate to that biomass level". [This is unnecessarily complex, particularly when one considers the details of how to conduct the analysis (e.g., the effect of the initial age structure on the result); however, the Recommended Solution would not prevent this approach if it was desired].

Alternative 3: Set MSST equal to B_{MSY}. [Not recommended because, in most cases, this would be unnecessarily conservative and could result in frequent flip-flops between the states of overfished and not overfished (and, therefore, frequent flip-flops in the need for a rebuilding plan)].

Alternative 4: Set MSST equal to (1-M) B_{MSY}. [This may also be too conservative; more analysis is needed. However, the Recommended Solution does not preclude this option].

Alternative 5: Disassociate the definition of MSST from B_{MSY}, particularly in cases where MSY-based reference points cannot be estimated or are unreliable; e.g., adopt B_{lim} approaches as per ICES and NAFO. [More analysis is needed to determine the relationship between B_{lim} and B_{MSY}. However, the Recommended Solution does not preclude this option].

Alternative 6: MSST is not required for any fisheries. [Not recommended because experience has clearly demonstrated that an MSST is necessary to ensure a rebuilding response if a stock has become depleted. Even in well-managed fisheries, where overfishing is a rare or non-existent occurrence, there are possibilities of assessment errors or environmental changes that can cause a rapid decrease in the abundance of fish stocks under otherwise good management. Without an MSST to trigger a formal rebuilding program, remedial management has tended to be late and inadequate. Therefore, at the least, an MSST is needed

as a "second line of defense" for a stock or assemblage that has either not been managed so as to prevent overfishing, or has become depleted for other reasons, or a combination of these. If MSSTs were not required, it would probably be necessary to develop some sort of proxy to use as a trigger for a rebuilding plan].

4. Rebuilding Time Horizons

In the following alternatives, T_{min} is the minimum rebuilding time, defined as the number of years it takes to achieve a 50% probability that biomass will equal or exceed B_{MSY} at least once when F = 0. T_{max} is the maximum permissible rebuilding time.

Alternative 1: Status quo; no change to the NS1 guidelines. [Not recommended because at the least, it is essential to eliminate the inherent discontinuity in the current NS1 guidelines].

Alternative 2: Emphasize stock biology constraints rather than the MSA's 10-year guideline; set T_{max} = 2 generation times across the board. [See the response following the list of alternatives].

Alternative 3: Emphasize stock biology constraints rather than the MSA's 10-year guideline; set T_{max} = 1.5 generation times across the board. [See the response following the list of alternatives].

Alternative 4: Set $T_{max} = 2 * T_{min}$ across the board. [See the response following the list of alternatives].

Alternative 5: Set $T_{max} = T_{min} + \rho *$ generation time, where $\rho < 1$. [See the response following the list of alternatives].

Alternative 6: Set T_{max} = the time it takes to rebuild if fishing at a constant rate of ½ F_{MSY} across the board. [Not recommended because for severely-depleted stocks where depensatory effects may be important, ½ F_{MSY} may not be low enough to enable the stock to rebound above the depensatory threshold, below which its long-term viability is jeopardized; also see the response following the list of alternatives].

Alternative 7: If T_{min} is greater than 10, then $T_{max} = 10 + 2*(T_{min}-10)$; i.e., 2 rebuilding years are allowed for each year greater than 10 that it would take to rebuild at F = 0. There is no need to invoke generation time, and the discontinuity problem is reduced. [Not recommended because while the discontinuity is not as strong as it is in the current NS1 guidelines, it still exists; also see the response following the list of alternatives].

Alternative 8: T_{min} is defined based on minimum feasible levels of fishing mortality, rather than F = 0.0. [Not recommended because any definition of "minimum feasible levels" would be too subjective. Zero fishing mortality should mean zero fishing mortality. In any case, T_{min} is only one part of the calculation of T_{max}. The Recommended Solution will generally result in rebuilding fishing mortalities greater than zero].

Response to Alternatives 2-7: There are many possible variations on Alternatives 2-7, a number of which were discussed by the NS1WG. However, they can all be boiled down to alternatives that contain T_{min}, and alternatives that are based on selected life history parameter(s), and don't include T_{min}. Alternatives that contain T_{min} are problematic because each new stock assessment is likely to result in a new estimate of this quantity due to changes that have accrued in stock size and age distribution since the last assessment, and other factors. However, alternatives not involving T_{min} are even more problematic because they are not responsive to the degree of

depletion that may have occurred, are usually not responsive to current levels of stock productivity, may specify rebuilding time horizons that are biologically impossible, and are not responsive to the MSA language "unless <circumstances> dictate otherwise". The Recommended Solution was favored because it (i) is consistent with the MSA, (ii) results in the least change to the existing NS1 guidelines definition and its justification, (iii) removes the discontinuity, (iv) results in time horizons that are responsive to the degree of depletion of a stock, (v) results in time horizons that are responsive to current levels of stock productivity, (vi) results in time horizons that are at least biologically feasible, (vii) allows a certain amount of flexibility to incorporate socio-economic considerations, and (viii) will result in more flexible rebuilding time horizons in several cases. None of the other alternatives satisfy all of these qualities.

The problem of estimates of T_{min} changing with each assessment is addressed under Issue 5.

5. Rebuilding Targets

Alternative 1: Status quo; no change to the NS1 guidelines. [Not recommended because there have already been several examples where it is obvious that the NS1 guidelines need to be amplified to provide further options and enhance flexibility].

Alternative 2: The only alternatives discussed under the issue of rebuilding targets that were not ultimately folded into the Recommended Solution were (i) the condition for determining an appropriate rebuilding fishing mortality in circumstances where there are inadequate data to reliably estimate biomass-based reference points, and (ii) the metric or mechanism for determining or inferring that a stock is rebuilt in such circumstances. The condition used for setting a rebuilding fishing mortality in the Recommended Solution is that the rebuilding fishing mortality must be at or below the MFMT and must result in a very low probability that the stock or assemblage will decline further (which means that it must have a high probability of increasing over time). This sub-issue is addressed in Alternatives 2a and 2b. The metric used for determining or inferring that a stock is rebuilt is that the running average fishing mortality has been at or below the MFMT for at least two generation times, provided there is no other evidence that biomass may still be depleted. This sub-issue is addressed in Alternative 2c.

Alternative 2a: The rebuilding fishing mortality must result in at least a 95% probability of annual increases in stock size for the foreseeable future (e.g., over the next ten years). [Not recommended because a requirement for stock increases in each and every year might require an unnecessarily restrictive rebuilding fishing mortality due to natural variation in stock size, particularly if it is known that one or more poor years classes will soon recruit to the stock].

Alternative 2b: The rebuilding fishing mortality must be set below some fraction of the MFMT (e.g., below 0.75*MFMT). [Not recommended because it is not possible to specify a fraction of MFMT that will work for every situation].

Alternative 2c: It may be permissible to declare a stock or assemblage to be rebuilt if the realized running average fishing mortality has been less than 0.75*MFMT for at least two generation times, provided that there is

no other evidence that biomass may still be depleted. [Not recommended because the NS1WG determined that adding an arbitrary constant did not make this alternative superior to the Recommended Solution. Although it is possible that fishing mortalities at the beginning of the rebuilding period may need to be much lower than the MFMT, they could potentially be quite close to the MFMT through much of the two generation time period].

6. *Revision of Rebuilding Plans*

Alternative 1: Status quo; no change to the NS1 guidelines; i.e., no amplification of guidance. [Not recommended because the current NS1 guidelines do not address the issue of revision of rebuilding plans after initiation and it is obvious from several recent examples that the guidelines need to be greatly amplified to address this issue].

