Fisherman Feedback: Mutton Snapper Response Summary

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SEDAR79-DW-09

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Response Summary
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The Gulf of Mexico Fishery Management Council (Council) asked fishermen, divers, and other federal fishery stakeholders what they've noticed about mutton snapper and mutton snapper fishing in recent years. Active fishermen are a rich source of information and may notice trends or phenomena that scientists and managers may not observe. This initiative expands the types of information gathered by fisheries scientists and managers to gain a better, more contemporary understanding of what is happening on-the-water.

Comments were collected using the Fisherman Feedback web-based tool that was advertised via press release, social media, and on the Council's website. Seventy-five unique responses were received between March 8 and April 7, 2023. One comment was dropped because it was unrelated to mutton snapper in the Gulf of Mexico. The remaining 74 comments were analyzed.

Respondents self-selected their association with the fishery (Figure 1). Respondents were not limited to a singular category, and some identified with more than one sector. An overwhelming majority of responses were received from anglers who identified with the private angling component of the recreational fishing sector. The single 'other' response was from a diver.

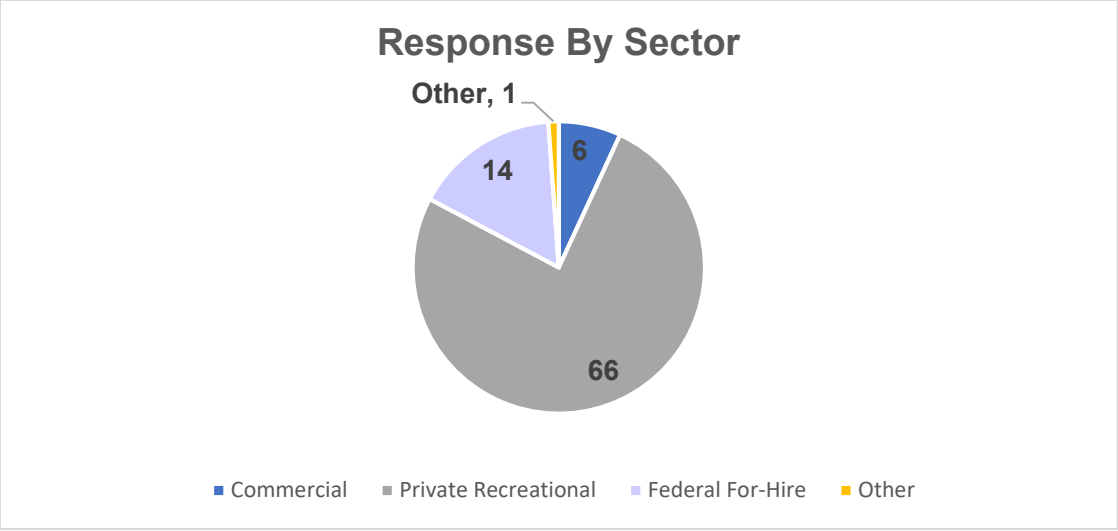

***Figure 1**: Self-identified number of responses to the survey tool from each sector (n=87). Respondents (n=74) were not limited to a singular response and some identified with more than one sector of the fishery.*

Respondents were provided a grid of 21 areas in the Gulf of Mexico where they were able to self-identify the general location(s) where their observation was made (Figure 2). Respondents were not limited to a single area, and many identified multiple areas. A majority of responses

originated off the central and southern coast of Florida. The fewest comments were received off the coast of western Louisiana.

