

AMENDMENT 13 TO THE COASTAL PELAGIC SPECIES FISHERY MANAGEMENT
PLAN: NATIONAL STANDARD 1 GUIDELINES, ANNUAL CATCH LIMITS AND
ACCOUNTABILITY MEASURES; SUMMARY OF ISSUES AND POTENTIAL
ALTERNATIVES

The Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 (MSRA) established several new fishery management provisions pertaining to National Standard 1 (NS1) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), which states “Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.” On January 16, 2009, the National Marine Fisheries Service (NMFS) published revised guidelines on implementing NS1 in accordance with the new MSRA requirements, which are designed to better account for scientific and management uncertainty and to prevent and end overfishing (50 CFR 660.310). The MSRA and NMFS guidelines introduce new fishery management ‘concepts,’ i.e., measures generally related to fish stock assessments and stock status determinations, including: overfishing levels (OFLs); annual catch limits (ACLs); annual catch targets (ACTs); and accountability measures (AMs). These important stipulations of the MSRA are required to be implemented by 2011 for most species and by 2010 for those species subject to overfishing. No Coastal Pelagic Species (CPS) are currently subject to overfishing or are designated as overfished. Therefore, implementation of an amended FMP and fishery regulations is planned for the 2011 fishing year.

This report was compiled by Pacific Fishery Management Council (Council) staff and members of the Coastal Pelagic Species Management Team (CPSMT). This report summarizes Council deliberations, Council Advisory Body recommendations, scoping comments, and Council staff efforts on bringing the CPS Fishery Management Plan (FMP) into compliance with the reauthorized MSA through FMP Amendment 13. The intent of the report is to inform and stimulate the discussion of Amendment 13 alternatives at the November 2009 Council meeting and is not intended to limit or constrain future development of the amendment.

This report presents a review of CPS stock classifications, stock status determination criteria, annual catch limits, accountability measures, and a proposed schedule for timely completion of Amendment 13. The CPSMT, in conjunction with the SSC and the CPS Advisory Subpanel (CPSAS), is working on the development of Amendment 13 alternatives and now seeks Council guidance at its November 2009 meeting. Amendment 13 alternatives and corresponding analyses will be developed for Council and public review in advance of the March 2010 Council meeting when the Council is scheduled to adopt a preliminary preferred alternative. Council final action on Amendment 13 is scheduled for June 2010 with full implementation in 2011.

1.0 CLASSIFICATION OF STOCKS

Stocks in the CPS FMP are classified under the following management categories: actively managed; monitored; and prohibited harvest species (Table 1-1). The CPS FMP is based on a management framework designed to react quickly to changes in the fisheries and/or stocks, with the CPSMT providing advice on classification changes in accordance with fishery/stock dynamics.

Table 1.1 Stocks managed under the CPS FMP.

Management Category	Common Name	Scientific Name
Actively Managed	Pacific sardine	<i>Sardinops sagax</i>
	Pacific (chub) mackerel	<i>Scomber japonicus</i>
Monitored	Northern anchovy Central and Northern Subpopulations	<i>Engraulis mordax</i>
	Market squid	<i>Loligo opalescens</i>
	Jack mackerel	<i>Trachurus symmetricus</i>
Prohibited Harvest	Krill or Euphausiids All West Coast EEZ Species Eight dominant species First two species are common and are the most vulnerable to fishing.	<u><i>Euphausia pacifica</i></u> <u><i>Thysanoessa spinifera</i></u> <i>Nyctiphanes simplex</i> <i>Nematocelis difficilis</i> <i>T. gregaria</i> <i>E. recurva</i> <i>E. gibboides</i> <i>E. eximia</i>

1.1 Stocks “In the Fishery”

According to NS1 guidelines (‘600.310(d)(1)), all stocks in an FMP are considered to be “in the fishery” by default, unless they are identified as ecosystem component (EC) species. All species in the fishery require specification of status determination criteria (SDC), including: OFL; maximum sustainable yield (MSY); allowable biological catch (ABC); optimum yield (OY); and most require ACLs and AMs to prevent overfishing. Stocks that exhibit annual life cycles or stocks managed under international agreements to which the United States is a party are exempt from the new measures, such as the ACL, AM, etc. requirements. It is important to note that no CPS are currently managed under international agreements, but market squid would be considered exempt, given this species’ longevity is less than one year.

