



FACT SHEET: ANNUAL CATCH LIMITS AND OTHER MANAGEMENT MEASURES

The Magnuson-Stevens Act requires annual catch limits and other management thresholds for all actively managed stocks and stock complexes. The terms and reference points used in the Pacific Council’s harvest management frameworks are described below. More detailed information on the groundfish harvest management framework can be found in the Groundfish Stock Assessment and Fishery Evaluation document found at <http://tinyurl.com/y7wjzsm3>.

MAXIMUM SUSTAINABLE YIELD

A long-term average yield usually estimated in a stock assessment

Maximum sustainable yield (MSY) is the maximum catch that can be harvested from a fishery on a continuing basis under prevailing conditions. If a stock or stock complex is harvested on a continuing basis at MSY (corresponds to “fishing mortality at MSY,” denoted by F_{MSY}), its abundance will approach a long-term average biomass (“biomass at MSY,” or B_{MSY}), at which it will fluctuate.

MSY, F_{MSY} and B_{MSY} should be estimated for each actively managed stock based on the best scientific information available. When there is not enough quality data to make good estimates, or when there is great uncertainty in these estimates, these values are assumed using “proxies.” Proxy F_{MSY} and B_{MSY} reference points are currently used for all West Coast groundfish stocks.

OPTIMUM YIELD

Considers the overall benefit to the nation, including economic factors

Optimum yield (OY) is the long-term average amount of fish that will provide the greatest overall benefit to the nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems. OY is prescribed on the basis of the MSY from the fishery, as reduced by any relevant economic, social, or ecological factor. In other

words, OY is the amount of *desired* yield from a stock, complex, or fishery. The OY cannot exceed the MSY, and must be achieved while preventing overfishing. If a fishery is already overfished, the OY must provide for rebuilding to a level consistent with producing the MSY. Councils must specify OYs in their fishery management plans.

OVERFISHING LIMIT

The most fish that can be caught in a year without overfishing

The overfishing limit (OFL) is the maximum amount of a stock that can be caught in a year without resulting in overfishing. Groundfish OFLs for assessed stocks are

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- MSY Maximum sustainable yield. A long-term average yield usually estimated in a stock assessment.
- OY Optimum yield. Long-term average amount of *desired* yield from a stock, complex, or fishery. OY considers overall benefits to the nation, including economic factors.
- OFL Overfishing limit. Best estimate of the maximum amount of a stock that can be caught in a year without resulting in overfishing.
- ABC Acceptable biological catch. An annual catch level that considers scientific uncertainty.
- ACL Annual catch limit. The amount of fish that can be harvested annually.
- AM Accountability measure(s). Measures to ensure a harvest stays within its ACL.
- ACT Annual catch target. A target that accounts for management uncertainty.
- HG Harvest guideline. A harvest target for a sector or sectors, a region, or any other subset of the fishery for any particular fishing season.

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typically determined by multiplying the estimated abundance of the exploitable biomass of a stock by the F_{MSY} harvest rate. There are also methods for determining OFLs for unassessed stocks. Setting OFLs is a scientific (as opposed to policy) determination made by the Scientific and Statistical Committee (SSC). OFLs are set for every actively managed stock or stock complex.

ACCEPTABLE BIOLOGICAL CATCH

Measures scientific uncertainty

The acceptable biological catch (ABC) is an annual catch level recommended by the SSC based on the OFL. The ABC considers the uncertainty in estimating the OFL and, under the Pacific Coast Groundfish Fishery Management Plan, is always less than the OFL. An annual catch limit cannot exceed the ABC. In general, the more scientific uncertainty there is in estimating the OFL, the bigger the difference between the ABC and OFL.

An ABC *control rule* is a specified approach to calculate the ABC for a stock. It is established by the Council with advice from its SSC. The SSC's recommendation for ABC should be based on the control rule, although exceptions are allowed if they are well-justified. The P* ABC control rule is the most common ABC rule used by the Pacific Council (see details below).