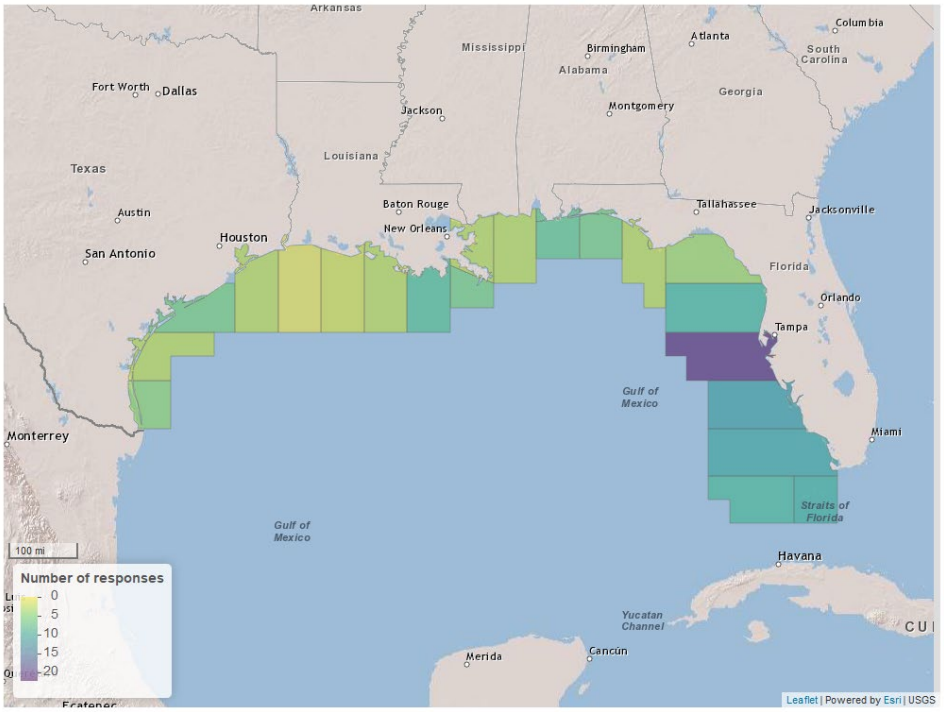

Figure 2: *Number of responses received in each of 21 areas in the Gulf. Respondents could select more than one area so the total number illustrated in the map (n=116) exceeds the number of individual responses.*

The overall sentiment of each response was classified as positive, negative, or neutral. The analysis showed that the greatest proportion of comments were neutral in nature. Primarily, neutral comments we observational in nature and sentiment was absent or hard to discern. When performing analysis, any comments that contained a mix of positive and negative sentiments were considered to have an overall neutral sentiment, unless there was a greater proportion of the comment that was considered positive or negative in nature. There were a similar number of comments classified as positive or negative. Positive sentiment was usually related to an increased observation of mutton snapper or perception that the stock is robust or improving. Comments that were classified as negative indicated that mutton snapper are rarely seen in that observation area or that they are outcompeted by other species.

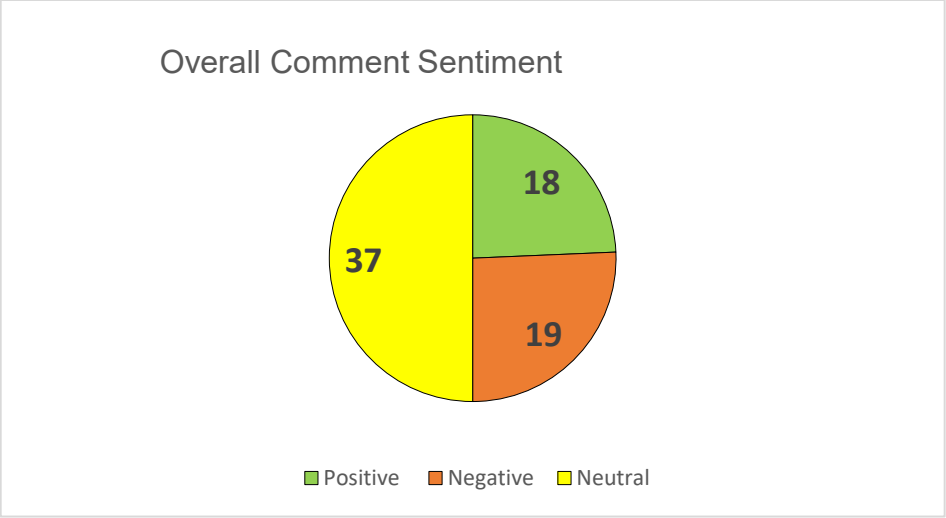

Figure 3: *Number of responses indicating positive, negative, or neutral sentiment (n=74) classified by manual analysis.*

Overall sentiment was also categorized by fishing sector (Figure 4). Respondents self-selected their fishing sector and were not limited to a singular response. The private recreational sector expressed the highest relative portion of neutral comments and a similar number of negative and positive comments. Both commercial and federal for-hire sectors expressed mostly positive sentiments.

