

Black Sea Bass Projections V

Prepared by NMFS Southeast Fisheries Science Center

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1 Description of projections

This report describes black sea bass projections requested in a memorandum dated 13 November 2012 from David Cupka to Dr. Bonnie Bonwith (Appendix). In these projections, fishing mortality rates in 2011 and in 2012 were set to provide the observed level of landings, and in subsequent years, F was set equal to F_{rebuild} . Here, F_{rebuild} is defined to be the maximum fishing mortality rate that allows rebuilding in 2016 with probability of 0.625.

The first year of new management in these projections is 2013. Because the terminal year of the SEDAR25 assessment was 2010, these projections required as input the levels of total landings in 2011 and 2012. The 2011 landings were estimated to be 1,047,688 lb whole weight, as documented in the report titled, "Black Sea Bass Projections IV," dated 29 May 2012. However, the estimates of landings in 2012 are currently either preliminary or incomplete. For these projections, these landings were estimated from various sources as follows:

General recreational — The 2012 general recreational landings were obtained by querying the MRIP website (accessed 20 November 2012). The query was for A+B1 landings in weight (lb) and did not include any headboat landings. The 2012 estimate, listed on the website as preliminary, was 378,252 lb.

Headboat — Estimates of 2012 headboat landings were available from the Southeast Regional Headboat Survey database only through June. Consequently, these estimates would not have included a substantial amount of landings between June and the recreational closure in September. Instead, the 2012 headboat landings were estimated by multiplying the 2012 general recreational landings by the current ratio of headboat landing to general recreational landings. This current ratio (0.57) was estimated as the geometric mean of ratios from 2009 (0.59), 2010 (0.55), and 2011 (0.57). Thus, the 2012 headboat landings were estimated to be $378,252 \times 0.57 = 215,604$ lb whole weight.

Commercial — The 2012 commercial landings were obtained from the SERO quota monitoring website. (accessed 20 November 2012). This estimate included values from January through May 2012, as well as the value for the 2012-2013 fishing year. Those values were converted from gutted to whole weight using the relationship, $WW=1.18GW$. The 2012 commercial landings were estimated to be 366,494 lb whole weight.

Total 2012 landings — The total 2012 landings was estimated to be the sum of landings from the general recreational, headboat, and commercial fleets, as described above. This total was 960,350 lb whole weight.

2 Results

With 2011 landings (whole weight) equal to 1,047,688 lb and 2012 landings equal to 960,350 lb, $F_{\text{rebuild}}=0.33$ allows rebuilding in 2016 with probability of at least 0.625 (Figure 1, Table 1).

3. Comments on projections

As usual, projections should be interpreted in light of the model assumptions and key aspects of the data. Some major considerations are the following (reproduced verbatim from the assessment report):

- In general, projections of fish stocks are highly uncertain, particularly in the long term (e.g., beyond 5–10 years).
- Although projections included many major sources of uncertainty, they did not include structural (model) uncertainty. That is, projection results are conditional on one set of functional forms used to describe population dynamics, selectivity, recruitment, etc.
- Fisheries were assumed to continue fishing at their estimated current proportions of total effort, using the estimated current selectivity patterns. New management regulations that alter those proportions or selectivities would likely affect projection results.
- The projections assumed that the estimated spawner-recruit relationship applies in the future and that past residuals represent future uncertainty in recruitment. If future recruitment is characterized by runs of large or small year classes, possibly due to environmental or ecological conditions, stock trajectories may be affected.
- Projections were based on the calendar year because they are extensions of the assessment model. A shift in the fishing year relative to calendar year may introduce some unquantified disconnect between projection results and management implementation. However, if quotas are reached each year prior to December 31, as might be expected, all fishing mortality within a fishing year would also occur within the same calendar year.
- Projections apply the Baranov catch equation to relate F and landings using a one-year time step, as in the assessment. The catch equation implicitly assumes that mortality occurs evenly throughout the year. This assumption is violated when seasonal closures are in effect, introducing additional and unquantified uncertainty into the projection results.
- The 2011 landings were expected to exceed the quota, but at the time of this assessment, the degree of overage is unknown. When that information becomes available, projections may need revision, as results were sensitive to 2011 landings in the L_{rebuild} and F_{rebuild} scenarios. Revised

projections might additionally account for any Accountability Measures implemented in response to exceeding the 2011 quota.

This current set of projections addresses uncertainty in the 2011 overage, as described in the last bullet above. However, it does not include effects of any Accountability Measures.

Because the values used to estimate the 2012 landings come from preliminary or incomplete data, the estimate is likely lower than the actual level of 2012 landings. For example, in-season monitoring of commercial landings (as reported on the SERO website) is based on incomplete data, and typically in the past these values have been underestimates of the actual landings. If the 2012 landings used here are indeed underestimated, these projections are more optimistic (higher landings in 2013—2016) than they would be if the actual level were used.