Species in the actively managed category as well as market squid and northern anchovy in the monitored species category are target species and thus, would be considered “in the fishery”. The other species in the monitored category, jack mackerel, is currently targeted to a much lesser degree than the two actively managed species, but when encountered is generally retained for sale.

Regarding the krill species in the prohibited harvest category, the Council might consider a few alternative stock classifications. Harvest for krill is currently prohibited under the FMP and Federal regulation, and no directed fishery for krill existed in the West Coast Exclusive Economic Zone (EEZ) when this action was taken. Ecosystem considerations were a key element of the rationale for the prohibition and krill may be a good candidate for an EC species. However, the prohibition prevents the conceivable development of a targeted fishery in the future and this may be sufficient rational to include krill and its broad regulatory harvest prohibition as a species in the fishery.

Non-target species caught in the fishery that either are retained for sale or are overfished or subject to overfishing may also be included in the fishery. Bycatch in CPS fisheries is generally low and tends to be dominated by other CPS in the FMP. It is important to note that a more current review of bycatch in CPS fisheries may be warranted to ensure all appropriate species are included and properly classified in the FMP.

1.2 Ecosystem Component Species

The specification of EC species is optional and there are several criteria that should be met for a species to be included in the EC category (' 660.310(d)(5)(i)). These are:

- Be a non-target stock/species;
- Not be subject to overfishing, approaching overfished, or overfished and not likely to become subject to overfishing or overfished in the absence of conservation and management measures; and,
- Not generally retained for sale or personal use, although “occasional” retention is not by itself a reason for excluding a species from the EC category

Comments received during the scoping session at the March 2009 Council meeting request that the Council consider the addition of forage species not currently in the FMP as EC species (i.e., Pacific saury, myctophids, Pacific sand lance, white bait smelt, and other smelts). The intent of the request is to monitor a set of forage species and to report on their trends, status, and ecological roles, and not to develop a fishery. There is a growing interest in ecosystem-based fishery management and for the consideration of the ecological roles and interrelations of species when developing management and conservation strategies for all federally managed fisheries, not just for CPS. The Council has initiated the development of an Ecosystem Fishery Management Plan (E-FMP) and is scheduled to appoint a plan development team and advisory subpanel at the November meeting. The identification and monitoring of indicator species and the role species play in the food web are likely to be important issues for the E-FMP, which is intended as an over-arching framework for all four of the Council’s existing FMPs. The interaction of species in an E-FMP and EC species in any Council FMP along with the potential management implications of these two approaches will likely be explored.

1.3 Federal versus State Management

In recent years, the CPSMT has discussed the suite of stocks in the CPS FMP and their appropriate classification as monitored or actively managed species (e.g., moving Pacific mackerel to the monitored species category in light of multiple years of low harvest and diminished data series for assessing stock status, and potentially moving northern anchovy to the actively managed category). The CPSMT has also reviewed the science and harvest policies for market squid in recent years to determine the need, if any, to revise management. The CPSMT has informally discussed the costs and benefits of including two monitored species in the CPS FMP versus transferring management authority to the State of California. Commercial landings of market squid and jack mackerel occur almost exclusively in California and are either currently managed under a California State FMP (market squid) or have been landed at low and generally declining levels for many years (jack mackerel). There are a considerable number of research and data needs identified for the CPS FMP and focusing available science and management resources on fewer FMP stocks may have benefits. Given the need to review stock classifications and reference points for Amendment 13, exploring Federal versus State management of CPS FMP stocks could be prudent at this time.

Market Squid

The market squid fishery has been managed solely by California in accordance with the CPS FMP, and State management has changed considerably since the inception of the CPS FMP.

California state legislation transferred authority to market squid to the California Fish and Game Commission (Commission) in 2001. In 2005, the Commission adopted a State Market Squid FMP (MSFMP), the environmental documentation, and the implementing regulations. The goals of the MSFMP are to provide a framework that will be responsive to environmental and socioeconomic changes and to ensure long-term resource conservation and sustainability.