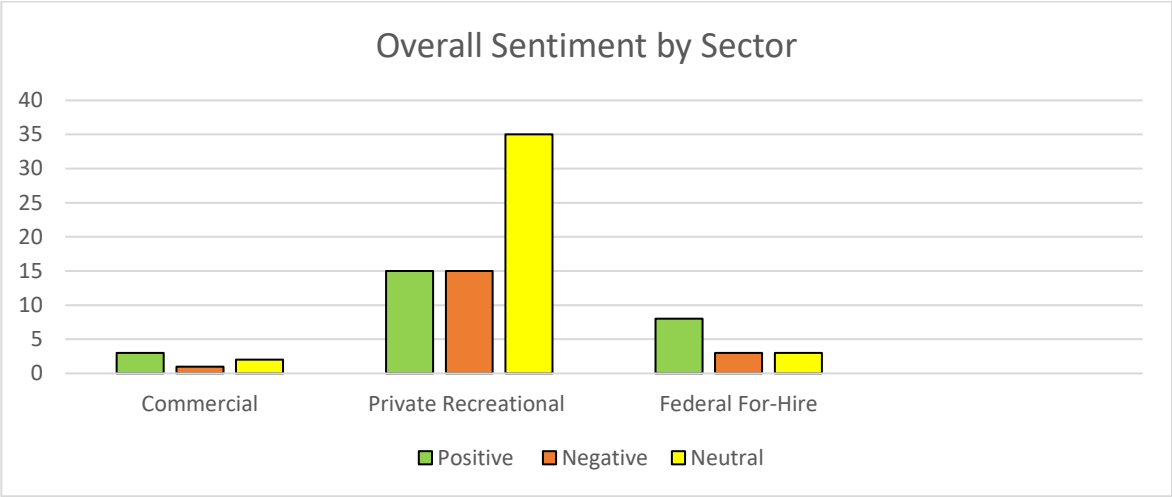

Figure 4*: Number of responses indicating positive, negative, or neutral sentiment sorted by fishing sector. Sentiment was classified and sector was self-selected by each respondent. Respondents were not limited to a singular sector declaration in their response (n=85).*

Overall comment sentiment was also sorted by location (Figure 5). A majority of positive sentiment was located off central and southern Florida. Neutral sentiment was prevalent off Mississippi, Louisiana, and eastern Texas and the most negative sentiment was expressed in western Texas and near the Florida/Alabama state line.