Alternative 2: Rebuilding plans should be reinvented from scratch every 2-5 years. [Not recommended because such a task would be too onerous, and could keep fisheries in an almost continual state of limbo].

Alternative 3: An alternative to the first bullet point that applies for the situation where rebuilding has occurred substantially faster or slower than expected: If rebuilding proves to have occurred substantially faster than initially projected, it is permissible to either retain the former[1] rebuilding time horizon and increase the former[1] rebuilding fishing mortalities to meet it, or to keep the former[1] rebuilding fishing mortalities and shorten the time horizon accordingly. [Not recommended because rebuilding fishing mortalities should not be increased just because, for example, there has been a run of fortuitously good recruitments. A run of poor recruitments may follow and the rate of rebuilding will fall behind schedule. It is important to remember that rebuilding projections are usually averages or medians of a large number of alternative plausible scenarios, whereas there is only one scenario that actually occurs. If the projection model was "correct" (and the rebuilding fishing mortalities were implemented exactly), it would be expected that the real scenario would fluctuate on either side of the projected average or median trajectory].

7. *OY Control Rules*

Alternative 1: Status quo; no change to the NS1 guidelines. [Not recommended because few FMPs have specified OY control rules even though the MSA implies that they should do so].

8. *Terminology*

Alternative 1: Status quo; no change to the NS1 guidelines – however, mention the difference between the NS1 guidelines approach and common usage in other countries and international organizations. [Not recommended because the United States should conform with common usage to avoid confusion and misunderstandings].

Alternative 2: The fishing mortality reference point should be a limit, while the biomass reference point should be a threshold. [Not recommended because the NS1WG

has now recommended a potentially less-conservative definition of the MSST than that contained in the current NS1 guidelines. Both should be limits].

9. Technical Issues

Alternative 1: Status quo (all Regions do it differently); no change to the NS1 guidelines. [Not recommended because the NS1WG determined that some degree of standardization is required].

Alternative 2: Recommend the formation of another working group to produce an update of Restrepo *et al.* 1998. [Not recommended – this alternative could be reconsidered, but the NS1WG felt that this would be a major task and all of the agency scientists capable of making meaningful contributions are already over-committed with numerous other projects].

10. International Fisheries

Alternative 1: Status quo; no change to the NS1 guidelines; i.e., no clarification of the NS1 guidelines. [Not recommended because the NS1WG believes that clarification and amplification of procedures to follow for straddling stocks and HMS fisheries is required].

Appendix 2. Northeast Region stocks that are subject to overfishing, overfished, or approaching an overfished condition (from NMFS 2003 Status of the Fisheries, May 2004).

FMP	Stock	Overfishing?	Overfished?	Approaching?
Northeast Multispecies	*Gulf of Maine cod*	Y	Y	-
Northeast Multispecies	*Georges Bank cod*	Y	Y	-
Northeast Multispecies	*Gulf of Maine haddock*	-	Y	-
Northeast Multispecies	*Georges Bank haddock*	-	Y	-
Northeast Multispecies	*American plaice*	Y	Y	-
Northeast Multispecies	*witch flounder*	Y	-	-
Northeast Multispecies	*Southern New England/Mid-Atlantic yellowtail flounder*	Y	Y	-
Northeast Multispecies	*Cape Cod/Gulf of Maine yellowtail flounder*	Y	Y	-
Northeast Multispecies	*white hake*	Y	Y	-
Northeast Multispecies	*Southern New England/Mid-Atlantic windowpane flounder*	-	Y	-
Northeast Multispecies	*Southern New England winter flounder*	Y	Y	-
Northeast Multispecies	*ocean pout*	-	Y	-
Northeast Multispecies	*Atlantic halibut*	-	Y	-
Northeast Skate	*barndoor skate*	-	Y	-
Northeast Skate	*thorny skate*	-	Y	-
Monkfish	*northern monkfish*[a]	Y	-	-
Monkfish	*southern monkfish*	Y	-	-
Summer flounder, scup, And black sea bass	*scup*[b]	Y	-	-
Summer flounder, scup, And black sea bass	*black sea bass*	Y	Y	-
Bluefish	*bluefish*	-	Y	-
Tilefish	*golden tilefish*	Y	Y	-
Atlantic salmon	*Atlantic salmon*	-	Y	-

[a] -The most recent assessment (SAW-34) was not able to precisely determine current exploitation rates (although all candidate values were above a candidate $F_{threshold}$). Accordingly, the status of this stock with respect to F is unchanged, pending an updated stock assessment.
[b] - The most recent assessment (SAW-35) could not make a quantitative estimate of the current F; therefore, no comparison with the F threshold specified in the FMP could be made.

Appendix 3. Southeast Region stocks that are subject to overfishing, overfished, or approaching an overfished condition (from NMFS 2003 Status of the Fisheries Report, May 2004).

FMP	Stock	Overfishing ?	Overfished ?	Approaching ?
South Atlantic Snapper Grouper	*vermilion snapper*	Y	-	-
South Atlantic Snapper Grouper	*red snapper*	Y	Y	-
South Atlantic Snapper Grouper	*snowy grouper*	Y	Y	-
South Atlantic Snapper Grouper	*golden tilefish*	Y	Y	-
South Atlantic Snapper Grouper	*red grouper*	Y	Y	-
South Atlantic Snapper Grouper	*black sea bass*	Y	Y	-
South Atlantic Snapper Grouper	*gag*	Y	-	-
South Atlantic Snapper Grouper	*speckled hind*	Y	Y	-
South Atlantic Snapper Grouper	*Warsaw grouper*	Y	Y	-
South Atlantic Snapper Grouper	*black grouper*	Y	Y	-
South Atlantic Snapper Grouper	*goliath grouper (Jewfish)*	-	Y	-
South Atlantic Snapper Grouper	*Nassau grouper*	-	Y	-
South Atlantic Snapper Grouper	*red porgy*	-	Y	-
Atlantic Coast Red Drum	*red drum*	Y	Y	-
Coastal Migratory Pelagics of the Gulf of Mexico and South Atlantic	*Gulf group king mackerel*	-	Y	-
Reef Fish Resources of the Gulf of Mexico	*red snapper*	Y	Y	-
Reef Fish Resources of the Gulf of Mexico	*red grouper*	Y	-	-
Reef Fish Resources of the Gulf of Mexico	*vermilion snapper*	Y	Y	-
Reef Fish Resources of the Gulf of Mexico	*greater amberjack*	-	Y	-
Reef Fish Resources of the Gulf of Mexico	*Nassau grouper*	-	Y	-
Reef Fish Resources of the Gulf of Mexico	*goliath grouper (Jewfish)*	-	Y	-
Gulf of Mexico Red Drum	*red drum*	Y	Y	-
Reef Fish Fishery of Puerto Rico and the USVI	*Nassau grouper*	-	Y	-
Reef Fish Fishery of Puerto Rico and the USVI	*goliath grouper (Jewfish)*	-	Y	-

FMP	Stock	Overfishing ?	Overfished ?	Approaching ?
Queen Conch Resources of Puerto Rico and the USVI	*queen conch*	Y	Y	-

Appendix 4. Northwest Region stocks that are subject to overfishing, overfished, or approaching an overfished condition (from NMFS 2003 Status of the Fisheries Report, May 2004).