The tools implemented to accomplish these goals include: (1) setting a seasonal catch limit of 107,048 mt (118,000 st) to prevent the fishery from over-expanding, (2) maintaining monitoring programs designed to evaluate the impact of the fishery on the resource, (3) continuing weekend closures that provide for periods of uninterrupted spawning, (4) continuing gear regulations regarding light shields and wattage used to attract squid, (5) establishing a restricted access program that includes provisions for initial entry into the fleet, permit types, permit fees, and permit transferability that produces a moderately productive and specialized fleet, and (6) creating a seabird closure restricting the use of attracting lights for commercial purposes in any waters of the Gulf of the Farallones National Marine Sanctuary. Under this framework, the MSFMP provides the Commission with specific guidelines for making management decisions. The Commission has the ability to react quickly to changes in the market squid population off California and implement management strategies without the need for a full plan amendment. The MSFMP framework structure was also designed to achieve the goals and objectives of the California Marine Life Management Act and to be consistent with the management outlined in CPS FMP Amendment 10.

Market squid provide forage, and it is well recognized that market squid population levels fluctuate significantly with environmental conditions. This, coupled with effective State fishery management, may make market squid a candidate as a management or indicator species in the Council's developing E-FMP rather than a monitored stock under the CPS FMP.

Jack Mackerel

Until 1999, jack mackerel were managed under the Council's groundfish FMP. There is no evidence of significant exploitation of this species on the Pacific coast of North America, and accordingly, there have not been regular stock assessments or efforts to collect biological information. Currently, most landings of jack mackerel are incidental to Pacific sardine and Pacific mackerel in California; however, pure landings do occur sporadically. Jack mackerel appear to be an underexploited stock that could be effectively managed at the State level. Alternatively, jack mackerel may be a candidate as an EC species although it is not clear whether current landing levels, although low, meet the intent of "occasional retention" in the criteria for the EC category.

1.4 Stock Classification Alternatives

Regarding stocks in the fishery, it appears straight-forward that actively managed and monitored species should be specified as stocks in the fishery. The Council may recommend for the purpose of analysis the alternate treatments of krill as prohibited harvest species in the fishery, or EC species for which harvest is prohibited. The Council may also recommend that the CPSMT

review the list of bycatch species in CPS fishery for their potential inclusion in the fishery or in the EC category.

Regarding the EC category, for the purpose of analysis, the following might serve as a reasonable range of alternatives.

- No EC species,
- Only those bycatch species in CPS fisheries, if any, that meet the criteria for EC classification,
- Include bycatch and/or additional forage species for monitoring.

How the last alternative dovetails with an E-FMP could be analyzed under this amendment process, through the development of the E-FMP, or both.

Regarding CPS FMP stocks and State management, the Council may recommend the analysis of alternative treatments of market squid, jack mackerel, or other species as State rather than CPS FMP managed species, as EC species, as species for potential inclusion in the Council’s E-FMP, or as a combination of these approaches.

2.0 STOCK STATUS DETERMINATION CRITERIA AND REFERENCE POINTS

The National Standard 1 Guidelines identify reference points (see Table 2-1 below) that must be specified for stocks “in the fishery,” which will likely include FMP species in the actively managed and monitored categories and may include krill in the prohibited harvest category. As noted above, market squid are exempt from ACL and AM requirements because of their annual life cycle, but MSY, OY, and SDCs must nevertheless be specified for these stocks.

Table 2-1 Required reference points for stocks in the fishery.

Maximum Sustainable Yield (MSY) <i>600.310(e)(1)</i>	The largest long-term average catch or yield that can be taken from a stock or stock complex under prevailing ecological, environmental conditions and fishery technology characteristics (e.g., gear selectivity)
Optimum Yield (OY) <i>600.310(e)(3) and (e)(3)(iv)</i>	A decisional mechanism to address MSA and FMP objectives. OY definition(s) must account for the need to prevent overfishing. A long-term average amount of desired yield that accounts for economic, social, and ecological factors - an FMP must contain ACLs and AMs to achieve OY. See (e)(3)(iii) and (iv) for factors to be considered in determining OY.
Status Determination Criteria (SDC): <i>600.310(e)(2)</i>	The FMP must describe which one of two methods will be used to determine overfishing status: (1) $F > MFMT$ or reasonable proxy or (2) $Catch > OFL$;
Maximum Fishing Mortality Threshold (MFMT)	The level of fishing mortality (F), on an annual basis, above which overfishing is occurring
Overfishing Limit (OFL)	Annual amount of catch that corresponds to the estimate of MFMT applied to a stock or stock complex’s abundance expressed in terms of numbers or weight of fish

Table 2-1 Required reference points for stocks in the fishery.