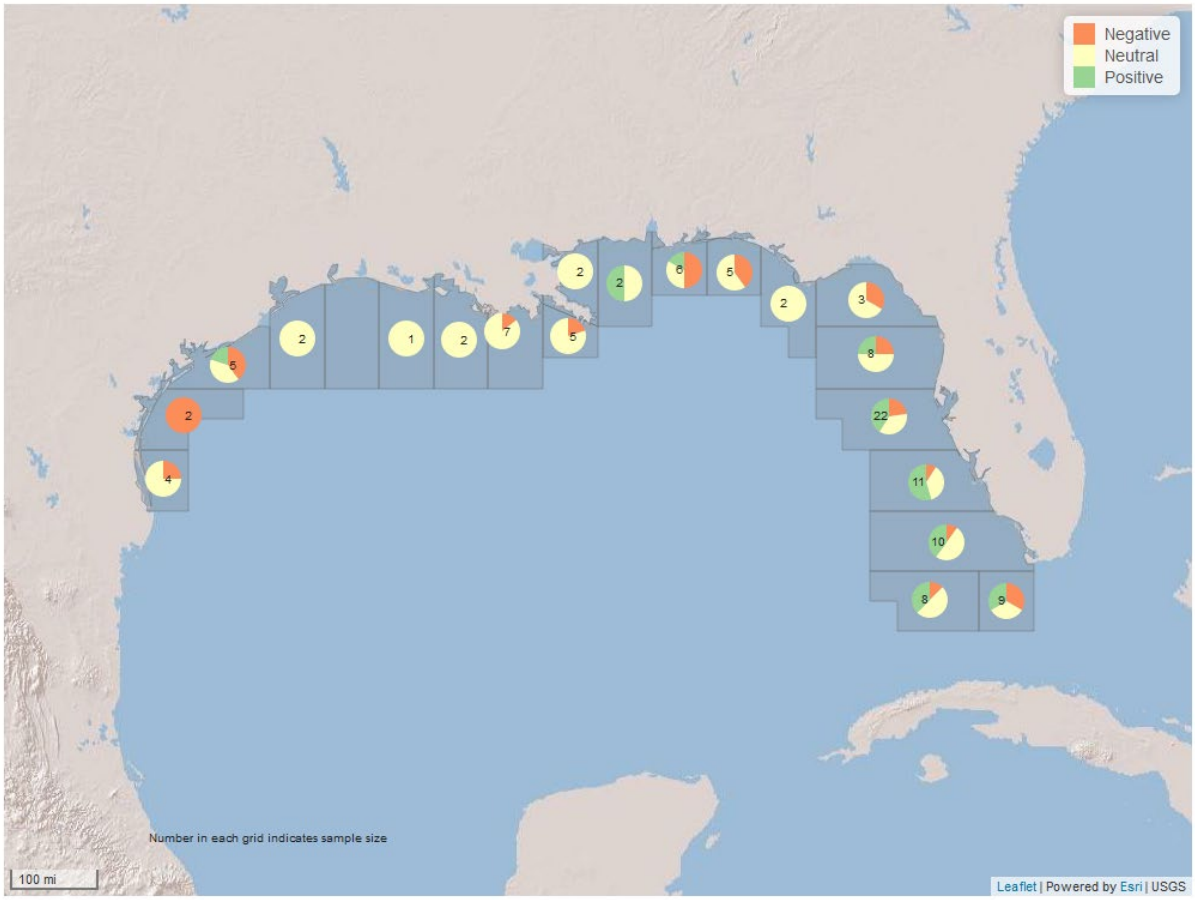

***Figure 5**: Sentiment analysis for each area. Each comment (n=74) was characterized as positive, negative, or neutral based on independent review of each comment by two reviewers. Each comment was then linked to one or more areas based on the self-reported locations (n=116).*

Next, comments that were determined to be related to the condition, health, or abundance of the stock (n=60) were analyzed again, in relation to how the comment characterized stock condition. Those comments were classified based on whether they indicated that the stock was in good, negative, or neutral health (Figure 6). There was nearly an equal number of comments related to abundance that expressed positive or negative perceptions of the condition, health, or abundance of the stock. Results were also analyzed by sector (Figure 7). Respondents from the commercial sector only expressed positive perceptions of stock condition. The private recreational sector expressed a slightly higher proportion of negative perceptions of stock condition followed closely by positive perceptions. The federal for-hire sector expressed mostly positive perceptions of stock condition with some negative and neutral sentiments expressed as well.

