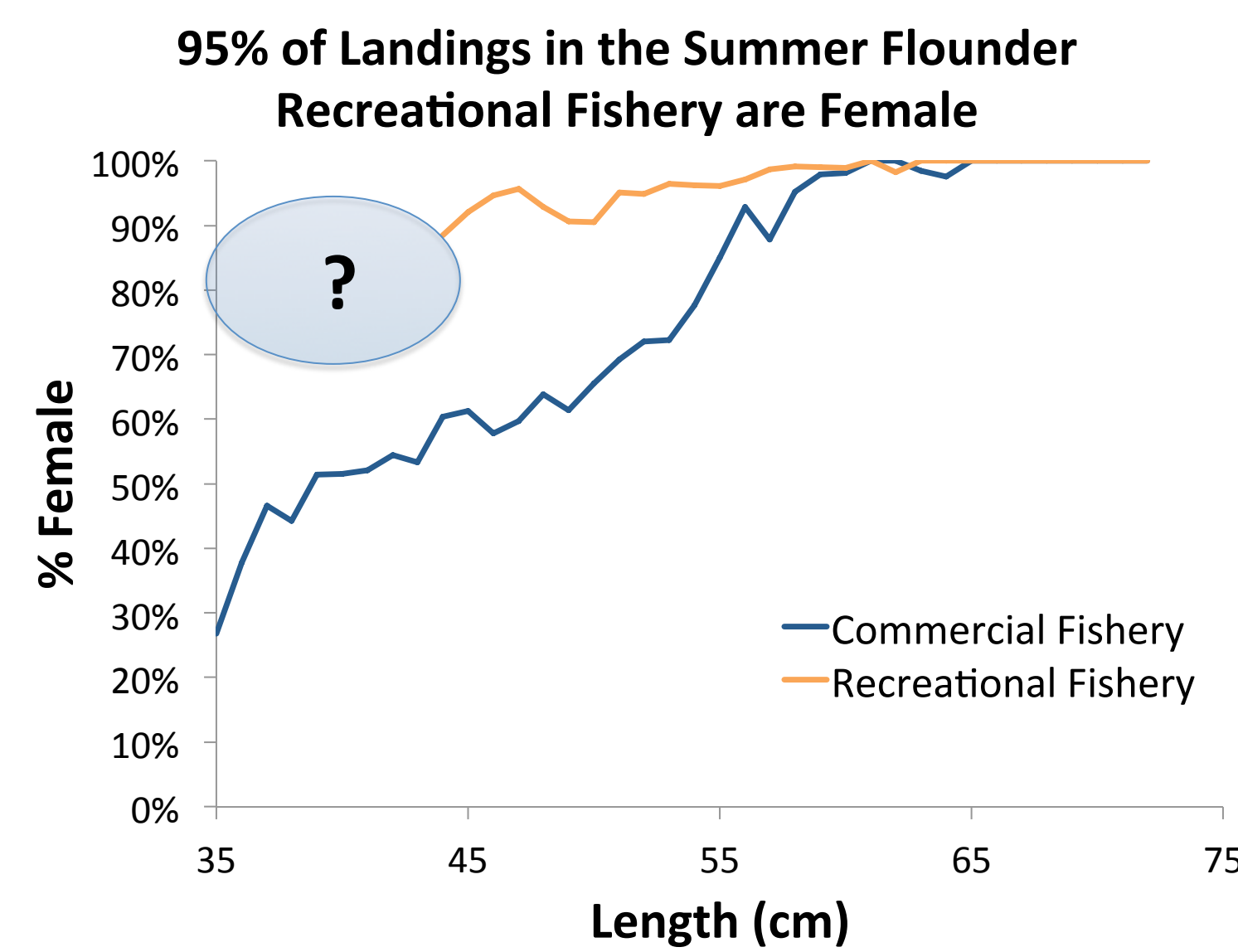


Evaluating The Potential For A Sex-Balanced Harvest Approach In The Recreational Summer Flounder Fishery