P* [P- STAR] AND σ [SIGMA]: THE RISK OF OVERFISHING

P* (the probability of overfishing) is a value that equates to the risk of exceeding the OFL. A high P* of 0.5 means there is a 50% risk of overfishing and, when applied to set the ABC, determines an ABC equal to the OFL (which is not allowed for Council-managed groundfish). A low P* of 0.1 means a 10% risk of overfishing.

The ABC buffer is calculated by applying the P* to a biomass variance (σ); high sigmas coupled with low P*s determine larger ABC buffers. The SSC determines the sigma, which varies by the category of stock. Stocks are categorized by the level of uncertainty in determining the OFL; higher sigmas are specified for stocks with greater uncertainty. The P* value is a policy determination made by the Council reflecting their preferred level of risk tolerance in setting an overall harvest level for the stock or stock complex. The highest P* allowed

for groundfish is 0.45.

ANNUAL CATCH LIMIT

The total catch limit for an actively managed stock or stock complex

The annual catch limit (ACL) is the amount of total catch (i.e., landings + discard mortalities) specified for an actively-managed stock or stock complex. The ACL can be set equal to or less than the ABC. The ACL accounts for all sources of fishing-related mortality including catches in research activities. The Council sets the ACL based on conservation concerns (e.g., rebuilding objectives), socioeconomic considerations, ecological considerations, and/or the preferred level of risk in harvesting the stock or stock complex. Inseason management of the fishery is done to prevent exceeding an ACL, including early closure of the fishery, if inseason catch monitoring projects early attainment of an ACL.

ACCOUNTABILITY MEASURES

Ensure harvest stays within an ACL

Accountability measures are management controls that prevent ACLs from being exceeded. They can also correct an overage (over-harvest) of an ACL if it occurs.

Accountability measures fall into two categories: inseason catch monitoring and fishery adjustments, and other measures specified before the start of a fishing season to reduce the risk of exceeding an ACL.

Inseason adjustments are restrictions that can be put in place during the fishing season and are designed to keep a catch limit from being exceeded. They are usually short-term and can include seasonal adjustments, trip or bag limits, area closures, or temporary closure of the fishery.

Accountability measures can also be triggered if an ACL is exceeded. These are restrictions put in place to address the cause of the initial overage and prevent it from happening again. They can involve modifications to management measures decided during a fishing season (i.e., inseason adjustments) or precautionary management measures (e.g., annual catch targets) specified for the following fishing season to account for the previous season's catch overage.

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ANNUAL CATCH TARGET

A management target accounting for management uncertainty

The annual catch target (ACT) is an accountability measure and is the amount of annual catch of a stock or stock complex that is the **management target** of the fishery. A stock or stock complex's ACT, when specified, is less than the ACL and is either sector-specific (i.e., a sector's allocation of the ACL) or a catch level less than the ACL to account for management uncertainty. Designation of an ACT is not required under the Magnuson-Stevens Act.

HARVEST GUIDELINE

A season's harvest

Harvest guideline is another accountability measure and is a harvest target for a sector or sectors, a region, or any other subset of the fishery for any particular fishing season. Harvest guidelines are used to allocate the allowable harvest of a stock or stock complex by time, area, or sector as needed to provide equitable and sustainable harvest opportunities to affected fishing sectors and fishing communities.

SUMMARY

All U.S. fisheries have a similar harvest management framework in place. The Pacific Council describes its harvest management framework in Amendment 16 of the salmon fishery management plan, Amendment 9 of the coastal pelagic species fishery management plan, Amendment 23 of the groundfish fishery management plan, and Amendment 2 of the highly migratory species fishery management plan.

Success in preventing overfishing also requires keeping management and scientific uncertainty in the measurements to a minimum. As scientific information improves, scientific uncertainty decreases. As reporting of catches becomes more accurate, and fishery controls become more effective, management uncertainty also decreases with less need for specifying accountability measures.

Compiled from several sources, including "Preventing Overfishing," a website developed by NOAA (www.preventoverfishing.com).

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