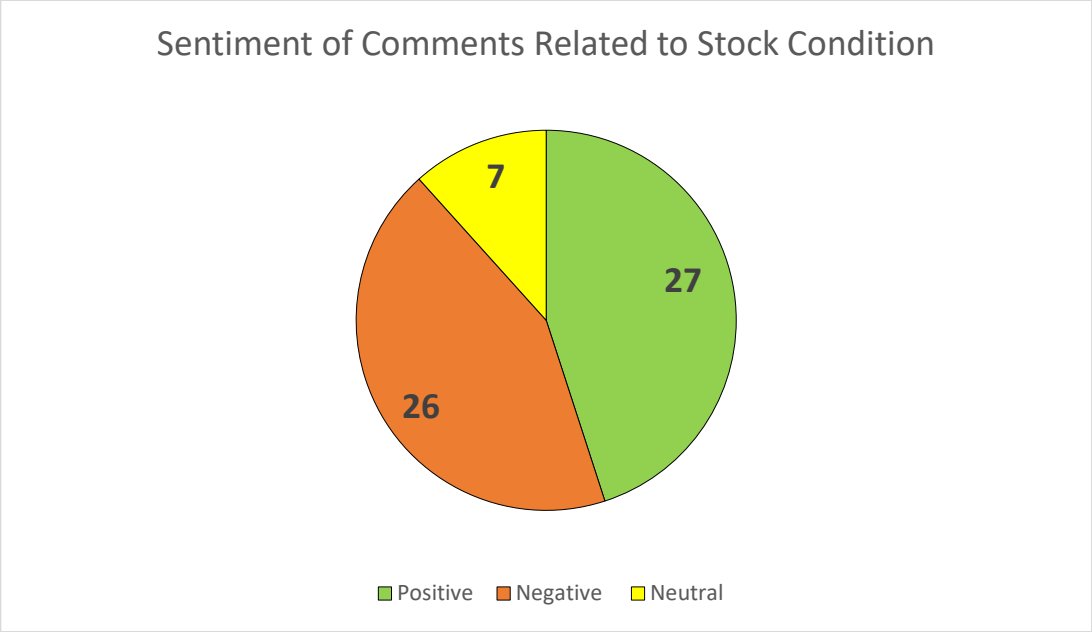

***Figure 6**: Number of comments indicating positive, negative, or neutral sentiment regarding stock condition (n=60)*

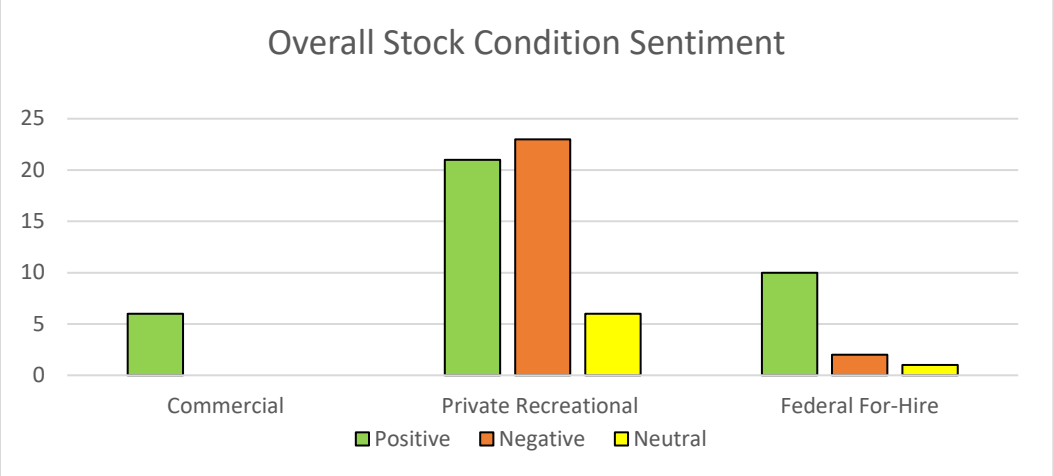

***Figure 7**: Number of responses related to stock condition that indicate positive, negative, or neutral sentiment and sorted by fishing sector. Sector was self-selected by each respondent. Respondents were not limited to a single area (n=69).*

The sentiment of comments related to the condition, health, or abundance of the stock were also sorted by location (Figure 8). A majority of comments in south and central Florida indicated that stock is healthy. The comments that expressed a negative perception of the stock condition were located in patches off western Texas and near the Florida/Alabama state line.

