Proposed Revision to National Standard 1 Guidelines
June 10, 2004

Note to Reviewers:

Italicized language is typically italicized in the Code of Federal regulations
Language in **Bold** is proposed new codified text
~~Strikeout~~ text is current text being proposed for removal

Sec. 600.310 National Standard 1--Optimum Yield.

(a) *Standard 1*. Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the OY from each fishery for the U.S. fishing industry.

(b) *General*. **(1)** The determination of OY **(see definitions in §600.10)** is a decisional mechanism for resolving the Magnuson-Stevens Act's multiple purposes and policies, implementing an FMP's objectives, and balancing the various interests that comprise the national welfare. OY is based on MSY,~~ or on~~ as it **is** ~~may be~~ reduced as provided under paragraph**(s)**(f)(3) **and (f)(5)** of this section. The most important limitation on the specification of OY is that the choice of OY and the conservation and management measures proposed to achieve it must prevent overfishing.

(2) *Definitions.* Compliance with the guidelines requires specification of status determination criteria (limits) related to the abundance and productivity of the managed stocks and targets to avoid breaching these limits. In brief:

(i) The fishing mortality rate that would produce the maximum long-term average catch (MSY) is the MSY control rule (F_{msy}) and is set as the upper limit for the Maximum Fishing Mortality Limit (F_{lim}). Normally, F_{lim} is set equal to the MSY control rule. Overfishing occurs when the fishing mortality rate exceeds F_{lim}. The fishery must be managed so that there is less than a 50 percent chance that the actual fishing mortality rate, on an annual basis, exceeds the Flim level.

(ii) The long-term expected level of biomass (abundance) that would result from fishing at F_{msy} is defined as the MSY stock size (B_{msy}), see paragraph (c)(1)(iii) of this section, and is set as the target biomass level (B_{target}) for the rebuilding of depleted stocks. Natural fluctuations in biomass above and below this level are normal and expected.

(iii) The lower edge of the normal biomass zone, below which there is increased concern regarding impaired productivity, delayed rebuilding to B_{target} and ecosystem harm, is labeled the biomass limit (B_{lim}). The proxy for B_{lim} is ½ B_{msy}. Stocks found to be below B_{lim} are considered depleted and must be managed to rebuild to B_{target} in a specified period of time that is as soon as possible subject to various constraints and conditions.

(iv) OY is the desired state of the fishery and is the

target harvest level of the fishery management system. An OY control rule that is consistent with the NS1 guidelines will set the target level of the fishery below F_{lim} in order to have less than a 50-percent chance of exceeding F_{lim}, to reduce the chance of the stock size falling below B_{lim}, to rebuild depleted stocks to B_{target}, and to achieve a large fraction of the MSY. To the extent that OY is less than MSY, the resulting long-term average biomass while fishing at OY will be correspondingly greater than B_{msy}.

(v) None of these limits and levels can be calculated with perfect certainty. Some uncertainty is related to our capability to measure stock status and can be reduced though additional data collection and research. Other uncertainty is related to fluctuations in natural biological and environmental processes that can be characterized, but not reduced. Best scientific estimates of these limits and levels should include evaluation of the uncertainty, to the extent possible. The operational response to uncertainty is primarily in setting the OY control rule more conservatively than the MSY control rule, and in setting the target time to rebuild depleted stocks at less than the maximum allowable time to rebuild those stocks.

(3) *Core stocks and assemblages of stocks.* Stocks may be differentiated based on their degree of importance to the fishery or the Nation, and on the availability of data sufficient to make reliable estimates of status determination criteria for those stocks.

(i) *Core stocks*. Core stocks should have sufficient information available to be managed on the basis of stock-specific parameters. Quantitative status determination criteria and OY control rules must be developed for core stocks with the rare exception of those core stocks which are data poor, but are the principal or only target stock in a fishery. They usually are the principal target stocks of the fishery and may also include historically important stocks, important bycatch stocks, highly vulnerable stocks, and indicator stocks (see paragraph (b)(3)(ii) of this section).

(ii) *Stock assemblages*. A stock assemblage is a group of stocks that constitute all or part of a fishery, typically co-occur, and tend to have similar productivity, but for some of which the available data are insufficient to specify individual status determination criteria or control rules. Stock assemblages may be assessed and managed as a group, using limits, targets, or other benchmarks based upon indicator stock(s) or the entire assemblage. Each individual stock in an assemblage will not necessarily have status determination criteria and an OY control rule specified. Instead, SDCs and OY are specified on an assemblage-wide basis or for an indicator stock within the assemblage. A precautionary approach to management of assemblages is important; assemblages should be managed in a way that is more conservative than the management of data-rich core stocks, because stocks in those assemblages have less information

available than do core stocks. For individual stocks that are important, but data-poor, data collection should be improved, sufficient to make them core stocks. Individual stocks within assemblages should be examined periodically using available quantitative or qualitative evidence to warn of depletion of these stocks.

(c) *MSY*. Each FMP should include an estimate of MSY, as explained in this **paragraph (c)** ~~section~~.

(1) *Definitions*. (i) "MSY" is the largest long-term average catch or yield that can be taken from a **core** stock or stock **assemblage** under prevailing ecological and environmental conditions.