FMP	Stock	Overfishing?	Overfished ?	Approaching?
Pacific Coast Groundfish	*Pacific whiting*	Y[5]	Y[5]	-
Pacific Coast Groundfish	*lingcod*	Y	Y	-
Pacific Coast Groundfish	*Pacific ocean perch*	-	Y	-
Pacific Coast Groundfish	*bocaccio*	-	Y	-
Pacific Coast Groundfish	*canary rockfish*	-	Y	-
Pacific Coast Groundfish	*darkblotched rockfish*	-	Y	-
Pacific Coast Groundfish	*widow rockfish*	-	Y	-
Pacific Coast Groundfish	*cowcod*	-	Y	-
Pacific Coast Groundfish	*yelloweye rockfish*	-	Y	-

Pacific whiting is designated as subject to overfishing and overfished in this report, as that was its status prior to the December 31, 2003, cut-off date for status determinations. However, an assessment completed March, 2004, indicates that overfishing was eliminated in 2002 and no longer overfished in 2003. In a final rule published on April 30, 2004 (69 FR 23667), NMFS announced that Pacific whiting was above the target rebuilding biomass in 2003 and is no longer considered overfished.

Appendix 5. Pacific Islands Region stocks that are subject to overfishing, overfished, or approaching an overfished condition (from NMFS 2003 Status of the Fisheries Report, May 2004).

FMP	Stock	Overfishing?	Overfished?	Approaching?
Western Pacific Pelagics	*Pacific bigeye tuna*	Y	-	-
Bottomfish and Seamount Groundfish of the Western Pacific	*pelagic armorhead*	-	Y	-

Appendix 6. Alaska Region stocks that are subject to overfishing, overfished, or approaching an overfished condition (from NMFS 2003 Status of the Fisheries Report, May 2004).

FMP	Stock	Overfishing?	Overfished?	Approaching?
BSAI King and Tanner Crab	*Bering Sea snow crab*	-	Y	-
BSAI King and Tanner Crab	*Pribilof Islands blue king crab*	-	Y	-

Appendix 7. Highly Migratory stocks that are subject to overfishing, overfished, or approaching an overfished condition (from NMFS 2003 Status of the Fisheries Report, May 2004).

FMP	Stock	Overfishing?	Overfished?	Approaching?
Atlantic Billfish	*Atlantic white marlin*	Y	Y	-
Atlantic Billfish	*Atlantic blue marlin*	Y	Y	-
Atlantic Billfish	*West Atlantic sailfish*	Y	Y	-
Atlantic Tunas, Swordfish, and Sharks	*Atlantic bigeye tuna*	Y	Y	-
Atlantic Tunas, Swordfish, and Sharks	*North Atlantic albacore*	Y	Y	-
Atlantic Tunas, Swordfish, and Sharks	*West Atlantic bluefin tuna*	Y	Y	-
Atlantic Tunas, Swordfish, and Sharks	*bull shark*	Y	Y	-
Atlantic Tunas, Swordfish, and Sharks	*sandbar shark*	Y	-	-
Atlantic Tunas, Swordfish, and Sharks	*finetooth shark*	Y	-	-
Atlantic Tunas, Swordfish, and Sharks	*spinner shark*	Y	Y	-
Atlantic Tunas, Swordfish, and Sharks	*silky shark*	Y	Y	-
Atlantic Tunas, Swordfish, and Sharks	*dusky shark*	Y	Y	-
Atlantic Tunas, Swordfish, and Sharks	*bignose shark*	Y	Y	-
Atlantic Tunas, Swordfish, and Sharks	*night shark*	Y	Y	-
Atlantic Tunas, Swordfish, and Sharks	*Caribbean reef shark*	Y	Y	-
Atlantic Tunas, Swordfish, and Sharks	*tiger shark*	Y	Y	-
Atlantic Tunas, Swordfish, and Sharks	*lemon shark*	Y	Y	-
Atlantic Tunas, Swordfish, and Sharks	*sand tiger shark*	Y	Y	-
Atlantic Tunas, Swordfish, and Sharks	*nurse shark*	Y	Y	-
Atlantic Tunas, Swordfish, and Sharks	*scalloped hammerhead shark*	Y	Y	-
Atlantic Tunas, Swordfish, and Sharks	*great hammerhead shark*	Y	Y	-

FMP	Stock	Overfishing?	Overfished?	Approaching?
Atlantic Tunas, Swordfish, and Sharks	*smooth hammerhead shark*	Y	Y	-
Atlantic Tunas, Swordfish, and Sharks	*white shark*	Y	Y	-
Atlantic Tunas, Swordfish, and Sharks	*Atlantic yellowfin tuna*	-	-	Y

Appendix 8. Addresses of Fishery Management Councils and NMFS Office of Sustainable Fisheries

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Chris Oliver, Executive Director
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Kitty M. Simonds, Executive Director
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For Atlantic highly migratory species:
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Appendix 9. Summary of Stock Status for Major Species Contained in Federal Fishery Management Plans. ***Summary of Stocks that have a Specified MSY, OY or both in FMPs for the New England and Mid-Atlantic Fishery Management Councils***

Fishery Management Plan	Stock	Jurisdiction	Control Rules	
			MSY	OY
Atlantic Sea Scallop	ATLANTIC SEA SCALLOP[1]	NEFMC	Y	Y
Northeast Multispecies	COD - GULF OF MAINE	NEFMC	Y	Y
Northeast Multispecies	COD - GEORGES BANK	NEFMC	Y	Y
Northeast Multispecies	HADDOCK - GULF OF MAINE	NEFMC	Y *	Y
Northeast Multispecies	HADDOCK - GEORGES BANK	NEFMC	Y	Y
Northeast Multispecies	AMERICAN PLAICE	NEFMC	Y	Y
Northeast Multispecies	REDFISH	NEFMC	Y	Y
Northeast Multispecies	WITCH FLOUNDER	NEFMC	Y	Y
Northeast Multispecies	YELLOWTAIL FLOUNDER - GEORGES BANK	NEFMC	Y	Y
Northeast Multispecies	YELLOWTAIL FLOUNDER - SOUTHERN NEW ENGLAND/MIDDLE ATLANTIC[4]	NEFMC	Y*	Y
Northeast Multispecies	YELLOWTAIL FLOUNDER - CAPE COD/GULF OF MAINE	NEFMC	Y	Y
Northeast Multispecies	WHITE HAKE	NEFMC	Y*	Y
Northeast Multispecies	POLLOCK	NEFMC	Y*	Y
Northeast Multispecies	WINDOWPANE FLOUNDER - GULF OF MAINE / GEORGES BANK	NEFMC	Y	Y
Northeast Multispecies	WINDOWPANE FLOUNDER - SOUTHERN NEW ENGLAND / MIDDLE ATLANTIC	NEFMC	Y	Y

