

APPENDIX A Amendments to FMP Language

This appendix documents revisions to the FMP based on the Council's preferred alternative under Issues 1-4 in Chapter 2.

GUIDE TO SECTIONS AFFECTED BY ISSUES CONSIDERED IN THE FMP AMENDMENT

Issue		Affected Sections
Issue 1	Form & Required Elements of Species Rebuilding Plans	4.5.2 4.5.3 4.5.4
Issue 2	Process for Periodic Review and Rebuilding Plans	4.5.3.5
Issue 3	Events or Standards that Would Trigger Revision of a Rebuilding Plan	4.5.3.5
Issue 4	ESA Listed Species	4.5.3.6
	Housekeeping Measures	Section 2.1, Goals and Objectives; Table 3-1; All Sections of Chapters 4 and 5; Section 6.5.1.2, Observers

SUMMARY OF CHAPTER 4 AND 5 REORGANIZATION

Sections in Amended Text	From Heading and/or Text in Original
4.0 (new text)	–
4.1	5.3
4.2	5.2
4.3	5.3
–	5.3.1- heading deleted
4.3.1	5.3.1.1
4.3.2	5.3.1.2
4.3.3	5.3.1.3
4.4	–
4.4.1	5.3.3
4.4.2	– text from 5.3.6.2
4.4.3	5.3.4
4.5	–
4.5.1	5.3.5
4.5.2	– text from 5.3.6.2
4.5.3	5.3.6
4.5.3.1	5.3.6.1
4.5.3.2	5.3.6.2
4.5.3.3	5.3.6.3
4.5.3.4	–
4.5.3.5	5.3.6.3
4.5.3.6	5.3.6.3
4.5.3.7	–
4.5.4	–
4.6	4.0, 5.3.2
4.6.1	5.3.2 (elevated subheading)
4.6.2	5.3.2 (elevated subheading)
4.6.3	5.3.2 (elevated subheading)
5.0	5.0

Sections in Amended Text	From Heading and/or Text in Original
5.1	5.0
5.2	5.1
5.3	5.4
–	5.5- section deleted
5.4	5.6
5.5	5.7
5.5.1	5.7.1
5.5.2	5.7.2
–	5.7.3- section deleted

KEY TO AFFECTED FMP LANGUAGE

Underline - inserted text

~~Strikeout~~ - deleted text

[Brackets and **boldface**] - notes on reorganization

{Braces and **boldface**--} - moved text, referenced by new heading numbers. (Original heading numbers may be referenced as appropriate.) Text in original location shown in *grey italic*.

Highlight - pending changes from Amendment 17

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2.0 GOALS AND OBJECTIVES

2.1 Goals and Objectives for Managing the Pacific Coast Groundfish Fishery

* * *

Management Goals.

Goal 1 - Conservation. Prevent overfishing and rebuild overfished stocks by managing for appropriate harvest levels and prevent, to the extent practicable, any net loss of the habitat of living marine resources.

* * *

Objective 3. For species or species groups which are below the level necessary to produce maximum sustainable yield (MSY) that are overfished, consider rebuilding the stock to the MSY level and, if necessary, develop a plan to rebuild the stock as required by the Magnuson-Stevens Act.

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3.0 AREAS AND STOCKS INVOLVED

* * *

3.1 Species Managed by this Fishery Management Plan

Table 3-1 is the listing of species managed under this FMP.

TABLE 3-1. Common and scientific names of species included in this FMP.

Common Name	Scientific Name
	SHARKS
Leopard shark	<i>Triakis semifasciata</i>
Soupfin shark	<i>Galeorhinus zyopterus</i>
Spiny dogfish	<i>Squalus acanthias</i>
Big skate	<i>Raja binoculata</i>
California skate	<i>R. inornata</i>
Longnose skate	<i>R. rhina</i>
	RATFISH
Ratfish	<i>Hydrolagus colliei</i>
	MORIDS
Finescale codling	<i>Antimora microlepis</i>
	GRENADIERS
Pacific rattail	<i>Coryphaenoides acrolepis</i>
	ROUNDFISH
Lingcod	<i>Ophiodon elongatus</i>
Cabezon	<i>Scorpaenichthys marmoratus</i>
Kelp greenling	<i>Hexagrammos decagrammus</i>
Pacific cod	<i>Gadus macrocephalus</i>
Pacific whiting (hake)	<i>Merluccius productus</i>
Sablefish	<i>Anoplopoma fimbria</i>
	ROCKFISH^{al}
Aurora rockfish	<i>Sebastes aurora</i>
Bank rockfish	<i>S. rufus</i>
Black rockfish	<i>S. melanops</i>
Black and yellow rockfish	<i>S. chrysomelas</i>
Blackgill rockfish	<i>S. melanostomus</i>
Blue rockfish	<i>S. mystinus</i>
Bocaccio	<i>S. paucispinis</i>
Bronze spotted Bronzespotted rockfish	<i>S. gilli</i>
Brown rockfish	<i>S. auriculatus</i>
Calico rockfish	<i>S. dallii</i>
California scorpionfish	<i>Scorpaena gutatta</i>
Canary rockfish	<i>Sebastes pinniger</i>
<u>Chameleon rockfish</u>	<i>S. phillipsi</i>
Chilipepper	<i>S. goodei</i>
China rockfish	<i>S. nebulosus</i>
Copper rockfish	<i>S. caurinus</i>
Cowcod	<i>S. levis</i>
Darkblotched rockfish	<i>S. crameri</i>
Dusky rockfish	<i>S. ciliatus</i>
<u>Dwarf-red rockfish</u>	<i>S. rufinanus</i>
Flag rockfish	<i>S. rubrivinctus</i>
<u>Freckled rockfish</u>	<i>S. lentiginosus</i>
Gopher rockfish	<i>S. carnatus</i>
Grass rockfish	<i>S. rastrelliger</i>
Greenblotched rockfish	<i>S. rosenblatti</i>
Greenspotted rockfish	<i>S. chlorostictus</i>
Greenstriped rockfish	<i>S. elongatus</i>

TABLE 3-1. Common and scientific names of species included in this FMP.

<u>Common Name</u>	<u>Scientific Name</u>
<u>Halfbanded rockfish</u>	<u><i>S. semicinctus</i></u>
Harlequin rockfish	<i>S. variegatus</i>
Honeycomb rockfish	<i>S. umbrosus</i>
Kelp rockfish	<i>S. atrovirens</i>
Longspine thornyhead	<i>Sebastolobus altivelis</i>
Mexican rockfish	<i>Sebastes macdonaldi</i>
Olive rockfish	<i>S. serranoides</i>
Pink rockfish	<i>S. eos</i>
<u>Pinkrose rockfish</u>	<u><i>S. simulator</i></u>
<u>Pygmy rockfish</u>	<u><i>S. wilsoni</i></u>
Pacific ocean perch	Sebastes <i>S. alutus</i>
Quillback rockfish	<i>S. maliger</i>
Redbanded rockfish	<i>S. babcocki</i>
Redstripe rockfish	<i>S. proriger</i>
Rosethorn rockfish	<i>S. helvomaculatus</i>
Rosy rockfish	<i>S. rosaceus</i>
Rougheye rockfish	<i>S. aleutianus</i>
Sharpchin rockfish	<i>S. zacentrus</i>
Shortbelly rockfish	<i>S. jordani</i>
Shortraker rockfish	<i>S. borealis</i>
Shortspine thornyhead	<i>Sebastolobus alascanus</i>
Silvergray rockfish	<i>Sebastes brevispinis</i>
Speckled rockfish	<i>S. ovalis</i>
Splitnose rockfish	<i>S. diploproa</i>
Squarespot rockfish	<i>S. hopkinsi</i>
Starry rockfish	<i>S. constellatus</i>
Stripetail rockfish	<i>S. saxicola</i>
<u>Swordspine rockfish</u>	<u><i>S. ensifer</i></u>
Tiger rockfish	<i>S. nigrocinctus</i>
Treefish	<i>S. serriceps</i>
Vermilion rockfish	<i>S. miniatus</i>
<u>Widow rockfish</u>	<u><i>S. entomelas</i></u>
<u>Yelloweye rockfish</u>	<u><i>S. ruberrimus</i></u>
<u>Yellowmouth rockfish</u>	<u><i>S. reedi</i></u>
<u>Yellowtail rockfish</u>	<u><i>S. flavidus</i></u>
	FLATFISH
Arrowtooth flounder (turbot)	<i>Atheresthes stomias</i>
Butter sole	<i>Isopsetta isolepis</i>
Curlfin sole	<i>Pleuronichthys decurrens</i>
Dover sole	<i>Microstomus pacificus</i>
English sole	<i>Parophrys vetulus</i>

TABLE 3-1. Common and scientific names of species included in this FMP.

Common Name	Scientific Name
FLATFISH (continued)	
Flathead sole	<i>Hippoglossoides elassodon</i>
Pacific sanddab	<i>Citharichthys sordidus</i>
Petrale sole	<i>Eopsetta jordani</i>
Rex sole	<i>Glyptocephalus zachirus</i>
Rock sole	<i>Lepidopsetta bilineata</i>
Sand sole	<i>Psettichthys melanostictus</i>
Starry flounder	<i>Platichthys stellatus</i>

a/ The category "rockfish" includes all genera and species of the family ~~Scorpaenidae~~ Scorpaenidae, even if not listed, that occur in the Washington, Oregon, and California area. The ~~Scorpaenidae~~ Scorpaenidae genera are *Sebastes*, ~~*Scorpaena*~~ *Scorpaena*, *Sebastolobus*, and ~~*Scorp*~~ *Scorpaenodes*.

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4.0 PREVENTING OVERFISHING AND ACHIEVING OPTIMUM YIELD

National Standard 1 requires that “Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the OY from each fishery for the U.S. fishing industry.” (50 CFR 600.310(a))

“The determination of OY 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 MSY as it may be reduced ... [in consideration of social, economic or ecological factors].... 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.” (50 CFR Section 600.310(b))

This chapter addresses the essential considerations suggested for National Standard 1, as identified in the NMFS guidelines on the standard (600.310):

- Estimating MSY, estimated the MSY biomass and setting the MSY control rule (50 CFR 600.310(c); Section 4.2 of this Chapter).
- Specifying stock status determination criteria (maximum fishing mortality threshold and minimum stock size threshold, or reasonable proxies thereof) (50 CFR 600.310(d); Section 4.4 of this Chapter).
- Actions for ending overfishing and rebuilding overfished stocks (including the development and adoption of rebuilding plans) (50 CFR 600.310(e); Section 4.5 of this Chapter).
- Setting OY and apportionment of harvest levels (50 CFR 600.310(f); Section 4.6 of this Chapter).