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Background



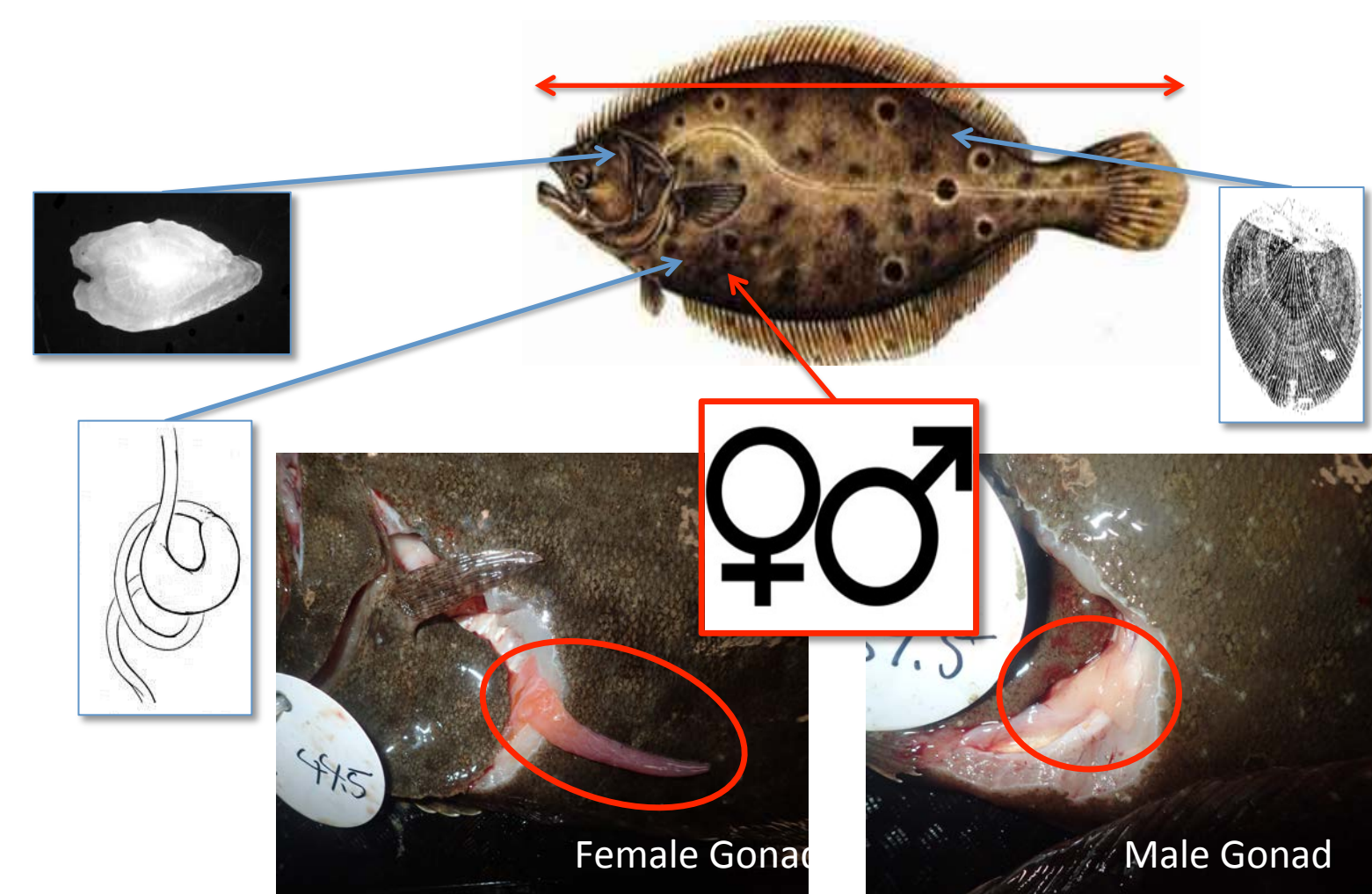
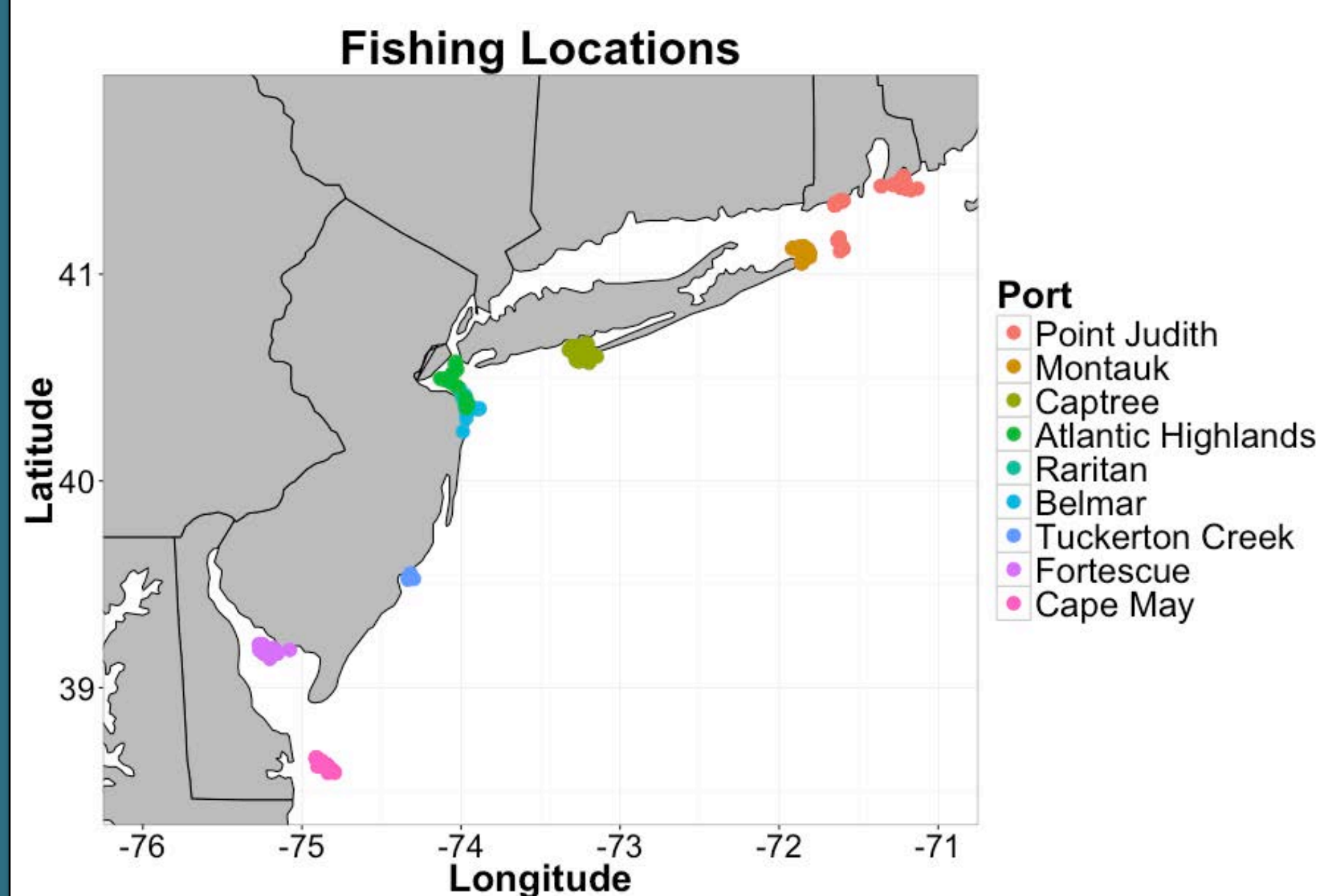
- Sex-selective harvesting can alter sex ratio and negatively affect stock productivity.
- The influence alternative management actions could have on the sex composition of the recreational catch cannot be evaluated because no information is available on the sex composition of discarded summer flounder in this fishery.