Northeast Multispecies	**WINTER FLOUNDER - GULF OF MAINE**	NEFMC	Y	Y
Northeast Multispecies	**WINTER FLOUNDER - GEORGES BANK**	NEFMC	*Y*	Y
Northeast Multispecies	**WINTER FLOUNDER - SOUTHERN NEW ENGLAND**	NEFMC	*Y*	Y
Northeast Multispecies	**SILVER HAKE - GULF OF MAINE / NORTHERN GEORGES BANK**	NEFMC	*Y**	N
Northeast Multispecies	**SILVER HAKE - SOUTHERN GEORGES BANK / MIDDLE ATLANTIC**	NEFMC	*Y**	N
Northeast Multispecies	**RED HAKE - GULF OF MAINE / NORTHERN GEORGES BANK**	NEFMC	*Y*	N
Northeast Multispecies	**RED HAKE - SOUTHERN GEORGES BANK / MIDDLE ATLANTIC**	NEFMC	*Y*	N
Northeast Skate	**LITTLE SKATE**	NEFMC	*Y**	N
Northeast Skate	**WINTER SKATE**	NEFMC	*Y**	N
Atlantic Herring	**ATLANTIC HERRING**	NEFMC	*Y*	Y
Red Crab	**DEEPSEA RED CRAB**	NEFMC	*Y*	N
Monkfish	**MONKFISH - NORTH**	NEFMC / MAFMC	*Y**	Y
Monkfish	**MONKFISH - SOUTH**	NEFMC / MAFMC	*Y**	Y
Spiny Dogfish	**SPINY DOGFISH**	NEFMC / MAFMC	*N*	N
Summer Flounder, Scup, and Black Sea Bass	**SUMMER FLOUNDER**	MAFMC	*Y*	N
Summer Flounder, Scup, and Black Sea Bass	**SCUP**	MAFMC	*Y***	N
Summer Flounder, Scup, and Black Sea Bass	**BLACK SEA BASS**	MAFMC	*Y**	N

Atlantic Bluefish	**BLUEFISH (EXCEPT GULF OF MEXICO)**	MAFMC	*Y*	N
Atlantic Surfclam and Ocean Quahog	**SURFCLAM**	MAFMC	Y	N
Atlantic Surfclam and Ocean Quahog	**OCEAN QUOHOG**	MAFMC	*Y*	N
Atlantic Mackerel, Squid, Butterfish	**SQUID - *ILLEX***	MAFMC	*Y*	Y
	SQUID - *LOLIGO*	MAFMC	*Y*	Y
	BUTTERFISH (ATLANTIC)	MAFMC	*Y***	Y
	ATLANTIC MACKEREL	MAFMC	*Y*	Y
Tilefish	**GOLDEN TILEFISH**	MAFMC	*Y*	N
Minor species				
Atlantic Salmon	Atlantic Salmon	NEFMC	*N*	N
Northeast Multispecies	Ocean Pout	NEFMC	*Y**	Y
Northeast Multispecies	Atlantic Halibut	NEFMC	*Y**	Y
Northeast Multispecies	Offshore Hake	NEFMC	*Y**	N
Northeast Skate	Barndoor Skate	NEFMC	*Y**	Y
Northeast Skate	Thorny Skate	NEFMC	*Y**	Y
Northeast Skate	Clearnose Skate	NEFMC	*Y**	N
Northeast Skate	Rosette Skate	NEFMC	*Y**	N
Northeast Skate	Smooth Skate	NEFMC	*Y**	Y

* Index based survey used as proxy for biomass determinations
* * Data to make determination not available

Note: For Summer flounder, scup, black sea bass and bluefish, OY is not specified in the FMP, but MSY functions as a proxy for OY
For Northeast Multispecies, Amendment 13 specifies that OY=MSY
For Barndoor skate, thorny skate and smooth skate, OY = zero.

Appendix10. South Atlantic and Gulf of Mexico Council FMPs' MSY control rules.

Area	Species	FMP	Amendment	MSY Control Rules
South Atlantic	Red Porgy	Snapper Grouper	Amendment 12	4.38 million pounds, which is the yield produced by $F_{35\%SPR}$ based on a 14" minimum size.
South Atlantic	All species FMP except Goliath Grouper, Nassau Grouper and red porgy.	Snapper Grouper	Amendment 11	Yield produced by $F_{30\%SPR}$
South Atlantic	Goliath Grouper and Nassau Grouper	Snapper Grouper	Amendment 11	Yield produced by $F_{40\%SPR}$
South Atlantic	White Shrimp	Shrimp		14.5 million pounds
South Atlantic	Brown Shrimp	Shrimp		9.2 million pounds
South Atlantic	Pink Shrimp	Shrimp		1.8 million pounds
South Atlantic	Rock Shrimp	Shrimp		6.8 million pounds
South Atlantic	Red Drum	Red Drum	Amendment 11	Yield produced by $F_{30\%SPR}$
South Atlantic	Spanish Mackerel and King Mackerel	Coastal Migratory Pelagics	Amendment 11	Yield produced by $F_{30\%SPR}$
South Atlantic	Spiny Lobster	Spiny Lobster	Amendment 11	Yield produced by $F_{20\%Static\ SPR}$
Gulf of Mexico	Reef fishes in FMP	Reef Fish	Amendment 12	Yield produced by $F_{30\%SPR}$
Gulf of Mexico	Greater Amberjack	Reef Fish	Secretarial Amendment 2	Yield produced by $F_{30\%SPR}$
Gulf of Mexico	Red Snapper	Reef Fish	Amendment 22	OY is the yield available on a continuing basis from fishing at F = Fmsy.
Gulf of Mexico	King Mackerel	Coastal Migratory Pelagics	Framework Procedure	Yield produced by $F_{30\%SPR}$
Gulf of Mexico	Spanish Mackerel	Coastal Migratory Pelagics	Framework Procedure	Yield produced by $F_{30\%SPR}$

Gulf of Mexico	Cobia	Coastal Migratory Pelagics	Framework Procedure	OY is the yield available on a continuing basis from fishing at F = Fmsy.
Gulf of Mexico	Vermilion Snapper	Reef Fish	Amendment 23	OY is the yield available on a continuing basis from fishing at F = Fmsy (proposed).
Gulf of Mexico	Red Grouper	Reef Fish	Secretarial Amendment 1	OY is the yield available on a continuing basis from fishing at F = Fmsy.

Appendix 11. South Atlantic and Gulf of Mexico Council FMPs' OY control rules.

Area	Species	FMP	Amendment	Pre SFA OY Control Rules
South Atlantic	Red Porgy	Snapper Grouper	Amendment 12	Yield produced by $F_{45\%SPR}$
South Atlantic	All groupers in FMP except Goliath Grouper and Nassau Grouper	Snapper Grouper	Amendment 11	Yield produced by $F_{45\%SPR}$
South Atlantic	Goliath Grouper and Nassau Grouper	Snapper Grouper	Amendment 11	Yield produced by $F_{50\%SPR}$
South Atlantic	All species in Snapper Grouper FMP groupers and red porgy	Snapper Grouper	Amendment 11	Yield produced by $F_{40\%SPR}$
South Atlantic	White Shrimp	Shrimp		The amount of harvest that can be taken by U.S. fishermen without reducing the spawning stock below the level necessary to ensure adequate reproduction.
South Atlantic	Brown Shrimp/Pink Shrimp	Shrimp	Amendment 2	The amount of harvest that can be taken by U.S. fishermen without annual landings falling below two standard deviations below mean landings from 1957-1993 for three consecutive years. [2,946,157 pounds (heads on) brown shrimp and 286,293 pounds (heads on) for pink shrimp.
South Atlantic	Rock Shrimp	Shrimp	Amendment 1	OY is MSY, which for the rock shrimp fishery in the South Atlantic EEZ, is defined as the amount of harvest that can be taken by U.S. fishermen without reducing the spawning stock below the level necessary to ensure adequate reproduction.
South Atlantic	Red Drum	Red Drum		The amount of harvest that can be taken by U.S. fishermen while maintaining the spawning stock biomass per recruit ratio at or above 30%.

