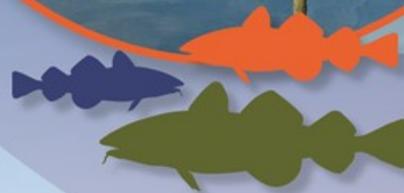


Fisheries Innovation Fund: Baseline Survey Estimates of Fishermen Well-Being and Diffusion of Innovations in the Gulf of Mexico Reef Fish Fishery and the Northeast Multispecies (Groundfish) Fishery

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Key Terms

Term	Definition
Fisheries Innovation Fund (FIF)	The FIF aims to foster innovation and support effective participation of fishermen and fishing communities in the implementation of sustainable fisheries in the United States. By developing and implementing innovative solutions to common fisheries challenges, the FIF hopes to help support environmental and economic performance and contribute to improved individual well-being of fishermen and fishing communities. As of 2019, since its inception in 2010, the FIF, in combination with the Electronic Monitoring and Reporting Grant Program, have awarded grants to 183 projects that have advanced innovations in capacity building, bycatch reduction, seafood marketing, electronic monitoring and reporting, and recreational fisheries.
Fishermen	Individuals in the fishing industry, and thus the population of interest in the two target fisheries (Gulf of Mexico Reef Fish fishery, and the Northeast Multispecies Groundfish fishery). For the purposes of this report, fishermen include any individuals actively participating in the two target fisheries as a vessel owner, captain or crew member, quota share owner, or vessel permit holder.
Lost employment income since March 2020	Respondents who indicated that they, or someone in their household, lost employment income since March 2020 and the onset of the COVID-19 pandemic in the United States.
Mail receipting/data capture	RTI has a team of data capture clerks who opened all returned mail for the project and sorted the mail based on their stage. All paper surveys were batched and scanned. Scanned data were then committed into the survey dataset on RTI's secure network, which merged both web and paper survey data. All paper data were verified using a two-step process, where one clerk entered data and a senior clerk verified and made necessary corrections.
Normal operating conditions	The period prior to March 2020 and the onset of the COVID-19 pandemic.
Northeast commercial category	Applicable only to the commercial fishermen in the Northeast Multispecies (Groundfish) fishery, this indicates whether a commercial fisherman fishes under sector management or in the common pool. This was defined through survey responses.

Term	Definition
Permit holder	An individual who owns a fishing permit in either the Gulf of Mexico Reef Fish or New England Multispecies (Groundfish) fishery.
Permit type	Applicable only to the Northeast Multispecies (Groundfish) fishery, this indicates whether the respondent is associated with a vessel that holds either an open access or a limited access permit. The permit type is derived from publicly available frame files.
Quota share owner	An individual who has received or holds quota share.
Target fishery provides majority of fishing revenue	Respondents who indicated that at least 50% of their fishing revenue comes from the target fishery (Gulf of Mexico Reef Fish fishery or Northeast Multispecies (Groundfish) fishery).
Sector	In the Gulf of Mexico Reef fishery there are three sector categories: Commercial-only, For-hire Recreational-only, and Dual Permit for fishermen who fish both commercially and for-hire. In the Northeast Multispecies (Groundfish) fishery, fishermen were classified as either commercial or for-hire recreational, with no dual permit category. The sector classification was derived based on responses to the survey, supplemented by frame data as necessary.
Symphony	Serves as the database management system for projects that use mailings, like the Survey of Fisherman Well-being and Disseminations of Innovative Fisheries Solutions. All mailings must be logged into the system to enable tracking of all sample records. All returns are receipted and coded as “stages” and “events,” such as “undeliverable” and “completed survey.”
Vessel owner	An individual who serves as a vessel owner and may own/lease a limited entry permit or quota.
Voxco	The software RTI used to program the web survey. It is a multimode data collection system that tracks survey activities and sample cases across modes and provides a centralized survey management portal to manage survey progress.

Executive Summary

The executive summary includes an overview of the Fisheries Innovation Fund (FIF) and the rationale for deploying the survey of well-being and innovation in the Gulf of Mexico Reef Fish and Northeast Multispecies (Groundfish) fisheries. Additionally, the key findings from the analysis of well-being, innovation, and FIF participation are presented in the executive summary.

Since 2010 the Fisheries Innovation Fund (FIF) has invested in numerous projects aimed at revitalizing U.S. fisheries. The FIF is a partnership developed by the National Fish and Wildlife Foundation (NFWF) along with the National Oceanic and Atmospheric Administration (NOAA), the Walton Family Foundation, and other partners. In 2015, NFWF and NOAA launched the Electronic Monitoring and Reporting (EMR) Grants Program, a second funding opportunity within FIF, to advance the use of Electronic Technologies (ET) in fisheries data collection and data management. Together, the FIF and EMR grant programs have funded projects aimed at advancing innovations in fisheries management as well as supporting fishermen and fishing communities. Over the last six years NFWF has focused its efforts on four priority fisheries and developed the FIF Evaluation Framework to evaluate how FIF grants are contributing to positive impacts for fishermen, their vessels, and their communities. A draft Survey of Fisherman Well-being and Disseminations of Innovative Fisheries Solutions (the survey) was designed to answer two research questions about commercial and for-hire recreational fishermen:

- To what extent have FIF innovations been disseminated to and implemented by fishermen in areas where FIF grants have been awarded?
- Have these fishermen's perceptions of subjective, relational, and material well-being increased in NFWF's priority fisheries?

RTI International, in collaboration with NFWF, tested and revised the draft survey questionnaire from the FIF Evaluation Framework for both web and mail administration within two of the four priority fisheries: the Gulf of Mexico Reef Fish fishery and the Northeast Multispecies (Groundfish) fishery. NFWF intends to repeat the survey every three years to evaluate changes in innovation diffusion and well-being. To establish the initial baseline for which future survey iterations can be compared, RTI developed a contact protocol and materials for gaining the interest and cooperation of fishermen, disseminated the survey, and cleaned and analyzed the data. The survey was disseminated to 3,481 commercial and for-hire recreational permit holders in the Gulf of Mexico Reef Fish fishery and the Northeast Multispecies (Groundfish) fishery in February through June 2021. The survey was originally planned to be deployed in the spring and summer of 2020. As the timeline for this work shifted it also became apparent that the worldwide coronavirus pandemic (COVID-19) would be an important factor to account for in establishing baseline measures of subjective, relational, and material well-being of these fishermen. Thus, the survey questionnaire included questions about well-being before and after March 2020 to account for the COVID-19 impact on fishermen. RTI received survey responses from 1,042 fishermen for a 29.9% overall response rate, including 439 from the Gulf of Mexico and 603 from the Northeast. While the FIF Evaluation Framework focuses on measuring changes among all permit holders, whenever

FIF Priority Fisheries



NORTHEAST GROUND FISH



GULF OF MEXICO REEF FISH



PACIFIC GROUND FISH



GULF OF ALASKA HALIBUT & GROUND FISH

possible, results were compared between those who did and did not participate in a FIF or EMR funded project.

ES.1 Well-Being

The survey asked fishermen about their subjective, relational, and material well-being, focusing on their perceptions of overall personal and job satisfaction, their relationships with fisheries management and their community, and questions about household income, respectively. Table 1 depicts the well-being measures evaluated within subjective, relational, and material well-being and the survey questions for measuring each.

Table 1. Types of Well-being and Associated Survey Questions

<u>Subjective well-being</u>	Job Satisfaction (0-10) On a scale of 0–10, with 10 being very satisfied and 0 being very dissatisfied, how would you describe your overall satisfaction with your job(s) in the fishing industry?
	Personal satisfaction/happiness (3-15) Summation of the 1-5 values from following three questions: How satisfied are you with your life? (1. Not at all satisfied, 2. Slightly satisfied, 3. Moderately satisfied, 4. Very satisfied, 5. Extremely satisfied) How satisfied are you with your physical health? (1. Not at all satisfied, 2. Slightly satisfied, 3. Moderately satisfied, 4. Very satisfied, 5. Extremely satisfied) How often do you feel really happy? (1. Never, 2. Rarely, 3. Sometimes, 4. Often, 5. Always)
<u>Relational well-being</u>	Satisfaction with federal management (0-10) On a scale of 0–10, with 10 being very satisfied and 0 being very dissatisfied, how would you describe your overall satisfaction with federal fisheries management?
	Satisfaction with state management (0-10) On a scale of 0–10, with 10 being very satisfied and 0 being very dissatisfied, how would you describe your overall satisfaction with state fisheries management?
	Do you have friends in your community you can count on if needed? (Yes, No, Don't know/Not sure)
<u>Material Well-being</u>	Feeling about household income Prior to March 2020 and the onset of the COVID-19 pandemic, which of the following best describes how you felt about your household income? (Lived comfortably on your household income, Got by on your household income, Found it somewhat difficult to get by on your household income)

Results for well-being reveal that fishermen in both fisheries have high job satisfaction and personal satisfaction/happiness; however, there is dissatisfaction with fisheries management, especially federal management. Fortunately, most fishermen have friends in their community they can count on for support. Prior to the COVID-19 pandemic, most fishermen were living comfortably on their household income, but that drastically changed for the worse after March 2020. One fisherman summarized the dynamic of the average subjective, relational, and material well-being in an open-ended response about job satisfaction:

I do love my job but I guess the reason for [job satisfaction] not being a 10 [on a 0- to 10-point scale] is every year there is a new regulation or cost to make my life and business more complicated.

This general finding is consistent with literature that shows fishermen tend to have higher job satisfaction than most industries in the United States (Smith & Clay 2010; NOAA 2014) and have low satisfaction with management (Pollnac et al. 2014). More specific findings related to well-being are included in the subsections below.

