

= 0.98 kg/tow), would serve as a biomass threshold. B_{MSY} could not be reliably estimated for black sea bass.

Biological reference points for black sea bass were addressed at the NEFSC Data Poor Workshop held in December 2008. The panel of experts reviewed the findings of the working group and recommended abandoning the previous reference points in favor of new metrics based on the results of a statistical catch at length model. As part of the revised model, the natural mortality of the stock was assumed equal to 0.4 rather than the previously used 0.2. The Panel recommended an F_{MSY} proxy of $F_{40\%}$, estimated with the new model to be $F = 0.42$, and a related SSB_{MSY} proxy of 12,537 mt.

METHODS

Fisheries Dependent Data

Since annual age information was unavailable, a length based model (SCALE developed by Paul Nitschke of the NEFSC) was explored as a method for evaluating sea bass (NEFSC 2009). SCALE data input includes catch history, survey indices, recruitment indices, growth information, survey length frequencies and catch length frequencies (Figure 3). The updated model covers the period 1968 to 2008 based on the times series of NEFSC spring offshore surveys.

Commercial length frequencies were compiled beginning with samples in 1984. Sampling was done randomly by market categories and expanded as the ratio of sample weight to total landings, by calendar quarter. Black sea bass were culled as small, medium, large, jumbo or unclassified. In the rare cases where fish were categorized as extra small and extra large, they were combined with small and large, respectively. Total annual length measurements have ranged from 300 to 7,768 with an average of 2,956 per year (Table 3).

Annual commercial landings were determined from the NEFSC and state data. In recent years, the predominant gear type for back sea bass has been fish pots, otter trawls and handline. Landings between 1996 and 2006 averaged 1,326 mt, however following quota reductions landings in 2007 declined to 1,016 mt and continued in 2008 to 850 mt. Commercial discards were estimated since 1989 using a standard approach developed for national standardized by-catch reporting. (Wigley et al., 2008). Observer samples were limited to otter trawl trips since 1989. Discard estimates were developed from the ratio of discarded black sea bass in mt to total