(ii) "MSY control rule" means a harvest strategy that, if implemented, would be expected to result in a long-term average catch approximating MSY. **The Maximum Fishing Mortality Limit (F_{lim}), above which overfishing occurs, must be set at or below the F resulting from the MSY control rule.**

(iii) "MSY stock size" **(B_{msy})** means the long-term average size of the core stock or stock assemblage, measured in terms of spawning biomass or other appropriate units, that would be achieved under ~~a~~ **the** MSY control rule~~ in which the fishing mortality rate is constant~~. **The MSY stock size is considered to be the biomass target (B_{target}) when rebuilding depleted stocks.**

(2) *Options in specifying MSY*. (i) Because MSY is a ~~theoretical concept~~ **long-term average**, its estimation in practice is conditional on the choice of an MSY control rule. In choosing an MSY control rule, Councils should be guided by the characteristics of the **stock and** fishery, the FMP's objectives, and the best scientific information available. The simplest MSY control rule is to remove a constant catch in each year that the estimated stock size exceeds an appropriate lower bound, where this catch is chosen so as to maximize the resulting long-term average yield. Other examples include the following: Remove a constant fraction of the biomass in each year, where this fraction is chosen so as to maximize the resulting long-term average yield; allow a constant level of escapement in each year, where this level is chosen so as to maximize the resulting long-term average yield; vary the fishing mortality rate as a continuous function of stock size, where the parameters of this function are constant and chosen so as to maximize the resulting long-term average yield. In any MSY control rule, a given stock size is associated with a given level of fishing mortality and a given level of potential harvest, where the long-term average of these potential harvests provides an estimate of MSY.

(ii) Any MSY value~~s~~ used in determining OY will necessarily be **an** estimate~~s~~, and will typically be associated with some level of uncertainty. Such estimates must be based on the best scientific information available (see §600.315) and must incorporate appropriate consideration of risk (see §§**600.310(c)(5) and** 600.335)). **All estimates should be accompanied by an evaluation of uncertainty, to the extent**

possible, to assist in setting OY sufficiently below the MSY level. Beyond these requirements, however, Councils, **with the technical guidance of their SSCs,** have a reasonable degree of latitude in determining which estimates to use and how these estimates, **and associated uncertainty**, are to be expressed. ~~For example, a point estimate of MSY may be expressed by itself or together with a confidence interval around that estimate.~~

(iii) ~~In the case of a mixed-stock fishery,~~ MSY ~~should be~~ **is** specified on a stock-by-stock basis for each core stock. **For stock assemblages,** ~~However, where MSY cannot be specified for each stock, then~~ MSY may be specified on the basis of one or more ~~species~~ **stocks** as an indicator for the stock assemblage, or for the stock assemblage ~~mixed stock as a whole or for the fishery~~ as a whole.

(iv) Because MSY is a long-term average, it need not be estimated annually, but it must be based on the best scientific information available, and should be re-estimated as required by changes in environmental or ecological conditions or new scientific information. **Original establishment of MSY and related quantities (i.e., OY and SDCs), for given fisheries in an FMP should normally be part of an FMP amendment. Numerical updates to these values can be made by annual specifications or a framework rulemakings if allowed by the respective FMP, or temporarily by emergency rulemaking, as long as any new management measures resulting from such measures are accompanied by the appropriate environmental, economic and social impact analyses. The numeric level of MSY and related quantities need not be codified as regulatory text.**

(3) *Alternatives to specifying MSY*. When data are insufficient to estimate MSY directly, Councils should adopt other measures of productive capacity that can serve as reasonable proxies for MSY **or the MSY fishing mortality rate (F_{msy})**, to the extent possible. Examples include **fishing mortality** ~~various~~ reference points defined in terms of relative spawning per recruit. For instance, the fishing mortality rate that reduces the long-term average level of spawning per recruit to 30-40 percent of the long-term average that would be expected in the absence of fishing may be a reasonable proxy for F_{msy} ~~the MSY fishing mortality rate~~. The long-term average stock size **that results from** ~~obtained by~~ fishing year after year at this rate, under average recruitment, may be a reasonable proxy for the MSY stock size, and the long-term average catch so obtained may be a reasonable proxy for MSY. The natural mortality rate may also be a reasonable proxy for F_{msy} ~~the MSY fishing mortality rate~~. If a reliable estimate of pristine stock size (i.e., the long-term average stock size that would be expected in the absence of fishing) is available, a stock size approximately 40 percent of this value may be a reasonable proxy for the MSY stock size, and the product of this stock size and the natural mortality rate may be a reasonable proxy for MSY. **Because proxies may not represent MSY exactly, there is greater risk in**

setting OY close to a proxy-based MSY estimate.

(d) *Overfishing*--(1) *Definitions*. (i) “To overfish” means to fish at a rate that jeopardizes the capacity of a core stock or stock assemblage to produce MSY on a continuing basis.

(ii) “Overfishing” occurs whenever a core stock or stock assemblage is subjected to a rate ~~or level~~ of fishing mortality that jeopardizes the capacity of a **core** stock or stock ~~complex~~ **assemblage** to produce MSY on a continuing basis.