Findings are presented separately for (1) both fisheries, (2) the Gulf of Mexico Reef Fish fishery, and (3) the Northeast Multispecies (Groundfish) fishery. Findings related to household income are presented first for the period prior to March 2020 (i.e., normal operating conditions prior to the onset of the COVID-19 pandemic in the U.S.) and then for the period following March 2020 and the onset of the COVID-19 pandemic. The impact of the COVID-19 pandemic is discussed separately in a call out box within this executive summary. In the discussions for both fisheries, the point estimates provided below are not confidence intervals, rather they include the point estimates for both fisheries, first the Gulf, followed by the Northeast (e.g., Gulf estimate, Northeast estimate). For the point estimates accompanied by their associated 95% confidence intervals, please refer to the corresponding section for each fishery in Section 2: Survey Results and Discussion. Any time in this report where a result is described as significant it indicates statistical significance at the 5% level (i.e., alpha = 0.05).

ES.1.1 Both Fisheries

Average subjective well-being is approximately equivalent for all fishermen in each fishery. Average job satisfaction tends toward the higher side of the scales available to respondents (7.2, 6.9) on a 0- to 10-point scale as does average personal satisfaction/happiness (11.6, 11.1) on a 3- to 15-point scale. Relational well-being in both fisheries reveals significantly higher satisfaction with state management than federal, and the overwhelming majority of fishermen (92.1%, 94.0%) feel they have friends in their community they can count on for support. For material well-being under normal operating conditions (i.e., before the start of the COVID-19 pandemic in March 2020), most fishermen lived comfortably or got by on their household income, with a small portion (14.3%, 12.3%) who found it somewhat or very difficult to get by on their household income.

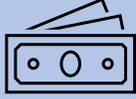
Well-Being in Relation to the COVID-19 Pandemic

The COVID-19 pandemic had a massive impact starting in March 2020 in the United States. After the onset of the COVID-19 pandemic in March 2020, the following patterns were observed in the Gulf of Mexico Reef Fish fishery and the Northeast Multispecies (Groundfish) fishery:

- Overall material well-being related to the sufficiency of income decreased relative to normal operating conditions before March 2020.
- The majority of fisherman suspended fishing operations for at least one month (72.1%, 85.0%).
- Most respondents who had suspended operations had resumed at the time of survey response (66.5%, 77.2%).
- For-hire recreational fishermen's material well-being was more negatively affected than commercial fishermen.
- The material well-being of fishermen for whom the majority of their income comes from fishing were more negatively affected than those less financially reliant on fishing.
- Those who lost household income after the onset of the COVID-19 pandemic have significantly lower satisfaction with federal management.
- No differences in well-being between FIF participants and nonparticipants were observed after the onset of the COVID-19 pandemic.

For-hire recreational fishermen (excluding dual-permitted fishermen in the Gulf of Mexico Reef Fish Fishery) have significantly higher subjective and relational well-being than commercial fishermen, with no significant difference observed for material well-being prior to the onset of the COVID-19 pandemic. Figure 1 depicts a summary of all these well-being findings in the two fisheries.

Figure 1. Summary of Fishermen Well-being in Both Fisheries under Normal Operating Conditions

<p>Most have high job satisfaction and personal happiness</p> 	<p>Satisfaction with state management</p> <p>></p> <p>Satisfaction with federal management</p>	<p>Most have friends in community to count on</p> 	<p>Most living comfortably or getting by on income</p> 	<p>For-hire recreational subjective and relational well-being</p> <p>></p> <p>Commercial subjective and relational well-being</p>
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ES.1.2 Gulf of Mexico Reef Fish Fishery



In the Gulf of Mexico Reef Fish fishery, FIF participants have higher subjective and relational well-being than nonparticipants, indicating a higher satisfaction with federal management and a smaller difference in satisfaction between federal and state management than nonparticipants. When prompted to explain their satisfaction with federal management, FIF participants were significantly less likely to mention concerns with quota management or fisheries data reporting than nonparticipants. This indicates that many of the dissatisfied remarks about federal management by FIF nonparticipants involved quota management and fisheries data.

Those who received the majority of their fishing revenue from the Gulf of Mexico Reef Fish fishery have lower material well-being than those who do not receive the majority of their fishing revenue from the fishery, when considered for normal operating conditions, (i.e., the period before the onset of the COVID-19 pandemic in March 2020). This finding is concerning because even before the impacts of the pandemic those fishermen most reliant on the fishery may have found it difficult to sustain a sufficient household income.

Conversely, when considering income from the fishing industry as a whole, including all fisheries in which a survey respondent may participate, those receiving a majority of household income from the fishing industry under normal operating conditions have higher job satisfaction than those whose income is less dependent on the fishing industry.

ES.1.3 Northeast Multispecies (Groundfish) Fishery



FIF participation has no detectable impact on well-being in the Northeast Multispecies (Groundfish) fishery. Nor was there a difference in well-being observed between commercial common pool and sector management permit holders. Although not significant, fishermen who received the majority of their household income from the fishing industry during normal

operating conditions had low relational well-being as reflected by their lower satisfaction with management and lower likelihood of having friends in their community they can count on for support.

Captain/crew members in the survey population have significantly lower relational and material well-being than those who do not actively harvest fish, e.g., quota share holders, permit holders, or those with an ownership interest that do not operate a vessel.

Limited access permit holders have significantly lower subjective and relational well-being, especially having lower satisfaction with federal management, than open access permit holders.

ES.2 Innovation

ES.2.1 Both Fisheries

The survey also asked permit holders of their awareness, use, and adoption of numerous fisheries innovations developed or tested by FIF or EMR grantees. Innovations were grouped into categories including those most relevant to commercial or recreational for-hire permit holders. In both fisheries, most fishermen (83.8%, 84.2%) were estimated to be aware of at least one innovation item surveyed and nearly half (41.1%, 44.0%) of all fishermen are estimated to have adopted at least one innovation item. “Fishermen” refers to the target population of the survey (i.e., individuals in the fishing industry in each of the target fisheries) and includes both FIF participants and nonparticipants. These results for each fishery are detailed in Section 2: Survey Results and Discussion and are generalizable to the respective fishery, with the confidence intervals provided. *Word of mouth* is the most common source reported for hearing about innovations.

Among both commercial and for-hire recreational fishermen, *Electronic Logbooks/Vessel Trip Reports (eVTR)* has the highest rate of awareness across all innovation items surveyed.¹ Electronic logbooks and vessel trip reports were the focus of numerous FIF and EMR grants aimed at modernizing data collection and reporting processes. Bolstered by the success of numerous pilot efforts funded by NFWF and others, electronic reporting is now required in the Gulf of Mexico Reef Fish for-hire recreational fishery and will soon be required in many New England fisheries. Fishermen who were aware of *Electronic Logbooks/Vessel Trip Reports (eVTR)* were more likely to list *Council Meetings/Presentations* and *Fishing Association/Sector* as source for hearing about innovations than those who are not aware of *Electronic Logbooks/Vessel Trip Reports (eVTR)*.

Electronic Logbooks/Vessel Trip Reports (eVTR)

Using tablet (such as an iPad), smartphone, or computer-based electronic logbooks to report catch on federal commercial fishing trips or for-hire recreational operators (including charter boats, headboats, party boats, Commercial Passenger Fishing Vessels, licensed fishing guides).

¹ Refer to table 7 in Section 2.4 for a list of all innovations surveyed.

The Diffusion of Innovation (DOI) Theory as first presented by Rogers in his book *Diffusion of Innovation* is a framework to describe how innovative ideas diffuse or spread through a population over time, ultimately resulting in the adoption of a new idea or change (Rogers, 2003). Refer to Section 2.4 for a more detailed discussion of DOI theory. On average, for all types of commercial innovations, the largest gap in the diffusion of innovation occurs between having interest and actually trying the innovation. That is, many fishermen who are aware of a given commercial innovation are interested but relatively few go on to try it. Across all commercial innovations, most respondents either did not cite a reason for not trying an innovation or indicated that they did not try the innovation because it was not required by the regulations.

For for-hire recreational innovations, on average, the majority of those who are aware of a given innovation have gone on to try it. A higher rate of awareness, more progress in the diffusion of innovation, and ultimately a higher rate of adoption is observed for for-hire recreational innovations relative to commercial innovations.

FIF participants have a higher rate of awareness for almost all innovation items surveyed in both fisheries, with a median difference across innovations between participants and nonparticipants of 10.0% in the Gulf and 16.4% in the Northeast. FIF participants were significantly more likely to list *Fishing Association/Sector* as a source for hearing about innovations.

ES.2.2 Gulf of Mexico Reef Fish Fishery



A total of 48.3% of fishermen in the Gulf of Mexico Reef Fish fishery are estimated to be aware of the FIF or EMR grant programs. 22.9% of fishermen indicated that they participated in a FIF or EMR funded project.

The three innovations that have low awareness but high adoption rates and would benefit from increased awareness are: (1) *Commercial Direct Marketing & Forward Contracting Marketplaces*, (2) *Commercial Training for Participation in Fisheries Management*, and (3) *For-hire Recreational Best Management Practices and Programs to Reduce Discard Mortality (FishSmart Program, Barotrauma Reduction/Descending Devices)*.

The three innovations with high awareness but low adoption, indicating difficulty gaining large-scale adoption, are (1) *Commercial Electronic Logbooks/Vessel Trip Reports (eVTR)*, (2) *For-hire Recreational Electronic Vessel Trip Reports (eVTR)*, and (3) *For-hire Recreational Electronic Reporting Apps*.

In addition to *Fishing Association/Sector*, FIF participants in the Gulf were significantly more likely to list *Council meetings/Presentations* as a source for hearing about innovations and significantly less likely to list *Trade journals/Newsletters* as a source. Those receiving the majority of their fishing revenue from the fishery were significantly more likely to list being *Recruited by organization that received FIF award* as a source for hearing about innovations.