In establishing OYs for West Coast groundfish, this FMP uses the interim step of calculating ABCs for major stocks or management units (groups of species). ABC is the MSY harvest level associated with the current stock abundance. Over the long term, if ABCs are fully harvested, the average of the ABCs would be MSY.

OY is set and apportioned under the procedures outlined in Chapter 5.

4.1 Species Categories

[New section title, previously portions of 5.3, as indicated]

~~{From new section 4.3, para 2 ABC, B_{MSY} , ABC and the overfished/rebuilding stock size threshold cannot be precisely defined for all species, because of the absence of available information for many species managed under the FMP.}--~~ **{From new section 4.3, para 3** For the purpose of setting MSY, ABC, the maximum fishing mortality threshold (MFMT), the minimum stock size threshold (MSST), OY and rebuilding standards, three categories of species are identified. The first are the relatively few species for which a quantitative stock assessment can be conducted on the basis of catch-at-age or other data. ABCs and overfished/rebuilding thresholds can generally be calculated for these species. The second category includes a large number of species for which some biological indicators are available, but a quantitative analysis cannot be conducted. It is difficult to estimate overfished and overfishing thresholds for the second category of species *a priori*, but indicators of long-term, potential overfishing can be identified. ABCs for species in this category are typically set at a constant level and some monitoring is necessary to determine if this level of catch is causing a slow decline in stock abundance. The third category includes minor species which are caught, but for which there is, at best, only information on landed biomass. For species in this category, it is impossible to determine MSY, ABC, or an overfished threshold.}--

4.2 Determination of MSY or MSY Proxy and B_{MSY}

[Previously 5.2]

Harvest policies are to be specified according to standard reference points such as MSY (MSY, interpreted as an a maximum average achievable catch under prevailing ecological and environmental conditions over a prolonged period), the long-term average biomass associated with fishing at F_{MSY} is B_{MSY} , ~~the biomass that produces MSY (B_{MSY}) and the fishing rate (F_{MSY}) that tends to hold biomass near B_{MSY} .~~ In this FMP, MSY

generally refers to a constant F control rule that is assumed to produce the maximum average yield over time while protecting the spawning potential of the stock. Thus the constant F control rule is generally the proxy for the MSY control rule. (Pacific whiting is generally based on a variable F control rule.) Fishing rates above F_{MSY} eventually result in biomass smaller than B_{MSY} and produce less harvestable fish on a sustainable basis. Accordingly, management should avoid fishing rates that hold biomass below B_{MSY} for long periods. **{From this section below** The biomass level that produces MSY (i.e., B_{MSY}) is generally unknown and assumed to be variable over time due to long-term fluctuations in ocean conditions, so that no single value is appropriate. **}-** This is especially important during periods of unfavorable environment in which resources may be less productive than usual and the risk of stock depletion is greater. During periods of unfavorable environment it is important to account for reduced sustainable yield levels.

The problem with an F_{MSY} control rule is that it is tightly linked to an assumed level of density-dependence in recruitment, and there is insufficient information to determine the level of density-dependence in recruitment for many West Coast groundfish stocks. Therefore, the use of approximations or proxies is necessary. Absent a more accurate determination of F_{MSY} , the Council will apply default MSY proxies. The current (1998 2001) proxies are: $F_{40\%}$ for flatfish and whiting, $F_{50\%}$ for rockfish (including thornyheads) and $F_{45\%}$ $F_{35\%}$ for all species such as sablefish and lingcod except rockfish and $F_{40\%}$ for rockfish^{1/}. However, these values ($F_{35\%}$, $F_{40\%}$, $F_{45\%}$ and $F_{50\%}$) are provided here as examples only and are expected to be modified from time to time as scientific knowledge improves. If available information is sufficient, values of F_{MSY} , B_{MSY} , and more appropriate harvest control rules may be developed for any species or species group. For example, the Council generally has applied a variable F control rule for management of Pacific whiting.

At this time, it is generally believed that, for many species, $F_{35\%}$ $F_{45\%}$ strikes a balance between obtaining a large fraction of the MSY if recruitment is highly insensitive to reductions in spawning biomass and preventing a rapid depletion in stock abundance if recruitment is found to be extremely sensitive to reductions in spawning biomass. The long-term expected yield under an $F_{35\%}$ $F_{45\%}$ policy depends upon the (unknown) level of density-dependence in recruitment. The recommended level of harvest will reduce the average lifetime egg production by each female entering the stock to ~~35%~~ 45% of the lifetime egg production for females that are unfished.

Because the level of recruitment is expected to decline somewhat as a stock is fished at $F_{45\%}$, the expected B_{MSY} proxy is less than 45% of the unfished biomass. A biomass level of 40% is a reasonable proxy for B_{MSY} . The short-term yield under an $F_{35\%}$ $F_{45\%}$ policy will vary as the abundance of the exploitable stock varies. This is true for any fishing policy that is based on a constant exploitation rate. The abundance of the stock will vary, because of the effects of fishing, and because of natural variation in recruitment. When stock abundance is high (i.e., near its average unfished level), short-term annual yields can be approximately two to three times greater than the expected long-term average annual yield. For many of the long-lived groundfish species common on the West Coast, this "fishing down" transition can take decades. Many of the declines in ABC that occurred during the 1980s were the result of this transition from a lightly exploited, high abundance stock level to a fully exploited, moderately abundant stock level. Further declines below the overfished levels in the 1990s were due mostly to much lower than expected recruitment.

Recent work (Clark 1993, Mace 1994, and Ianelli 1995) indicates that $F_{35\%}$ may not be the best approximation of F_{MSY} , given more realistic information about recruitment than was initially used by Clark in 1991. In his 1993 publication Clark extended his 1991 results by improving the realism of his simulations and analysis. In particular he (1) modeled stochasticity into the recruitment process, (2) introduced serial correlation into recruitment time series, and (3) performed separate analyses for the Ricker and Beverton-Holt spawner-recruit functions. For rockfish, these changes improved the realism of his spawning biomass per recruit (SPR) harvest policy calculations, because these species are known to have stochastic recruitment and they appear to display serial correlation in recruitments (especially on interdecadal time scales), and because the Beverton-Holt spawner-recruit curve may be biologically the most plausible recruitment model. The effect of each of these changes, in isolation and in aggregate, was to decrease F_{MSY} . Consequently, the estimated

1/ In the rest of this document use of $F_{35\%}$ will be taken to mean $F_{40\%}$ in the case of rockfish, and the hybrid fishing mortality rate strategy for Pacific whiting.

SPR reduction needed to provide an optimal F_{MSY} proxy (defined as that level of fishing which produces the largest assured proportion of MSY), must necessarily be increased. Clark concluded that $F_{40\%}$ is the optimal rate for fish stocks exhibiting recruitment variability similar to Alaska groundfish stocks. Likewise, Mace (1994) recommended the use of $F_{40\%}$ as the target mortality rate when the stock recruitment relationship is unknown. Lastly, Ianelli (1995) determined that $F_{44\%}$ was a good F_{MSY} proxy for Gulf of Alaska Pacific ocean perch, although he subsequently indicated that a recent recruitment to that stock was larger than expected and that $F_{44\%}$ may be too conservative in that case.

Based on this information and advice by its Groundfish Management Team, in 1997 the Council concluded that $F_{40\%}$ should be used as the proxy for F_{MSY} for rockfish in the absence of specific knowledge of recruitment or life history characteristics which would allow a more accurate determination of F_{MSY} . This and other proxies may be revised on the basis of further information and experience.

In spring 2000, the Council's Scientific and Statistical Committee (SSC) sponsored a workshop to review the Council's groundfish exploitation rate policy. The workshop explored the historic use of different fishing mortality (F) rates and found that the Council's past practices have generally changed in response to new information from the scientific community. Starting in the early 1990s, the Council used a standard harvest rate of $F_{35\%}$. The SSC's workshop participants reported that new scientific studies in 1998 and 1999 had shown that the $F_{35\%}$ and $F_{40\%}$ rates used by the Council had been too aggressive for Pacific Coast groundfish stocks, such that some groundfish stocks could not maintain a viable population over time. A 1999 study, *The Meta-Analysis of the Maximum Reproductive Rate for Fish Populations to Estimate Harvest Policy; a Review* (Myers, et al.) showed that Pacific Coast groundfish stocks, particularly rockfish, have very low productivity compared to other, similar species worldwide. One prominent theory about the reason for this low productivity is the large-scale North Pacific climate shifts that are thought to cycle Pacific Coast waters through warm and cool phases of 20-30 years duration. Pacific Coast waters shifted to a warm phase around 1977-1978, with ocean conditions less favorable for Pacific Coast groundfish and other fish stocks. Lower harvest rates are necessary to guard against steep declines in abundance during these periods of low productivity (low recruitment). After an intensive review of historic harvest rates, and current scientific literature on harvest rates and stock productivity, the SSC workshop concluded that $F_{40\%}$ is too aggressive for many Pacific Coast groundfish stocks, particularly for rockfish. For 2001 and beyond, the Council adopted the SSC's new recommendations for harvest policies of: $F_{40\%}$ for flatfish and whiting, $F_{50\%}$ for rockfish (including thornyheads) and $F_{45\%}$ for other groundfish such as sablefish and lingcod.

In the past, F_{MSY} these fishing rates were treated by the Council (as intended) as targets. Under the Magnuson-Stevens Act as amended in 1996, these fishing rates are more appropriately considered to be limits thresholds which that should not be exceeded (see Section 4.4). **{To new section 4.4.2 Technically, exceeding F_{MSY} now constitutes overfishing.}**--

The Council will consider any new scientific information relating to calculation of MSY or MSY proxies and may adopt new values based on improved understanding of the population dynamics and harvest of any species or group of species.

{To this section above *The biomass level that produces MSY (i.e., B_{MSY}) is also generally unknown and assumed to be variable over time due to long-term fluctuations in ocean conditions, so that no single value is appropriate.* **}--** Current scientific thought is that B_{MSY} (and/or the natural range of biomass under F_{MSY}) usually falls somewhere between 0.3 to 0.5 of the average unfished abundance (mean $B_{unfished}$), and rarely falls below one quarter of that amount, (i.e., $B_{MSY} > 0.25$ mean $B_{unfished}$). Rebuilding, or at least a reduced harvest rate, may be required if abundance falls below these levels.

