Something's Fishy with Cobia Response Summary

GMFMC

2019 SEDAR28-WP-03

29 April 2020

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Please cite this document as:

GMFMC. 2020. Something's Fishy with Cobia Response Summary. 2019-S28Update-WP-03. SEDAR, North Charleston, SC. 6 pp.

Something's Fishy with Cobia
Response Summary
March 2020

The Gulf of Mexico Fishery Management Council (Council) asked fishermen, divers, and other stakeholders if they have noticed anything "fishy" about cobia fishing in the Gulf of Mexico in recent years. Recognizing that active fishermen may notice trends or unusual occurrences happening that scientists and managers may not have observed, this initiative expands the type of information gathered by the Council to gain a better understanding of what is happening on the water. Comments were collected using a web-based tool that was advertised via press release, social media, and on the Council's website. Five hundred and eighty-six unique responses were received between January 8th and February 7th, 2020.

Respondents self-selected their association with the fishery (Figure 1). Respondents were not limited to a singular response and many identified with more than one sector in the fishery. A vast majority of respondents identified as private anglers. Respondents who identified as state guides/charters were counted as private anglers.

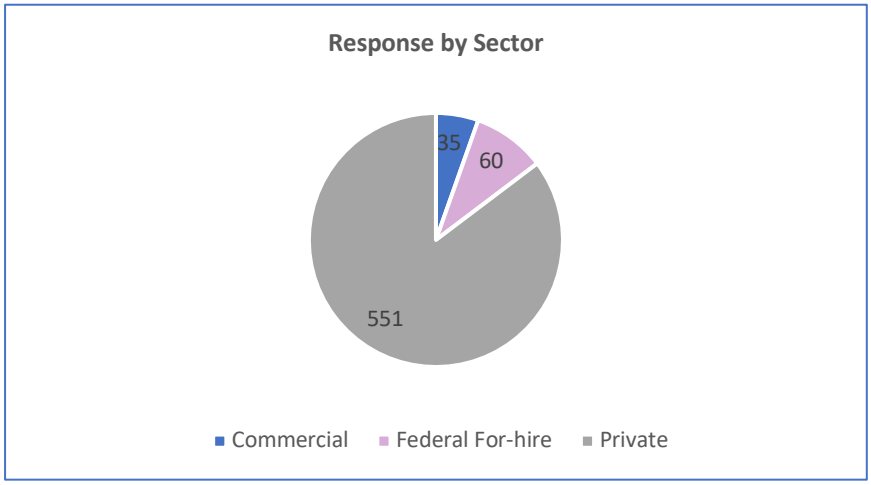

Figure 1: Self-identified number of responses to the survey tool from each sector (n=646). Respondents (n=586) were not limited to a singular response and many identified with more than one sector of the fishery

Respondents also self-selected the general location where their observation was made. Respondents were not limited to a singular response and many identified multiple locations. Responses were gathered for each location and a majority of responses originated from the areas off the Florida panhandle extending down to central coast of Florida (Figure 2).

