

Amendment 13
To the Fishery Management Plan for the
Scallop Fishery off Alaska

(1) In Section 1.1 Amendments to the Fishery Management Plan, add *Amendment 13: Annual Catch Limits*.

Amendment 13: Annual Catch Limits.

In October 2010, the Council adopted Amendment 13 to (1) revise the maximum sustainable yield and optimum yield to include all fishing mortality; (2) specify that the overfishing limit equals the maximum sustainable yield in the absence of a statewide estimate of spawning biomass for weathervane scallops; (3) specify an acceptable biological catch control rule to account for uncertainty in the overfishing limit; (4) set the annual catch limit equal to the acceptable biological catch; (5) specify accountability measures; and (6) create an ecosystem component category for non-target scallop species. NMFS approved Amendment 13 on XX,XX, 2011.

(2) Revise Chapter 3, Section 3.1.1.2 Specification of OY and Overfishing to read:

3.1.1.2 Specification of Maximum Sustainable Yield, Optimum Yield, and Overfishing Limit

The following ~~definitions~~ **reference points are specified for weathervane scallops are based on in accordance with** the national standard 1 guidelines (50 CFR 600.310).

Maximum Sustainable Yield (MSY). MSY is the largest long-term average catch or yield that can be taken from a stock or stock complex under prevailing ecological and environmental conditions. The long-term average stock size obtained by fishing year after year at this rate under average recruitment may be a reasonable proxy for the MSY stock size, and the long-term average catch so obtained **is considered** ~~may be~~ a reasonable proxy for MSY.

MSY for weathervane scallops is 1.284 million lbs. (~~582~~ 562.46 metric tons) of shucked **meats** ~~adductor muscles~~. MSY ~~was~~ **is** estimated based on the average **retained** catch from 1990 to 1997, (1995 data **is** not included as **the** fishery was closed most of the year), which ~~was~~ **is** 1,240,000 lbs. (562.46 metric tons) of shucked meats, **plus an amount equivalent to estimates of the additional fishing mortality during the 1990—1997 period (excluding 1995). Additional fishing mortality includes discard mortalities from the directed scallop fishery, the groundfish fisheries, and total mortality from agency surveys.**

The time period from 1990 to 1997 reflects prevailing ecological conditions. The fishery was fully capitalized during this time period, and all areas of the state ~~were~~ where scallops could be harvested were being exploited. Prior to that time period, vessels moved into and out of the scallop fishery, in part in response to economic opportunities available in other fisheries (Shirley and Kruse, 1995). However, since 1993, the fishery has been somewhat limited by crab bycatch limits, closure areas, and season length. As a consequence, a stable period during the history of

this fishery does not exist. MSY estimation by averaging catches is problematic, however, a better solution does not exist at this point.

MSY Control Rule (F_{MSY}). The MSY control rule is a harvest strategy which, if implemented, would be expected to result in a long-term average catch approximating MSY. ~~The MSY control rule establishes a maximum fishing mortality threshold (MFMT), which may be expressed either as a single number or as a function of spawning biomass or other measure of productive capacity. The MFMT is set at the fishing mortality rate or level associated with the relevant MSY control rule. Exceeding the MFMT for a period of 1 year or more constitutes overfishing.~~

In choosing an MSY control rule, ~~the~~ Councils ~~should be~~ **is** guided by the characteristics of the fishery, the FMP's objectives, and the best scientific information available. In any MSY control rule, a given stock size is associated with a given level of fishing mortality and a given level of potential harvest, where the long-term average of these potential harvests provides an estimate of MSY. The MSY control rule is based on natural mortality, using the estimate of $M = 0.13$, the MSY control rule F_{MSY} equals M , or $F_{MSY} = 0.13$. ~~No control rule for spiny, pink, or rock scallops is recommended at this time.~~

MSY Stock Size (B_{MSY}). The MSY stock size is the long term average size of the stock or stock complex, measured in terms of spawning biomass or other appropriate units, associated with the production of MSY. It is the stock size that would be achieved under an appropriate MSY control rule. It is also the minimum standard for a rebuilding target when remedial management action is required.