Minimum Stock Size Threshold (MSST)	The level of biomass below which the stock or stock complex is considered overfished
Acceptable Biological Catch (ABC) / ABC Control Rule <i>600.310(f)</i>	ABC is a level of a stock or stock complex's annual catch that accounts for the scientific uncertainty in the estimate of OFL and any other scientific uncertainty and should be based on the ABC control rule. ABC control rule means a specified approach to setting ABC for a stock or stock complex as a function of the scientific uncertainty in the estimate of OFL and any other scientific uncertainty. Councils should develop a process for receiving scientific information and advice used to establish ABC including the body that will apply the ABC control rule (calculate the ABC) and the review process. The SSC must recommend the ABC to the Council.
Annual Catch Limit (ACL); mechanisms for specifying ACLs <i>600.310(f)</i>	The level of annual catch of a stock or stock complex that serves as the basis for invoking AMs. ACL cannot exceed ABC but may be divided into sector-specific ACLs.
Accountability Measures (AMs) <i>600.310(g)</i>	Management controls to prevent ACLs from being exceeded and to correct or mitigate overages of the ACL if they occur. There are two categories: inseason AMs and AMs for when the ACL is exceeded.
Annual Catch Target (ACT) (optional) <i>600.310(f)(6) & (g)(2)</i>	An optional AM. An amount of annual catch that is the management target of the fishery, and accounts for management uncertainty in controlling catch at or below the ACL.

Under the CPS FMP, an MSY control rule is defined to be a harvest strategy that provides biomass levels at least as high as the F_{MSY} (fishing mortality rate that maximizes catch biomass in the long term) approach while also providing relatively high and consistent levels of catch.

The use of an MSY control rule for actively managed stocks is designed to provide managers with a tool for setting and adjusting harvest levels on a periodic basis, while preventing overfishing and overfished stock conditions. All actively managed stocks must have stock-specific MSY control rules, a definition of overfishing, and a definition of an overfished stock (see Table 2-2).

The main use of an MSY control rule for a monitored stock is to help gauge the need for active management. MSY control rules and harvest policies for monitored CPS stocks may be more generic and simpler than those used for actively managed stocks. Under the FMP, any stock supporting catches approaching the ABC or MSY levels should be actively managed unless there is too little information or other practical problems.

Table 2-2. Existing CPS FMP specifications for Status Determination Criteria

	MSY	MFMT	MSST	ABC (serves as OFL)	OY
Pacific sardine	MSY control rule	Catch exceeding ABC	50,000 mt	Equal to MSY control rule calculation	Currently at or below MSY
Pacific (chub) mackerel	MSY control rule	Catch exceeding ABC	18,200 mt	Equal to MSY control rule calculation	Currently at or below MSY
N. anchovy Northern Subpop.	Unknown	Catch exceeding ABC	Not specified	25% of MSY Catch level (unknown)	Unknown
N. anchovy Southern Subpop.	Estimated at 123,000 mt	Catch exceeding ABC	Not specified	25% of estimated MSY or 31,000mt 26,000mt in U.S.	26,000mt
Market squid	F _{MSY} resulting in egg escape-ment \geq 30%	F _{MSY} resulting in egg escape-ment \leq 30%	Not specified	F _{MSY} resulting in egg escape-ment \geq 30% mt	107,047mt
Jack mackerel	Age/Area based potential yield	Catch exceeding ABC	Not specified	48,000mt 31,000mt in U.S.	31,000mt
Krill or Euphausiids	Not specified	Catch over de minimus or trace amounts	Not specified	Not specified	0

As noted above, the reference points in table 2-1 must be specified for all of the species in the fishery except that market squid is exempt from ACL and AM requirements. Current reference points for monitored species are designed to trigger active management well before a stock experiences overfishing or is designated as overfished. Under active management, stock status would be assessed, reference points addressed, and management measures implemented as necessary. To comply with the revised NS1 guidelines, all existing reference points for stocks in the fishery will be reviewed and developed where currently insufficient (e.g., MSST for monitored stocks and an MSY proxy for the northern subpopulation of northern anchovy).

