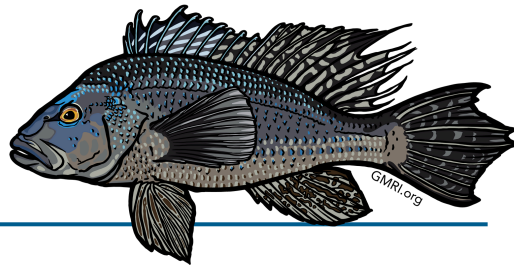
Measuring Quality: Black Sea Bass Shelf Life



Experimental Design

Trial 1:

- Gear: Pot
- Handling: Whole (6 fish)
- Duration: 8 days
- Notes: Kept on ice onboard. Fish were collected the following day at a processing facility and kept in a cooler with ice at a private residence. The air temperature became very hot (80-90F) and there was not enough ice available for use.

Trial 2:

- Gear: Rod and Reel
- Handling: Ike Jime (3 fish) and Whole (3 fish)
- Duration: 20 days
- Notes: Kept onboard in a cooler with ice. Three of these fish had the ike jime method performed on them (brain spike to kill fish quickly) and three fish were kept whole.

Data collection using the CQR and QIM methods continued until fish either reached a minimum quality score or reached a state of degradation that impeded analysis. As fish were not filleted or consumed at any point, the duration of the trial does not represent the shelf life of marketable product, but when fish reached their lowest recorded quality.

Methods of Measuring Quality

Certified Quality Reader (CQR): Hand held device that runs a small electrical current through fish tissue to measure resistance and signs of good/bad quality; higher numbers indicate higher quality.

Quality Index Method (QIM): Visual/physical assessment of fish characteristic categories (e.g. color, firmness, smell, etc), based on a demerit point system. A lower total number indicates higher quality. Characteristics and possible points vary for different species.

Temperature data: Tracked storage temperature with digital loggers in the coolers.

Takeaways

- Maintaining a low temperature below 40F (32 F in the experiment) doubled shelf life.
- Temperature abuse can rapidly decrease shelf life. Even chilling fish at what might be considered lower temperatures, between 40-50 degrees (F), resulted in a faster decrease in shelf life.
- Using the ike jime method quadrupled shelf life compared to Trial 1.
- More research involving filleted product would be needed to understand the difference in the edible, marketable shelf life of these different handling methods.

For more details on this experiment with this species and results on quality experiments with a range of other species, visit gmri.org/quality.

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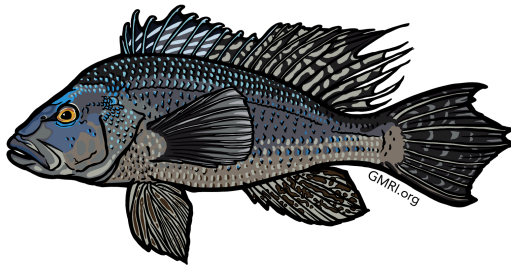
Key Results



Trial 1

- Storage temperatures remained at 40-50 F.
- QIM scoring started at 3 points (indicating relatively high quality) and reached the lowest quality measurement (15 points) after 7 days.

Trial 2:

- Storage temperature maintained at 32 F.
- Whole fish QIM score started at 0 (indicating the highest possible quality) and reached the lowest quality measurement (18 points) after 20 days.
- Ike jime method fish QIM score started at 0 (indicating the highest possible quality) and reached the lowest quality measurement (12 points) after 20 days.

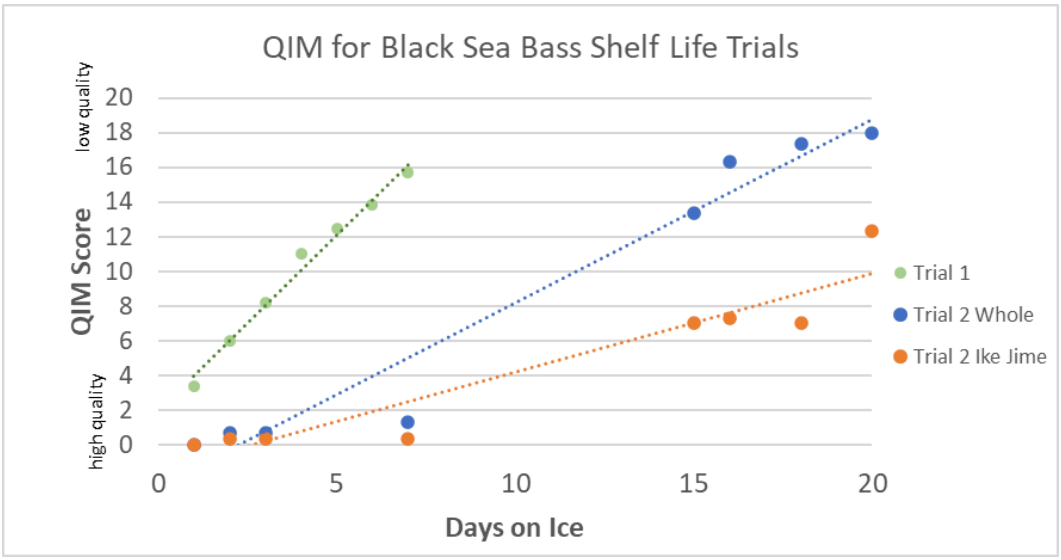
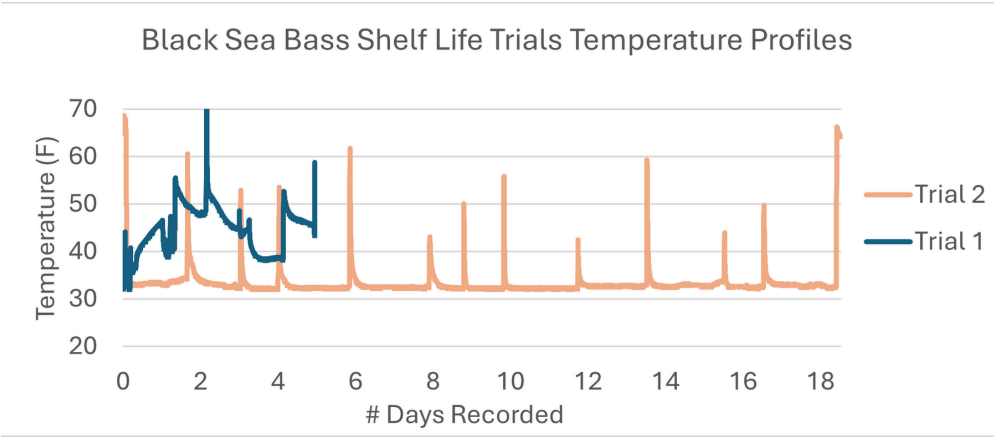


Figure 1. Quality Index Method (QIM) results for black sea bass shelf life Trial 1 (green line), Trial 2 with fish kept whole (blue line) and Trial 2 fish killed with ike jime (orange line). The colored dots represent data points recorded during the trials and the dotted lines are the trend line for each group of data points.

Figure 2. Temperature loggers were placed in coolers with the fish during Trial 1 (blue line) and Trial 2 (orange line). Loggers recorded once every 3 minutes. Temporary spikes in temperature represent when loggers were removed from the coolers to record quality data, so do not necessarily represent the temperature experienced by the fish.



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