(iii) In the Magnuson-Stevens Act, the term “overfished” is used in two senses: First, to describe any **core** stock or stock ~~complex~~ **assemblage** that is subjected to a rate ~~or level~~ of fishing mortality meeting the criterion in paragraph (d)(1)(i) of this section, and second, to describe any **core** stock or stock ~~complex~~ **assemblage** whose size is sufficiently small that a change in management practices is required in order to achieve an appropriate level and rate of rebuilding. ~~To avoid confusion, this section uses ``overfished'' in the second sense only.~~ **This second usage can cause confusion because it implies that any severe decline in stock size is necessarily caused by an excessive rate of fishing. While excessive fishing may be one or even the only contributing factor in stock decline, the severe decline in stock size could be caused by a number of other factors, including environmental factors. Rebuilding is necessary, whatever the cause. To avoid an incorrect interpretation of the cause of a severe decline in stock size, the term “depleted” will be used throughout these guidelines to describe a condition in which the stock size has become sufficiently small that a change in management practices is required in order to achieve an appropriate stock size level and rate of rebuilding.**

(2) *Specification of status determination criteria*. Each FMP must specify, to the extent possible, objective and measurable status determination criteria for each **core** stock or stock **assemblage** covered by that FMP, and provide an analysis of how the status determination criteria were chosen and how they relate to ~~reproductive potential~~ **the capability of the stock to produce MSY.** Status determination criteria must be expressed in a way that enables the Council and the Secretary to monitor the core stock or stock **assemblage** and determine annually whether overfishing is occurring and whether the **core** stock or stock ~~complex~~ **assemblage** is ~~overfished~~ **depleted. Unless sufficient data are unavailable or unless otherwise excepted in this paragraph (d)(2),** ~~In all cases~~, status determination criteria must specify both of the following:

(i) A maximum fishing mortality ~~threshold~~ **limit (F_{lim})** or reasonable proxy thereof. The ~~maximum fishing mortality threshold~~ **F_{lim}** may be expressed either as a single number or as a function of spawning biomass or other measure of productive capacity. The ~~maximum fishing mortality~~ ~~threshold~~ **F_{lim}** must not exceed the fishing mortality rate ~~or level~~ associated with the relevant MSY control rule. Exceeding the ~~maximum fishing~~

~~mortality threshold~~ **F_{lim}** ~~for a period of 1 year or more~~ **on an annual basis** constitutes overfishing. **The F_{target}, which is used to calculate OY, is set below Flim, so there is less than a 50% chance of exceeding F_{lim}.**

(ii) A minimum ~~stock size threshold~~ **biomass limit (B_{lim})**, or reasonable proxy thereof,~~. The stock size threshold~~ should be expressed in terms of spawning biomass or other measure of productive capacity. ~~To the extent possible,~~ **As a default, in the absence of other information and analysis,** ~~the stock size threshold~~ **Blim** 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 maximum fishing mortality threshold specified under paragraph (d)(2)(i) of this section~~ **except as described in paragraphs (d)(2)(ii)(A), (B), and (C) of this section.** Should the actual size of the **core** stock or stock **assemblage** ~~complex~~ in a given year fall below ~~this threshold~~ **B_{lim},** the **core** stock or stock ~~complex~~ **assemblage** is considered ~~overfished~~ **depleted.**

(A) Use of values higher or lower than ½ B_{msy} as the B_{lim} may be justified based on the expected range of natural fluctuations in the stock size when the stock is not subjected to overfishing.

(B) B_{lim} does not have to be specified if a fishery is being managed with a conservative OY control rule such that the fishing mortality rate is at least as conservative as would have been the case if a B_{lim} had been specified. This generally means that the fishing mortality rates associated with the OY control rule are sufficiently low that, in the event the stock falls below ½ B_{MSY}, continued management of the stock according to the OY control rule is expected to rebuild the stock to Btarget within the maximum allowable time period for rebuilding (see paragraph (e)(4)(ii)(B) of this section).

(C) In the case of extremely data-poor fisheries, F_{lim} can be used in the manner described in paragraph (e)(3)(v) of this section, as a proxy for B_{lim}, provided that there also is an OY control rule set safely below this F_{lim}.

(D) In the case of extremely short-lived species, such as penaeid shrimp, squid and Pacific salmon, that have short lifespans and may have extreme year-to-year fluctuations in stock abundance, the determination of depletion can be based on the stock abundance level in more than one consecutive year.

(3) *Relationship of status determination criteria to other national standards*--(i) *National Standard 2*. Status determination criteria must be based on the best scientific information available (see §600.315). When data are insufficient to estimate MSY, Councils should base status determination criteria on reasonable proxies thereof, to the extent possible (also see paragraph (c)(3) of this section). In cases where scientific data are severely limited, effort should also be directed to identifying and gathering the needed data.

(ii) *National Standard 3*. The requirement to manage interrelated stocks of fish as a unit or in close coordination notwithstanding (see §600.320), status determination criteria should generally be specified in terms of the level of stock aggregation for which the best scientific information is available (also see paragraph (c)(2)(iii) of this section).