The default MSY control rule for monitored stocks sets the ABC at 25 percent of estimated MSY levels making it more conservative than the MSY control rules for actively managed species for which more data and more current assessments exist. This approach is similar to “tiered” approaches used in North Pacific Fishery Management Council FMPs and the Council’s Groundfish FMP where harvest specifications and reference points differ for categories or tiers of species based on the amount and quality of data that is available for management. This approach could be explored further for CPS with the development of a tier system for determining alternative proxy reference points for these species according to what is known about their current status, productivity, and vulnerability to fishing pressure.

2.2 Overfishing Levels and Acceptable Biological Catch

The NS1 guidelines envision OFL to correspond to the best available estimate of MSY stock size. The guidelines also call for an assessment of scientific uncertainty in the estimate of MSY and the development of an ABC control rule that addresses scientific uncertainty and management risk when setting an ABC level below the OFL.

The CPSMT has proposed that the MSY control rules for actively managed species could serve as an adequate buffer to account for scientific uncertainty as it explicitly and significantly reduces harvest as biomass approaches an overfished condition, or in the case of Pacific sardine as biomass approaches a level three times the current designation of MSST. The Scientific and Statistical Committee (SSC) has not supported this approach stating that the MSY control rules “were selected to maximize long-term yield given variation in recruitment (an MSY control rule).”

The harvest control rule for actively managed species.

$$\text{HARVEST} = (\text{BIOMASS} - \text{CUTOFF}) \times \text{FRACTION} \times \text{DISTRIBUTION}$$

where:

FRACTION is the fraction of the BIOMASS above the CUTOFF value that can be harvested, for Pacific sardine this is an environmental driven component that is based on sea surface temperature.

DISTRIBUTION is the percentage of the stock assumed to be in U.S. waters.

CUTOFF is the estimated biomass below which directed harvest is not allowed. If the CUTOFF is greater than zero, then the harvest rate (H/BIOMASS) declines as biomass declines. By the time BIOMASS falls as low as CUTOFF, the harvest rate is reduced to zero. The CUTOFF provides a buffer for the spawning stock that is protected from fishing and available for use in rebuilding if a stock becomes overfished. CUTOFF may alone serve as an adequate buffer between OFL and ABC to prevent overfishing while providing long-term yield.

Determining the degree to which the provisions in the existing harvest control rules adequately buffer CPS stocks from overfishing will be a critical step in ensuring the amended CPS FMP meets the new NS1 requirements. The SSC Groundfish and CPS Subcommittees are working on the development of a framework for factoring scientific uncertainty into harvest control rules. They have recommended quantifying assessment variability for stocks with a history of multiple assessments as a basis for evaluating the size of a scientific uncertainty buffer (i.e., the difference in yield between the OFL and the ABC) and the risk of overfishing the stock. SSC recommendations will be brought forward at the November meeting.

To illustrate the role of the CUTOFF values, the role of scientific uncertainty, and the application of management risk in choosing an ABC control rule, the Council may recommend a range of alternatives that compares simulated long-term stock status and management performance under the existing control rules, under an SSC recommended ABC control rule that accounts for scientific uncertainty, or a combination of both. The Council reviewed a similar simulation approach when choosing the existing control rules and a contemporary simulation could be informative in the development of an ABC control rule. Simulations that include an analysis of

various harvest policies and their potential impact on the ecological roles of forage species would also be valuable to the development of alternative harvest control rules.

2.3 Annual Catch Limits and Accountability Measures

Annual catch limits serve the basis for invoking accountability measures and corresponds to OY. In the CPS framework for actively managed species this is often referred to as the harvest guideline (HG) for the directed fishery. ACLs may be set at the ABC level or below the ABC level for OY considerations (social, economic, or ecological, factors). For the relatively data-poor stocks in the monitored category, the Council could recommend a tiered system (see Section 2.0) for the development of reference points including ACLs for these species, which in most cases have not been assessed in recent years and are unlikely to be assessed in time for this amendment.