South Atlantic	Spanish Mackerel and King Mackerel	Coastal Migratory Pelagics	Amendment 11	Yield produced by $F_{40\%SPR}$
South Atlantic	Golden Crab	Golden Crab		OY is all golden crab that are harvested legally under the provisions of the golden crab fishery management plan, which is equivalent to that level of golden crab harvest that would minimize user conflict among vessels, minimize the cost of fishing, produce a stable level of landings that would maximize returns to fishermen, provide for stable supply, and minimize management costs.
Area	**Species**	**FMP**	**Amendment**	**Pre SFA OY Control Rules**
South Atlantic	Spiny Lobster	Spiny Lobster	Amendment 11	OY is all spiny lobster is the amount of harvest that can be taken by U.S. fishermen while maintaining the Spawning Potential Ratio (SPR) at or above 30% Static SPR.
Gulf of Mexico/South Atlantic	Coral, Coral Reefs and Live/Hard Bottom	Coral, Coral Reefs and Live/Hard Bottom Habitat FMP	Amendment 5	OY for coral reefs, stony corals, and sea fans (*Gorgonia ventalina* and *Gorgonia flabellum*), hereafter to be referred to as prohibited corals, in the EEZ is to be zero (0) except as may be authorized for scientific and educational purposes. The level of harvest is expected to be about 140 kilograms per year. Harvest of allowable octocorals (those other than sea fans) in the EEZ is not to exceed 50,000 colonies per year. Fishing for octocorals in the EEZ will cease when the quota is reached. OY for live rock is zero (0) except for that which may be allowed by permit.
Gulf of Mexico	Reef fishes in FMP	Reef Fish	Amendment 12	Yield produced by $F_{30\%SPR}$
Gulf of Mexico	Greater Amberjack	Reef Fish	Secretarial Amendment 2	OY is the yield available on a continuing basis from fishing at $F_{40\%SPR}$.
Area	**Species**	**FMP**	**Amendment**	**Post SFA OY Control Rules**
Gulf of Mexico	Red Snapper	Reef Fish	Amendment 22	OY is the yield available on a continuing basis from fishing at F = 0.75Fmsy.
Gulf of Mexico	King Mackerel	Coastal Migratory Pelagics	Framework Procedure	OY is the yield available on a continuing basis from fishing at F = 0.85Fmsy.

Gulf of Mexico	Spanish Mackerel	Coastal Migratory Pelagics	Framework Procedure	OY is the yield available on a continuing basis from fishing at F = 0.75Fmsy.
Gulf of Mexico	Cobia	Coastal Migratory Pelagics	Framework Procedure	OY is the yield available on a continuing basis from fishing at F = 0.75Fmsy.
Gulf of Mexico	Vermilion Snapper	Reef Fish	Amendment 23	OY is the yield available on a continuing basis from fishing at F = 0.75Fmsy (proposed).
Gulf of Mexico	Red Grouper	Reef Fish	Secretarial Amendment 1	OY is the yield available on a continuing basis from fishing at F = 0.75Fmsy.

Appendix 12. West Coast Groundfish – MSY and OY Control Rules

There are 89 named species in the Pacific Coast Groundfish Fishery Management Plan. These species are managed with Acceptable Biological Catch (ABC) levels and OY levels. ABC levels are set with MSY control rules, whereas OYs are set with OY control rules. The ABC for a species or species group is set by multiplying the harvest rate proxy by the current estimated biomass. In 2001, the Council's SSC conducted a harvest rate workshop that resulted in the Council developing new default harvest rate proxies. These harvest rate proxies have been in use since the 2002 fishing year: $F_{40\%}$ for flatfish, $F_{50\%}$ for rockfish (including thornyheads), and $F_{45\%}$ for other groundfish such as sablefish and lingcod. There are eight overfished groundfish species, which are managed with the above MSY-control rules, but which have species-specific OY control rules set at rebuilding, rather than sustainable fishing, levels. The following species had ABCs set under these MSY proxy policies in 2004:

Flatfish ($F_{40\%}$)	Rockfish ($F_{50\%}$)	Roundfish, others ($F_{45\%}$)
Dover sole	Pacific ocean perch	Lingcod
Petrale sole	Widow rockfish	Pacific whiting
	Canary rockfish	Sablefish
	Chilipepper rockfish	
	Bocaccio	
	Yellowtail rockfish	
	Shortspine thornyhead	
	Longspine thornyhead	
	Cowcod	
	Darkblotched rockfish	
	Yelloweye rockfish	
	Black rockfish	
	Blackgill rockfish	

The OY for each species or species group is set according to a series of rules that vary depending upon the relative abundance of the stock and upon the quantity and quality of scientific assessment on the stock. For stocks with stock assessments that indicate those stocks are above B_{MSY}, harvest specifications may be set such that OY = ABC, unless reductions in available harvest need to be made to account for: high degree of uncertainty about the biomass estimate and other parameters, anticipated bycatch mortality of that species, past OY levels resulted in overfishing occurring on that species, or international fishery management agreements regarding that species (FMP at 4.6.1). Regardless of where the OY is set for a stock above B_{MSY}, the fisheries will likely not be permitted to achieve that OY if that species co-occurs with an overfished species and fishing the more abundant stock must be constrained to protect the overfished stock.

Those stocks with stock assessments that indicate a population level between $B_{40\%}$ and $B_{25\%}$ are considered to be in a "precautionary zone." Under the FMP at Section 4.5.1 and 4.6.1, OYs for stocks in the precautionary zone will generally be reduced from ABC on a scale known as the "40-10" policy, demonstrated by the following figure:

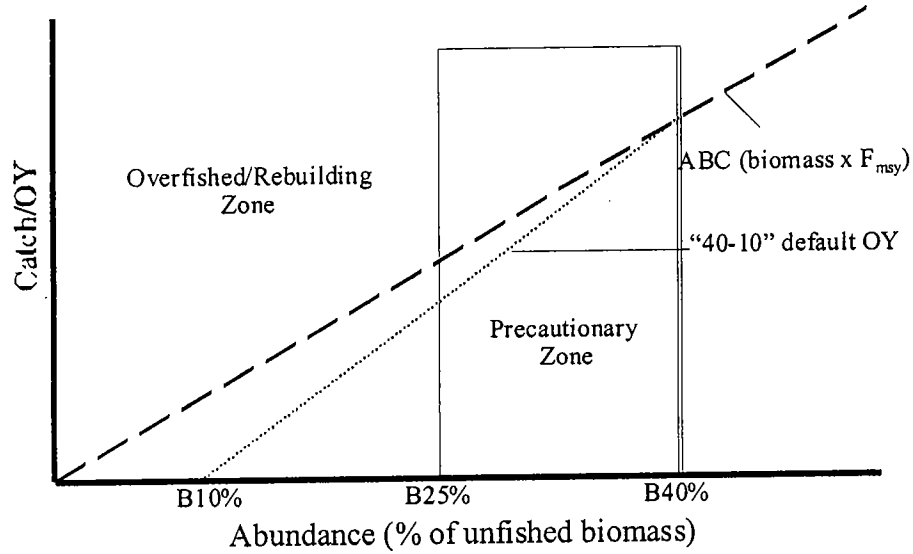

Figure 1: Illustration of default OY rule compared to ABC, known as "40--10 policy"

As mentioned above, each overfished species is set with its own OY control rule, intended to rebuild the stock to B40% within the target rebuilding period. Rebuilding parameters for each overfished species are thoroughly discussed in the preamble to the proposed rule for the 2004 groundfish fishery specifications and management measures (January 8, 2004, 69 FR 1380). OY control rules and target rebuilding dates for the eight overfished species have been set into 50 CFR 660.365 as follows:

(a) *Canary rockfish.* Target year for rebuilding to B_{MSY} = 2074. Harvest control rule to rebuild the canary rockfish stock is an annual harvest rate of F=0.022.