While B_{MSY} may be set based on the averaged unfished abundance ($B_{unfished}$), there are many possible approximations and estimates of mean $B_{unfished}$. If the necessary data exist, the following standard methodology is the preferred approach:

$$\text{mean } B_{unfished} = \text{mean } R * \text{SPR}(F=0)$$

Where mean R is the average estimated recruitment expected under unfished conditions over all reliable years, and $SPR(F=0)$ is the spawning potential per recruit at zero fishing mortality rate. Alternative reference points based on mean $R * SP(F_{35\%})$ or reconstruction of mean $B_{unfished}$ from stock-recruitment relationships may also be used. $SPR(F=0)$ is normally available as part of the calculation leading to determination of $F_{35\%}$, $F_{45\%}$, and is equivalent to $F_{100\%}$.

4.3 Determination of ABC OY, Precautionary Threshold, and (Overfished/Rebuilding Threshold)

[Previously 5.3]

~~The Magnuson-Stevens Act as amended in 1996 defines OY as the amount of fish that is prescribed on the basis of MSY from the fishery as reduced by any relevant economic, social, or ecological factors. By this definition, overfishing occurs if a stock is harvested at a level in excess of F_{MSY} . Moreover, overfished stocks (i.e., those that have declined to below a specified (overfished/rebuilding threshold)) are to be rebuilt to a level that is consistent with producing MSY. In establishing OYs for West Coast groundfish, this FMP utilizes the interim step of calculating ABCs for major stocks or management units (groups of species). ABC is the MSY harvest level associated with the current stock abundance. Over the long term, if ABCs are fully harvested, the average of the ABCs would be MSY.~~

~~**{To new section 4.1 ABC, B_{MSY} , and overfished/rebuilding stock size threshold cannot be precisely defined for all species, because of the absence of available information for many species managed under the FMP.}--**~~

~~**{To new section 4.4.2 In this FMP, the term "overfishing" is used to denote situations where catch exceeds or is expected to exceed the established ABC or MSY proxy ($F_{x\%}$). The term "overfished" describes a stock whose abundance is below its overfished/rebuilding threshold). Overfished/rebuilding thresholds in general, are linked to the same productivity assumptions that determine the ABC levels. The default value of this threshold is 25% of the estimated unfished biomass level or 50% of B_{MSY} , if known.}--**~~

~~**{To new Section 4.1 Three categories of species are identified. The first are the few species for which a quantitative stock assessment can be conducted on the basis of catch-at-age or other data. ABCs and overfished/rebuilding thresholds can generally be calculated for these species. The second category includes a large number of species for which some biological indicators are available, but a quantitative analysis cannot be conducted. It is difficult to estimate overfished and overfishing thresholds for the second category of species a priori, but indicators of long term, potential overfishing can be identified. ABCs for species in this category are typically set at a constant level and some monitoring is necessary to determine if this level of catch is causing a slow decline in stock abundance. The third category includes minor species which are caught, but for which there is, at best, only information on landed biomass. For species in this category, it is impossible to determine MSY, ABC, or an overfished threshold.}--**~~

~~For category 1 species, in addition to the overfished/rebuilding threshold, a precautionary threshold is established. The default value will be 40% of mean $B_{unfished}$. This level of biomass is expected to be near B_{MSY} , and if abundance is between the overfished/rebuilding threshold and the precautionary threshold, a precautionary reduction in harvest will be implemented to avoid further declines in abundance. **[This paragraph is deleted because it is redundant with revised text in new section 4.4.1.]**~~

~~**[Heading 5.3.1 (Determination of ABC) deleted as redundant.]**~~

4.3.1 Stocks with Quantitative Assessments, Category 1

[Previously 5.3.1.1]

The stocks with quantitative assessments are those that have recently been assessed by a catch-at-age analysis. Annual evaluation of the appropriate MSY proxy (e.g., $F_{35\%}$, $F_{45\%}$) for species in this category will require some specific information in the SAFE document. Estimated age-specific maturity, growth, and availability to the fishery (with evaluation of changes over time in these characteristics) are sufficient to determine the relationship between fishing mortality and yield-per-recruit and spawning biomass-per-recruit. The estimated time series of recruitment, spawning biomass, and fishing mortality are also required to

determine whether recent trends indicate a point of concern. In general, ABC will be calculated by applying $F_{35\%}$, $F_{45\%}$ (or $F_{40\%}$ or $F_{50\%}$ or other established MSY proxy) to the best estimate of current biomass. This current biomass estimate may be for a single year or the average of the present and several future years. Thus, ABC may be intended to remain constant over a period of three or more years. **{To new section 5.4 All ABCs will remain in effect until revised, and, whether revised or not, will be announced at the beginning of the year along with other specifications.}**--

4.3.2 Stocks with ABC Set by Nonquantitative Assessment, Category 2

[Previously 5.3.1.2]

These stocks with ABC set by nonquantitative assessments typically do not have a recent, quantitative assessment, but there may be a previous assessment or some indicators of the status of the stock. Detailed biological information is not routinely available for these stocks, and ABC levels have typically been established on the basis of average historical landings. Typically, the spawning biomass, level of recruitment, or the current fishing mortality rate for Category 2 stocks are unknown. The Council places high priority on improving the information for managing these stocks so that they may be moved to Category 1 status.

4.3.3 Stocks Without ABC Values, Category 3

[Previously 5.3.1.3]

Of the 83 groundfish species managed under the FMP, ABC values have been established for only about 25. The remaining species are incidentally landed and usually are not listed separately on fish landing receipts. Information from fishery independent surveys are often lacking for these stocks, because of their low abundance or they are not vulnerable to survey sampling gear. ~~Without an~~ Until sufficient quantities of at-sea observer program data are available or surveys of other fish habitats are conducted, it is unlikely that there a data base will be developed in the future for these stocks to sufficient data to upgrade the assessment capability capabilities or to evaluate their overfishing potential. Interim ABC values may be established for these stocks based on qualitative information, including advice from the Council's advisory entities.

[Original section 5.3.2 (Determination of OY) moved to new section 4.6.]

4.4 Precautionary Thresholds and Overfishing Status Determination Criteria

[New section]

The National Standard Guidelines define two thresholds that are necessary to maintain a stock at levels capable of producing MSY: the maximum fishing mortality threshold (MFMT) and a minimum stock size threshold (MSST). These two limits are intended for use as benchmarks to decide if a stock or stock complex is being overfished or is in an overfished state. The MFMT and MSST are intrinsically linked through the MSY control rule, which specifies how fishing mortality or catches could vary as a function of stock biomass in order to achieve yields close to MSY.

4.4.1 Determination of Precautionary Thresholds

[Previously 5.3.3]

The precautionary threshold is the biomass level at which point the harvest rate will be reduced to help the stock return to the MSY level (see Section 4.5.1 "Default Precautionary and Interim Rebuilding OY Calculation"). The precautionary biomass threshold is in addition to the overfishing and overfished/rebuilding thresholds required under the Magnuson-Stevens Act (MFMT and MSST). The precautionary biomass threshold is higher than the overfished biomass (MSST). Because B_{MSY} is a long term average, biomass will by definition be below B_{MSY} in some years and above B_{MSY} in other years. Thus, even in the absence of overfishing, biomass may decline to levels below B_{MSY} due to natural fluctuation. By decreasing harvest rates when biomass is below B_{MSY} but maintaining MSY control rule (or proxy control rule) harvest rates for biomass

levels above MSY, the precautionary threshold and accompanying response effectively constitute a control rule that manages for harvests lower than MSY and an average biomass above MSY.

The precautionary threshold is established only for category 1 species. The precautionary threshold will be the B_{MSY} level, if known. The default precautionary threshold will be 40% of the estimated unfished biomass level. The Council may recommend different precautionary thresholds for any species or species group based on the best scientific information about that species or group. It is expected the threshold will be between 25% and 50% of the estimated unfished biomass level.

4.4.2 Determination of Overfishing Threshold

[New section]

{From new Section 4.3 In this FMP, for Category 1 species, the term “overfishing” is used to denote situations where catch exceeds or is expected to exceed the established ABC or MSY proxy ($F_{x\%}$). This can also be expressed as where catch exceeds or is expected to exceed the MFMT. The term “overfished” describes a stock whose abundance is below its overfished/rebuilding threshold, or MSST). Overfished/rebuilding thresholds, in general, are linked to the same productivity assumptions that determine the ABC levels. The default value of this threshold is 25% of the estimated unfished biomass level or 50% of B_{MSY} , if known. **}- The MFMT is simply the value(s) of fishing mortality in the MSY control rule. {From new Section 4.2** Technically, exceeding F_{MSY} ~~now~~ constitutes overfishing. **}-**

{From new section 4.5.3.3 (text to end of section) For Category 2 species, the following may be evaluated as potential indicators of overfishing:

- catch per effort from logbooks
- catch area from logbooks
- index of stock abundance from surveys
- stock distribution from surveys
- mean size of landed fish

If declining trends persist for more than three years, then a focused evaluation of the status of the stock, its ABC, and overfishing threshold will be quantified. If data are available, such an evaluation should be conducted at approximately five year intervals even when negative trends are not apparent. In fact, many stocks are in need of re-evaluation to establish a baseline for monitoring of future trends. Whenever an evaluation indicates the stock may be declining and approaching an overfished state, the Council should:

1. Improve data collection for this species so it can be moved to Category 1.
2. Determine the rebuilding rate that would allow the stock to return to MSY in no longer than ten years.