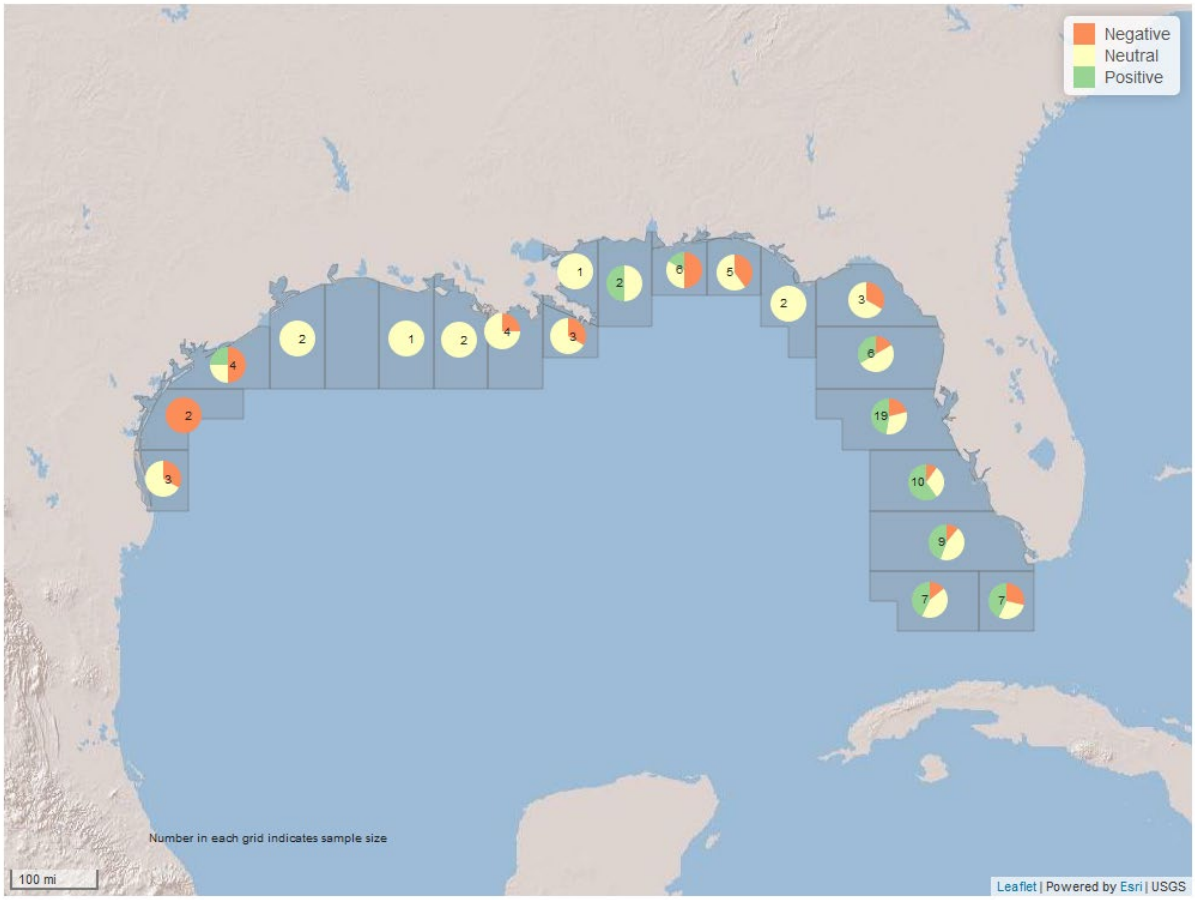

***Figure 8**: Sentiment analysis of the perception of stock condition by location. Each comment related to the health, condition, and/or abundance of the stock was characterized based on whether it indicated something positive, negative, or neutral about the stock (n =74). Each comment was then linked to one or more areas based on the self-reported locations (n=98) from the respondent that was part of the survey.*

Comments were analyzed for the words most frequently used to contribute to either positive or negative sentiment through automated analysis (Figures 9 and 10). The words that occurred most frequently in comments with a positive sentiment were: well, plenty, like, larger, and healthy. This seems to indicate that most of the positive sentiment expressed was based on a positive perception of the health, condition, and abundance of mutton snapper. The words that occurred most frequently in comments with a negative sentiment were: sharks, undersized, less, suspect, and small. The word 'suspect' always occurred in tandem with other expressions of negative sentiment and was used to hypothesize that stock depletion was being caused by depredation or competition from other species. The occurrence of the word 'shark' indicates that much of the negative sentiment was directed towards shark depredation. The appearance of the word 'less' was related to relative abundance of mutton snapper over time. Finally, the words 'undersized' and 'small' were used to describe the size of available mutton snapper.