As noted earlier, MSY for weathervane scallops is established at 1.284 million lbs. (~~582 562.46~~ metric tons) of shucked **meats adductor-museles**. Therefore, MSY stock size is estimated as $MSY/M = 9.54$ ~~87~~ million lbs. (~~4,477 326.6~~ mt) of shucked meat biomass. In terms of whole animals (including shells and gurry) B_{MSY} would be ~~98.7 95.4~~ million lbs. (~~44,760 43,273~~ mt), as expanded by a product recovery rate of 10%. This assumes that the stock was at B_{MSY} and that catches were at MSY during 1990—1997 **period**, and that the logistic equation holds.

Minimum Stock Size Threshold (MSST). ~~The minimum stock size threshold (MSST),~~ to the extent possible, should equal whichever is greater: one half the MSY stock size, or the minimum stock size at which rebuilding to the MSY level would be expected to occur within 10 years if the stock or stock complex were exploited at the maximum fishing mortality threshold. Should the actual size of the stock or stock complex in a given year fall below MSST, the stock or stock complex is considered overfished. The MSST should be expressed in terms of spawning biomass or other measure of reproductive capacity. Based on the national standard guidelines, a MSST for weathervane scallops is established based on $\frac{1}{2}$ MSY stock size = $\frac{1}{2} B_{MSY} = 4.93$ ~~4.77~~ million lbs. (~~2,236 2,163.7~~ mt) of shucked **meats adductor-museles**.

Overfishing Control Rule ($F_{overfishing}$). The national standard guidelines define the terms “overfishing” and “overfished” to mean a rate or level of fishing mortality that jeopardizes the capacity of a fishery to produce MSY on a continuing basis. ~~The~~ **Overfishing rate** is established for weathervane scallops ~~stocks~~ as a fishing rate in excess of the natural mortality rate. Hence, $F_{overfishing} = M = 0.13$.

Overfishing Limit (OFL). The OFL will be used to determine if overfishing occurs in a given year. Overfishing occurs if the total catch exceeds the OFL. If an estimate of the statewide weathervane scallop spawning biomass is available, the overfishing control rule would be applied to that estimate of spawning biomass to determine the OFL. In the absence of an estimate of the statewide weathervane scallop spawning biomass, the default OFL is the MSY of 1.284 million lbs. (582 mt) of shucked meats.

Optimum Yield (OY). Optimum yield should be established on the basis of MSY. OY is upper bounded by $MSY = F_{MSY} * B_{MSY} = M * B_{MSY}$ (=1.284 1,240,000 million lbs. or 582 562.46 mt.). Hence, a numerical range for OY of 0—1.284 1,240,000 million lbs. (582 562.46 mt) can thus be is established for Alaska weathervane scallops. Because MSY cannot be estimated for the other scallop species, OY cannot be quantified for rock scallops, pink scallops, or spiny scallops. Sufficient conservatism is built into establishing an annual OY cap of 1.284 1,240,000 million lbs. (582 562.46 mt) of shucked meats for the following reasons:

1. the years of averaging include years when no fishing occurred in the Bering Sea, but obviously some sustainable harvest was possible;
2. the period of averaging includes other areas and years when the harvest was constrained by fishery controls, such as recently by bycatch PSCs, and therefore the resulting catch underestimates the productivity of scallop stocks;
3. substantial areas are closed to scallop dredging due to concerns about bycatch, yet these areas have substantial productivity;
4. closed areas can almost be thought of as marine refuges and potential yields from these areas are not factored into MSY estimates;
5. there are years during the history of the fishery when effort was low due to market (not abundance) conditions;
6. $F_{30\%}$ is probably a better estimator of $F_{\text{overfishing}}$ than is $F=M$; yet $M < F_{30\%}$, so the overfishing rule is conservative; and
7. In years of good recruitment, the stocks are likely greater than B_{MSY} , thus we will fish at $F < F_{\text{overfishing}}$ to achieve $OY = MSY$ (recall $MSY = F_{MSY} * B_{MSY}$, so if $B > B_{MSY}$, then $F < F_{MSY}$).

In the future, better quantitative estimates of appropriate weathervane scallop biomass yields by area may be generated using assessment surveys and stock assessment models based on observer data analysis. Additional information on biomass and long-term potential yield of pink, spiny and rock scallops also may be available in the future. At such time, MSY and OY would be re-estimated and the FMP amended.

