1. How closely did the research team follow the original planned scope of work?

Relatively minor deviations from the original planned scope of work occurred with all sites being chosen randomly instead of 50% of the sites chosen randomly and the others being selected by the vessel captain. This deviation from the plan was accounted for in the analysis to maintain consistency between the 2003-2005 and 2011 surveys. Other differences between planned and accomplished tasks were associated with the number of tows completed. Several areas were not sampled due to hard bottom habitats, fixed gear in the area or extremely high catches of spiny dogfish. Of the 288 planned tows (3 areas x 48 tows in each area x 2 sets of 48 randomly chose stations), 263 tows were completed (91%; though only 232 tows were considered valid 80.5%).

2. If there were differences between scheduled and completed tasks, did the project team address these and explain why there were differences?

There were no differences between scheduled and completed tasks other than the number of tows as explained above.

3. In the results, analysis, and discussion sections of the report, did the team answer their original research question(s)?

The research team accomplished and addressed most of the original research questions including biomass and density estimates of Yellowtail Flounder in three areas off Southern New England, tagging Yellowtail Flounder (n=5,014 fish), providing scales for age estimation to inform the stock assessment, and presenting data to fishermen, scientists, and resource managers.

Missing from this analysis were comparisons of catch with respect to depth, temperature, and time of day as stated in the proposal. However, the research team provided data for Winter Flounder, a species not considered in the original proposal.
4. Were analytical techniques appropriately used? Was the experimental methodology statistically sound and supportive of the conclusions drawn?

Statistical models used in the analysis were appropriate and sufficient detail was provided to support the conclusions that were drawn. Comparisons of Yellowtail Flounder were made among areas sampled and time periods examined for size structure, density, biomass, and trends. Additional comparisons were made with another survey conducted in the same region, which is used exclusively in the stock assessment for this species. Differences between the industry-based survey and the fishery-independent survey were noted and discussed appropriately.

5. Was the raw data included in the appendix complete?

Raw data was not supplied in this final report, though the research team stated that raw data was supplied to the Northeast Fisheries Science Center for use in the stock assessment.

6. Was the information clearly presented? Were figures and tables appropriately used?

The information presented was clear and addressed the proposed research objectives aside from the effects of water temperature, depth, and time of day on Yellowtail Flounder catches. A general discussion about diel differences in catchability of Yellowtail Flounder was included in the report.

Figure 9A is missing the y-axis label.

7. In the discussion section, did the team offer comments on results including observations made while conducting the research; explanations of why a particular gear, sampling strategy, or laboratory technique may or may not have worked as anticipated; how project research results may have advanced the knowledge base about the research topic area; and ideas about follow up research?

The research team provided comments on all aspects of the research project from the effectiveness (or lack of effectiveness) of the Nantucket Lightship Closed Area for rebuilding Yellowtail Flounder stocks to the use of shortest possible ground cables with the trawl gear. The team also discusses possible discrepancies between industry-based surveys conducted during daylight and the fishery-independent survey that samples during day and night hours. Results of this study will help stock assessment scientists, resource managers, industry representatives, and guide future survey work for this species.
“An industry-based survey for yellowtail flounder in Southern New England.”
Lead PI: Adam Barkley / Steve Cadrin—University of Massachusetts Dartmouth/SMAST

1. How closely did the research team follow the original planned scope of work?
   It appears that the research was carried out as planned. The proposed work outlined plans to extend
   the industry-based survey funded through the MFI by trawling in areas to the west, thus making the
   2011 survey comparable with the 2003-2005 survey completed in this same region previously. The
   survey completed 232 valid tows during fall 2011, 81 of which were in the extended area funded by
   this proposal. The investigators were able to compare estimates of abundance, density, and size
   distributions among areas and between time periods.

2. If there were differences between scheduled and completed tasks, did the project team address these
   and explain why there were differences?
   No considerable differences were apparent. The investigators did discuss some invalid tows that
   occurred throughout the survey, but these were not restricted to the area covered by CFRF funding,
   rather, they occurred periodically throughout each area. The number of invalid tows overall was low,
   and the investigators were able to complete a sufficient number of valid tows to meet their study
   objectives.

3. In the results, analysis, and discussion sections of the report, did the team answer their original research
   question(s)?
   Yes. The survey design enabled comparison of yellowtail flounder biomass estimates between open
   and closed areas, and between temporal periods. The investigators found that biomass estimates had
   increased since the previous survey and that flounder were more abundant, and were larger, in the
   open areas as opposed to the closed area (Nantucket Lightship). The investigators concluded that the
   stock was recovering, which aligned with the most recent assessment results, and that the closed area
   was not realizing increasing biomass as expected. It is possible that the closed area may still be
   effective, serving as a nursery area for yellowtail flounder, given the smaller sizes of fish found there.
   However, abundance estimates were much lower in the closed section, indicating substantial
   emigration from, or mortality within, that area.
4. Were analytical techniques appropriately used? Was the experimental methodology statistically sound and supportive of the conclusions drawn?
Yes. The investigators did a thorough job of adjusting for differences between survey time periods in such variables as bridle wire length, tow duration, tow speed, and the prior use of fixed stations. In addition, valid tows were required to meet specific criteria, which standardized the catch rates. The investigators also evaluated the potential effects of variable catchability (q) on estimates of flounder biomass. The BACI analysis enabled differences in catch rates due to space, time, and their interaction to be determined.

5. Was the raw data included in the appendix complete?
I did not receive the raw data, but I assume it was forwarded to CFRF as required.

6. Was the information clearly presented? Were figures and tables appropriately used?
The tables and figures were clear and illustrated the spatial and temporal patterns in catch and size distribution of yellowtail flounder. The tables provided a comprehensive view of summary data, which outlined the number of tows, mean catch, and variability by location, between time periods, and between industry vessels. Estimates of area swept and biomass by area and time period were also detailed in the tables. Lastly, the statistical output from the BACI analysis was included in a table. The figures illustrated the trawl design, the survey area (past and present), and the NEFSC survey areas included for comparison. The exact location of all valid trawls was depicted well in Fig. 6, as well as the spatial distribution of average biomass per tow in Fig. 7. The figures (8 and 9) illustrating the size distributions revealed a bi-modal pattern.

7. In the discussion section, did the team offer comments on results including observations made while conducting the research; explanations of why a particular gear, sampling strategy, or laboratory technique may or may not have worked as anticipated; how project research results may have advanced the knowledge base about the research topic area; and ideas about follow up research?
Yes. The investigators devoted considerable text to the potential reasons for differences in catch rates that were observed among spatial locations and between time periods. They also discussed extensively the potential reasons for lower catches within the Nantucket Lighthouse closed area. Gear design issues and their possible impact on catch rates was discussed, along with recommendations for future industry-based surveys. Lastly, the investigators discussed the advantages of working collaboratively with industry representatives on studies such as these and the direct application of their findings to improve stock assessments for this species. The investigators have also completed extensive outreach in the form of public presentations to members of the public, industry, and the science and management community, in order to address a concern that was brought up during the panel review.