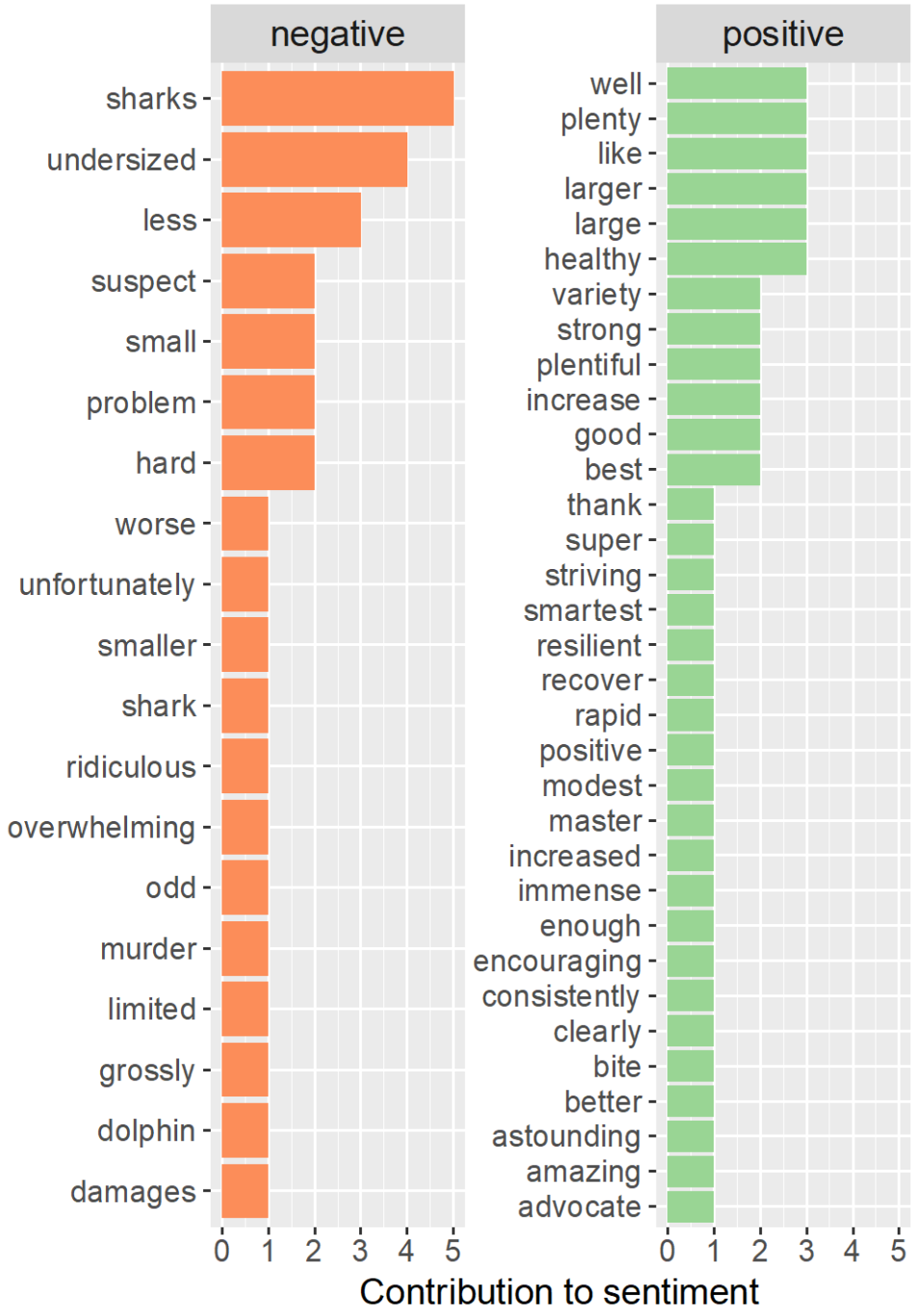

***Figure 9**: Most frequently used words contributing to comment sentiment identified using automated sentiment analysis.*