ES.2.3 Northeast Multispecies (Groundfish) Fishery



A total of 37.0% of fishermen in the Northeast Multispecies (Groundfish) fishery are estimated to be aware of the FIF or EMR grant programs. 7.0% of fishermen indicated that they participated in a FIF or EMR funded project.

The two innovations that have low awareness but high adoption rates and would benefit from increased awareness are (1) *For-hire Recreational Best Management Practices and Programs to Reduce Discard Mortality (FishSmart Program, Barotrauma Reduction/Descending Devices)* and (2) *For-hire Recreational Training for Participation in Fisheries Management*.

Commercial Video Electronic Monitoring (VEM) had high awareness but a low adoption rate indicating difficulty gaining large-scale adoption among commercial fishermen. The most common reason provided for not trying VEM was that it was not useful or relevant to their business. For *Commercial VEM*, commercial sector management fishermen had higher rates of awareness and adoption than commercial common pool fishermen, and FIF participants had higher awareness and adoption than FIF nonparticipants.

In addition to *Fishing Association/Sector* as a source for hearing about innovations, FIF participants were significantly more likely to report being *Recruited by organization that received FIF award* as a source. Although the difference was not significant, commercial sector management fishermen cited *being Recruited by organization that received FIF award* more often than commercial common pool fishermen.

ES.3 FIF Participation in Both Fisheries

Across measures of well-being and innovation, clear patterns emerged where the impact of FIF could be seen. Most notably, in both priority fisheries, FIF participants are consistently aware of innovations and adopting innovations at a higher rate than nonparticipants. FIF participants are also hearing about innovations differently than nonparticipants, as they are more likely to list *Fishing Association/Sector* as a source in both fisheries, being *recruited by organization that received FIF award* in the Groundfish fishery, and *Sector Council meetings/Presentations* in the Reef Fish fishery. FIF participants had significantly higher subjective and relational well-being in the Gulf of Mexico Reef fishery, and while this pattern did not exist in the Northeast Multispecies (Groundfish) fishery, there was a much higher rate of FIF participation in the survey in the Gulf of Mexico (22.3%) relative to the Northeast (7.0%). Northeast commercial sector management fishermen did have a higher rate of FIF participation than their common pool counter parts, 11.4% compared to 2.6%, showing an impact of the concerted effort the FIF and EMR grant programs have made with commercial sector management fishermen in the Groundfish fishery. Throughout the survey data, it is clear that FIF has had influence in both of these fisheries. One fisherman in the Northeast was very clear about their perception of the benefits that FIF offers the fishing industry:

“I think the FIF has been a valuable tool for the fishing community to try to figure out tough challenges. Not all things work, but at least fishermen can try with less exposure. I hope the FIF continues into the future.”



1. Introduction

This section provides an overview of the purpose for the survey of well-being and innovation in the Gulf of Mexico Reef Fish and Northeast Multispecies (Groundfish) fisheries. A high-level overview of the methods to implement and analyze the surveys is included as well.

1.1 Background

NFWF developed the Fisheries Innovation Fund (FIF) in 2010 through a partnership with the National Oceanic and Atmospheric Administration (NOAA), the Walton Family Foundation, and other partners. The Fund aims to foster innovation and support effective participation of fishermen and fishing communities in the implementation of sustainable fisheries in the United States. By developing and implementing innovative solutions to common fisheries challenges, FIF hopes to help support environmental and economic performance and contribute to improved individual well-being of fishermen and fishing communities.

Since its inception, the FIF has awarded grants to 183 projects that have advanced innovations in capacity building, bycatch reduction, seafood marketing, electronic monitoring and reporting, and recreational fisheries. Attracting highly innovative solutions to many of the most pressing issues in fisheries management today, the FIF has successfully catalyzed over \$75.55 million in investments to fisheries throughout the United States.² Fishermen, the subject of this survey, rarely receive grants directly from NFWF. FIF grant recipients are typically nonprofits, fishing organizations, or management entities that work directly with fishermen and the fishing community to implement projects.

Through these investments, the FIF has fostered myriad innovations that have benefited fishing communities and businesses across the country. An external evaluation³ conducted in 2014 concluded that the FIF has been highly successful in identifying and supporting projects that are consistent with the revitalization of U.S. fisheries. The report recommended that the FIF begin complementing its emphasis on innovation with a focus on the dissemination and uptake of grantee innovations. Starting in 2015 NFWF placed its focus on projects that implement proven innovations at larger scales within a subset of priority fisheries, including the New England Groundfish fishery, the Gulf of Mexico Reef Fish fishery, the Pacific Groundfish fishery, and the Gulf of Alaska Halibut and Groundfish fisheries. To better measure the impact of investments made within these priority fisheries, NFWF has also developed a FIF Evaluation Framework designed to measure programmatic impact in four distinct but interrelated ways: (1) economic impact, (2) environmental impact, (3) well-being, and (4) the dissemination and adoption of innovations.

The innovation and well-being components of the FIF Evaluation Framework aim to answer two key research questions through a survey to both commercial and for-hire recreational fishermen operating within a subset of the four priority fisheries:

1. To what extent have FIF innovations been disseminated to and implemented by fishermen in the areas where FIF grants have been awarded?

² Estimates include grantee matching funds and grants funded through the Fisheries Innovation Fund and the Electronic Monitoring and Reporting Grant Program, which was launched in 2015 in partnership with NOAA as a separate funding opportunity under the FIF.

³ Evaluation of the National Fish and Wildlife Foundation, Fisheries Innovation Fund. 2014. Stratus Consulting, Inc. Available online:

<https://www.nfwf.org/sites/default/files/results/evaluationreports/Documents/fif-final-evaluation-report.pdf>

2. Have these fishermen's perceptions of subjective, relational, and material well-being increased in NFWF's priority fisheries?

1.1.2 Purpose

This baseline survey of fisherman well-being and disseminations of innovative fisheries solutions was designed to enable NFWF and their partners to answer the two key research questions for commercial and for-hire recreational fishermen in the Gulf of Mexico Reef Fish fishery and the Northeast Multispecies Groundfish fishery. NFWF anticipates completing additional baseline surveys in the West Coast groundfish and Alaska Halibut and Groundfish fisheries in the future. The results provide insight into the extent to which fishermen are aware of and have implemented FIF innovations in their fisheries. Also considered are fishermen's perceptions of their well-being in relation to the COVID-19 pandemic.

1.1.3 Survey Methods

In 2017, NFWF developed a draft survey to evaluate changes in fishermen well-being and diffusion of innovations within FIF priority fisheries. RTI worked in collaboration with NFWF to refine the draft version of the survey instrument with focus on the Gulf of Mexico Reef Fish and New England Groundfish fisheries. It was critical to adapt the well-being questions to address differences before and after the start of the COVID-19 pandemic to understand fishermen's baseline well-being separate from all the ways in which their well-being may have changed as a result of the pandemic. Initial revisions were made to the web instrument, which was then adapted to a paper version to allow those fishermen who did not have web access or preferred to complete a paper questionnaire to participate. Additional refinements were made after cognitive interviewing with six fishermen of whom five were for-hire recreational and one was dual-permitted. These six fishermen were evenly split between the Gulf and New England and most tested the web version of the instrument while one tested the paper instrument. This process is discussed further in Appendix A-1.

To identify the target population for each fishery, RTI identified all vessel permit holders in each fishery as of December 17, 2020. Because the two populations of interest for this survey are small, RTI attempted to contact every known member of the target populations to participate rather than taking a probability sample. The specific members of the two fisheries in the population of commercial and for-hire recreational fishermen were those actively participating in the two target fisheries. Mailing addresses for each fishing business associated with all of the known members of the target population were obtained through NOAA's publicly available vessel files.⁴ A total of 3,481 unique fishing businesses were identified across both fisheries, with 1,530 holding permits in the Gulf of Mexico Reef Fish fishery and 1,951 in the New England Multispecies (Groundfish) fishery. More detail about the identification of the target population is found in Appendix A-2.

In early February 2021, permit holders were first mailed an introductory letter, web invitation, and \$5 cash pre-incentive; a week later, they received a postcard reminder with web

⁴ <https://www.fisheries.noaa.gov/southeast/resources-fishing/frequent-freedom-information-act-requests-southeast-region>;
<https://www.greateratlantic.fisheries.noaa.gov/public/public/web/NEROINET/aps/permits/data/index.html>

credentials (i.e., a self-mailer). Three weeks later, those who had not responded were mailed a full paper survey and web invitation, followed two weeks later by another self-mailer with web credentials. The final survey mailing was sent in mid-April and the web survey stayed open through mid-May. All permit holders were offered a \$15 post-incentive for completion of the survey. Additional information on the contact protocol and survey receipting is in Appendix A-3.

1.1.4 Analysis Methods

All quantitative analyses conducted within this report are weighted analyses using the nonresponse adjusted weight whose creation is detailed in Appendix A-2. Comparisons of means (e.g., job satisfaction on a 0- to 10-point scale) were done through a t-test to determine if the underlying means in different subgroups are significantly different. Comparisons of categorical variables (e.g., four categories of material well-being) were conducted with a chi-square test to determine if the distributions of the variables are significantly different between subgroups. The threshold for significance used in this analysis is the 5% level (i.e., $\alpha = 0.05$). Any time in this report where a result is described as significant it indicates statistical significance at the 5% level.

In addition to the quantitative analysis of well-being and innovation items, RTI did an analysis of the open-ended text responses in the survey to identify comments that are related to one another in topic or sentiment. The specific methods utilized for this analysis are discussed in Appendix A-4.

