



New England Fishery Management Council

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**To:** Paul J. Howard, Executive Director  
**From:** Dr. Steve Cadrin, Chairman, Scientific and Statistical Committee  
**Date:** September 23, 2009

**Subject: Red Crab Acceptable Biological Catch (ABC)**

The Scientific and Statistical Committee (SSC) was asked to 1) review the information provided by the Red Crab Plan Development Team and 2) develop recommendations specifying acceptable biological catch (ABC) for the 2010 fishing year, as well as the ABC control rule for future years. On August 11 and September 16 2009, the SSC reviewed several sources of information and associated presentations by the Red Crab Plan Development Team (PDT):

1. Memo from PDT to SSC on recommendations for OFL, ABC, OY, ACL and Target TAC.
2. Discussion document to guide PDT Recommendations for MSY, OFL, ABC, OY, ACL and Target TAC – from Red Crab PDT Chair, Dick Allen to Red Crab PDT.
3. Report Deep Sea Red Crab prepared for the Northeast Data Poor Stocks Working Group Meeting, Woods Hole, MA, December 8-12, 2008. (Chute A., Jacobson L. and Rago P.)
4. Report by the Peer Review Panel for the Northeast Data Poor Stocks Working Group, Woods Hole, MA, January 20, 2009. Thomas Miller, Chair, Robert Muller, Bob O’Boyle and Andrew Rosenberg
5. Copy of presentation by Toni Chute on the 2009 Data Poor Stocks Workgroup assessment of red crab
6. Comments on Data Poor Working Group Report for Red Crab submitted by PDT member R. A. Wahle
7. Wahle, R.A. 2003. Revealing stock-recruitment relationships in lobsters and crabs: is experimental ecology the key? *Fisheries Research* 65: 3-32.
8. Haefner, P.A. 1977. Reproductive biology of the female deep-sea red crab, *Geryon quinquidens*, from the Chesapeake Bight. *Fishery Bulletin* 75: 91-102.

The SSC endorses the range of Maximum Sustainable Yield proxies from the 2008 Data Poor Stocks Working Group (DPSWG) as the best science available for the overfishing limit (OFL). According to the DPSWG Peer Review Report, “The panel found no reason to change the overfishing definition of catch>MSY” and “The review panel concluded that, using the best available scientific information, estimates of MSY for male crabs only was in the range of 1700-1900 mt.” Several approaches to approximating MSY were reviewed by the DPSWG. The OFL recommendation by the Peer Review Panel was based on long-term average landings and depletion-adjusted average catch, both of which had technical problems associated with inaccurate catch statistics, low catches influenced by market conditions, assuming constant stock biomass despite evidence of an increase, or assumed stock-recruit relationship. The MSY proxy is highly uncertain and should be reevaluated. Therefore, the SSC concludes that there is insufficient information to derive an ABC control rule. The SSC encourages fishery participants to be involved in data collection and

continued cooperative research to improve the information available for stock assessment and fishery management.

Given the data-poor nature of the stock assessment, the SSC derived an interim ABC on the basis of status quo catch. The exploitation history of the resource appears to be sustainable. The 2003-2005 survey indicated increased abundance of all crab categories, except large males as compared to the 1974 survey. Although the average size of male crabs decreased from 1974 to 2003, the 1974 survey was at the beginning of the fishery, some decrease in size structure should be expected, and there is no indication that the decrease in average size results from an unsustainable fishery. Landings in 2010 were 1,284 mt, which is 68-76% of the approximate OFL. This magnitude of catch provides a 24% to 32% buffer between OFL and ABC, which is consistent with general guidance on buffers for data-moderate to data-poor stocks.

The SSC would prefer to base the ABC recommendation on a longer series of recent catch (e.g., the average catch from 2002-2007, the most reliable series of catch statistics). However, this magnitude of catch is at the upper end of the range of approximate values of OFL recommended by the DPSWG. Given that there should be a substantial buffer between OFL and ABC for data-poor stocks, an ABC based on the 2002-2007 average landings would contradict the DPSWG advice. Therefore, the SSC recommendation is for an interim ABC that is based on 2007 landings until a better estimate of OFL can be determined.

**The SSC recommends that:**

- 1. The overfishing limit (OFL) for red crab is approximated as 1,700-1,900 mt based on long-term average landings and depletion-adjusted average catch analyses from the 2008 Data Poor Stocks Working Group. However, both approaches to deriving OFL have technical problems that should be addressed to improve the basis of catch advice.**
- 2. Interim Acceptable Biological Catch (ABC) of red crab for 2010 is 1,284 mt based on 2007 landings until the OFL estimate is reevaluated.**
- 3. Improvement of fishery and resource monitoring information is needed to derive estimates of MSY reference points and an ABC control rule.**