(iii) *National Standard 6*. Councils must build into the status determination criteria **and OY control rules** appropriate consideration of risk, taking into account uncertainties in estimating harvest, stock conditions, life history parameters, or the effects of environmental factors (see §600.335).

(4) *Relationship of status determination criteria to environmental change*. Some short-term environmental changes can alter the current size of a core stock or stock assemblage without affecting the long-term productive capacity of the core stock or stock assemblage. Other environmental changes affect both the current size and long-term productivity of the core stock or stock assemblage. **MSY and OY control rules must be designed and calculated for prevailing environmental, ecosystem, and habitat conditions, taking into account the scale and frequency of fluctuations in these conditions, as follows:**

(i) If environmental changes cause a **core** stock or stock ~~complex~~ **assemblage** to fall below the ~~minimum~~ $\mathbf{B_{lim}}$ ~~stock size threshold~~ without affecting the long-term productive capacity of the **core** stock or stock ~~complex~~ **assemblage**, fishing mortality must be constrained sufficiently to allow rebuilding within an acceptable time frame (also see paragraph (e)(4)(ii) of this section). Status determination criteria ~~need~~ **should** not be respecified **in this situation.**

(ii) If environmental changes affect the long-term productive
capacity of the core stock or stock assemblage, one or more components of the status determination criteria must be respecified. **The determination of a long-term change in environmental conditions must be based on the best available scientific information and cannot be based solely on a decline in stock productivity. Such a decline in productivity could be due to low stock abundance, which is exactly the situation that National Standard 1 seeks to avoid. Suitable evidence for a relevant environmental shift could include scientific information for a long-term change in an environmental, ecosystem, or habitat condition that has been demonstrated to relate to stock productivity. The duration of "long-term" cannot be precisely specified, but it is normally expected to be at least as long as the average life span of individuals in the stock.** Once status determination criteria have been respecified, fishing mortality may or may not have to be ~~reduced~~ **changed**, depending on the status of the **core** stock or stock ~~complex~~ **assemblage** with respect to the new criteria.

(iii) If ~~manmade~~ **anthropogenic** environmental changes are partially responsible for a **core** stock or stock ~~complex~~ **assemblage** being in a ~~overfished~~ **depleted** condition, in addition to controlling effort, Councils should recommend restoration of habitat and other ameliorative programs, to the extent possible (see also the guidelines issued pursuant to sec. 305(b) of the Magnuson-Stevens Act for Council actions concerning essential fish habitat **at 67 FR 2343; January 17, 2002)**.

(5) *Secretarial approval of status determination criteria*. Secretarial approval or disapproval of proposed status determination criteria will be based on consideration of whether the proposal:

(i) Has sufficient scientific merit;

(ii) Contains the elements described in paragraph (d)(2) of this section;

(iii) Provides a basis for objective measurement of the status of the core stock or stock assemblage against the criteria; and

(iv) Is operationally feasible.

(6) *Exceptions*. There are certain limited exceptions to the requirement to prevent overfishing. Harvesting one ~~species~~ **stock** of a ~~mixed-stock complex~~ **fishery** at its optimum level may result in ~~the~~ overfishing of another stock **when the two stocks tend to be caught together** ~~component in the complex~~. A Council may decide to allow this type of overfishing only if all of the following conditions are satisfied:

(i) It is demonstrated by analysis (**see** paragraph (f)(6) of this section) that such action will result in long-term net benefits to the Nation;

(ii) It is demonstrated by analysis that mitigating measures have been considered and that a similar level of long-term net benefits cannot be achieved by modifying fleet behavior, gear selection/configuration, or other technical characteristic in a manner such that no overfishing would occur; and

(iii) **Although this overfishing is expected to cause the affected stock to fall below its B_{target} more than 50 percent of the time in the long-term,** the resulting rate ~~or level~~ of fishing mortality will not cause any ~~species or evolutionarily significant unit thereof to require protection under the ESA~~ **core stock or stock assemblage** ~~**to have more than a 50 percent chance of falling below its B_{lim}.**~~ **to fall below its B_{lim} more than 50% of the time in the long-term.**

(e) *Ending overfishing and rebuilding* ~~*overfished*~~ ***depleted*** *stocks*--(1) *Definition*. A **limit** ~~threshold~~, either maximum fishing mortality or minimum **biomass** ~~stock size~~, is being “approached” whenever it is projected that the **limit** ~~threshold~~ will be breached within 2 years, based on trends in fishing effort, **stock abundance** ~~fishery resource size~~, and other appropriate factors.

(2) *Notification*. The Secretary will immediately notify a Council and request that remedial action be taken whenever the Secretary determines that:

(i) Overfishing is occurring;

(ii) A **core** stock or stock ~~complex~~ **assemblage** is ~~overfished~~

below its B_{lim} (i.e., is depleted);

(iii) The rate ~~or level~~ of fishing mortality for a **core** stock or stock ~~complex~~ **assemblage** is approaching **its** ~~the maximum fishing mortality~~ **F_{lim}** ~~threshold~~;

(iv) A **core** stock or stock ~~complex~~ **assemblage** is approaching its ~~minimum~~ **B_{lim}** ~~stock size threshold~~; or

(v) Existing remedial action taken for the purpose of ending previously identified overfishing or rebuilding a previously identified ~~overfished~~ **depleted core** stock or stock ~~complex~~ **assemblage** has not resulted in adequate progress.