Acceptable biological catch (ABC). The ABC is a level of annual catch of a stock that is set below the OFL and accounts for the scientific uncertainty in the estimate of OFL and any other scientific uncertainty. The maximum ABC is calculated from the ABC control rule. Annually, the Council's Scientific and Statistical Committee will set a statewide ABC for the weathervane scallop fishery prior to the beginning of the fishing season. The Scientific and Statistical Committee may set an ABC lower than the maximum ABC, but it must provide an explanation for setting the ABC below the maximum ABC.

ABC Control Rule. The ABC control rule is the specified approach for setting the maximum ABC for weathervane scallops. The ABC control rule calculates a statewide maximum ABC at 90 percent of the OFL, which provides a 10 percent buffer to account for scientific uncertainty in the estimation of the OFL.

Lacking a stock assessment model, the sources of scientific uncertainty in the weathervane scallop OFL estimate are not directly quantifiable at this time. The 10 percent buffer incorporates scientific uncertainty and limits the risk of overfishing occurring in the weathervane scallop fishery.

Annual catch limit (ACL). The ACL is the level of annual catch of a stock that serves as the basis for invoking accountability measures. For weathervane scallops, the ACL will be set equal to the ABC. Measures to ensure accountability with the ACL are described in section 3.2 of this FMP.

(3) Revise Section 3.2.1 Setting harvest limits to read:

3.2.1 Setting harvest limits

The FMP authorizes the State of Alaska to set guideline harvest ranges (GHRs) **and guideline harvest levels (GHLs)** under State regulations. ~~Although the term GHRs and GHLs are harvest limits that~~ corresponds closely to the ~~term~~ total allowable catch (TAC) used in groundfish FMPs for the Gulf of Alaska and Bering Sea and Aleutian Islands Management Areas.;

GHRs are hard caps established in State of Alaska regulations for each registration area and are not to be exceeded. ~~GHRs are expressed as ranges while TACs are not; the term GHR is used in this FMP in lieu of TAC because it corresponds with the State's management program.~~ Each year, the sum of upper end values of the scallop GHRs established for each fishing area will fall within the OY range specified in this FMP.

GHLs are pre-season targets set for each fishing area (registration area, district, or statistical area) prior to each season. The State establishes the annual GHL for each scallop management area at a level sufficiently below the ACL so that total catch (directed fishery removals plus all fishery discard mortality) does not exceed the ACL. As an accountability measure, if an ACL is exceeded, the overage will be accounted for through a downward adjustment to the GHL for the following fishing season by an amount sufficient to remedy the biological consequences of the overage.

In scallop Registration Areas D (Yakutat), E (Prince William Sound), H (Cook Inlet), K (Kodiak), M (Alaska Peninsula), Q (Bering Sea), O (Dutch Harbor), and R (Adak), ~~GHRs~~ **GHLs** are established by ADF&G each year prior to the opening of the fishing season. Scallop seasons are not opened in Area A (Southeastern Alaska). ~~Specifying~~ **Specifying** harvest limits in terms of ranges allows the State to make inseason management decisions based on observer data obtained from the fishery as it occurs. Areas or parts of areas may be closed before the upper end of the ~~GHL~~ **GHR** is reached due to concerns about fishery performance, bycatch rates, or localized depletion.

In Scallop Registration Areas K, M, O, Q, and R, ADF&G also establishes crab bycatch limits (CBLs) for red king crab and Tanner crab species each year prior to the season. Scallop fishing is closed in any area where these limits are attained regardless of the amount of scallops harvested. Bycatch of crab and other prohibited species is closely monitored by ADF&G in all fishing areas of the state. **GHRs and GHLs** are the result of a process which includes evaluation of the effects of different harvest levels on the seven objectives of management listed previously in this FMP; however, **GHRs and GHLs** will most frequently be used as management measures to achieve the first two objectives. The first concern in setting **GHRs and GHLs** is to prevent overfishing.

Because the maintenance of adequate reproductive potential takes precedence over economic and social considerations, the upper end of the GHR serves as an upper bound constraint on harvest. Economic benefits such as profits, personal income, employment, benefits to consumers, and less tangible or less quantifiable social benefits such as the economic stability of coastal communities, are considered secondarily to the prevention of overfishing. GHRs reflect uncertainty in stock status and in estimates of socioeconomic benefits.