(b) *Darkblotched rockfish.* Target year for rebuilding to B_{MSY} is 2030. Harvest control rule to rebuild the darkblotched rockfish stock is an annual harvest rate of F=0.032.

(c) *Lingcod.* Target year for rebuilding to B_{MSY} is 2009. Harvest control rule to rebuild the lingcod stock is an annual harvest rate of F=0.0531 in the area north of 40°10' N. lat. and F=0.061 for the area south of 40°10' N. lat.

(d) *Pacific ocean perch (POP).* Target year for rebuilding to B_{MSY} is 2027. Harvest control rule to rebuild the POP stock is an annual harvest rate of F=0.0257.

(e) Bocaccio. Target date for rebuilding to B_{MSY} is 2023. Harvest control rule to rebuild the southern bocaccio stock is an annual harvest rate of F=0.0498.

(f) Cowcod. Target year for rebuilding to B_{MSY} is 2090. The harvest control rule to rebuild the cowcod stock is an annual harvest rate of F=0.009.

(g) Widow rockfish. Target year for rebuilding to B_{MSY} is 2038. Harvest control rule to rebuild the widow rockfish stock is an annual harvest rate of F=0.0093.

(h) Yelloweye rockfish. Target year for rebuilding to B_{MSY} is 2058. Harvest control rule to rebuild the yelloweye rockfish stock is an annual harvest rate of F=0.0153.

There are several species or species groups for which there is not enough information to apply a harvest rate proxy based on an estimated biomass. For these species or species groups, the ABC is generally set based on the average of historic landings levels (FMP at 4.3.2). The FMP recognizes that an ABC based on average historical landings cannot be the upper harvest level for a species if historical landings have been unsustainable. Section 4.6.2 of the FMP requires precautionary downward adjustments from the ABC to the OY if there is a perception that the stock is below its MSY or if there is a high degree of uncertainty about the condition of the stock. ABC values are first calculated from average historic landings levels and then set by reducing the resultant average by 25 percent. Thus, an ABC for these less-information species is set at 75 percent of its average historic landings level. OY levels for these species are further reduced from their ABCs by 25 percent if they are species with less rigorous stock assessment, or by 50 percent if they are species with non-quantitative stock assessments. Thus an OY for a species with a less rigorous stock assessment is set by multiplying the historic average landings level by 0.75, and then by multiplying that result by 0.75, ultimately resulting in an OY that is 56.25 percent of the historic average landings level. An OY for a less-information species with a non-quantitative assessment is set by multiplying the historic average landings level by 0.75, and then by multiplying that result by 0.5, ultimately resulting in an OY that is 37.5 percent of the historic average landings level. The following species or species groups had 2004 ABCs and OYs set using the MSY- and OY-control rules described above:

OY = ABC * 0.75	OY = ABC * 0.50
Pacific cod "Remaining rockfish," which includes: bank rockfish, blackgill rockfish, north coast bocaccio, north coast chilipepper, redstripe rockfish, sharpchin rockfish, silvergrey rockfish, splitnose rockfish, yellowmouth rockfish, south coast yellowtail rockfish.	"Other rockfish," which includes all of the rockfish not specifically named herein, but listed as an FMP species at 660.302.

Finally, there are species for which there are no assessments, but have shown themselves to be either generally abundant in surveys, or undesirable to commercial markets and/or recreational fishing opportunities. These species have ABCs set at historic harvest levels: all of the sharks, skates, rays, ratfish, morids, and grenadiers listed at 660.302; "other flatfish," which includes arrowtooth flounder, butter sole, curlfin sole, flathead sole, Pacific sand dab, rex sole, sand sole, and starry flounder. On September 21, 2004, NMFS published a proposed rule for the 2005-2006 fishery specifications and management measures. In that rule, NMFS describes the Council's recommendation for this fishing period to apply the precautionary ABC/OY adjustments historically used for rockfish with less rigorous or no stock assessments to the species listed in this paragraph.

Appendix 13. Summary of salmon stocks within the Pacific Coast Salmon Plan with Optimum Yield and Maximum Sustained Yield control rules.

Fishery Management Plan	Stock	Optimum Yield Control Rule	MSY Control Rule
	CALIFORNIA CENTRAL VALLEY CHINOOK		
WA, OR, CA Salmon	Sacramento River Fall	Y	Y
WA, OR, CA Salmon	Sacramento River Spring (Central Valley Spring - ESA Threatened 1999)	Y	N
WA, OR, CA Salmon	Sacramento River Winter (ESA Endangered 1994)	Y	N
	NORTHERN CALIFORNIA COAST CHINOOK		
WA, OR, CA Salmon	Eel, Mattole, Mad, and Smith Rivers[2] (Fall and Spring) (Eel, Mattole and Mad River stocks - ESA Threatened 1999)	Y	N
WA, OR, CA Salmon	Klamath River Fall (Klamath and Trinity Rivers)	Y	Y
WA, OR, CA Salmon	Klamath River Spring (Klamath and Trinity Rivers)	Y	N
	OREGON COAST CHINOOK		
WA, OR, CA Salmon	Southern Oregon (Aggregate of fall and spring stocks in all streams south of Elk River; Rogue River fall stock is used to indicate relative abundance and ocean contribution rates)	Y	N

WA, OR, CA Salmon	Central and Northern Oregon (Aggregate of fall and spring stocks in all streams from the Elk River to just south of the Columbia River)	Y	N
	COLUMBIA RIVER BASIN CHINOOK		
WA, OR, CA Salmon	North Lewis River Fall (ESA Threatened 1999)	Y	Y
WA, OR, CA Salmon	Lower River Hatchery Fall	Y	Y[2]
WA, OR, CA Salmon	Lower River Hatchery (Spring)	Y	Y[2]
WA, OR, CA Salmon	Upper Willamette Spring (ESA Threatened 1999)	Y	Y
WA, OR, CA Salmon	Mid-River Bright Hatchery (Fall)	Y	Y[2]
WA, OR, CA Salmon	Spring Creek Hatchery (Fall)	Y	Y[2]
WA, OR, CA Salmon	Klickitat, Warm Springs, John Day, and Yakima Rivers (Spring)	Y	Y
WA, OR, CA Salmon	Snake River Fall (ESA Threatened 1992)	Y	N
WA, OR, CA Salmon	Snake River Spring/Summer (ESA Threatened 1992)	Y	N
WA, OR, CA Salmon	Upper River Bright (Fall)	Y	Y
WA, OR, CA Salmon	Upper River Summer	Y	Y
WA, OR, CA Salmon	Upper River Spring (ESA Endangered 1999)	Y	Y
	WASHINGTON COAST CHINOOK		
WA, OR, CA Salmon	Willapa Bay Fall (natural)	Y	N
WA, OR, CA Salmon	Willapa Bay Fall (hatchery)	Y	Y[2]