(3) *Council action*. Within 1 year of such time as the Secretary identifies that overfishing is occurring, that a **core** stock or stock ~~complex~~ **assemblage** is ~~overfished~~ **depleted**, or that a limit is being approached, or such time as a Council may be notified of the same under paragraph (e)(2) of this section, the Council must take remedial action by preparing an FMP, FMP amendment, or proposed regulations**, as appropriate**. This remedial action must be designed to accomplish all of the following purposes that apply:

(i) If overfishing is occurring, the purpose of the action is to end overfishing.

(ii) If the **core** stock or stock ~~complex~~ **assemblage** is ~~overfished~~ **depleted**, the purpose of the action is to rebuild the **core** stock or stock ~~complex~~ **assemblage** to the MSY **stock size (B_{target})** ~~level within an~~ ~~**the**~~ ~~appropriate time frame~~ **as soon as possible subject to the constraints and conditions in (e)(4)(ii).**

(iii) If the rate ~~or level~~ of fishing mortality is approaching the ~~maximum fishing mortality threshold~~ **F_{lim}** (from below), the purpose of the action is to prevent this ~~threshold~~ **limit** from being ~~reached~~ **exceeded.**

(iv) If the **core** stock or stock ~~complex~~ **assemblage** is approaching the ~~minimum biomass stock size threshold~~ **B_{lim}** (from above), the purpose of the action is to prevent this ~~threshold~~ **limit** from being reached.

(v) *Data-poor situations*. When the Secretary determines that data are inadequate to estimate biomass-based reference points reliably, it is permissible to use appropriate fishing mortality rates as proxies, in certain situations. In cases where the available quantitative or qualitative evidence suggests that a core stock or stock assemblage is depleted and requires rebuilding, it is permissible to establish a rebuilding fishing mortality rate, at or below the F_{lim}, that will result in a very low probability of the core stock or stock assemblage declining further, and a high probability that the stock will become rebuilt. Under these circumstances, the stock or assemblage may be considered to be rebuilt if the realized running average fishing mortality rate has been below the F_{lim} for at least two generation times, provided there is no other scientific evidence that biomass is still depleted.

(4) *Constraints on Council action*. (i) In cases where overfishing is occurring, Council action must be sufficient to

end overfishing **as soon as practicable. The Council action must include a rationale for the time period selected for ending overfishing. The appropriate time period for ending overfishing may be influenced by considerations including those related to mixed-stock fisheries. Phase-in periods for reducing fishing mortality rate down to the level of F_{lim} should be permitted only if the following two conditions are met:**

(A) For stocks that are depleted or are on a rebuilding plan, the maximum allowable rebuilding time is no greater than it would have been without the phase-in period; and

(B) Fishing mortality rate levels must, at the least, be reduced by a substantial and measurable amount each year.

(ii) In cases where a **core** stock or stock ~~complex~~ **assemblage** is ~~overfished~~ **depleted**, the Council action must specify a time period for rebuilding the **core** stock or stock ~~complex~~ **assemblage** that **is as short as possible, taking into consideration the factors listed in paragraph (e)(4)(ii)(A) of this section, and that otherwise** satisfies the requirements of sec. 304(e)(4)(A) of the Magnuson-Stevens Act.

(A) A number of factors may be considered in the specification of the time period for rebuilding:

(*1*) The status and biology of the **core** stock or stock ~~complex~~ **assemblage**;

(*2*) Interactions between the **core** stock or stock ~~complex~~ **assemblage** and other components of the marine ecosystem (also referred to as "other environmental conditions");

(*3*) The needs of fishing communities;

(*4*) Recommendations by international organizations in which the United States participates; and

(*5*) Management measures under an international agreement in which the United States participates.

(B) These factors enter into the specification of the maximum allowable time period for rebuilding as follows:

(*1*) The "minimum time for rebuilding" means the amount of time it is expected to take to rebuild a stock to its MSY biomass level in the absence of any fishing mortality, starting in the first year after a stock is determined to be depleted. In this context, the term "expected" means to reach a 50-percent probability of attaining the Btarget. Also, technical updates to Tmin calculations must be retrospective to the same starting date.

(*2*) If the minimum time for rebuilding a stock plus one mean generation time for the stock is 10 years or less, then the maximum time allowable for rebuilding that stock to its B_{target} is 10 years.

(*3*) If the minimum time for rebuilding a stock plus one mean generation time for the stock exceeds 10 years, then the maximum time allowable for rebuilding a stock to its B_{target} is the minimum time for rebuilding that stock, plus the length of time associated with one mean generation time for that stock.