Sector Specific ACLs

The NSI guidelines allow for sector specific ACLs and recommend their use if a stock is targeted by multiple fishery sectors, each with their own level of monitoring and inseason management. The California live bait fishery may be a candidate for a sector specific portion of the overall annual catch limits. This fishery is small but important and supplies bait fish primarily for recreational vessels. The fishery is not actively monitored or managed inseason, but landings are estimated at the end of the year. The Council may wish to include an alternative that establishes a sector-specific ACL and corresponding ACT for the live bait fishery that takes this less intensive management strategy into consideration. Another alternative could be to consider the small landings in the live bait fishery as an AM.

Under the current management regime, the Council has been in the practice of setting aside a portion of the Pacific mackerel and the Pacific sardine HGs for the purpose of protecting other CPS fisheries that may land these species incidentally after their respective directed fisheries close. The Council may recommend an alternative that considers the incidental fishery as a sector and sets a specific ACL for this purpose. Another approach that would be within the scope of the existing management strategies would be to set aside a portion of an ACT to cover incidental landings.

In 2009, the Council and NMFS set aside a portion of the Pacific sardine HG to cover fish landed during an industry-sponsored aerial research project under an exempted fishing permit (EFP). This too may be an area where the Council might explore the use of a sector specific ACL focused on research applications and/or EFPs. As with incidental set-asides, an alternate approach could be to set aside a portion of the ACT to cover planned research.

2.4 Annual Catch Targets

Annual catch targets are optional reference points designed to account for management uncertainty when setting target levels below ACLs. Good inseason management of CPS fisheries exists through catch monitoring, and the fishery can be closed quickly by NMFS through an automatic regulatory action. However, several aspects of CPS fisheries warrant the consideration of ACTs.

The HG for the directed Pacific sardine fishery has been declining in recent years and has created a derby-style fishery. This has increased the rate at which the seasonal HGs are taken and added additional management uncertainty. The Council has recently begun setting aside portions of the

Pacific sardine and Pacific mackerel HGs to account for “management uncertainty” and this proactive approach could be included as an ACT alternative for Amendment 13.

Under the NS1 guidelines catch is defined to include mortality associated with fishery discards. Discards do occur in CPS fisheries when a vessel captures more fish than can be brought onboard or when a school of an undesirable species composition is captured and then released. There is limited observer and logbook data available to enumerate the mortality associated with these discards. To meet the NS1 requirements and account for total mortality in the catch, a consideration of discard mortality when setting an ACT could be analyzed as an alternative.

2.5 Additional Accountability Measures

As touched on in previous sections, several pre-season and in-season accountability measures exist in the CPS fisheries. In March, under the scoping period for this amendment, the CPSMT and the CPSAS recommended several ways to improve the in-season monitoring and management of CPS fisheries. Recommended actions for consideration include:

- Improving in-season management flexibility to open or close the fishery faster by revising reporting requirements (e.g., processors faxing information daily), setting daily trip limits, and opened/closed days, and
- Exploring a shift in the start date of the Pacific sardine fishery from January 1 to July 1 to allow additional time for stock assessment work and the development of new fishery-independent indices of abundance.

Council direction at the time was to focus efforts on those aspects of Amendment 13 that are required to be in place by 2011 and only address these improvements to the FMP as time and workload allows. The CPSMT will continue to proceed with this approach unless Council guidance on this matter changes at the November meeting.

3.0 PROPOSED AMENDMENT SCHEDULE

No CPS FMP stocks are subject to overfishing or are designated as overfished. Therefore, implementation of an amended FMP and fishery regulations is targeted for the 2011 fishing year. The Council is scheduled to review a range of amendment alternatives and adopt a preliminary preferred alternative at its March 2010 meeting. Final Council action is scheduled for the June 2010 Council meeting to allow for full implementation by 2011.

Table 3-1 Proposed Timeline for CPS FMP Amendment 13

Stage	Date
Council Announces Scoping -Initiates FMP Amendments	March 2009
Potential alternatives for draft FMP Amendment	November 2009
Adopt Preliminary Preferred Alternative for Public Review	March 2010
Final Council Action	June 2010
Secretarial Approval	January 2011
Changes in Existing Fishing Regulations	2011