The COVID-19 pandemic created massive upheaval around the world including the United States starting in March 2020. The purpose of this study is to establish baseline measures of well-being and innovation for fishermen in the Gulf of Mexico Reef Fish fishery and the Northeast Multispecies (Groundfish) fishery such that longitudinal comparisons can be conducted over time. However, the impact of the COVID-19 pandemic cannot be ignored when evaluating this or any specific population during this time frame. As such, this analysis establishes baseline material well-being as reflected by the feelings of fishermen about their household income prior to March 2020. These estimates of material well-being before March 2020 are intended to be the baseline estimates to which future survey results are compared. In an attempt to understand the effects of the pandemic on the fishermen in these fisheries, additional analyses of well-being in the context of fishermen's well-being before and after March 2020 are also presented.



2. Survey Results and Discussion

This section includes the results from the analysis of well-being and innovation in the Gulf of Mexico Reef Fish and Northeast Multispecies (Groundfish) fisheries. The section includes an overview of the cases included in the analysis and the well-being and innovation results within each fishery, including the impacts of the COVID-19 pandemic on well-being.

Overview of cases included in analysis

Table 2 displays the profile of cases included in the analysis for each fishery by key subgroups used in the analysis. Refer to Appendix A.2 for more information on the subset of respondents retained for analysis. This is intended to give the reader context for the characteristics of fishermen included in the analysis for each fishery. Although the purpose of the table is not to compare fisheries, it should be noted that the context of respondents in each fishery differs. The majority of cases retained for analysis from the Gulf of Mexico Reef Fish fishery were for-hire recreational, whereas the Northeast Multispecies (Groundfish) fishery cases were predominantly commercial. Respondents included for analysis from the Gulf fishery had higher FIF participation, a higher rate of active fishermen, and a higher amount of reliance on the fishery and fishing for their income than those from the Northeast Multispecies (Groundfish) fishery.

Table 2. Profile of Cases Included in Analysis

Subgroup	Gulf of Mexico Reef Fish Fishery	Northeast Multispecies (Groundfish) Fishery
Sector	28.8% Commercial only 52.7% For-hire recreational only 18.5% Dual permitted	67.3% Commercial 32.4% Recreational
FIF Participants	22.3%	7.0%
Actively fished in the target fishery in past 3 years	89.1%	67.7%
Target fishery provides majority of fishing revenue	75.7%	33.8%
Fishing industry ¹ provides majority of household income before March 2020	63.1%	55.4%
Vessel Owner	91.0%	88.8%
Captain/Crew	79.6%	81.4%
Permit Holder	85.9%	75.9%
Quota Share Owner	30.8%	18.8%
Permit Type	n/a	68.7% Open Access 31.3% Limited Access
Commercial Category ²	n/a	50.5% Sector Management 49.5% Common Pool

Notes: Percentages are weighted. Roles in the fishery (e.g., vessel owner, captain/crew) are not mutually exclusive.

¹Respondents considered income from all state or federal fisheries in which they participate including the two target fisheries.

²Percentages among commercial fishermen.

Table 3 presents a profile of FIF participants included in the analysis in each fishery. These are the subset of cases retained for analysis who were identified as FIF participants through their survey response or NFWF administrative records of FIF participation. Although the purpose of the table is not to compare fisheries, it should be noted how the composition of FIF participants resembles and differs from the cases retained for analysis in their respective fishery. The majority of FIF participants from the Gulf of Mexico Reef Fish fishery were for-hire recreational, whereas the Northeast Multispecies (Groundfish) fishery cases were predominantly commercial. FIF participants from the Gulf of Mexico Reef Fish fishery had a higher rate of active fishermen, and a higher amount of reliance on the fishery and fishing for their income than those from the Northeast Multispecies (Groundfish) fishery. However, in both fisheries, FIF participants were more likely to be actively fishing and have higher reliance on the fishing industry and their respective fishery than all cases included for analysis. Only applicable to the Northeast Multispecies (Groundfish) fishery, the majority of FIF participants that responded to the survey operate under commercial sector management, whereas approximately half of the cases retained for analysis are in the common pool. Additionally, most FIF participants hold limited access permits and the majority of cases retained for analysis hold open access permits. These differences in commercial category and permit type indicate FIF participants participate in the New England Multispecies (Groundfish) fishery differently than most respondents.

Table 3. Profile of FIF Participants Included in Analysis

Subgroup	Gulf of Mexico Reef Fish Fishery	Northeast Multispecies (Groundfish) Fishery
Sector	13.1% Commercial only 57.7% For-hire recreational only 29.2% Dual permitted	73.0% Commercial 27.0% For-hire recreational
Actively fished in the Gulf of Mexico Reef Fish fishery in past 3 years	94.0%	82.7%
Target fishery provides majority of <u>fishing revenue</u>	90.6%	59.7%
Fishing industry ¹ provides majority of <u>household income</u> before March 2020	80.9%	67.5%
Permit Type	n/a	39.9% Open Access 60.1% Limited Access
Commercial Category ²	n/a	81.6% Sector Management 18.4% Common Pool

Percentages are weighted.

¹ Respondents considered income from all state or federal fisheries in which they participate including the two target fisheries..

²Percentages among commercial fishermen.

2.2 Well-being—Gulf of Mexico Reef Fish Fishery



To summarize well-being within the Gulf of Mexico Reef Fish fishery and establish baseline estimates for comparison to future measurements, the following results are presented irrespective of subgroup. Accompanying the estimates are the lower and upper bound of the corresponding 95% confidence interval.

- Subjective well-being** measures tend toward the higher side of the scales on the survey instrument. Results revealed a **mean of 7.2 (6.9, 7.4) for job satisfaction** on a 0- to 10-point scale and a **mean of 11.6 (11.4, 11.8) for personal satisfaction/happiness** on a 3- to 15-point scale, where 10 and 15, respectively, indicate the highest satisfaction. Figure 2 displays a weighted histogram of every 0 to 10 value selected for job satisfaction. Figure 3 displays a weighted histogram of every 3 to 15 value for personal satisfaction/happiness. In both figures 2 and 3, the column highlighted in orange indicate the median value for each wellbeing measure.

Figure 2. Job Satisfaction on a 0- to 10-point Scale in the Gulf of Mexico Reef Fish Fishery

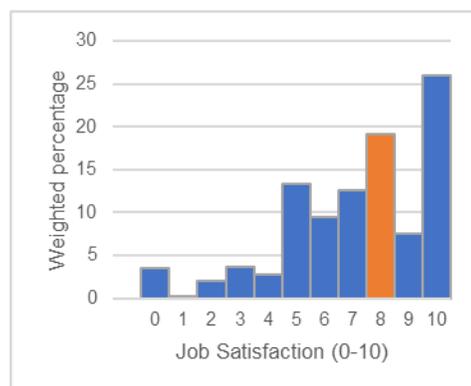
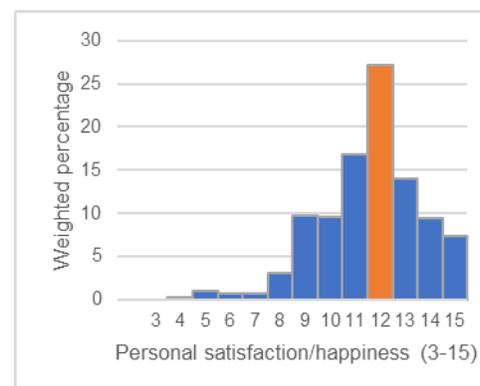


Figure 3. Personal Satisfaction/Happiness on a 3- to 15-point Scale in the Gulf of Mexico Reef Fish Fishery



- For **relational well-being**, satisfaction with state management is significantly higher than with federal management. The mean was 4.8 (4.5, 5.1) for satisfaction with federal management and was 6.4 (6.1, 6.7) for satisfaction with state management on the same 0- to 10-point scale, where 10 indicates the highest satisfaction. Figures 4 and 5 display a weighted histograms of every 0 to 10 value selected for satisfaction with federal and state management, respectively. In both figures 4 and 5, the column highlighted in orange indicate the median value for each wellbeing measure. The overwhelming majority of respondents, 92.1% (90.0%, 94.4%) feel they have friends in their community they can count on for support.

Figure 4. Satisfaction with Federal Management on a 0- to 10-point Scale in the Gulf of Mexico Reef Fish Fishery

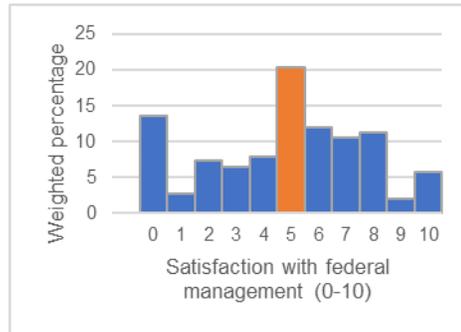
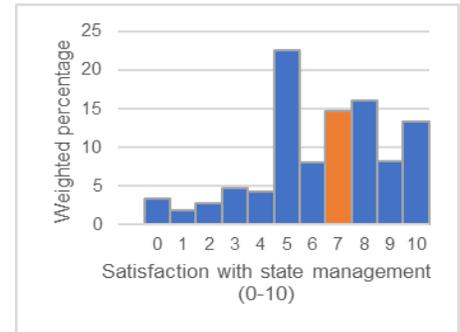
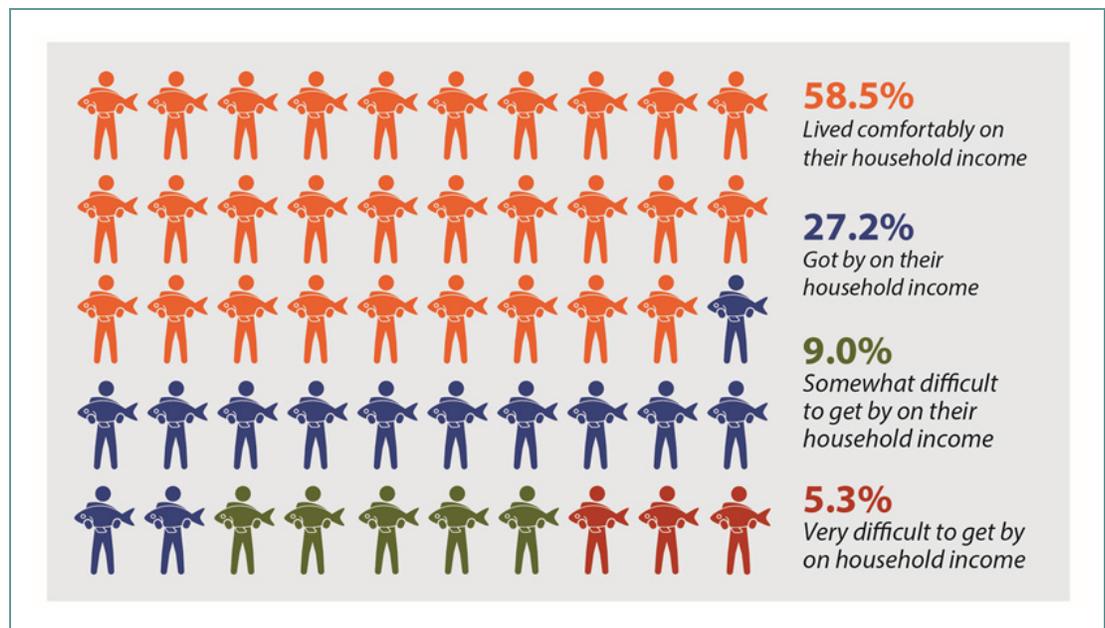