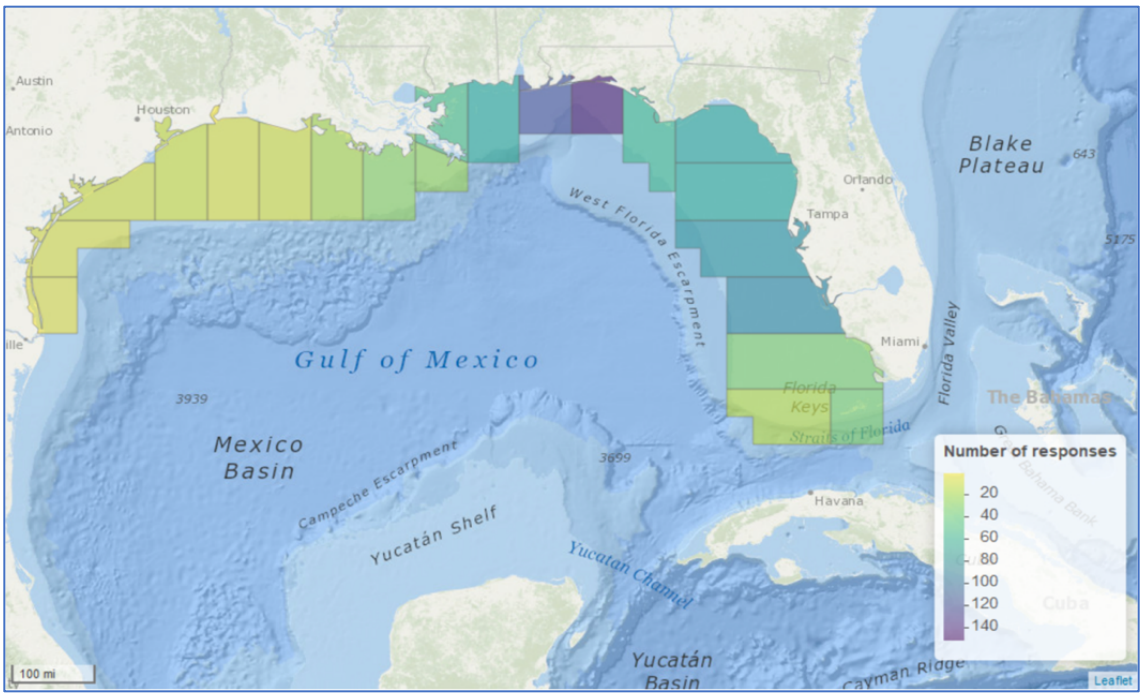

Figure 2: Self-Identified number of responses to the survey tool identifying location where observations were made (n=878). Respondents (n=586) were able to report observations for one or more grids, thus the number of responses is greater than the number of respondents.

Responses were analyzed in two ways: manually and by an automated analysis. Responses were classified into three categories, indicative of positive, negative or neutral trends in the cobia stock in the Gulf of Mexico. Both manual and automated sentiment analysis showed that a majority of respondents reported a negative sentiment (Figures 3 and 4). However, the manual analysis showed a greater proportion of negative comments than automated analysis.

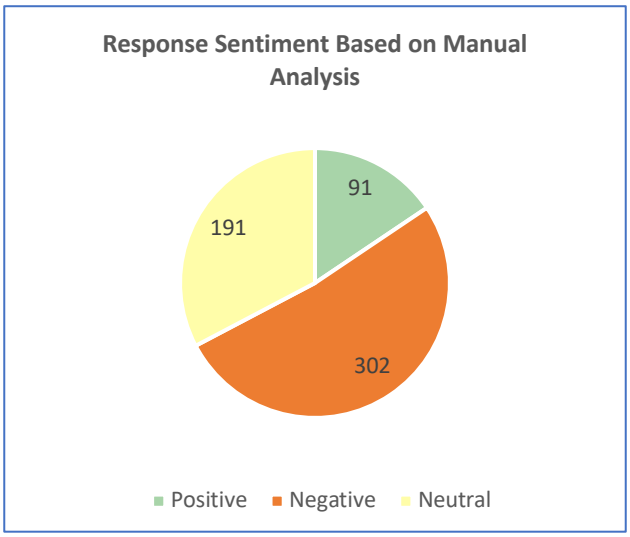

Figure 3: Number of responses indicating positive, negative, or neutral sentiment classified using manual analysis.

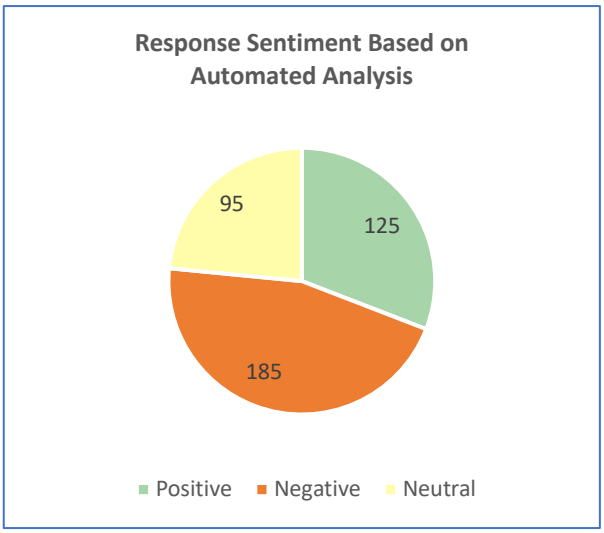

Figure 4: Number of responses indicating positive, negative, or neutral sentiment classified using automated analysis.