~~For Category 3 species, information from fishery independent surveys are is often lacking for these Category 3 species because of their low abundance or because they are not vulnerable to survey sampling gear. Without an~~ Until sufficient data become available from the at-sea observer program, it is unlikely that a data base will be developed in the future for these species to evaluate the risk of overfishing these species cannot be fully evaluated. ~~}-~~

4.4.3 Determination of Overfished/Rebuilding Thresholds

[Previously 5.3.4]

The MSST (overfished/rebuilding threshold) is the default value of 25% of the estimated unfished biomass level or 50% of B_{MSY} , if known. As described in section 5.3, the overfished/rebuilding threshold (also referred to as $B_{rebuild}$ MSST), $B_{rebuild}$, is generally in the range of 25% to 40% of $B_{unfished}$, and may also be written as

$$B_{rebuild} = x\% * \text{mean } R * \text{SPR}(F=0)$$

The default overfished/rebuilding threshold for category 1 groundfish is $0.25B_{\text{unfished}}$. The Council may establish different thresholds for any species based on information provided in stock assessments, the SAFE document, or other scientific or groundfish management-related report. For example, if B_{MSY} is known, the overfished threshold may be set equal to 50% of that amount. The Council may also specify a lower level of abundance where catch or fishing effort is reduced to zero. This minimum abundance threshold (B_{MIN}) would correspond to an abundance that severely jeopardizes the stock's ability to recover to B_{MSY} in a reasonable length of time; ~~likely values fall between five percent and ten percent of the average unfished level.~~

4.5 Ending Overfishing and Rebuilding

[New Section Title]

4.5.1 Default Precautionary and Interim Rebuilding OY Calculation

[Previously 5.3.5]

[Figure omitted here]

The precautionary threshold, defined in Section 4.4.1, is used to trigger a precautionary management approach. If biomass declines to a level that requires rebuilding (below the MSST), the precautionary management approach also provides an interim rebuilding harvest control policy to guide the setting OY until the Council sets a new rebuilding policy specific to the conditions of the stock and fishery. The default OY/rebuilding plan policy can be described as an "ICES-type catch-based approach" that consists of a modification of the catch policy, where catch (C) declines from $C(F_{\text{MSY}})$ at the precautionary threshold in a straight line to $F=0$ at the minimum abundance threshold of ten percent of the estimated mean unfished biomass (sometimes called pristine or virgin biomass or reproductive potential). This approach could also be described as an OY based on a variable F_{SPR} that is progressively more conservative at low biomass levels. The abbreviated name for this is the "40-10" default adjustment. In most cases, there is inadequate information to estimate F_{MSY} ; in such cases, the best proxy for F_{MSY} will be used. The default proxy values will be $F_{40\%}$ for flatfish and whiting, $F_{40\%/50\%}$ for rockfish in the *Sebastes* complex and $F_{35\%/45\%}$ for other species such as sablefish and lingcod. The Council anticipates scientific information about the population dynamics of the various stocks will improve over time and that this information will result in improved estimates of appropriate harvest rates and MSY proxies. Thus, these initial default proxy values will be replaced from time to time. Such changes will not require amendment to the FMP, but the scientific basis for new values must be documented.

The greater amount of catch reduction applied below the precautionary threshold will foster quicker return to the MSY level. If a stock falls below its overfished/rebuilding threshold, this line would be used as the interim rebuilding plan during the year until the Council develops a formal rebuilding plan. The point at which the line intersects the horizontal axis does not necessarily imply zero catch would be allowed, but rather is for determining the slope of the line.

In order to apply this default approach, a minimal amount of information is necessary; only stocks in Category 1 can be managed in this way. For stocks with inadequate information to apply this approach, the Council will consider other methods of ensuring that overfishing will be avoided. The Council will consider the approaches discussed in the National Standard Guidelines in developing such recommendations for stocks in Categories 2 and 3.

4.5.2 Procedures For Calculating Rebuilding Parameters

[New section title]

The Magnuson-Stevens Act and National Standard Guidelines provide a descriptive framework for developing strategies to rebuild overfished stocks. This framework identifies three parameters: a minimum time in which an overfished stock may rebuild to its target biomass (denoted T_{MIN}), a maximum permissible time period for rebuilding the stock to its target biomass (T_{MAX}), and a target year, falling within the time period represented T_{MIN} and T_{MAX} and representing the best of estimate of the year by which the stock will be rebuilt.

{From new section 4.5.3.3 (three paragraphs, reordered)} T_{MIN} , the lower limit of the specified time period for rebuilding, will be determined by the status and biology of the stock or stock complex and its interactions with other components of the marine ecosystem or environmental conditions and is defined as the amount of time that would be required for rebuilding if fishing mortality were eliminated entirely.

If the lower limit is less than ten 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 may result in the specified time period exceeding ten years (which would then constitute T_{MAX}), unless management measures under an international agreement in which the United States participates dictate otherwise.

If the lower limit is ten 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, if a stock could be rebuilt within 12 years in the absence of any fishing mortality, and has a mean generation time of eight years, the rebuilding period could be as long as 20 years, which is T_{MAX} .

The Council may consider a number of factors in determining the time period for rebuilding, including:

1. The status and biology of the stock or stock complex.
2. Interactions between the stock or stock complex and other components of the marine ecosystem or environmental conditions.
3. The needs of fishing communities.
4. Recommendations by international organizations in which the United States participates.
5. Management measures under an international agreement in which the United States participates. }--

Calculating Rebuilding Probabilities

Stock assessment results form the basis of a rebuilding analysis, which in turn is used to develop rebuilding policies and choose the rebuilding parameters identified in each rebuilding plan. The elements of rebuilding analyses are described in the SSC Terms of Reference for Rebuilding Analyses (SSC, 2001). This guidance has been incorporated into a computer program (Punt 2002). In the analysis the probability that the overfished stock will reach its target biomass is determined with respect to T_{MIN} , T_{MAX} , and T_{TARGET} . The methods for calculating the values of these parameters are described below. This is a simplified explanation of the current methodology; for example, equations and technical specifications are omitted. The SSC may revise their terms of reference in the future and the computer program undergoes continued refinement and elaboration.

The rebuilding analysis program uses “Monte Carlo simulation” to derive a probability estimate for a given rebuilding strategy. This method projects population growth many times in separate simulations. It accounts for possible variability by randomly choosing the value of a key variable—in this case total recruitment or recruits per spawner—from a range of values. These values can be specified empirically, by listing some set of historical values, or by a relationship based on a model. The SSC recommends that the rebuilding analyses use historical values. Because of this variability in a key input value, each simulation will show a different pattern of population growth. As a result, a modeled population may reach the target biomass that defines a rebuilt stock (B_{MSY}) in a different year in each of the simulations.

This technique can be used first to calculate T_{MIN} in probabilistic terms, which is defined as the time needed to reach the target biomass in the absence of fishing with a 50% probability. In other words, in half the

simulations the target biomass was reached in some year up to and including the computed T_{MIN} . Given T_{MIN} , T_{MAX} is computed as 10 years or by adding the value of one mean generation time to T_{MIN} if T_{MIN} is greater than or equal to 10 years.

After determining T_{MAX} , multiple Monte Carlo simulations are conducted, varying the fishing mortality rate. This determines the relationship between F and the probability of the stock being rebuilt by T_{MAX} (denoted P_{MAX}). Since a higher P_{MAX} probability must be achieved by lowering the fishing mortality rate (other things being equal) there is a tradeoff between fishery harvests and rebuilding speed in probabilistic terms. As fishing mortality is reduced, the likelihood that the stock will recover in this maximum time period increases.

A target year, T_{TARGET} , is then computed as the median rebuilding year for each related F and P_{MAX} . The median year is simply the year by which half of all cases have already rebuilt, and is unique for a given F and P_{MAX} .

It is important to recognize that some of the terms introduced and described above represent policy decisions at the national level and the Council **does not have a choice** in setting their values. The dates for T_{MIN} and T_{MAX} are determined based on guidelines established at the national level. Mean generation time is a biological characteristic that cannot be chosen by policymakers. Thus, the Council cannot choose these values and then use them as a basis for management. Defined in national guidelines, T_{MIN} is a consequence of the productivity of the fish stock and is calculated by fishery biologists based on information they get from a particular stock. Similarly, T_{MAX} , which is calculated from T_{MIN} , does not represent a Council choice.

Fundamentally, when developing a management strategy the Council **can** choose a fishing mortality rate and corresponding annual level of fishing. However, when rebuilding overfished species, the choice of F can be based on either the value of T_{TARGET} or P_{MAX} , keeping in mind that these three values cannot be chosen independently of one another. In other words, the Council may choose one of these values and derive the other two from it, but they cannot choose the values for two of these terms independently of the third.

4.5.3 Stock Rebuilding Requirements Plans

[Previously section 5.3.6]

As required by the Magnuson-Stevens Act, within one year of being notified by the Secretary that a stock is overfished or approaching a condition of being overfished, the Council will prepare a recommendation to end the overfished condition and rebuild the stock(s) or to prevent the overfished condition from occurring. For a stock that is overfished, the rebuilding plan will specify a time period for ending the overfished condition and rebuilding the stock. Overfishing restrictions and recovery benefits should be fairly and equitably allocated among sectors of the fishery. A new rebuilding plan or revision to an existing plan proposed by the Council will be submitted to the Secretary along with annual management recommendations as part of the regular annual management process. Once approved by the Secretary, a rebuilding plan will remain in effect for the specified duration of the rebuilding program, or until modified. The Council will make all approved rebuilding plans available in the annual SAFE document or by other means. The Council may recommend the Secretary implement interim measures to reduce overfishing until the Council's program has been developed and implemented.

Certain elements of a rebuilding plan developed by the Council, as specified in Section 4.5.3.2 (Contents of Rebuilding Plans), will be submitted to the Secretary as an FMP amendment and implementing regulations. Changes to key rebuilding plan elements will be accomplished through full (notice and comment) rulemaking. Once approved by the Secretary, a rebuilding plan will remain in effect for the specified duration of the rebuilding program, or until modified. The Council will make all approved rebuilding plans available in the annual SAFE document or by other means. The Council may recommend that the Secretary implement interim measures to reduce overfishing until the Council's program has been developed and implemented.

The Council intends its stock rebuilding plans to provide targets, checkpoints, and guidance for rebuilding overfished stocks to healthy and productive levels. ~~The rebuilding plans themselves will not be regulations but principles and policies. They are intended to should~~ provide a clear vision of the intended results and the

means to achieve those results. They will provide the strategies and objectives that regulations are intended to achieve, and proposed regulations and results will be measured against the rebuilding plans. It is likely that rebuilding plans will be revised over time to respond to new information, changing conditions, and success or lack of success in achieving the rebuilding schedule and other goals. If, in response to these revisions, the Council recommends changes to the management target for a particular stock, such changes will be published through full (notice and comment) rulemaking as described in Section 6.2 of this FMP. As with all Council activities, public participation is critical to the development, implementation and success of management programs.

4.5.3.1 Goals and Objectives of Rebuilding Plans

[Previously 5.3.6.1]

The overall goals of rebuilding programs are to (1) achieve the population size and structure that will support the maximum sustainable yield within the specified time period; (2) minimize, to the extent practicable, the adverse social and economic impacts associated with rebuilding, including adverse impacts on fishing communities; (3) fairly and equitably distribute both the conservation burdens (overfishing restrictions) and recovery benefits among commercial, recreational, and charter fishing sectors; (4) protect the quantity and quality of habitat necessary to support the stock at healthy levels in the future; and (5) promote widespread public awareness, understanding and support for the rebuilding program. More specific goals and objectives may be developed in the rebuilding plan for each overfished species.