Figure 5. Satisfaction with State Management on a 0- to 10-point Scale in the Gulf of Mexico Reef Fish Fishery



- For **material well-being** before March 2020, 58.5% (53.6%, 63.2%) of fishermen lived comfortably on their household income, 27.2% (23.1%, 31.8%) got by, and 14.3% (11.2%, 18.2%) found it somewhat or very difficult to get by on their household income. Figure 6 depicts how fishermen in the Gulf of Mexico Reef Fish fishery felt about their material well-being before the onset of the COVID-19 pandemic.

Figure 6. Material wellbeing: Feelings about Income



2.2.1 Subgroups

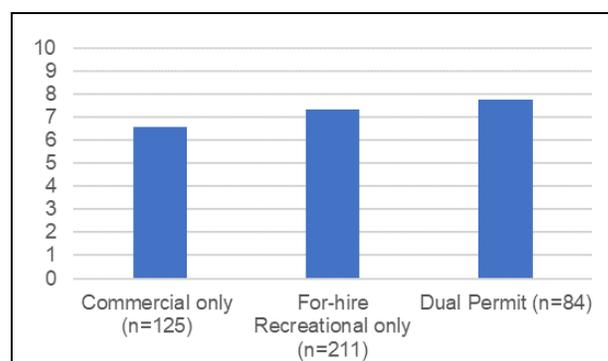
Results from the well-being survey responses were analyzed across various subgroups of interest within the Gulf of Mexico Reef Fish fishery (see Tables 2 and 3). The subgroups are not intended to be presented as baseline estimates for future longitudinal analysis, and thus confidence intervals are not presented. This does not imply that longitudinal comparisons across and between subgroups cannot be made; however, the purpose of this section is to present comparisons within subgroups for this baseline iteration of the survey within the Gulf of Mexico Reef Fish fishery. For confidence intervals of associated estimates, please refer to Appendix B.

Sector (Commercial-only, For-hire Recreational-only, Dual Permit)

In the Gulf of Mexico Reef Fish fishery, fishermen were classified into one of three mutually exclusive sectors: commercial-only, for-hire recreational-only, and dual permit, where dual-permitted fishermen fish under both a commercial and recreational permit. Dual-permitted fishermen have the highest job satisfaction and personal satisfaction/happiness, but no noticeable differences for dual-

permitted fishermen were observed for other measures of well-being. For-hire recreational-only fishermen have significantly higher job satisfaction than commercial-only fishermen. Figure 7 displays job satisfaction on a 0 to 10-point scale by sector for fishermen in the Gulf of Mexico Reef Fish fishery. For-hire recreational-only fishermen also have the highest satisfaction with state management across the three sectors. There are no significant differences between sectors in material well-being.

Figure 7. Job Satisfaction in the Gulf of Mexico Reef Fish Fishery by Sector on a 0- to 10-point Scale

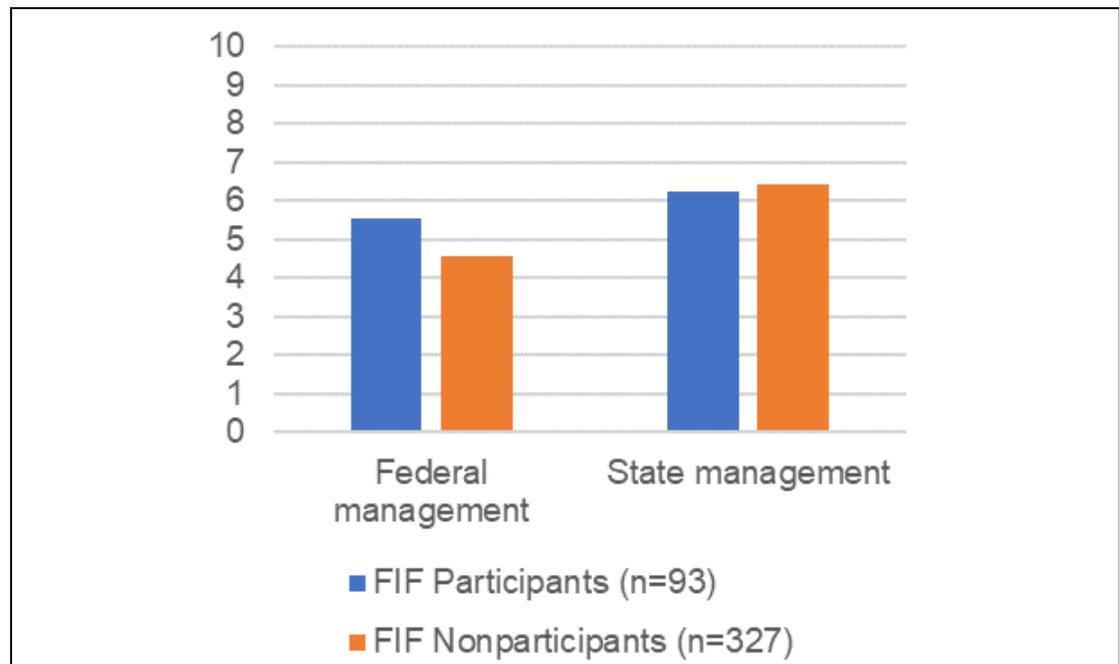


In open-ended responses about job satisfaction, commercial-only fishermen were more likely than for-hire recreational-only fishermen to discuss management, prices (e.g., fish prices, fuel prices), and quota management (e.g., individual fishing quotas (IFQ), paying for quota). Given that commercial fishermen have lower job satisfaction than for-hire recreational fishermen, the sentiment of commercial fishermen's remarks about fisheries management, prices, and quota management was predominantly negative. Additionally, these negative remarks are consistent with the lower satisfaction commercial fishermen have with fisheries management. For-hire recreational-only fishermen were more likely than commercial-only fishermen to express love for what they do, talk about personal freedom, and fishing seasons (e.g., discussing the length of seasons).

FIF Participation

FIF participants have higher subjective and relational well-being than nonparticipants. Specifically, FIF participants have higher job satisfaction for subjective well-being, and as displayed in Figure 8, for relational well-being they have higher satisfaction with federal management, and a smaller difference in satisfaction between federal and state management than nonparticipants. There were no differences observed in material well-being before March 2020 among FIF participants.

Figure 8. Satisfaction with Federal and State Management in the Gulf of Mexico Reef Fish Fishery by FIF Participation on a 0- to 10-point Scale



In open-ended responses about job satisfaction, FIF participants in the Gulf were significantly more likely than non-participants to talk about business and significantly less likely to talk about conservation, vessel monitoring, and regulations. In open-ended responses about satisfaction with federal management, FIF participants were significantly less likely to talk about quota management and reporting. As FIF nonparticipants have lower satisfaction with federal management, it follows that the remarks of FIF nonparticipants about quota management and reporting were negative. When considered alongside FIF participants' higher satisfaction with federal management, this suggests that FIF participants in the Gulf may be less likely to have difficulty navigating quota management policies and reporting requirements than FIF nonparticipants.

Gulf of Mexico Reef Fish fishery provides majority of fishing revenue

Those fishermen who receive the majority of their fishing revenue from the Reef Fish fishery (regardless of FIF participation) indicated having a less sufficient household income during normal operating conditions than those who do not receive the majority of their fishing revenue from the fishery. There is no relationship between subjective well-being and whether the majority of fishing revenue comes from the Reef Fish fishery.

In open-ended responses at the end of survey where respondents were given the option to share anything additional, those who receive the majority of their fishing revenue from the Gulf of Mexico Reef Fish fishery were significantly more likely to talk about issues related to conservation, reporting, government, management, and recreational fishing. This group was also significantly more likely to mention NFWF or FIF in their responses and to provide suggestions for changes to the fishery.

Fishing industry provides majority of household income before March 2020

Those receiving a majority of household income from the fishing industry during normal operating conditions have significantly higher subjective well-being, specifically regarding job satisfaction, than those receiving less than 50% of household income from the fishing industry. No significant differences were observed for relational or material well-being.

Roles in the Fishing Industry

Four roles (vessel owner, captain/crew, permit holder, and quota/share owner) were assessed for differences across the measures of well-being. Vessel owners have significantly higher relational well-being compared to non-owners, specifically in relation to satisfaction with state management. In addition, there were no significant differences by role for subjective or material well-being prior to March 2020. It is important to note that there is overlap across these roles so each comparison is to those who are not in that role, not the roles to each other.