Objectives



- Collect representative sex and length composition data from the recreational summer flounder catch (landings and discards).
- Determine whether slot limits have the potential to achieve a more sex-balanced recreational harvest.

Sampling Procedures



- Samples were collected on board for-hire recreational fishing boats from late May through September, 2016.
- The total length of all summer flounder caught on each sampling trip was recorded.
- A subset of discarded fish from a range of fish lengths and water depths were sacrificed, retained on ice, and brought back to the lab to determine sex. Length- and depth-specific keys were developed from these fish and applied to sex all unsexed discards.
- Sex of all landed fish was recorded on all sampling trips.

Analyses

Simulation of Slot Limits

- Catch composition (number and weight at length by sex) was fixed at what was observed.
- Slot limits evaluated ranged from 14 to 21 inches and varied in size from 2 to 7 inches wide.
- All fish within a simulated slot limit were deemed kept (no bag limit).

Performance Metrics

- Total Number of Dead Fish (landings + dead discards)
- Biomass of Dead Females
- Ratio of Dead Discards to Total Number Dead

Results

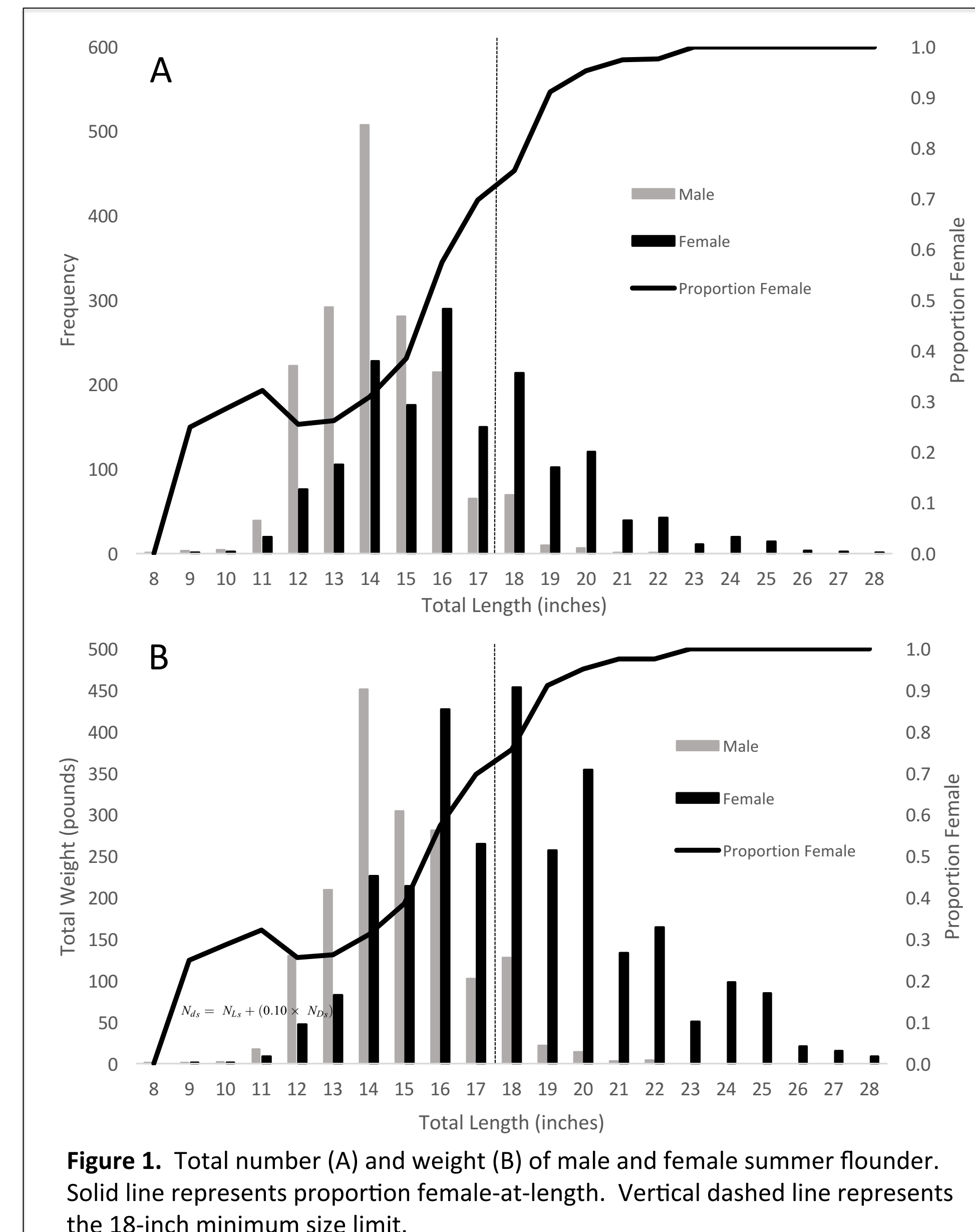


Figure 1. Total number (A) and weight (B) of male and female summer flounder. Solid line represents proportion female-at-length. Vertical dashed line represents the 18-inch minimum size limit.

DEFENITIONS

Suitable Slot Limit = Any slot limit that resulted in a total number dead within +/- 10% of the observed total number dead (fixed fishing mortality).
Optimal Slot Limit = The *Suitable Slot Limit* that resulted in the largest reduction in dead female biomass.