{Moved from new section 4.5.3.2 To achieve the rebuilding goals, the Council will strive to (1) explain the status of the overfished stock, pointing out where lack of information and uncertainty may require that conservative assumptions be made in order to maintain a risk-averse management approach; (2) identify present and historical harvesters of the stock; (3) where adequate harvest sharing plans are not already in place, develop harvest sharing plans for the rebuilding period and for when rebuilding is completed; (4) set harvest levels that will achieve the specified rebuilding schedule; (5) implement any necessary measures to allocate the resource in accordance with harvest sharing plans; (6) promote innovative methods to reduce bycatch and bycatch mortality of the overfished stock; (7) monitor fishing mortality ~~and the condition of the stock at least every two years to ensure the goals and objectives are being achieved~~ and use available stock assessment information to evaluate the condition of the stock; (8) identify any critical or important habitat areas and implement measures to ensure their protection; and (9) promote public education regarding these goals, objectives, and the measures intended to achieve them.}--

4.5.3.2 Contents of Rebuilding Plans

[Previously 5.3.6.2 (corrected from 5.6.3.2)]

{Moved to new section 4.5.3.1 *To achieve the rebuilding goals, the Council will strive to (1) explain the status of the overfished stock, pointing out where lack of information and uncertainty may require that conservative assumptions be made in order to maintain a risk-averse management approach; (2) identify present and historical harvesters of the stock; (3) where adequate harvest sharing plans are not already in place, develop harvest sharing plans for the rebuilding period and for when rebuilding is completed; (4) set harvest levels that will achieve the specified rebuilding schedule; (5) implement any necessary measures to allocate the resource in accordance with harvest sharing plans; (6) promote innovative methods to reduce bycatch and bycatch mortality of the overfished stock; (7) monitor fishing mortality and the condition of the stock at least every two years to ensure the goals and objectives are being achieved (8) identify any critical or important habitat areas and implement measures to ensure their protection; and (9) promote public education regarding these goals, objectives and the measures intended to achieve them.}--*

~~The rebuilding plan will specify any individual goals and objectives including a time period for ending the overfished condition and rebuilding the stock and the target biomass to be achieved. The plan will explain how the rebuilding period was determined, including any calculations that demonstrate the scientific validity of the~~

rebuilding period. The plan will identify potential or likely allocations among sectors, identify the types of management measures that will likely be imposed to ensure rebuilding in the specified period, and provide other information that may be useful to achieve the goals and objectives.

{Moved to new section 4.5.2 *The Council may consider a number of factors in determining the time period for rebuilding, including:*

1. *The status and biology of the stock or stock complex.*
2. *Interactions between the stock or stock complex and other components of the marine ecosystem or environmental conditions.*
3. *The needs of fishing communities.*
4. *Recommendations by international organizations in which the United States participates.*
5. *Management measures under an international agreement in which the United States participates.*

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

If the lower limit is less than ten 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 may result in the specified time period exceeding ten years, unless management measures under an international agreement in which the United States participates dictate otherwise.

If the lower limit is ten 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, if a stock could be rebuilt within 12 years in the absence of any fishing mortality, and has a mean generation time of eight years, the rebuilding period could be as long as 20 years. }--

Generally, rebuilding plans will contain:

1. A description of the biology and status of the overfished stock and fisheries affected by stock rebuilding measures.
2. A description of how rebuilding parameters for the overfished stock were determined (including any calculations that demonstrate the scientific validity of parameters).
3. Estimates of rebuilding parameters (B_{unfished} , B_{MSY} , T_{MIN} , T_{MAX} , and the probability of reaching target biomass by this date, and T_{TARGET}) at the time of rebuilding plan adoption.
4. The process, and any applicable standards, that will be used during periodic review to evaluate progress in rebuilding the stock to the target biomass (see Section 4.5.3.5).
5. Any management measures the Council may wish to specifically describe in the FMP, which facilitate stock rebuilding in the specified period. (These measures would be in addition to any existing measures typically implemented through annual or biennial management. See Section 4.5.3.4 for more information.)
6. Any goals and objectives in addition to or different from those listed in the preceding section.

7. Potential or likely allocations among sectors.
8. For fisheries managed under international agreement, a discussion of how the rebuilding plan will reflect traditional participation in the fishery, relative to other nations, by fishermen of the United States.
9. Any other information that may be useful to achieve the rebuilding plan's goals and objectives.

In general, the Council will also consider the following questions in developing rebuilding plans: The following questions also serve as a guide in developing rebuilding plans:

1. What is the apparent cause of the current condition (historical fishing patterns, a declining abundance or recruitment trend, a change in assessment methodology, or other factors)?
2. Is there a downward trend in recruitment that may indicate insufficient compensation in the spawner-recruitment relationship?
3. Based on a comparison of historical harvest levels (including discards) relative to recommended ABC levels, has there been chronic over-harvest?
4. Is human-induced environmental degradation implicated in the current stock condition? Have natural environmental changes been observed that may be affecting growth, reproduction, and/or survival?
5. Would reduction in fishing mortality be likely to improve the condition of the stock?
6. Is the particular species caught incidentally with other species? Is it a major or minor component in a mixed-stock complex?
7. What types of management measures are anticipated and/or appropriate to achieve the biological, social, economic, and community goals and objectives of the rebuilding plan?

Rebuilding plan documents are distinct from the analytical documents required by the National Environmental Policy Act and other legal mandates, although they will reflect the contents of those analyses in a much briefer form. Rebuilding plan elements incorporated into the FMP (in Section 4.5.4) summarize the contents enumerated in this section. Rebuilding plans as a whole will be published in the next annual SAFE document after their approval.

{From new section 4.6 (formerly section 5.3.2) Any new rebuilding program will commence as soon as the first measures to rebuild the stock or stock complex are implemented.}--

4.5.3.3 Process for Development and Approval of Rebuilding Plans

[Formerly section 5.3.6.3]

Upon receiving notification that a stock is overfished, the Council will identify one or more individuals to draft the rebuilding plan. ~~If possible, the Council will schedule review and adoption of the proposed rebuilding plan to coincide with the annual management process.~~ A draft of the plan will be reviewed and preliminary action taken (tentative adoption or identification of preferred alternatives), followed by final adoption at a subsequent meeting. The tentative plan or alternatives will be made available to the public and considered by the Council at a minimum of two meetings, unless stock conditions suggest more immediate action is warranted. Upon completing its final recommendations, the Council will submit the proposed rebuilding plan or revision to an existing plan to NMFS for concurrence. ~~In most cases, this will be concurrent with its recommendations for annual management measures. In addition, any proposed regulations to implement the rebuilding plan will be developed in accordance with the framework procedures of this FMP. The Council may designate a state or states to take the lead in working with its citizens to develop management proposals to achieve the rebuilding. Allocation proposals require consideration at a minimum of three Council meetings, as specified in the allocation framework. Rebuilding plans will be reviewed periodically, at least every 2 years, and the~~

Council may propose revisions to existing plans at any time, although in general this will occur only during the annual management process.

NMFS will review the Council's recommendations and supporting information upon receipt and may approve, disapprove, or partially approve each rebuilding plan. The Council will be notified in writing of the NMFS decision. If NMFS does not concur with the Council's recommendation, reasons for the disapproval will be included in the notification. Once approved, a rebuilding plan will remain in effect for the length of the specified rebuilding period or until revised. Any revisions to a rebuilding plan must also be approved by NMFS following the standard procedures for considering and implementing an FMP amendment under the Magnuson-Stevens Act and other applicable law.

The following elements in each rebuilding plan will be incorporated into the FMP in Section 4.5.4:

1. A brief description of the status of the stock and fisheries affected by stock rebuilding measures at the time the rebuilding plan was prepared.
2. The methods used to calculate stock rebuilding parameters, if substantially different from those described in Section 4.5.2.
3. An estimate at the time the rebuilding plan was prepared of:
 - unfished biomass (B_{unfished}) and target biomass (B_{MSY});
 - the year the stock would be rebuilt in the absence of fishing (T_{MIN});
 - the year the stock would be rebuilt if the maximum time period permissible under National Standard Guidelines were applied (T_{MAX}) and the estimated probability that the stock would be rebuilt by this date based on the application of stock rebuilding measures; and
 - the year in which the stock would be rebuilt based on the application of stock rebuilding measures (T_{TARGET}).
4. A description of the harvest control rule (e.g., constant catch or harvest rate) and the specification of this parameter. The types of management measures that will be used to constrain harvests to the level implied by the control rule will also be described (see also Section 4.5.3.4). These two elements, the harvest control rule and a description of management measures, represents the rebuilding strategy intended to rebuild the stock by the target year.

It is likely that over time the parameters listed above will change. It must be emphasized that the values enumerated in the FMP represent estimates at the time the rebuilding plan is prepared. Therefore, the FMP need not be amended if new estimates of these values are calculated. The values for these parameters found in the FMP are for reference, so that managers and the public may track changes in the strategy used to rebuild an overfished stock. However, any new estimates of the parameters listed above will be published in the SAFE documents as they become available.

{Moved to new section 4.4.2} For Category 2 species, the following may be evaluated as potential indicators of overfishing:

- catch per effort from logbooks
- catch area from logbooks
- index of stock abundance from surveys
- stock distribution from surveys
- mean size of landed fish

If declining trends persist for more than three years, then a focused evaluation of the status of the stock, its ABC, and overfishing threshold will be quantified. If data are available, such an evaluation should be conducted at approximately five year intervals even when negative trends are not apparent. In fact, many stocks are in need of re-evaluation to establish a baseline for monitoring of future trends. Whenever an evaluation indicates the stock may be declining and approaching an overfished state, the Council should:

1. Improve data collection for this species so it can be moved to Category 1.
2. Determine the rebuilding rate that would allow the stock to return to MSY in no longer than ten years.