2.3 Well-being—Northeast Multispecies (Groundfish) Fishery



To summarize well-being within the Northeast Multispecies (Groundfish) fishery and establish baseline estimates for comparison to future measurements the following results are presented irrespective of subgroups. Accompanying the estimates are the lower bound and upper bound of the corresponding 95% confidence interval.

- **Subjective well-being** measures tend toward the higher side of the scales on the survey instrument. There was a **mean of 6.9 (6.6,7.1) for job satisfaction** on a 0- to 10-point scale and a **mean of 11.1 (10.9, 11.3) for personal satisfaction/happiness** on a 3- to 15-point scale, where 10 and 15, respectively, indicated the highest satisfaction. Figure 9 displays a weighted histogram of every 0 to 10 value selected for job satisfaction. Figure 10 displays a weighted histogram of every 3 to 15 value for

personal satisfaction/happiness. In both figures 9 and 10, the column highlighted in orange indicate the median value for each wellbeing measure.

Figure 9. Job Satisfaction on a 0- to 10-point Scale in the Northeast Multispecies (Groundfish) Fishery

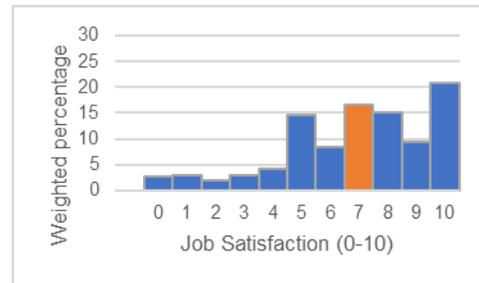
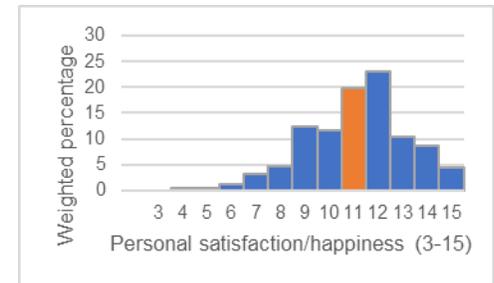


Figure 10. Personal Satisfaction/Happiness on a 3- to 15-point Scale in the Northeast Multispecies (Groundfish) Fishery



- For relational well-being, satisfaction with state management is significantly higher than with federal management. The mean was 4.5 (4.2, 4.8) for satisfaction with federal management and the mean was 5.8 (5.5, 6.1) for satisfaction with state management on the same 0- to 10-point scale, where 10 indicates the highest satisfaction. Figures 11 and 12 display weighted histograms of every 0 to 10 value selected for satisfaction with federal and state management, respectively. In both figures 11 and 12, the column highlighted in orange indicate the median value for each wellbeing measure. The overwhelming majority of respondents (94.0%) feel they have friends in their community they can count on for support.

Figure 11. Satisfaction with Federal Management on a 0- to 10-point Scale in the Northeast Multispecies (Groundfish) Fishery

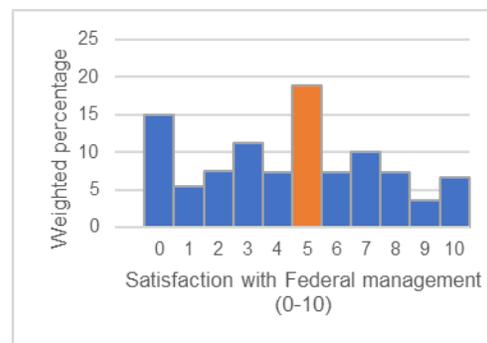


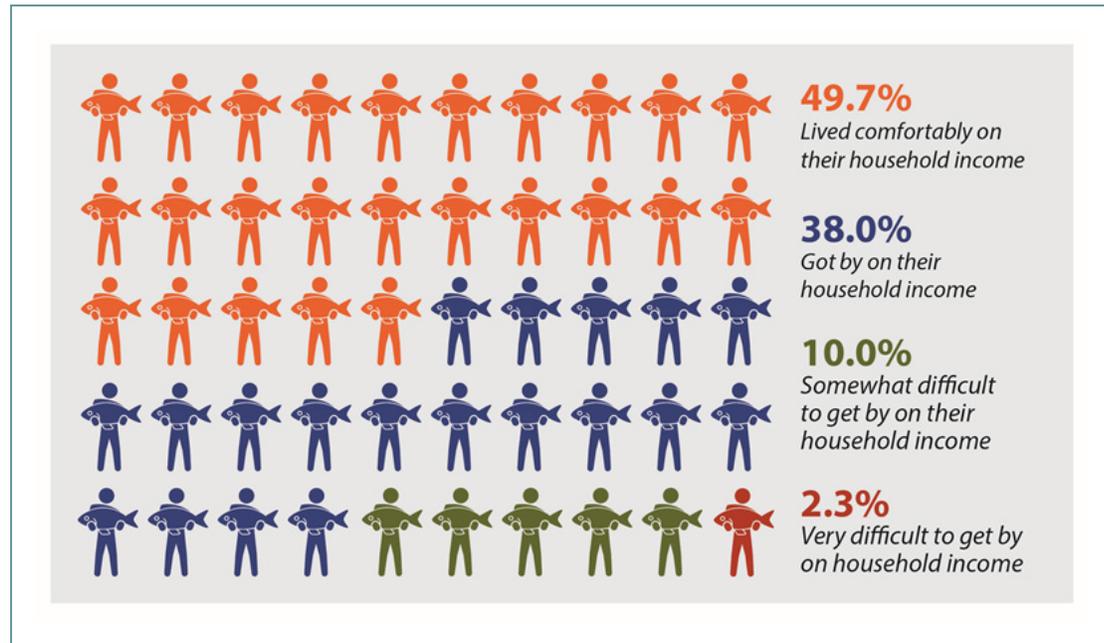
Figure 12. Satisfaction with State Management on a 0- to 10-point Scale in the Northeast Multispecies (Groundfish) Fishery



- For **material well-being** before March 2020, 49.7% (45.6%, 54.2%) of fishermen lived comfortably on their household income, 38.0% (33.7%, 42.5%) got by, and 12.3% (9.6%, 15.8%) found it somewhat or very difficult to get by on their household income.

Figure 13 depicts how fishermen in the Reef Fish fishery felt about their material well-being before the onset of the COVID-19 pandemic.

Figure 13. Material wellbeing: Feelings about Income in the Northeast Multispecies (Groundfish) Fishery



2.3.1 Subgroups

Results from the well-being survey responses were analyzed across various subgroups of interest within the Northeast Multispecies (Groundfish) fishery (see Tables 2 and 3). The subgroups are not intended to be presented as baseline estimates for future longitudinal analysis, and thus confidence intervals are not presented. This does not imply that longitudinal comparisons across and between subgroups cannot be made; however, the purpose of this section is to present comparisons within subgroups for this baseline iteration of the survey within the Groundfish fishery. For confidence intervals of associated estimates, please refer to Appendix B.

Sector (Commercial, For-hire Recreational)

In the Northeast Multispecies (Groundfish) fishery, fishermen were classified into one of two mutually exclusive sectors: commercial or for-hire recreational. For-hire recreational fishermen have significantly higher subjective and relational well-being than do commercial fishermen in the Groundfish fishery, with no significant difference between the sectors in material well-being before March 2020. Figure 14 displays the difference in satisfaction with federal and state management by sector.

In evaluating open-ended responses about job satisfaction, for-hire recreational fishermen, who have significantly higher job satisfaction than commercial fishermen, were significantly more likely to express love for their work and talk about personal freedom. As noted by one for-hire recreational fisherman: *“Love My Job!! People I deal with, being on the water, Satisfaction of making a person smile with them catching a fish or seeing something amazing in nature.”*

FIF Participation in the Northeast Multispecies (Groundfish) Fishery

FIF participation has no relationship with well-being in the Northeast Multispecies fishery.

In open-ended responses about job satisfaction, FIF participants talked about quotas more than nonparticipants. In open-ended responses at the end of survey where respondents were given the option to share anything additional, FIF participants talked more about industry decline and the future of fishing than nonparticipants. One FIF participant in the Northeast shared thoughts about FIF, which reflect positively on the program: *“I think the FIF has been a valuable tool for the fishing community to try to figure out tough challenges. Not all things work, but at least fishermen can try with less exposure. I hope the FIF continues into the future.”*

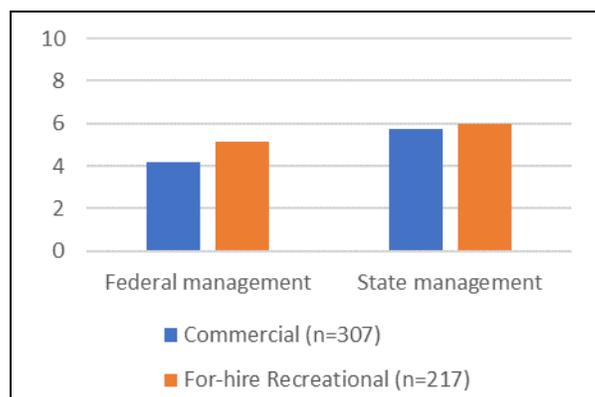
Actively Fished in the Northeast Multispecies (Groundfish) Fishery in Past Three Years

There is no evidence of differences in well-being between those actively fishing in the Groundfish fishery and those not actively fishing in the fishery. Generally, the subjective and relational well-being of those actively fishing in the fishery tend to be higher than of those who are not actively fishing in the fishery, but the differences are small and statistically insignificant.