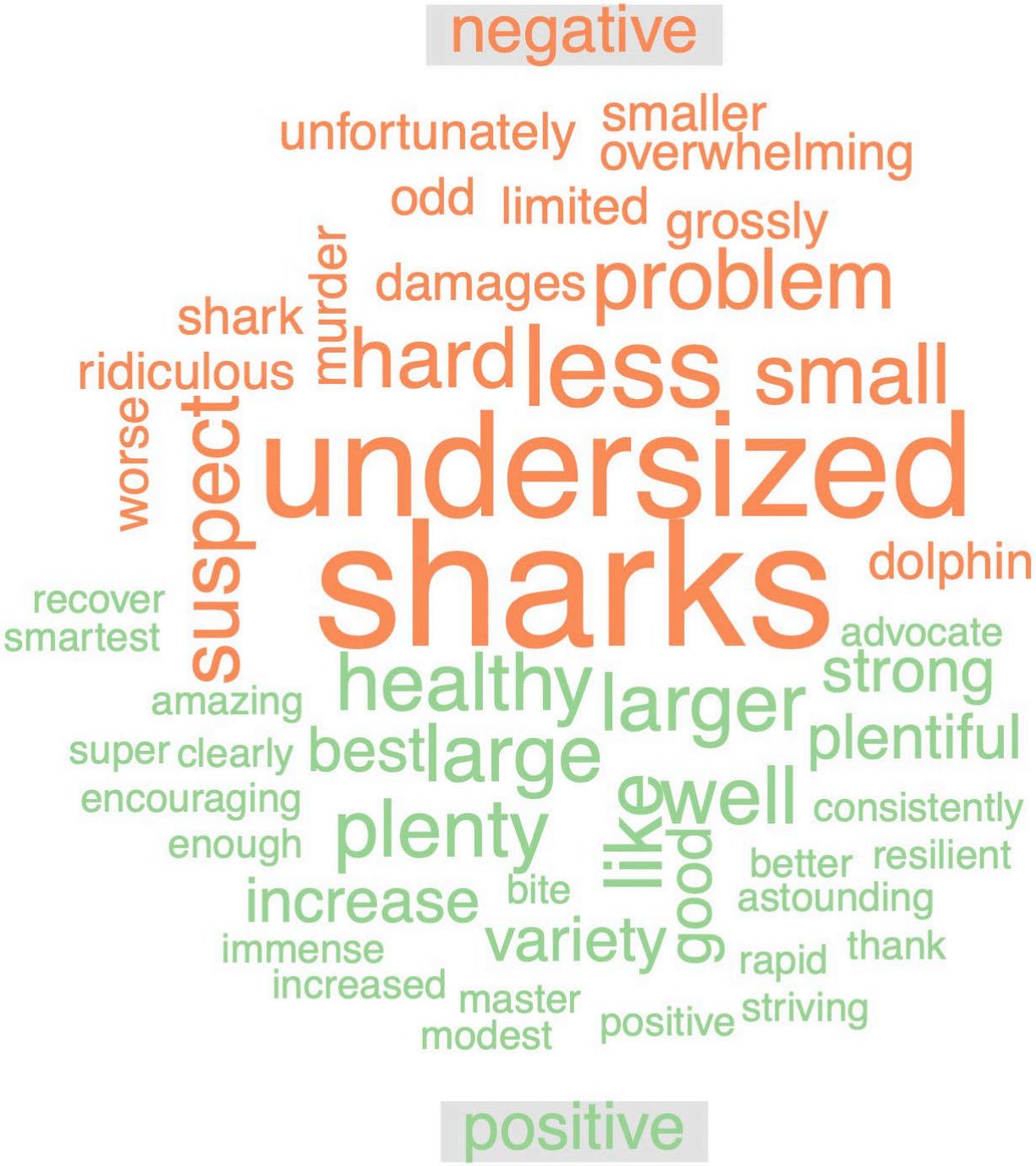

Figure 10: *Most frequently used words contributing to comment sentiment identified using automated sentiment analysis.*

Themes did emerge in the comments received. It was obvious that respondents fishing off central Florida were noticing an increasing number of mutton snapper, and many hypothesized that they are expanding their range northward. Others simply noted that the mutton snapper population was prolific.

Much of the negative or neutral sentiment expressed in the northern parts of the Gulf simply indicated that mutton are not, and never have been, prevalent in those areas. Negative comments also indicated that there is too much fishing pressure, that mutton snapper are being out competed by red snapper and lane snapper, and that shark depredation is increasing.

The results of Fisherman Feedback for Mutton Snapper will be submitted to the NOAA Southeast Fisheries Science Center as it develops the SEDAR 79: Gulf of Mexico Mutton Snapper Stock Assessment. The information collected through the tool is not intended to be considered as an index of abundance for direct incorporation into the 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.

Methods

Manual sentiment analysis was conducted by two independent readers and overall comment sentiment was broadly characterized as positive, neutral, or negative. Readers also determined whether comments were related to the condition, health, or abundance of the stock. Those comments were analyzed again and classified based on whether they indicated that the stock was in good, negative, or neutral health. Readers then compared characterizations and resolved any disagreements in interpretation so that both readers agreed. Comments that were determined through manual analysis to be unrelated to mutton snapper in the Gulf of Mexico were dropped from both manual and automated analysis.

Automated sentiment analysis characterized each response using the 'tidytext' package in R. For this analysis, the words in each comment were compared to a revised version of the 'Bing' lexicon library which has been amended with characterizations for words commonly used in reporting fishery information. The library categorizes words into positive, negative, or neutral sentiment and scores every word in each comment accordingly. This was used to identify the most common words associated with a positive and negative sentiment.