For Category 3 species, information from fishery independent surveys are often lacking for these species because of their low abundance or they are not vulnerable to survey sampling gear. Without an at-sea observer program, it is unlikely that a data base will be developed in the future for these species to evaluate the risk of overfishing. }--

4.5.3.4 Updating Key Rebuilding Parameters

[New heading]

In addition to an initial specification in the FMP, the target year (T_{TARGET}) and the harvest control rule (type and numerical value) will also be specified in regulations. If new information indicates a need to change the value of either of these two parameters, such a change will be accomplished through full (notice and comment) rulemaking as described in Section 6.2 of this FMP. The target year is the year by which the stock would be rebuilt to its target biomass. Therefore, if a subsequent analysis identifies an earlier target year for the current fishing mortality rate (based on the harvest control rule), there is no obligation to change in regulations either the target year (to the computed earlier year) or the harvest control rule (to delay rebuilding to the original target year). Since the target year is a key rebuilding parameter, it should only be changed after careful deliberation. For example, the Council might recommend that the target year be changed if, based on new information, they determine that the existing target year is later than the recomputed maximum rebuilding time (T_{MAX}) or if a recomputed harvest control rule would result in such a low optimum yield as to cause substantial socioeconomic impacts. These examples are not definitive: the Council may elect to change the target year because of other circumstances. However, any change to the target year or harvest control rule must be supported by commensurate analysis.

4.5.3.5 Implementation of Actions Required Under the Rebuilding Plan

[New heading, text based on portions of original section 5.3.6.3, see deleted text in new section 4.5.3.3]

Once a rebuilding plan is adopted, certain measures required in the rebuilding plan may need to be implemented through authorities and processes already described in the FMP. Management actions to achieve OY harvest, and objectives related to rebuilding requirements of the Magnuson-Stevens Act and goals and objectives of the FMP (each of which may require a slightly different process) include: automatic actions, notices, abbreviated rulemaking actions, and full rulemaking actions. (These actions are detailed in Section 4.6, Chapter 5, and Section 6.2.) Allocation proposals require consideration as specified in the allocation framework (see Section 6.2.3.1). Any proposed regulations to implement the rebuilding plan will be developed in accordance with the framework procedures of this FMP.

Any rebuilding management measures that are not already authorized under the framework of the existing FMP, or specified in the FMP consequent of rebuilding plan adoption, will be implemented by further FMP amendments. These plan amendments may establish the needed measures or expand the framework to allow the implementation of the needed measures under framework procedures.

The Council may designate a state or states to take the lead in working with its citizens to develop management proposals to achieve stock rebuilding.

4.5.3.6 Periodic Review of Rebuilding Plans

[New heading, text based on original section 5.3.6.3, see deleted text in new section 4.5.3.3]

Rebuilding plans will be reviewed periodically, but at least every two years, although the Council may propose revisions to an adopted rebuilding plan at any time. These reviews will take into account the goals and objectives listed in Section 4.5.3.1, recognizing that progress towards the first goal, to achieve the population

size and structure that will support MSY within the specified time period, will only be evaluated on receipt of new information from the most recent stock assessment. In evaluating progress towards achieving target biomass, the Council will use the standard identified in the rebuilding plan. When drafting a rebuilding plan one of the following standards, or a standard similar in kind to the following, may be chosen:

- If the probability of achieving the target biomass within the maximum permissible time period (T_{MAX}) falls below 50% (the required minimum value), then progress will be considered inadequate.
- If the probability of achieving the target biomass within the maximum permissible time period (T_{MAX}) falls below the value identified in the rebuilding plan, then progress will be considered inadequate.
- The Council, in consultation with the SSC and GMT, will determine on a case-by-case basis whether there has been a significant change in a parameter such that the chosen management target must be revised.

If, based on this review, the Council decides that the harvest control rule or target year must be changed, the procedures outlined in Section 4.5.3.3 will be followed.

4.5.3.7 Precedence of a Recovery Plan or “No Jeopardy” Standard Issued Pursuant to the Endangered Species Act

[New Section]

Like rebuilding plans pursuant to National Standard 1 in the Magnuson-Stevens Act, a recovery plan pursuant to the Endangered Species Act outlines measures for the conservation and survival of the designated species. Under Section 7 of the Endangered Species Act an agency must consult NMFS when any activity permitted, funded, or conducted by that agency may affect a listed marine species or its designated critical habitat. (In the case of fishery management actions, NMFS is both the action and consulting agency.) As part of these consultations, a biological opinion is produced describing standards that must be met when permitting or implementing the action to ensure that the action is not likely to jeopardize the continued existence of the listed species; these are referred to as “no jeopardy” standards.

Measures under a recovery plan or “no jeopardy” standards in a biological opinion will supercede rebuilding plan measures and targets if they will result in the stock rebuilding to its target biomass by an earlier date than the target year identified in the current rebuilding plan. (If expressed probabilistically, any ESA standard expressed as a combination of date and probability that constitutes a higher standard will take precedence over the equivalent target and probability in the rebuilding plan. For example, an ESA standard requiring recovery by the rebuilding plan target year, but with a higher probability, would take precedence over the rebuilding plan.) If a stock is de-listed before reaching its target biomass, the rebuilding plan will come back into effect until such time as the stock is fully rebuilt.

4.5.4 Summary of Rebuilding Plan Contents

[New heading]

[Reserved]

4.6 Determination of OY

[Previously 5.3.2.]

[The following five paragraphs comprised the entirety of the original Chapter 4.]

Optimum yield (OY) is defined in the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) as the amount of fish which will provide the greatest overall benefit to the Nation. The Magnuson-Stevens Act also specifies that OY is based on maximum sustainable yield (MSY), and may be equal to or less than MSY. The fishery management plan (FMP) authorizes establishment of a numerical

or non-numerical OY for any groundfish species or species group and lays out the procedures the Council will follow in determining appropriate numerical OY values. An OY may be specified for the fishery management area as a whole or for specific subareas. Numerical OYs will be specified annually, based on acceptable biological catches (ABCs) for major species or species groups, which are in turn based on quantitative or qualitative stock assessments. "Control rules" for determining the numerical values of OYs ensure they will not exceed the ABCs except under tightly limited conditions.

Most of the 83 species managed by the FMP have never been assessed in either a quantitative or qualitative manner. In some cases even basic catch statistics are unavailable, because many species (rockfish, for example) are not sorted unless specifically required by regulation. Species of this type have generally not been subject to numerical harvest limits, but rather harvest is limited by gear restrictions and market demand. Other management measures which determine the total amount of harvest each year include trip landing and frequency limits. Those species without a specified OY and not included in a multi-species OY will be included in a non-numerical OY, which is defined as all the fish that can be taken under the regulations, specifications, and management measures authorized by the FMP and promulgated by the U.S. Secretary of Commerce. This non-numerical OY is not a predetermined numerical value, but rather the harvest that results from regulations, specifications, and management measures as they are changed in response to changes in the resource and the fishery. In many cases, the absence of a numerical specification reflects the absence of basic management information, such as abundance estimates and catch statistics. The non-numerical OY concept allows for a variable amount of groundfish to be harvested annually, limited by such constraints as gear restrictions, management measures for other species, and/or absence of consumer acceptance or demand.

The close spatial relationship of many groundfish species throughout the management area results in commercial and recreational catches often consisting of mixtures of several species. This is especially the case in the trawl fishery where fishermen may target on one species, but unavoidably harvest several other species. In such cases, the optimum harvest strategy often is to target on a group (complex or assemblage) of groundfish species. ~~The grouping of groundfish species into multispecies numerical and non-numerical OYs provides the flexibility to manage to obtain the optimum public benefit from the groundfish fishery as a whole rather than the maximum yield from each species. In other cases, single species management may be necessary to provide adequate resource protection, bycatch controls, or equitable allocation. In such cases, the Council may determine it more appropriate to use individual species management by means of quotas, harvest guidelines, allocations by gear type, and other management measures.~~

~~Managing multiple species complexes for OY from the complex as a whole necessarily may result in some degree of overfishing or failure to allow recovery to the MSY level for some individual stocks. The Council will strive, to the extent practicable, to avoid allowing overfishing individual stocks and control harvest mortality to allow overfished stocks to rebuild or preventing a stock from recovering to the MSY level. In the event the Council determines that greater long-term benefits will be gained from the groundfish fishery by overfishing individual stocks or by preventing a stock from recovering to its MSY level, it will justify the action in writing in accordance with the procedures and standards identified in this section and the National Standard Guidelines (50 CFR 600.310(d)) in Section 5.3.6 (Stock Rebuilding) or in Section 5.5 (Annual Implementation Procedures for Specifications and Apportionments).~~ Conversely, the Council may determine that greater benefits will accrue from protecting an individual stock by constraining the multiple species complex or specific components of that complex.

Prior to implementation of the FMP in 1982, the states of Washington, Oregon, and California managed the groundfish fishery without the use of quotas. State regulations since the mid-1940s took the form of area closures (such as San Francisco Bay), legal gear definitions, minimum codend mesh regulations, size limits, bag limits, and other nonquota management measures. Implementation of the FMP built upon those historical management practices by increasing the level of catch monitoring, improving the assessment of stock conditions, and establishing other mechanisms for responding to management needs. It provides for continuation of the historical fishery on traditionally harvested groundfish species while allowing for the development of new fisheries for underutilized species. The FMP, as amended, provides for the establishment of resource conservation measures such as harvest guidelines or quotas through the annual specification procedure and annual and inseason management measures through the "points of concern" and

socioeconomic framework mechanisms.

[The remainder of new section 4.6 comprised the original section 5.3.2, except as noted.]

Reduction in catches or fishing rates for either precautionary or rebuilding purposes is an important component of converting values of ABC to values of OY. This relationship is specified by the harvest control rule. All OYs will remain in effect until revised, and, whether revised or not, will be announced at the beginning of the year fishing period along with other specifications (see Chapter 5).

Groundfish stock assessments generally provide the following information to aid in determination of ABC and OY.

1. Current biomass (~~or~~ and reproductive potential) estimate.
2. F_{MSY} or proxy, translated into exploitation rate.
3. Estimate of MSY biomass (B_{MSY}), or proxy, unfished biomass (based on average recruitment), precautionary threshold, and/or overfished/rebuilding threshold.
4. Precision estimate (e.g., confidence interval) for current biomass estimate.

4.6.1 Determination of Numerical OYs If Stock Assessment Information Is Available (Category 1)

[Heading elevated and numbered]

The Council will follow these steps in determining numerical OYs. The recommended numerical OY values will include any necessary adjustments to harvest mortality needed ~~actions~~ to rebuild any stock determined to be below its overfished/rebuilding threshold and may include adjustments to address uncertainty in the status of the stock.