Northeast Multispecies (Groundfish) Fishery provides majority of fishing revenue

There is no evidence of differences in well-being between fishermen who receive a majority of their fishing income from the Northeast Multispecies fishery and fishermen who do not.

Figure 14. Satisfaction with Federal and State Management by Sector in the Northeast Multispecies (Groundfish) Fishery



Fishing industry provides majority of household income before March 2020

Those receiving a majority of their household income from the fishing industry under normal operating conditions have significantly lower personal happiness/ satisfaction than those making less than 50% of income from the fishing industry. In this context, the fishing industry includes the Groundfish fishery and other federal and state fisheries as well. As displayed in Figure 15, they also have lower relational well-being, being significantly less satisfied with federal management and being less likely to have friends in their community they can count on for support. Significant differences regarding material well-being were not observed between those reliant on the fishing industry for the majority of income and those who were not.

In open-ended responses about satisfaction with federal management, those receiving a majority of their household income from the fishing industry

were more likely to express the need for managers to engage more effectively with fishermen. A quote from such a fisherman: *“Fisheries managers are too disconnected from the fishermen, the resource, and most importantly the communities and infrastructure that rely on these resources.”*

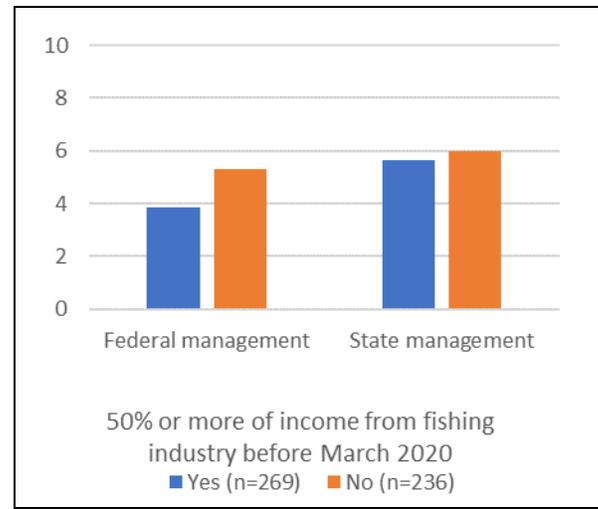
Roles in the Fishing Industry

Four roles (vessel owner, captain/crew, permit holder, and quota/share owner) were assessed for differences across the types of well-being. It is important to note that there is overlap across these roles so each comparison is to those who are not in that role, not the roles to each other. Captain/crew members have significantly lower relational and material well-being than those who do not actively harvest fish. Permit holders have significantly lower relational well-being than non-permit holders, specifically in relation to satisfaction with federal management and their community. Similarly, quota share owners have significantly lower relational well-being than non-owners, but specific only to federal management. There were no significant differences by role for subjective well-being.

Permit Type (Open Access, Limited Access)

Limited access permit holders have significantly lower subjective and relational well-being than open access permit holders, but no differences for material well-being were observed. Differences in job satisfaction by permit type are displayed in Figure 16. Regarding relational well-being specifically, limited access permit holders are significantly less satisfied with federal management than open access permit holders.

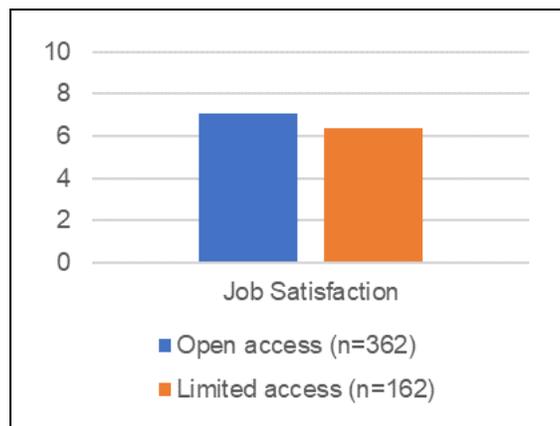
Figure 15. Satisfaction with Federal and State Management by Proportion of Income from Fishing



In open-ended responses about job satisfaction, limited access fishermen were significantly more likely to mention quota management than open access fishermen. In open-ended responses about federal management, limited access fishermen talked more often about how the regulations affect small boats than open access fishermen. Given the lower job satisfaction and satisfaction with federal management, the remarks made by limited access fishermen about quota management and small boats in relation to federal management are generally negative.

For context regarding the type of fishermen classified as open and limited access, Table 4 displays a profile of fishermen with both permit types.

Figure 16. Job Satisfaction by Permit Type on a 0- to 10-point Scale in the Northeast Multispecies (Groundfish) Fishery



Percentages are weighted.

Table 4. Profile by Permit Type in the Northeast Multispecies (Groundfish) Fishery

	Permit Type	
	Open Access	Limited Access
Sector	56.8% Commercial 43.2% For-hire recreational	91.4% Commercial 8.6% For-hire recreational ¹
FIF Participants	4.1%	13.5%
Actively fished in the Northeast Multispecies (Groundfish) fishery in past 3 years	69.5%	63.6%
Northeast Multispecies (Groundfish) fishery provides majority of <u>fishing revenue</u>	32.4%	36.8%
Fishing industry ² provides majority of <u>household income</u> before March 2020	45.1%	78.2%

Percentages are weighted.

¹There are no limited access for-hire recreational permits. Sector was derived from survey data, and permit type was derived from frame data.

²Respondents considered income from all state or federal fisheries in which they participate including the two target fisheries.

Commercial Category (Sector Management, Common Pool)

No significant differences exist for any measure of well-being between those operating under sector management and those in the common pool, nor were any trends observed between the two commercial categories. Table 5 displays a profile of respondents classified under commercial sector management and common pool.

Table 5. Profile by Northeast Multispecies (Groundfish) Commercial Categories

	Commercial Category	
	Sector Management	Common Pool
FIF Participants	11.4%	2.6%
Actively fished in the Northeast Multispecies (Groundfish) fishery in past 3 years	65.7%	55.2%
Northeast Multispecies (Groundfish) fishery provides majority of <u>fishing revenue</u>	40.1%	20.0%
Fishing industry ¹ provides majority of <u>household income</u> before March 2020	67.2%	52.0%

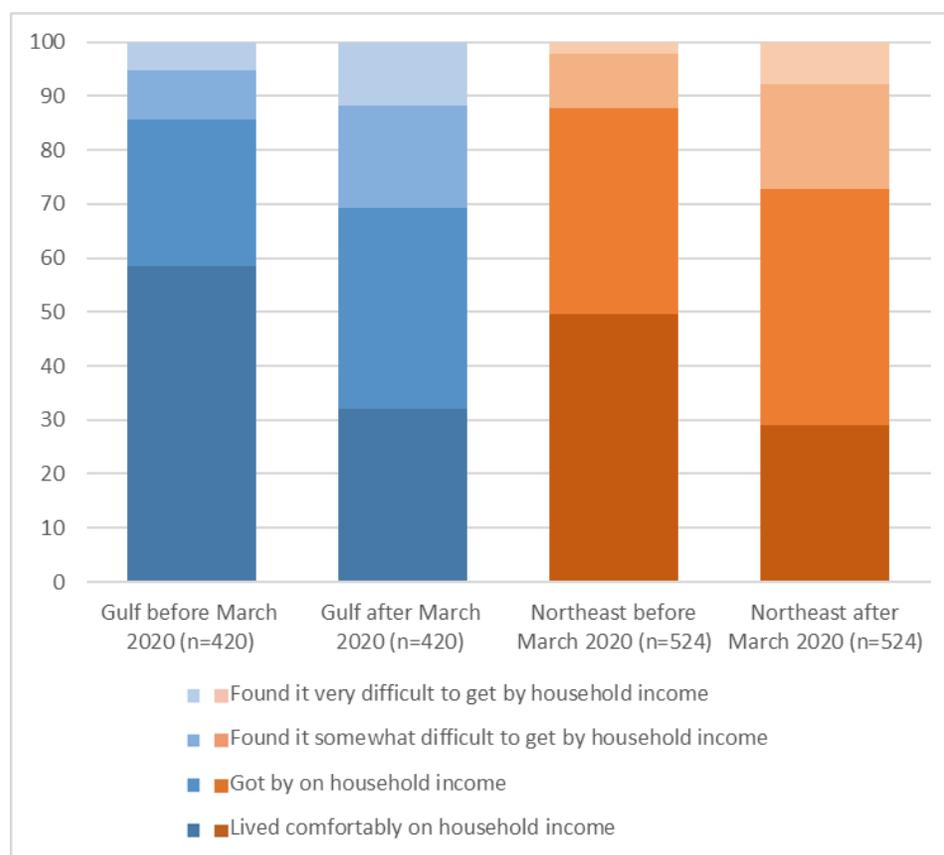
Percentages are weighted.

¹Respondents considered income from all state or federal fisheries in which they participate including the two target fisheries.

2.4 Impact of the COVID-19 Pandemic on Fishermen's Material Well-being

This section discusses well-being, specifically material well-being, after the onset of the COVID-19 pandemic in the U.S. in March 2020 and attempts to measure some of the effects the COVID-19 pandemic is having on fishermen in the Gulf of Mexico Reef Fish fishery and Northeast Multispecies (Groundfish) fishery. At the time of this survey, the pandemic was still ongoing and its full impact on fishermen may not yet have been realized. Point estimates presented in parentheses display the associated point estimate for the Gulf followed by the Northeast (e.g., Gulf, Northeast).

The pandemic is having massive global implications, and the survey results show that the material well-being of fishermen in both target fisheries is being affected. In both fisheries, significantly more fishermen found it somewhat or very difficult to get by on household income after March 2020 (30.8%, 27.3%) than before March 2020 (14.3%, 12.3%). Before March 2020, most fishermen in the Gulf of Mexico Reef Fish fishery (58.5%) and nearly half in the Northeast Multispecies (Groundfish) fishery (49.7%) lived comfortably on their household income, which was reduced to 32.0% and 29.1%, respectively, after the onset of the COVID-19 pandemic. Figure 17 depicts how feelings about the sufficiency of income changed before and after the onset of the COVID-19 pandemic.