~~(*1*) The lower limit of the specified time period for rebuilding is determined by the status and biology of the stock or stock complex and its interactions with other components of the marine ecosystem, and is defined as the amount of time that would be required for rebuilding if fishing mortality were eliminated entirely.~~

~~(*2*) If the lower limit is less than 10 years, then the specified time period for rebuilding may be adjusted upward to the extent warranted by the needs of fishing communities and recommendations by international organizations in which the United States participates, except that no such upward adjustment can result in the specified time period exceeding 10 years, unless management measures under an international agreement in which the United States participates dictate otherwise.~~

~~(*3*) If the lower limit is 10 years or greater, then the specified time period for rebuilding may be adjusted upward to the extent warranted by the needs of fishing communities and recommendations by international organizations in which the United States participates, except that no such upward adjustment can exceed the rebuilding period calculated in the absence of fishing mortality, plus one mean generation time or equivalent period based on the species' life-history characteristics. For example, suppose a stock could be rebuilt within 12 years in the absence of any fishing mortality, and has a mean generation time of 8 years. The rebuilding period, in this case, could be as long as 20 years.~~

~~(C) A rebuilding program undertaken after May 1, 1998 commences as soon as the first measures to rebuild the stock or stock complex are implemented.~~

~~(D) In the case of rebuilding plans that were already in place as of May 1, 1998, such rebuilding plans must be reviewed to determine whether they are in compliance with all requirements of the Magnuson-Stevens Act, as amended by the Sustainable Fisheries Act.~~

(iii) **Fisheries managed by the United States and other nations. (~~B~~A) For fisheries actively being managed by international fisheries organizations to which the United States is a party, the international fisheries organization has the primary authority to determine the status of stocks or assemblages under its purview, as well as to specify the stock status determination criteria.**

(~~A~~B) For fisheries managed under an international agreement, Council **or Secretarial** action must reflect traditional participation in the fishery, relative to other nations, by fishermen of the United States.

(C) If a relevant international fisheries organization does not have a process for developing a formal plan to rebuild a depleted stock or assemblage, the provisions of the Magnuson-Stevens Act and these guidelines will be applied and promoted by the United States in the international fisheries organization.

(D) In fisheries that are also engaged in by fishermen from

other countries, management measures shall 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.

(5) *Revision of rebuilding plans*. (i) 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 because initial rebuilding plans should have target times to rebuild that are sooner than the maximum permissible time to rebuild in order to have a buffer to absorb some slower than anticipated pace of rebuilding.

(ii) *Change in the pace of rebuilding.* (A) If rebuilding occurs faster than the rebuilding plan anticipated, then the rebuilding plan should be maintained in order to rebuild as soon as possible.

(B) If rebuilding occurs substantially slower than the rebuilding plan anticipated, despite the rebuilding fishing mortality targets having been maintained, then the rebuilding plan must be revised, either by reducing the rebuilding fishing mortality targets and maintaining the rebuilding time horizon; or by maintaining the rebuilding fishing mortality targets and lengthening the rebuilding time horizon; or by a combination of reducing the rebuilding fishing mortality targets and lengthening the rebuilding time horizon.

(iii) *Change in estimate of rebuilding target.* (A) If the best scientific estimate of stock abundance, fishing mortality, or rebuilding criteria change in such a way as to suggest that increased fishing mortality would be consistent with rebuilding within the specified time horizon, then the rebuilding plan may be revised by either increasing the rebuilding fishing mortality targets and maintaining the rebuilding time horizon; or by maintaining the rebuilding fishing mortality targets and shortening the rebuilding time horizon. The benefits of such changes need to be considered in the context of the possibility of future changes in the opposite direction.

(B) If the scientific estimates of rebuilding criteria, such as assessment parameters and variables or the rebuilding target, change in such a way as to suggest that substantial reductions in fishing mortality would be necessary to rebuild the core stock or stock assemblage within the specified time horizon, and if rebuilding fishing mortality targets have been achieved, then the rebuilding plan must be revised by a combination of reducing the rebuilding fishing mortality targets and/or lengthening the rebuilding time horizon.

(iv) Any revision to a rebuilding plan must be accomplished either by an amendment to the FMP or by some other action authorized by the FMP.

~~(5)~~ **(6)** *Interim measures*. The Secretary, on his/her own initiative or in response to a Council request, may implement interim measures to reduce overfishing under sec. 305(c) of the Magnuson-Stevens Act, until such measures can be replaced by an FMP, FMP amendment, or regulations taking remedial action.

(i) These measures may remain in effect for no more than 180 days, but may be extended for an additional 180 days if the public has had an opportunity to comment on the measures and, in the case of Council-recommended measures, the Council is actively preparing an FMP, FMP amendment, or proposed regulations to address overfishing on a permanent basis. Such measures, if otherwise in compliance with the provisions of the Magnuson-Stevens Act, may be implemented even though they are not sufficient by themselves to stop overfishing.

(ii) Interim measures ~~are~~ made effective without prior notice and opportunity for comment ~~they~~ should be reserved for exceptional situations, because they affect fishermen without providing the usual procedural safeguards. A Council recommendation for interim measures without notice-and-comment rulemaking will be considered favorably if the short-term benefits of the measures in reducing overfishing outweigh the value of advance notice, public comment, and deliberative consideration of the impacts on participants in the fishery.

(f) OY--(1) *Definitions*. (i) The term “optimum,” with respect to the yield from a fishery, means the amount of fish that will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities and taking into account the protection of marine ecosystems; that is prescribed on the basis of the MSY from the fishery, as reduced by any relevant economic, social, or ecological factor; and, in the case of a ~~overfished~~ **depleted** fishery, that provides for rebuilding to a level consistent with producing the MSY in such fishery.