Results from both automated and manual analysis were sorted by location (Figures 5 and 6). Respondents were allowed to choose more than one location, and the sentiment of a singular comment can be reflected in more than one area. Few responses were received from the western Gulf and in areas off the Florida Keys (Figure 2), thus the sentiment analysis results should be interpreted with caution in those areas.

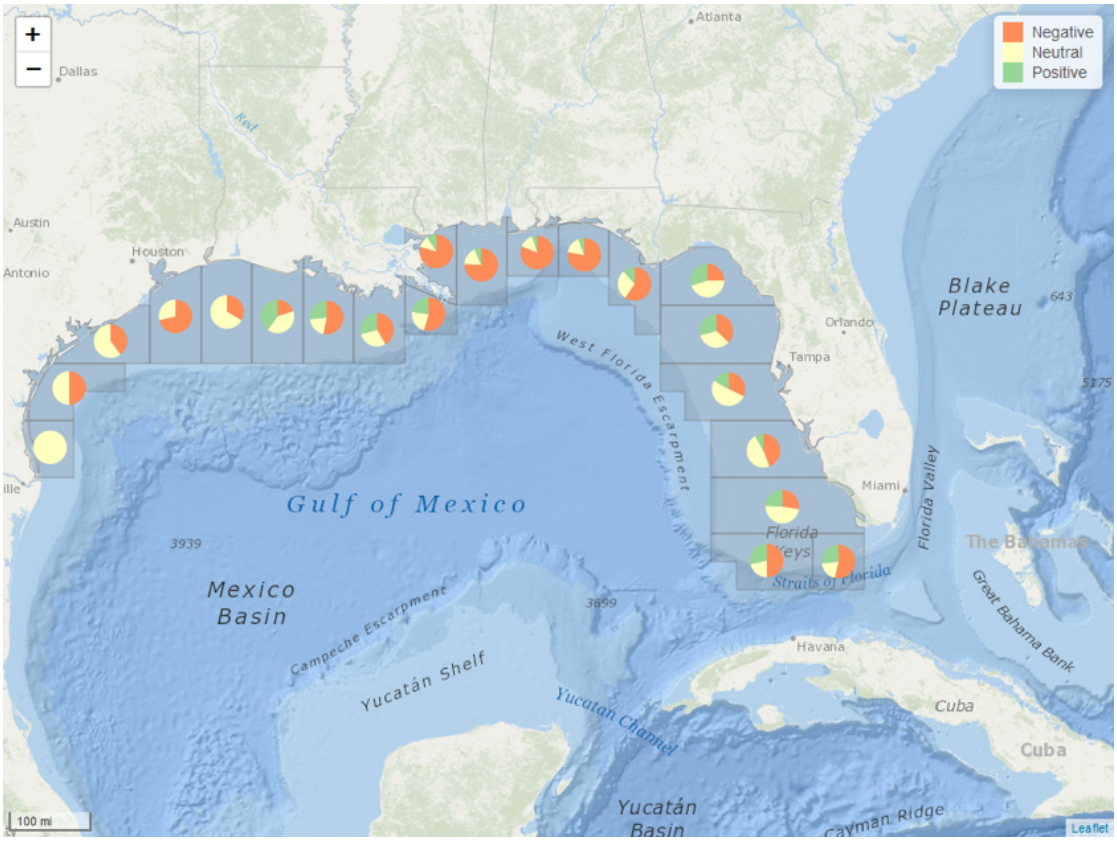

Figure 5: Manual analysis of response sentiment by location. Each comment (n=586) from respondents was characterized into one of three categories based on independent review of each comment by two reviewers. Each comment was linked to one or more grids based on the self-reported locations from the respondent that was part of the survey.