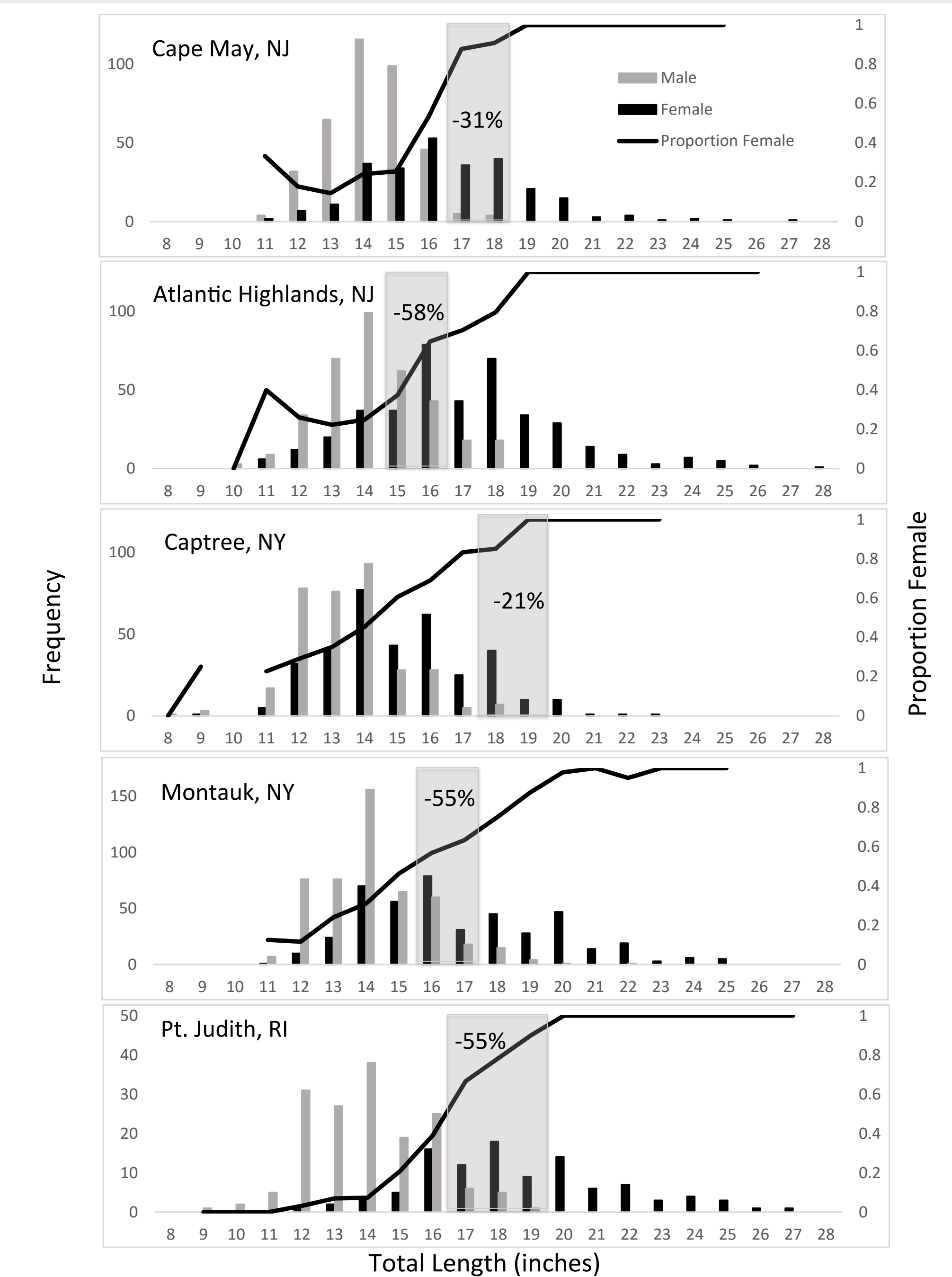


Figure 2. Total number of male and female summer flounder at each sampling location. Solid line represents proportion female-at-length. The optimal slot limit (see definition) for each sampling location is represented by a shaded box. The change in dead female biomass going from an 18-inch size limit to this slot is indicated inside each box.

Table 1. Simulated slot limits and associated performance metrics for those slots that were deemed *suitable* and *optimal* at each sampling location. In parentheses next to each outcome is the proportional change from the observed metric under an 18-inch minimum size limit to the metric calculated using the slot limit.

Conclusions

- The application of slot limits to the summer flounder recreational fishery has the potential to simultaneously achieve multiple management objectives, including conservation of female biomass under a fixed harvest rate.
- The slot limits deemed suitable were all narrow, ranging from two to four inches wide, and often contained the current minimum size limit within the slot limit.
- Optimal and suitable slot limits varied with sex and length composition at each sampling location.
- Given several assumptions inherent in the analysis (ex. fixed fishing effort under alternative slots, fixed catch composition), results should be viewed as optimal given the observed catch composition for the year, locations, and modes sampled and further evaluation of interannual, spatial, and mode-specific dynamics is warranted.

Acknowledgements

We thank the captains and crews of the FVs Porgy IV, Bonanza II, Big Mohawk, Fishermen, Laura Lee, Lazy Bones, and Gail Frances for permitting us to collect samples aboard their fishing vessels. We are grateful to Sarah Borsetti, Emerson Hasbrouck, Scott Curato-Wagemann, Tara Froelich, and Kristin Gerbino for helping with data collection. Eleanor Bochenek assisted with coordinating sampling trips, for which we are thankful. Partial funding for this work was provided by the National Science Foundation (NSF) Industry-University Cooperative Research Center Science Center for Marine Fisheries (SCeMFis) through membership fees under the direction of the Industry Advisory Board; SCeMFis administrative support is provided by NSF award number 1266057. Additional funding was provided by the Save the Summer Flounder Fishery Fund and the Jersey Coast Anglers Association.