(ii) In National Standard 1, use of the phrase “achieving, on a continuing basis, the OY from each fishery” means producing, from each fishery, a long-term series of catches such that the average catch is equal to the average OY and such that status determination criteria **(F_{lim} and B_{lim})** are ~~met~~ **not breached**.

(2) *Values in determination*. In determining the greatest benefit to the Nation, the values that should be weighed are food production, recreational opportunities, and protection afforded to marine ecosystems. They should receive serious attention when considering the economic, social, or ecological factors used in reducing MSY to obtain OY.

(i) The benefits of food production are derived from providing seafood to consumers; maintaining an economically viable fishery, together with its attendant contributions to the national, regional, and local economies; and utilizing the capacity of the Nation's fishery resources to meet nutritional needs.

(ii) The benefits of recreational opportunities reflect the quality of both the recreational fishing experience and non-consumptive fishery uses such as ecotourism, fish watching, and recreational diving; and the contribution of recreational fishing to the national, regional, and local economies and food supplies.

(iii) The benefits of protection afforded to marine ecosystems are those resulting from maintaining viable populations (including those of unexploited species), maintaining evolutionary and ecological processes (e.g., disturbance regimes, hydrological processes, nutrient cycles), maintaining the evolutionary potential of species and ecosystems, and accommodating human use.

(3) *Factors relevant to OY.* Because fisheries have finite capacities, any attempt to maximize the measures of benefits described in paragraph (f)(2) of this section will inevitably encounter practical constraints. ~~One of these is MSY. Moreover~~ **In particular, the degree to which OY is less than MSY depends upon several** ~~various~~ factors~~ can constrain the optimum level of catch to a value less than MSY~~. The Magnuson-Stevens Act's definition of OY identifies three categories of such factors: Social, economic, and ecological. Not every factor will be relevant in every fishery. For some fisheries, insufficient information may be available with respect to some factors to provide a basis for corresponding reductions in **OY relative to** MSY.

(i) *Social factors*. Examples are enjoyment gained from recreational fishing, avoidance of gear conflicts and resulting disputes, preservation of a way of life for fishermen and their families, and dependence of local communities on a fishery. Other factors that may be considered include the cultural place of subsistence fishing, obligations under Indian treaties, and worldwide nutritional needs.

(ii) *Economic factors*. Examples are prudent consideration of the risk of overharvesting when a stock's size or productive capacity is uncertain **(also see paragraph (f)(5) of this section)**, satisfaction of consumer and recreational needs, and encouragement of domestic and export markets for U.S.-harvested fish. Other factors that may be considered include the value of fisheries, the level of capitalization, the decrease in cost per unit of catch afforded by an increase in stock size and the attendant increase in catch per unit of effort, alternate employment opportunities, and economies of coastal areas.

(iii) *Ecological factors*. Examples are stock size and age composition, the vulnerability of incidental or unregulated stocks in a mixed-stock fishery, predator-prey or competitive interactions, and dependence of marine mammals and birds or endangered species on a stock of fish. Also important are ecological or environmental conditions that stress marine organisms, such as natural and manmade changes in wetlands or nursery grounds, and effects of pollutants on habitat and stocks.

(4) *Specification*. (i) The amount of fish that constitutes the OY should be expressed in terms of numbers or weight of fish.

Each FMP must include an OY control rule for each core stock, i.e., a harvest strategy which, when implemented, would be expected to result in a long-term average catch approximating OY. The harvest level associated with the OY control rule (equivalent to the fishing mortality target) must be less than the harvest level associated with the maximum fishing mortality limit. The probability of exceeding the OY control rule in any given year should not exceed 50 percent. Assemblages can have either an OY control rule for the entire assemblage, or they can contain an indicator stock(s) with an OY control rule. ~~However, OY may be expressed as a formula that converts periodic stock assessments into target harvest levels; in terms of an annual harvest of fish having a minimum weight, length, or other measurement; or as an amount of fish taken only in certain areas, in certain seasons, with particular gear, or by a specified amount of fishing effort.~~

~~(ii) Either a range or a single value may be specified for OY. Specification of a numerical, fixed-value OY does not preclude use of annual target harvest levels that vary with stock size. Such target harvest levels may be prescribed on the basis of an OY control rule similar to the MSY control rule described in paragraph (c)(1)(ii) of this section, but designed to achieve OY on average, rather than MSY. The annual harvest level obtained under an OY control rule must always be less than or equal to the harvest level that would be obtained under the MSY control rule.~~

(ii) ~~However, OY may be expressed as a formula that converts periodic stock assessments into target harvest levels; in terms of an~~ **In addition to the OY control rule, or in cases where an OY control rule cannot be implemented, the OY may specify** annual harvest of fish having a minimum weight, length, or other measurement; or ~~as~~ an amount of fish taken only in certain areas, in certain seasons, with particular gear; or ~~by~~ a specified amount of fishing effort.

(iii) All fishing mortality must be counted against OY, including that resulting from bycatch, scientific research, and any other fishing activities.

