SCIENTIFIC AND STATISTICAL REPORT ON FISHERY MANAGEMENT PLAN
AMENDMENT 16, ANNUAL CATCH LIMITS AND ACCOUNTABILITY MEASURES

Mr. Chuck Tracy briefed the Scientific and Statistical Committee (SSC) on outstanding issues related to Amendment 16. The SSC discussed two related issues: time spans for computing overfishing and rebuilding, and the use of arithmetic versus geometric mean abundances when applying Status Determination Criteria (SDC).

In our September 2010 review of Amendment 16, the SSC recommended "…the SDC be based on three-year geometric means as they will be less subject to random error (noise) in the estimation and evaluation process." This statement was based on the original one- and three-year options. The arithmetic mean was not suggested at that time.

Salmon abundance often varies widely from year to year. Chinook salmon year-classes are spread over three to five years, while coho salmon have three largely independent brood cycles. Averaging abundance over a three-year period captures abundance patterns on a scale that is biologically appropriate. As the SSC previously stated, it also reduces annual "flip-flops" in status that could result from high interannual variability. The Salmon Amendment Committee (SAC) provided retrospective analysis of several options for SDCs in their August 2010 draft document. The SSC recommends adding these one- and three-year options to the retrospective analysis.

Salmon abundance over time follows a log-normal distribution. The geometric mean is appropriate for describing the most likely value of such distributions. It is most sensitive to low values. For salmon abundance distributions the arithmetic mean will generally be higher than the geometric mean, and more than half the observations will be below the arithmetic mean. High values have most influence on the arithmetic mean.

Choice of which mean to use will affect how often stocks are defined as overfished, and levels needed to be declared recovered, with the geometric mean being more precautionary. A retrospective analysis would aid in understanding the implications of the two means, especially in combination with one- and three-year time frames.

PFMC
11/05/10