1. ABC: Multiply the current fishable biomass estimate times the F_{MSY} exploitation rate or its proxy to get ABC.
2. Precautionary adjustment: If the abundance is above the specified precautionary threshold, OY may be equal to or less than ABC. If current biomass estimate is less than the precautionary threshold (Section 4.4.1), the harvest rate will be reduced according to the harvest control rule specified in ~~Section 5.3.5~~ 4.5.1 in order to accelerate a return of abundance to optimal levels. If the abundance falls below the overfished/rebuilding threshold (Section 4.4.2), the harvest control rule will generally specify a greater reduction in exploitation as an interim management response toward rebuilding the stock while a formal rebuilding plan is being developed. The rebuilding plan will include a specific harvest control rule designed to rebuild the stock, and that control rule will be used in this stage of the determination of OY.
3. Uncertainty adjustments: In cases where there is a high degree of uncertainty about the biomass estimate and other parameters, OY may be further reduced accordingly.
4. Other adjustments to OY: Adjustments to OY for ~~Other~~ social, economic, or ecological considerations may be made. ~~There will be, including reductions for anticipated bycatch mortality (i.e. mortality of discarded fish), may be made.~~ Amounts of fish harvested as compensation for private vessels participating in NMFS resource survey activities will also be deducted from ABC prior to setting OY.
5. OY recommendations will be consistent with established rebuilding plans and achievement of their goals and objectives ~~unless otherwise adjusted in accordance with section 6 below.~~
 - (a) In cases where overfishing is occurring, Council action will be sufficient to end overfishing.
 - (b) In cases where a stock or stock complex is overfished, Council action will specify OY in a manner that complies with rebuilding plans developed in accordance with Section 4.5.2. ~~a time period for~~

rebuilding the stock or stock complex that satisfies the requirements of section 304(e)(4)(A) of the Magnuson-Stevens Act.

- ~~(i) The Council will consider a number of factors in determining the time period for rebuilding:
 - ~~(1) The status and biology of the stock or stock complex.~~
 - ~~(2) Interactions between the stock or stock complex 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.~~
 - ~~(5) Management measures under an international agreement in which the United States participates.~~~~
- ~~(ii) These factors enter into the specification of the time period for rebuilding as follows:
 - ~~(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 ten 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 ten years, unless management measures under an international agreement in which the United States participates dictate otherwise.~~
 - ~~(3) If the lower limit is ten 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 twelve years in the absence of any fishing mortality, and has a mean generation time of eight years. The rebuilding period, in this case, could be as long as 20 years. **[Deleted because it duplicates provisions of section 4.5.3.]**~~~~

{To new section 4.5.3.2

- ~~(iii) Any new rebuilding program will commence as soon as the first measures to rebuild the stock or stock complex are implemented. }--~~
 - ~~(iv) Any pre-existing rebuilding plans will be reviewed to determine whether they are in compliance with all requirements of the Magnuson-Stevens Act. (Note: Only Pacific ocean perch falls into this category.) **[Deleted because there are no pre-existing rebuilding plans.]**~~
 - (c) 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.
 - (d) For any stock that has been declared overfished, the open access/limited entry allocation shares may be temporarily revised for the duration of the rebuilding period by amendment to the regulations in accordance with the normal allocation process described in this FMP. However, the Council may at any time recommend the shares specified in chapter 12 of this FMP be reinstated without requiring further analysis. Once reinstated, any change may be made only through the allocation process.
 - (e) For any stock that has been declared overfished, any vessel with a limited entry permit may be prohibited from operating in the open access fishery when the limited entry fishery has been closed.
6. Adjustments to OY could include increasing OY above the default value up to the overfishing level as long as the management still allows achievement of established rebuilding goals and objectives. In limited circumstances, these adjustments could include increasing OY above the overfishing level as long as the harvest meets the standards of the mixed stock exception in the National Standard Guidelines:
- (a) The Council demonstrates by analysis that such action will result in long-term net benefits to the Nation.
 - (b) The Council demonstrates 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.
 - (c) The resulting rate or level of fishing mortality will not cause any species or evolutionarily significant

unit thereof to require protection under the Endangered Species Act.

7. For species complexes (such as *Sebastes* complex), the OY will generally be set equal to the sum of the individual component ABCs, HGs, and/or OYs, as appropriate.

4.6.2 Determination of a Numerical OY If ABC Is Based on Nonquantitative Assessment (Category 2)

[Heading elevated and numbered]

1. ABC may be based on average of past landings, previous nonquantitative assessment, or other qualitative information.
2. Precautionary adjustments, if any, would be based on relevant information. In general, the Council will follow a risk-averse approach and may recommend an OY below ABC if there is a perception the stock is below its MSY biomass level. If a declining trend persists for more than three years, then a focused evaluation of the status of the stock, its ABC, and the overfishing parameters will be quantified. If data are available, such an evaluation should be conducted at approximately five-year intervals even when negative trends are not apparent. In fact, many stocks are in need of re-evaluation to establish a baseline for monitoring of future trends. Whenever an evaluation indicates the stock may be declining and approaching an overfished state, then the Council should:
 - a. Recommend improved data collection for this species.
 - b. Determine the rebuilding rate that would increase the multispecies value of the fishery.
3. Uncertainty adjustment: In cases where there is a high degree of uncertainty about the condition of the stock or stocks, OY may be reduced accordingly.
4. Amounts of fish harvested as compensation for industry research activities will also be deducted.
5. These adjustments could include increasing OY above the default value as indicated for Category 1 stocks, items 5 and 6 above.

4.6.3 Non-numerical OY for Stocks with No ABC Values (Category 3)

[Heading elevated and numbered]

Fish of these species are incidentally landed and usually are not listed separately in fish landing receipts. Information from fishery-independent surveys are often lacking for these stocks, because of their low abundance or they are not vulnerable to survey sampling gear. Until sufficient quantities of ~~Without an~~ at-sea observer program data are available or surveys of other fish habitats are conducted and/or requirements that landings of all species be recorded separately, it is unlikely that there a data base will be developed in the future for these stocks to sufficient data to upgrade the assessment capability capabilities or to evaluate their overfishing potential.

These species typically may be included in a non-numerical OY that is defined as all the fish that can be taken under the regulations, specifications, and management measures authorized by the FMP and promulgated by the Secretary. Such an OY may not be a predetermined numerical value, but rather that harvest that results from regulations, specifications, and management measures as they are changed in response to changes in the resource and the fishery. Nothing in this FMP prevents inclusion of these species in a numerical OY if the Council believes that is more appropriate.

(Blank)

5.0 PERIODIC SPECIFICATION AND APPORTIONMENT OF HARVEST LEVELS

The ability to establish and adjust harvest levels is the first major tool at the Council's disposal to exercise its resource stewardship responsibilities. **Each biennial fishing period**, the Council will assess the biological, social, and economic condition of the Pacific Coast groundfish fishery and update maximum sustainable yield (MSY) estimates or proxies for specific stocks (management units) where new information on the population dynamics is available. The Council will make this information available to the public in the form of the *Stock Assessment and Fishery Evaluation (SAFE)* document described in Section 5.1. Based upon the best scientific information available, the Council will evaluate the current level of fishing relative to the MSY level for stocks where sufficient data are available. Estimates of the acceptable biological catch (ABC) for major stocks will be developed, and the Council will identify those species or species groups which it proposes to be managed by the establishment of numerical harvest levels (optimum yields [OYs], harvest guidelines [HG], or quotas). For those stocks judged to be below their overfished/rebuilding threshold, the Council will develop a stock rebuilding management strategy.

The process for specification of numerical harvest levels includes the estimation of ABC, the establishment of OYs for various stocks, calculation of specified allocations between harvest sectors, and the apportionment of numerical specifications to domestic annual processing (DAP), joint venture processing (JVP), total allowable level of foreign fishing (TALFF), and the reserve. The specification of numerical harvest levels described in this chapter is the process of designating and adjusting overall numerical limits for a stock either throughout the entire fishery management area or throughout specified subareas. **The process normally occurs annually between November and June, but can occur, under specified circumstances, at other times of the fishing year.** The Council will identify those OYs which should be designated for allocation between limited entry and open access sectors of the commercial industry. Other numerical limits which allocate the resource or which apply to one segment of the fishery and not another are imposed through the socioeconomic framework process described in Chapter 6 rather than the specification process.

The National Marine Fisheries Service (NMFS) Regional Administrator will review the Council's recommendations, supporting rationale, public comments, and other relevant information; and, if it is approved, will undertake the appropriate method of implementation. Rejection of a recommendation will be explained in writing.

The procedures specified in this chapter do not affect the authority of the U.S. Secretary of Commerce (Secretary) to take emergency regulatory action as provided for in Section 305(c) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) if an emergency exists involving any groundfish resource or to take such other regulatory action as may be necessary to discharge the Secretary's responsibilities under Section 305(d) of the Magnuson-Stevens Act.

{From end of new section 5.1 This chapter describes the steps in this process.}--

5.1 General Overview of the Harvest Specifications and Management Process

[New heading inserted]

The specifications and management process, in general terms, occurs as follows:

1. The Council will determine the MSY or MSY proxy and ABC for each major stock. Typically, the MSY proxy will be in terms of a fishing mortality rate ($F_{x\%}$) and ABC will be the $F_{x\%}$ applied to the current biomass estimate. The MSY is the maximum long-term average yield expected from annual application of the MSY (or proxy) harvest policy under prevailing ecological and environmental conditions.
2. Every species will either have its own designated OY or be included in a multispecies OY. Species which are included in a multispecies OY may also have individual OYs, have individual HGs, or be included in a HG for a subgroup of the multispecies OY. Stocks without quantitative or qualitative assessment information may be included in a numerical or non-numerical OY.