WA, OR, CA Salmon	Grays Harbor Fall	Y	Y
WA, OR, CA Salmon	Grays Harbor Spring	Y	Y
WA, OR, CA Salmon	Quinault Fall	Y	N
WA, OR, CA Salmon	Queets Fall	Y	Y
WA, OR, CA Salmon	Queets Spring/Summer	Y	Y
WA, OR, CA Salmon	Hoh Fall	Y	Y
WA, OR, CA Salmon	Hoh Spring/Summer	Y	Y
WA, OR, CA Salmon	Quillayute Fall	Y	Y
WA, OR, CA Salmon	Quillayute Spring/Summer	Y	Y
WA, OR, CA Salmon	Hoko Summer/Fall (Western Strait of Juan de Fuca)	Y	Y
	PUGET SOUND CHINOOK		
WA, OR, CA Salmon	Eastern Strait of Juan de Fuca Summer/Fall (ESA Threatened 1999)	Y	Y
WA, OR, CA Salmon	Skokomish Summer/Fall (Hood Canal) (ESA Threatened 1999)	Y	Y
WA, OR, CA Salmon	Nooksack Spring (early) (ESA Threatened 1999)	Y	Y
WA, OR, CA Salmon	Skagit Summer/Fall (ESA Threatened 1999)	Y	Y
WA, OR, CA Salmon	Skagit Spring (ESA Threatened 1999)	Y	Y
WA, OR, CA Salmon	Stillaguamish Summer/Fall (ESA Threatened 1999)	Y	Y
WA, OR, CA Salmon	Snohomish Summer/Fall (ESA Threatened 1999)	Y	Y

WA, OR, CA Salmon	Cedar River Summer/Fall (Lake Washington) (ESA Threatened 1999)	Y	Y
WA, OR, CA Salmon	White River Spring (ESA Threatened 1999)	Y	Y
WA, OR, CA Salmon	Green River Summer/Fall Threatened (1999)	Y	Y
WA, OR, CA Salmon	Nisqually River Summer/Fall (South Puget Sound) (ESA Threatened 1999)	Y	Y
	SOUTHERN BRITISH COLUMBIA CHINOOK		
	Coastal Stocks	Y	N
	Fraser River	Y	N
	OREGON PRODUCTION INDEX AREA COHO		
WA, OR, CA Salmon	Central California Coast Threatened (1996)	Y	N
WA, OR, CA Salmon	Northern California (ESA Threatened 1997)	Y	N
WA, OR, CA Salmon	Oregon Coastal Natural Comprised of Southern, South-Central, North-Central, and Northern Oregon stocks. (Southern Stock – ESA Threatened 1998)	Y	Y
WA, OR, CA Salmon	Columbia River Late (Hatchery)	Y	Y[2]
WA, OR, CA Salmon	Columbia River Early (Hatchery)	Y	Y[2]
WA, OR, CA Salmon	Columbia River (Natural) (ESA Proposed Threatened 2004)	Y	N
	WASHINGTON COASTAL COHO		
WA, OR, CA Salmon	Willapa Bay (Hatchery)	Y	Y[2]

WA, OR, CA Salmon	Grays Harbor	Y	Y
WA, OR, CA Salmon	Quinault (Hatchery)	Y	Y[2]
WA, OR, CA Salmon	Queets	Y	Y
WA, OR, CA Salmon	Hoh	Y	Y
WA, OR, CA Salmon	Quillayute Fall	Y	Y
WA, OR, CA Salmon	Quillayute Summer (Hatchery)	Y	Y[2]
WA, OR, CA Salmon	Western Strait of Juan de Fuca (Sekiu, Hoko, Clallam, Pysht, East and West, and Lyre Rivers and Miscellaneous streams west of the Elwha River)	Y	Y
	PUGET SOUND COHO		
WA, OR, CA Salmon	Eastern Strait of Juan de Fuca (Streams east of Salt Creek through Chimacum Creek)	Y	Y
WA, OR, CA Salmon	Hood Canal	Y	Y
WA, OR, CA Salmon	Skagit	Y	Y
WA, OR, CA Salmon	Stillaguamish	Y	Y
WA, OR, CA Salmon	Snohomish	Y	Y
WA, OR, CA Salmon	South Puget Sound (Hatchery)	Y	Y[2]
	SOUTHERN BRITISH COLUMBIA COAST COHO		
	Coastal Stocks	Y	N
	Fraser River	Y	N
	PINK (odd-numbered years)		
WA, OR, CA Salmon	Puget Sound	Y	N
WA, OR, CA Salmon	Fraser River	Y	N

[1] The Pacific Coast salmon fishery is managed as an aggregate to achieve optimum yield. The majority of stocks managed under the Salmon Plan have conservation objectives expressed in terms of MSY or MSY proxy control rules. The goal of the Salmon Plan is to simultaneously meet all individual conservation objectives, in addition to the Council's other harvest and allocation objectives. Because a few stocks will be constraining in any single year, the optimum yield control rule will result in the majority of stocks exceeding their conservation objective in any given year.

[2] Hatchery stocks are managed to achieve escapement goals necessary to meet the production requirements of each facility. The stock-specific escapement goals are therefore analogous to MSY escapement goals for natural stocks.

Appendix 14. Stock status reference point specifications for stocks in the Western Pacific region

Coral Reef Ecosystems FMP

Stock	MSY	OY
Multi-species complex – American Samoa	x	x
Multi-species complex – CNMI	x	x
Multi-species complex – Guam	x	x
Multi-species complex – Hawaii	x	x
Multi-species complex – Pacific Remote Island Areas	x	x

Pelagics FMP

Stock	MSY	OY
Bigeye tuna	x	
Albacore tuna – northern Pacific	x	
Albacore tuna – southern Pacific	x	
Yellowfin tuna – eastern Pacific	x	
Yellowfin tuna – western central Pacific	x	
Skipjack tuna – eastern Pacific	x	
Skipjack tuna – western central Pacific	x	
Other tunas (geographical/taxonomic stocks not defined)	x	
Swordfish – northern Pacific	x	
Blue marlin	x	
Other billfishes (geographical/taxonomic stocks not defined)	x	
Pelagic sharks (geographical/taxonomic stocks not defined)	x	
Other management unit species (geographic/taxonomic stocks not defined)	x	

Bottomfish and seamount groundfish FMP

Stock	MSY	OY
Seamount groundfish complex – Hancock Seamounts	x	
Bottomfish complex – American Samoa	x	
Bottomfish complex – CNMI	x	
Bottomfish complex – Guam	x	
Bottomfish complex – Hawaiian archipelago	x	

Crustaceans FMP

	MSY	OY
Lobster complex – NWHI	x	x
Other stocks (geographical/taxonomic stocks not defined)		

Precious Corals FMP

Stock	MSY	OY
Pink coral – Makapu'u Bed	x	x
Gold coral – Makapu'u Bed	x	x
Bamboo coral – Makapu'u Bed	x	x
Pink coral – Ke-ahole Point Bed	x	x
Gold coral – Ke-ahole Point Bed	x	x
Bamboo coral – Ke-ahole Point Bed	x	x
Pink coral – Kaena Point Bed	x	x
Gold coral – Kaena Point Bed	x	x
Bamboo coral – Kaena Point Bed	x	x
Pink coral – Brooks Bank Bed	x	x
Gold coral – Brooks Bank Bed	x	x
Bamboo coral – Brooks Bank Bed	x	x
Pink coral – 180 Fathom Bank Bed	x	x
Gold coral – 180 Fathom Bank Bed	x	x
Bamboo coral – 180 Fathom Bank Bed	x	x
Pink coral – Wespac Bed	x	x
Gold coral – Wespac Bed	x	x
Bamboo coral – Wespac Bed	x	x
All species – Hawaii, American Samoa, Guam, other Pacific Islands Exploratory Beds	x	x
Other stocks (geographical/taxonomic stocks not defined)		