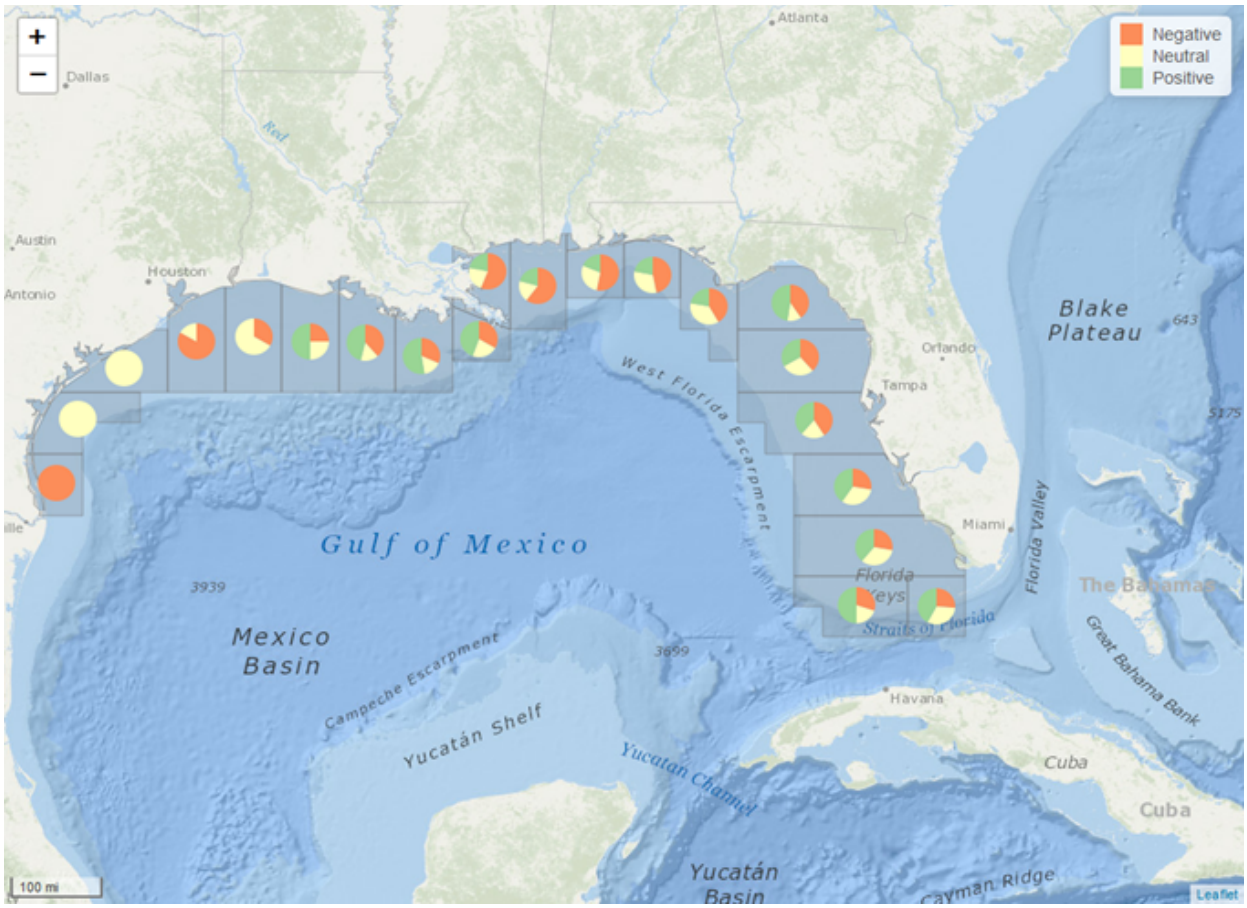

Figure 6: Automated analysis of response sentiment by location. Each comment (n=586) from respondents was characterized into one of three categories based on an automated sentiment analysis of the text in each comment. Each comment was linked to one or more grids based on the self-reported locations from the respondent that was part of the survey.

Manual analysis was conducted by two independent readers and sentiment was broadly characterized as positive, neutral, or negative. Readers then compared characterizations and resolved any disagreements in interpretation so that both readers were in agreement as to comment sentiment. Manual analysis results identified many comments that indicated the average size of fish encountered is smaller than it has been historically. Comments that indicated a negative trend in cobia abundance noted that the spring migration had either diminished or moved further offshore, and speculated that this was due to red tide, influx of freshwater, or removal of structure. Comments also indicated that the population decline had been occurring since about 2010.