The process of setting appropriate **GHRs and GHLs** which prevent overfishing and maximize socioeconomic benefits includes collection and analysis of biological, economic, social, and other data. Available information on scallop resources in Alaska's different registration areas varies in quantity and in quality, and consequently, procedures for determining **GHRs and GHLs** vary as well. Data collected through the State's onboard observer program, which requires 100% coverage outside of Cook Inlet, is a mainstay of information for **GHR and GHL** analyses. NMFS and the Council will, to the extent possible, coordinate with ADF&G in the establishment of **GHRs, GHLs**, and CBLs that are consistent with current Federal and State regulations. **GHRs, GHLs**, and CBLs will apply to both Federal and State waters, so that scallop fisheries in each registration area are managed as a cohesive unit.

GHRs, GHLs, and CBLs are periodically reviewed by the Council to assure compliance with this FMP, the Magnuson-Stevens Fishery Conservation and Management Act, and all applicable federal laws. This FMP authorizes the commercial harvest of scallops species listed in Chapter 4.0 of this plan. It is prohibited for a person to take or retain scallops in any registration area unless the season for that species within those waters is open. It is prohibited for a person to possess, purchase, barter, sell, or transport scallops if that person knows or has reason to know that such shellfish were taken or possessed in contravention of this FMP.

(4) Revise Section 3.2.2 Guideline Harvest Ranges (GHRs) to read:

3.2.2 Guideline Harvest Levels Ranges (GHLsRs)

Annual scallop **GHL** ~~GHRs~~ will be specified by registration area for the time period extending from July 1 through June 30 of the following year. Official announcements on **GHL** ~~GHRs~~ will be available to the public approximately one month prior to season openings.

(5) Revise Section 3.2.5 Inseason Adjustments to read:

3.2.5 Inseason Adjustments

The State may make inseason adjustments to ~~the GHLs~~ ~~GHRs~~, fishing seasons, bycatch limits, and may close areas in State and Federal waters to scallop fishing. In making such adjustments, the State may consider all available data on factors such as: (1) overall fishing effort; (2) catch per unit effort and rate of harvest; (3) rate of bycatch; (4) relative scallop abundance; (5) attainment of the upper end of GHRs or bycatch limits; (6) general information on stock condition; (7) timeliness and accuracy of catch reporting; and (8) other factors that affect the State's ability to meet objectives of the FMP.

All inseason adjustments will be recorded and justified in writing. These justifications are attached to the emergency order and will be made available to the public.

(6) Revise Section 4.3 Description of Stocks and Fishery to read:

4.3 Description of Stocks and Fishery

This FMP covers all scallop stocks off the coast of Alaska including weathervane scallops *Patinopecten caurinus*, rock scallops *Crassadoma gigantea*, pink scallops *Chlamys rubida*, spiny scallops *Chlamys hastata*, *Chlamys behringiana*, and *Chlamys albida*.

Weathervane scallops are “in the fishery” as they are targeted and retained for commercial sale. Rock scallops and the *Chlamys* species are managed under this FMP as Ecosystem Component (EC) species in section 4.3.5.

(7) Add a new section, 4.3.5 Ecosystem Component.

4.3.5 Ecosystem Component

Rock scallops and the *Chlamys* species are non-target scallops and classified as EC species. The following factors were considered, per the National Standard 1 Guidelines, in classifying these non-target species as an EC species:

- (A) These scallop species are not the target of commercial exploitation or retention by commercial fisheries;
- (B) None of the non-target scallop species are generally retained for sale or personal use;
- (C) The best available scientific information indicates that none of the non-target scallop species are overfished or subject to overfishing; and
- (D) The best available scientific information indicates that none of the non-target stocks are likely to become subject to overfishing or overfished in the absence of conservation and management measures.

In accordance with NS 1 Guidelines, reference points and status determination criteria are not specified for the EC species. However, these species are monitored to ensure they are not targeted and that incidental catch does not reach a point where there are concerns for the sustainability of these stocks. Evaluation of EC species bycatch in the weathervane scallop fishery occurs annually through the existing Stock Assessment and Fishery Evaluation (SAFE) report process. The SAFE report annually summarizes best available scientific information on EC species.

Before a commercial fishery for an EC species could occur in Federal waters, the FMP must be amended to move an EC species in to the fishery for targeted commercial fishing and specify biological reference points for that species.