3. To determine the OY for each stock, the Council will determine the best estimate of current abundance and its relation to its precautionary and overfished thresholds. If the abundance is above the precautionary threshold, OY will be equal to or less than ABC. If abundance falls below the precautionary threshold, OY will be reduced according to the harvest control rule for that stock. If abundance falls below the overfished/rebuilding threshold, OY will be set according to the interim rebuilding rule until the Council develops a formal rebuilding plan for that species.
4. For any stock or stock complex where the Secretary identifies that overfishing is occurring, the Council will take remedial action to end overfishing and prevent the stock or stock complex from falling below the minimum stock size threshold. For any stock the Secretary has declared overfished or approaching the overfished condition, or for any stock the Council determines is in need of rebuilding, the Council will implement such periodic management measures as are necessary to rebuild the stock by controlling harvest mortality, habitat impacts, or other effects of fishing activities that are subject to regulation under this biennial process. These management measures will be consistent with any approved rebuilding plan. the Council will develop a rebuilding plan and submit it in the same manner as recommendations of the annual management process. Once approved, a rebuilding plan will remain in effect for the specified duration or until the Council recommends and the Secretary approves revision.
5. The Council may reserve and deduct a portion of the ABC of any stock to provide for compensation for vessels conducting scientific research authorized by NMFS. Prior to the research activities, the Council will authorize amounts to be made available to a research reserve. However, the deduction from the ABC will be made in the year after the "compensation fishing"; the amounts deducted from the ABC will reflect the actual catch during compensation fishing activities.
6. The Council will identify stocks which are likely to be fully harvested (i.e., the ABC, OY, or HG achieved) in the absence of specific management measures and for which allocation between limited entry and open access sectors of the fishery is appropriate.
7. The groundfish resource is fully utilized by U.S. fishing vessels and seafood processors. The Council may entertain applications for foreign or joint venture fishing or processing at any time, but fishing opportunities may be established only through amendment to this FMP. This section supercedes other provisions of this FMP relating to foreign and joint venture fishing.

{To new section 5.0 *This chapter describes the steps in this process.*--}

5.2 SAFE Document

[Previously 5.1]

For the purpose of providing the best available scientific information to the Council for evaluating the status of the fisheries relative to the MSY and overfishing definition, developing ABCs, determining the need for individual species or species group management, setting and adjusting numerical harvest levels, assessing social and economic conditions in the fishery, and updating the appendices of this fishery management plan (FMP); a SAFE document is prepared annually. Not all species and species groups can be reevaluated every year due to limited state and federal resources. However, the SAFE document will in general contain the following information:

1. A report on the current status of Washington, Oregon, and California groundfish resources by major species or species group.
2. Specify and update estimates of harvest control rule parameters for those species or species groups for which information is available. **{Copied from new section 4.5, first paragraph (The Council anticipates scientific information about the population dynamics of the various stocks will improve over time and that this information will result in improved estimates of appropriate harvest rates and MSY proxies. Thus, initial default proxy values will be replaced from time to time. Such changes will not require amendment to the FMP, but the scientific basis for new values must be documented.)--}**

3. Estimates of MSY and ABC for major species or species groups.
4. Catch statistics (landings and value) for commercial, recreational, and charter sectors.
5. Recommendations of species or species groups for individual management by OYs.
6. A brief history of the harvesting sector of the fishery, including recreational sectors.
7. A brief history of regional groundfish management.
8. A summary of the most recent economic information available, including number of vessels and economic characteristics by gear type.
9. Other relevant biological, social, economic, ecological, and essential fish habitat information which may be useful to the Council.
10. A description of the maximum fishing mortality threshold (MFMT) and the minimum stock size threshold (MSST) for each stock or stock complex, along with other information the Council may use to determine whether overfishing is occurring or a stock or stock complex is overfished. {Copied from new section 4.4.3, second paragraph (The default overfished/rebuilding threshold for category 1 groundfish is $0.25B_{unfished}$. The Council may establish different thresholds for any species based on information provided in stock assessments, the SAFE document, or other scientific or groundfish management-related report.)}--
- 10: 11. A description of any rebuilding plans currently in effect, a summary of the information relevant to the rebuilding plans, and any management measures proposed or currently in effect to achieve the rebuilding plan goals and objectives.
- 11: 12. A list of annual specifications and management measures that have been designated as routine under processes described in the FMP at Section 6.2.

Under a biennial specifications and management measures process, elements 2, 5, 6, 7, and 11 would not need to be included in a SAFE document in years when the Council is not setting specifications and management measures for an upcoming biennial fishing period. The preliminary stock assessment section of the SAFE document is normally completed late in the year, generally late October, when the most current stock assessment and fisheries performance information is available and prior to the meeting at which the Council approves its final management recommendations for the upcoming **biennial fishing period**. The Council will announce the availability of make the preliminary stock assessment and fishery evaluation section of the SAFE document available to the public by such means as mailing lists or newsletters and will provide copies upon request. ~~A final~~ The fishery evaluation section of the SAFE may be prepared after the Council has made its final recommendations for the upcoming **biennial fishing period** and will include the final recommendations, an estimate of the previous year's catch, and including summaries of proposed and pre-existing rebuilding plans. ~~The final SAFE document, if prepared, will also~~ Availability will be similarly announced and copies made available upon request.

5.3 Authorization and Accounting for Fish Taken as Compensation for Authorized Scientific Research Activities.

[Previously 5.4, sections 5.2 and 5.3 moved to chapter 4.]

At a Council meeting, NMFS will advise the Council of upcoming resource surveys that would be conducted using private vessels with groundfish as whole or partial compensation. For each proposal, NMFS will identify the maximum number of vessels expected or needed to conduct the survey, an estimate of the species and amounts of compensation fish likely to be needed to compensate vessels for conducting the survey, when the fish would be taken, and when the fish would be deducted from the ABC in determining the OY/harvest guideline. NMFS will initiate a competitive solicitation to select vessels to conduct resource surveys. NMFS

will consult with the Council regarding the amounts and types of groundfish species to be used to support the surveys. If the Council approves NMFS' proposal, NMFS may proceed with awarding the contracts, taking into account any modifications requested by the Council. If the Council does not approve the proposal to use fish as compensation to pay for resource surveys, NMFS will not use fish as compensation.

Because the species and amounts of fish used as compensation will not be determined until the contract is awarded, it may not be possible to deduct the amount of compensation fish from the ABC or harvest guideline in the year that the fish are caught. Therefore, the compensation fish will be deducted from the ABC the **biennial fishing period** after the fish are harvested. During the annual specification process, NMFS will announce the total amount of fish caught during the **biennial fishing period** as compensation for conducting a resource survey, which then will be deducted from the following year's ABCs in setting the OYs.

[Section 5.5 (Determination of DAH, DAV, JVP and TALFF) deleted.]

5.4 **Biennial Implementation Procedures for Specifications and Management Measures**

[Previously 5.6]

Biennially, the Council will develop recommendations for the specification of ABCs, OYs, any HGs or quotas, and apportionments to DAH, DAP, JVP, and TALFF and the reserve over the span of **three** Council meetings. In addition during this process, the Council may recommend establishment of HGs and quotas for species or species groups within an OY.

The Council will develop preliminary recommendations at the first of **three** meetings (usually in **November**) based upon the best stock assessment information available to the Council at the time and consideration of public comment. After the first meeting, the Council will provide a summary of its preliminary recommendations and their basis to the public through its mailing list as well as providing copies of the information at the Council office and to the public upon request. The Council will notify the public of its intent to develop final recommendations at its **third** meeting (usually **in June**) and solicit public comment both before and at its second meeting.

At its second meeting, the Council will again consider the best available stock assessment information which should be contained in the recently completed SAFE report and consider public testimony before adopting final recommendations to the Secretary. Following the **second/third** meeting, the Council will submit its recommendations along with the rationale and supporting information to the Secretary for review and implementation.

Upon receipt of the Council's recommendations supporting rationale and information, the Secretary will review the submission, and, if approved, publish a notice in the *Federal Register* making the Council's recommendations available **for public comment and agency review. Following the public comment period on the proposed rule, the Secretary will review the proposed rule, taking into account any comments or additional information received, and will publish a final rule in the Federal Register, possibly modified from the proposed rule in accordance with the Secretary's consideration of the proposed rule.** {From new section 4.3.1 All ABCs, OYs, and any HGs or quotas will remain in effect until revised, and, whether revised or not, will be announced at the beginning of the year along with other specifications.}--

In the event that the Secretary disapproves one or more of the Council's recommendations, he may implement those portions approved and notify the Council in writing of the disapproved portions along with the reasons for disapproval. The Council may either provide additional rationale or information to support its original recommendation, if required, or may submit alternative recommendations with supporting rationale. In the absence of an approved recommendation at the beginning of the **biennial fishing period**, the current specifications in effect at the end of the previous **biennial fishing period** will remain in effect until modified, superseded, or rescinded.

5.5 Inseason Procedures for Establishing or Adjusting Specifications and **Management Measures**

[Previously 5.7]

5.5.1 Inseason Adjustments to ABCs

[Previously 5.7.1]

Occasionally, new stock assessment information may become available inseason that supports a determination that an ABC no longer accurately describes the status of a particular species or species group. However, adjustments will only be made during the **biennial** specifications process and a revised ABC announced at the beginning of the next **biennial fishing period**. The only exception is in the case where the ABC announced at the beginning of the **biennial fishing period** is found to have resulted from incorrect data or from computational errors. If the Council finds that such an error has occurred, it may recommend the Secretary publish a notice in the *Federal Register* revising the ABC at the earliest possible date.

5.5.2 Inseason Establishment and Adjustment of OYs, HGs, and Quotas

[Previously 5.7.2]

OYs and HGs may be established and adjusted inseason (1) for resource conservation through the “points of concern” framework described in Chapter 6; (2) in response to a technical correction to ABC described above; or, (3) under the socioeconomic framework described in Chapter 6.

Quotas, ~~except for apportionments to DAH, DAP, JVP, TALFF, and reserve,~~ may be established and adjusted inseason only for resource conservation or in response to a technical correction to ABC.

[Section 5.7.3 (Inseason Apportionment and Adjustments to DAH, DAP, JVP, TALFF, and Reserve) deleted.]

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6.0 MANAGEMENT MEASURES

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6.5.1.2 Observers

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The Regional Administrator ~~may~~ will implement an observer program through a Council-approved federal regulatory framework. Details of how observer coverage will be distributed across the West Coast groundfish fleet will be described in an observer coverage plan. NMFS will publish an announcement of the authorization of the observer program and description of the observer coverage plan in the *Federal Register*.

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13.0 REFERENCES

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Myers, R.A., N.J. Barrowman, and R. Hilborn. 2000. The Meta-analysis of the maximum reproductive rate for fish populations to estimate harvest policy; a review. Unpublished report distributed at the March 20-23, 2000, West Coast Groundfish Harvest Rate Policy Workshop sponsored by the Scientific and Statistical Committee of the Pacific Fishery Management Council.

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Punt, A.E. 2002. SSC default rebuilding analysis: Technical specifications and user manual (Version 2.0) June 2002. Unpublished report available from the Council offices.

SSC (Science and Statistical Committee). 2001. SSC terms of reference for groundfish rebuilding analyses. Pacific Fishery Management Council, Portland, April 2001, Briefing Book Exhibit F.7.