The automated sentiment analysis characterized responses using the R statistical software package 'tidytext'. Words in each comment were compared to a revised version of the 'Bing' lexicon library. This revised library amends characterizations for words commonly used in reporting fishery information. This library categorizes words into positive, negative, or neutral sentiment. Positive words get a score of +1, negative words get a score of -1, and neutral words get a score of zero. The analysis scores every word in each comment and then averages those word scores for the individual comment to standardize the score by comment length. Comments that have an average sentiment above 0.33 were considered a positive comment,

neutral comments were between -0.33 and 0.33, and negative comments had sentiment score less than -0.33. The negative words that occurred most frequently were less, decline, limits, fewer, and small/smaller. The positive words that occurred most frequently were large/larger, like, good, well, and healthy (Figures 7 and 8). This could indicate that anglers with negative perceptions of the cobia stock were seeing fewer fish and that the fish they were seeing were smaller.

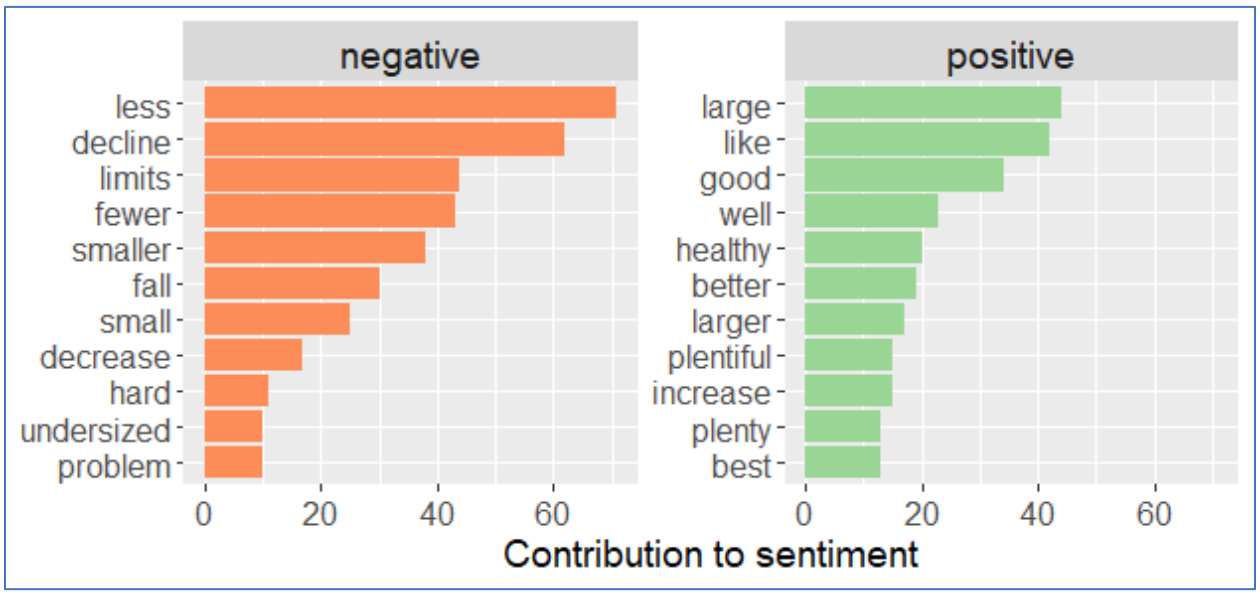

Figure 7: Most frequent words contributing to comment sentiment identified by automated sentiment analysis.

Figure 8: Most frequent words contributing to comment sentiment identified by automated sentiment analysis.

These results of Something's Fishy with Cobia will be submitted to the NOAA Southeastern Fishery Science Center as it updates the most recent Cobia stock assessment. The information

collected through the tool are not intended to be considered as an index of abundance for direct incorporation into a stock assessment model. Instead, results of this effort are meant to supplement the role played by fisheries observers to the stock assessment process. The on-the-water perspective offered by respondents to this tool should be used to ground truth the science and enhance our understanding of the stock.