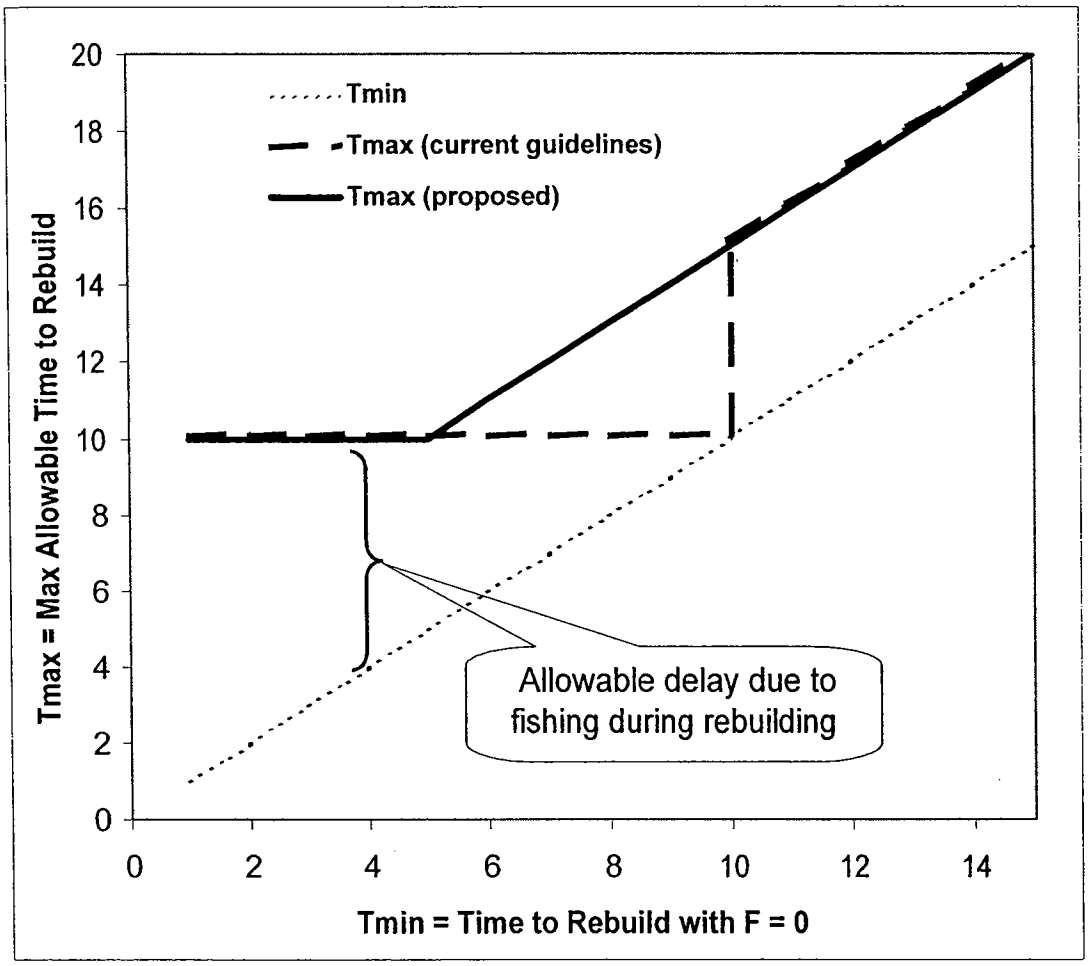

Figure 1. Comparison of calculated maximum time to rebuild under current and proposed guidelines. The offset between Tmin and Tmax is one GT, 5 years in this example.

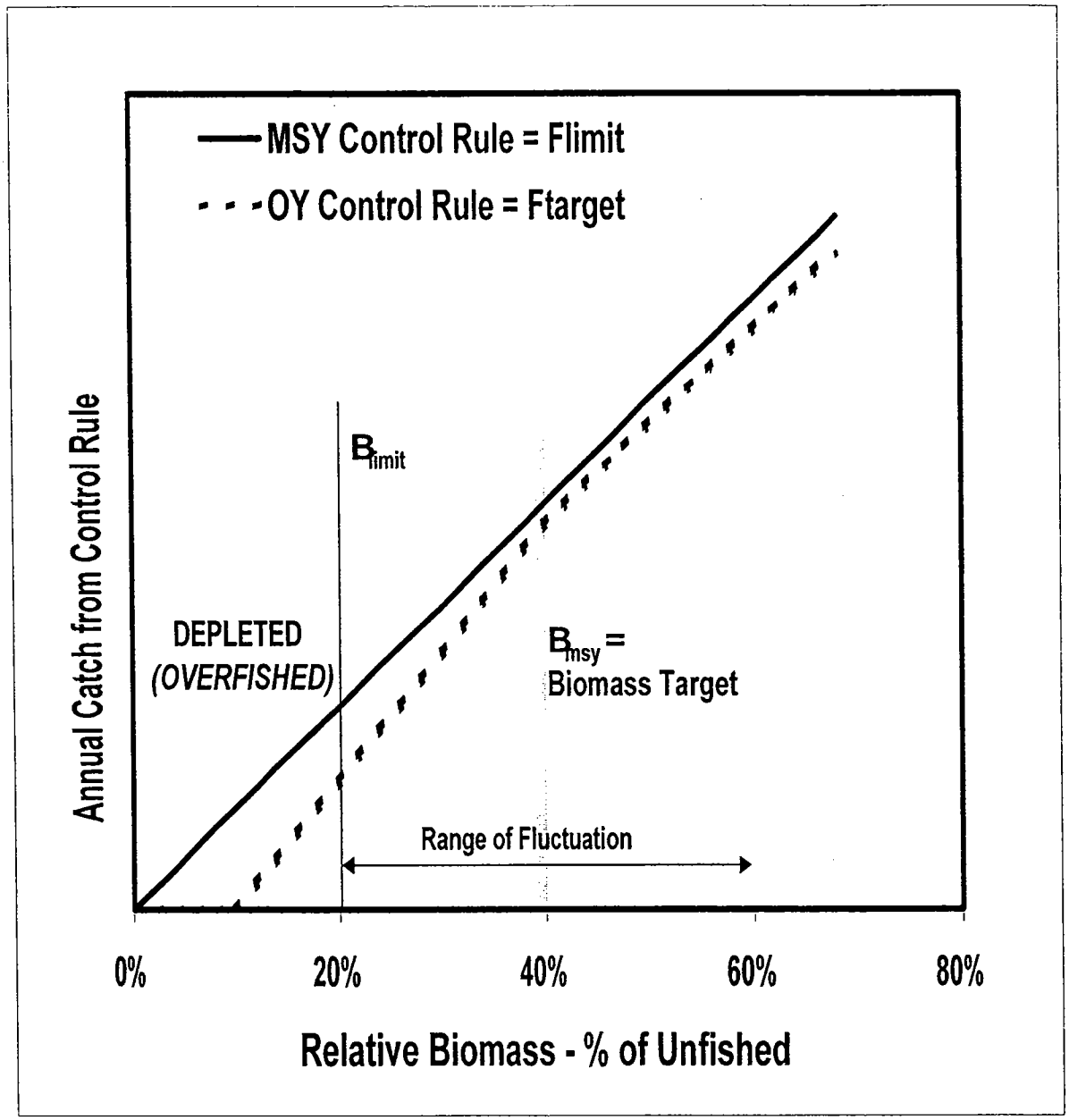

Figure 2 Relationship of limits, targets, and control rules. If annual fishing rate was at the MSY control rule, the expected level of biomass would be B_{msy}, and the lower range of expected