(iv) The OY specification should be translatable into an annual numerical estimate for the purposes of establishing any TALFF and analyzing impacts of the management regime. There should be a mechanism in the FMP for periodic reassessment of the OY specification, so that it is responsive to changing circumstances in the fishery.

(v) The determination of OY requires a specification of MSY, which may not always be possible or meaningful. However, even where sufficient scientific data as to the biological characteristics of the stock do not exist, or where the period of exploitation or investigation has not been long enough for adequate understanding of stock dynamics, or where frequent large-scale fluctuations in stock size diminish the meaningfulness of the MSY concept, OY must still be based on the best scientific information available. When data are insufficient to estimate MSY directly, Councils should adopt other measures of productive capacity that can serve as reasonable proxies for MSY to the extent possible (see paragraph (c)(3) of this section).

~~(vi) In a mixed-stock fishery, specification of a fishery-wide OY may be accompanied by management measures establishing separate annual target harvest levels for the individual stocks. In such cases, the sum of the individual target levels should not exceed OY.~~

(5) *OY and the precautionary approach*. In general, Councils should adopt a precautionary approach to specification of OY. A precautionary approach is characterized by three features:

(i) Target reference points, such as OY, should be set safely below limit reference points, ~~such as the catch level associated with the fishing mortality rate or level defined by the status determination criteria~~ **taking into account social, economic and ecological factors as defined in paragraph (f)(1) of this section.** Because OY is a target reference point, it does not constitute an absolute ceiling or limit, but rather a desired result. An FMP must contain conservation and management measures to achieve OY, and provisions for information collection that are designed to determine the degree to which OY is achieved on a continuing basis--that is, a long-term average catch that is equal to the long-term average OY, while meeting the status determination criteria. These measures should allow for practical and effective implementation and enforcement of the management regime, so that the harvest is allowed to reach OY, **on average, but should result in a low probability of exceeding the** $\mathbf{F_{lim}}$**.** ~~but not to exceed OY by a substantial amount.~~ The Secretary has an obligation to implement and enforce the FMP so that OY is achieved. If management measures prove unenforceable or too restrictive, or not rigorous enough to realize OY, they should be modified; an alternative is to reexamine the adequacy of the OY specification. Exceeding OY does not necessarily constitute overfishing, **if the OY has been set safely below the MSY control rule**. However, even if no overfishing results from exceeding OY, continual harvest at a level above OY would violate National Standard 1, because OY is not being achieved on a continuing basis.

(ii) ~~A~~ **The OY control rule should be designed so that a core** stock, and **a** stock ~~complex~~ **assemblage** that **has an** OY control rule, that is below the size that would produce MSY is harvested at a lower rate ~~or level~~ of fishing mortality than if the core stock **or stock assemblage** were above the size that would produce MSY.

(iii) Criteria used to set target catch levels should be explicitly risk averse, so that greater uncertainty regarding the status or productive capacity of a **core** stock or stock ~~complex~~ **assemblage** corresponds to greater caution in setting target catch levels.

(iv) Part of the OY may be held as a reserve to allow for factors such as uncertainties in estimates of stock size and DAH.

If an OY reserve is established, an adequate mechanism should be included in the FMP to permit timely release of the reserve to domestic or foreign fishermen, if necessary.

(6) *Analysis*. An FMP must contain an assessment of how its OY specification was determined (sec. 303(a)(3) of the Magnuson-Stevens Act). It should relate the explanation of overfishing in paragraph (d) of this section to conditions in the particular fishery and explain how its choice of OY and conservation and management measures will prevent overfishing in that fishery. A Council must identify those economic, social, and/or ecological factors relevant to management of a particular fishery, then evaluate them to determine the amount ~~if any~~, by which ~~MSY exceeds~~ OY **has been set safely below MSY**. The choice of a particular OY must be carefully defined and documented to show that the OY selected will produce the greatest benefit to the Nation. If overfishing is permitted under paragraph (d)(6) of this section, the assessment must contain a justification in terms of overall benefits, including a comparison of benefits under alternative management measures, and an analysis of the risk of any species or ecologically significant unit thereof reaching a threatened or endangered status, as well as the risk of any **core** stock or stock ~~complex~~ **assemblage** falling below its ~~minimum stock size threshold~~ **Blim**.

(7) *OY and foreign fishing*. Section 201(d) of the Magnuson-Stevens Act provides that fishing by foreign nations is limited to that portion of the OY that will not be harvested by vessels of the United States.

(i) *DAH*. Councils must consider the capacity of, and the extent to which, U.S. vessels will harvest the OY on an annual basis. Estimating the amount that U.S. fishing vessels will actually harvest is required to determine the surplus.

(ii) *DAP*. Each FMP must assess the capacity of U.S. processors. It must also assess the amount of DAP, which is the sum of two estimates: The estimated amount of U.S. harvest that domestic processors will process, which may be based on historical performance or on surveys of the expressed intention of manufacturers to process, supported by evidence of contracts, plant expansion, or other relevant information; and the estimated amount of fish that will be harvested by domestic vessels, but not processed (e.g., marketed as fresh whole fish, used for private consumption, or used for bait).

(iii) *JVP*. When DAH exceeds DAP, the surplus is available for JVP. JVP is derived from DAH.