Figure 17. Material Well-being Before and After March 2020 by Fishery

Throughout Figure 17 it is clear that fishermen within both fisheries have a lower material well-being after the onset of the COVID-19 pandemic in March 2020 than they did before the pandemic. In an open-ended response about job satisfaction, a respondent who lost income during the COVID-19 pandemic explained their current situation as a fisherman in the midst of the pandemic:

“I was an owner Captain and loved my job, it’s just due to lack of customers during this pandemic and overhead costs, my best option was to sell my offshore boat hold on to my permits and wait for the economy to get better. I guess the fish get a break lol.”

In addition to lower household income, most fishermen (72.1%, 85.0%) suspended their fishing operations for at least one month after the onset of the COVID-19 pandemic. Of those fishermen who suspended operations, in both fisheries the majority had resumed (66.5%, 77.2%) by the time of their survey response between February and June 2021. Refer to appendix B for additional details regarding well-being after the onset of the COVID-19 pandemic in the Gulf of Mexico Reef Fish and Northeast Multispecies (Groundfish) fisheries. Table 6 displays a profile of the characteristics fishermen in the Gulf of Mexico Reef Fish

fishery and Northeast Multispecies (Groundfish) fisheries who lost household income after the onset of the COVID-19 pandemic in March 2020.

Table 6. Profile of Those Who Lost Household Income Since March 2020

Subgroup	Gulf of Mexico Reef Fish Fishery	Northeast Multispecies (Groundfish) Fishery
Sector	26.0% Commercial only 55.1% For-hire recreational only 18.8% Dual permitted	63.2% Commercial 36.8% For-hire recreational
FIF Participants	23.5%	8.1%
Actively fished in the target fishery in past 3 years	93.4%	69.9%
Target fishery provides majority of <u>fishing revenue</u>	81.6%	36.6%
Fishing industry ¹ provides majority of <u>household income</u> before March 2020	67.8%	61.9%
Permit Type	n/a	67.9% Open Access 32.1% Limited Access
Commercial Category ²	n/a	50.0% Sector Management 50.0% Common Pool

Percentages are weighted. Percentages are weighted. ¹Respondents considered income from all state or federal fisheries in which they participate including the two target fisheries. ²Percentages among commercial fishermen.

As depicted in Table 6, 81.6% of fishermen who lost household income after the onset of the COVID-19 pandemic were reliant on the Gulf of Mexico Reef Fish fishery for the majority of their fishing revenue, and 36.6% were reliant on the Northeast Multispecies (Groundfish) fishery for the majority of their fishing revenue. In both target fisheries, those receiving a majority of their fishing revenue from the given target fishery report having a less sufficient household income after the onset of the pandemic in March 2020 than those who do not receive at least 50% of their fishing revenue from the target fishery. Furthermore, fishermen in both fisheries receiving a majority of their household income from fishing before the onset of the pandemic, but not after the pandemic began, have significantly lower material well-being after the onset of the pandemic than fishermen whose proportion of income from the fishing industry did not change. This suggests the income lost from their fishing operations was not replaced and their financial well-being was greatly affected. Interestingly, in both fisheries, fishermen who received a majority of their income from fishing even after the onset of the pandemic felt their personal income was less sufficient than did fishermen making less than 50% of their income from fishing after the onset of the pandemic. This suggests that

respondents who rely on other industries for their household income may have fared better during the pandemic than those who are mostly reliant on the fishing industry.

These observations from the survey of well-being and innovation regarding lowered material well-being in relation to the COVID-19 pandemic align with NOAA reports describing the impact of the COVID-19 pandemic in fisheries in the southeast and northeast United States. From January to June 2020, commercial total landings revenue in the Gulf Reef Fish fishery was down 20% relative to 2019 (NOAA, 2021a). In the Northeast Groundfish fishery, monthly commercial cumulative revenue was down approximately 10% from January to June 2020 relative to the average from 2015-2019 (NOAA, 2021b). In a survey conducted by NOAA of for-hire recreational fishermen in the Gulf of Mexico and South Atlantic regions, 94% of responding for-hire fishermen reported a reduction in revenue, with the average reduction being 58% (NOAA, 2021a). Additionally, NOAA conducted the same survey of for-hire recreational fishermen in the New England and Mid-Atlantic region, which revealed 87% of responding for-hire recreational fishermen had a reduction in revenue, with the average reduction also being 58% (NOAA, 2021b).

2.5 Diffusion of Innovation

According to the Diffusion of Innovation (DOI) theory, over time innovative ideas diffuse or spread through a population, ultimately resulting in the adoption of a new idea or changed behavior (Rogers, 2003). DOI theory also predicts several attributes that are commonly associated with successful innovations, including the perception of a relative advantage because of the innovation, compatibility and complexity of the innovation, and the user's ability to try and observe the results of the innovation. The rate at which innovations are then adopted depends on a combination of these factors, in addition to the social context, communication channels available, and presence of well-respected leaders to promote the innovation. DOI theory dictates that once enough individuals in the system adopt the innovation a "critical mass" is reached in which further adoption of the innovation becomes self-sustaining.

DOI theory is used as a framework to guide the evaluation of innovation in the Gulf of Mexico Reef Fish fishery and Northeast Multispecies (Groundfish) fishery. Within this report diffusion is broken into two parts: awareness and adoption. For each innovation item in the survey, respondents were asked if they were either aware of the innovation, were not aware, or were aware but the innovation was not applicable to their fishing operations. Then, those who were aware, and the innovation was applicable, were asked a series of questions about the innovation to determine where they are currently situated within the diffusion of innovation. Figure 18 depicts this diffusion of innovation as conceptualized for a single innovation.

Within this report, adoption is defined by those respondents who were interested in the innovation, tried it, and will continue to use it in their fisheries strategy (i.e., the rightmost station in Figure 18). When discussing adoption within the context of a single innovation, this report considers adoption rates among only those respondents who are aware of the innovation and the innovation is applicable to their fishing operations. That is, the denominator for the percent adopting a given innovation is the number of fishermen aware of the given

innovation. This allows the analysis of adoption to control for fishermen who were aware of an innovation but indicated it was not applicable to them. It also allows the analysis to focus on levels of awareness for specific innovations, and separately, barriers to adoption.

Figure 18. Diffusion of Innovation for a Single Innovation

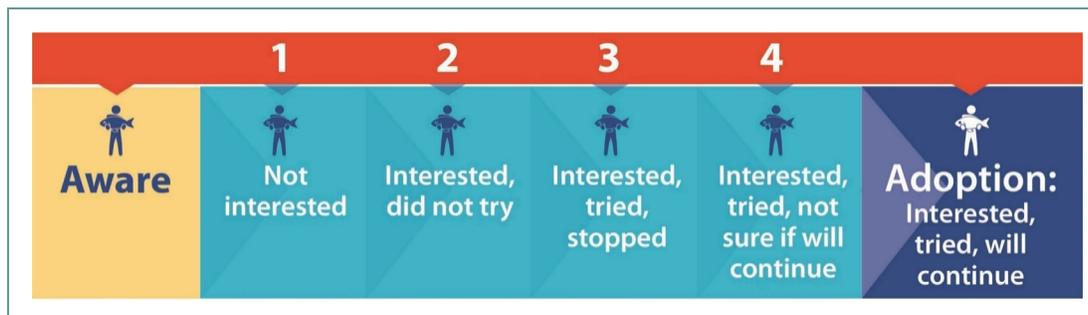


Table 7 displays the innovation items surveyed and a description of each. There were 13 commercial innovations and five for-hire recreational innovations included in the survey. All innovations included represented strategies developed, piloted, and/or implemented through FIF or EMR grants, regardless of fishery or region, to understand potential awareness of innovative fisheries strategies tested or implemented in other areas.

Table 7. Innovations Included in the Survey

Commercial Innovations	Description
Electronic Logbooks/Vessel Trip Reports (eVTR)	Using tablet (such as an iPad), smartphone, or computer-based electronic logbooks to report catch on commercial fishing trips.
Video Electronic Monitoring	Video cameras instead of, or in addition to, human observers for catch accounting, discard monitoring, or compliance monitoring.
Electronic Fish Tickets, Dealer Reports, or Landing Receipts	Tablet (e.g., iPad) or computer-based electronic fish ticket reports.
Any of the following business planning or quota management tools: FishHub, ECatch, LegitFish, Fishing Area Selectivity Tool	Online platforms that help manage fishing business, gain access to quota, and monitor bycatch interactions.
Bycatch Hotspot Mapping	Online communication networks that generate maps in near real-time and display areas where high incidences of bycatch have been reported.
Risk Pools	Arrangement in which several fishermen pool their quota/allowances of constraining species so that rare overages by a few members of the pool are covered by the group's pooled allotment.

(continued)

Table 7. Innovations Included in the Survey

Commercial Innovations	Description
Direct Marketing & Forward Contracting Marketplaces	Marketing arrangements that enable fishermen to better plan or market their catches based on demand from seafood buyers by targeting species at prearranged prices (e.g., community and restaurant supported fisheries and direct marketing arrangements with consumers, schools, universities, or hospitals).
Any of the following seafood traceability tools: GulfWild, FishTrax, Legit Fish (Backtracker), ThisFish, TraceRegister	Electronic tools and record-keeping systems that allow seafood buyers to track seafood products through the supply chain, from harvester to consumer.
Permit Banks	A collection of fishing permits managed by an organization or individual for the purpose of leasing the associated fishing privileges to qualifying fishermen (e.g., Cape Cod Fisheries Trust, Gloucester Fishing Community Preservation Fund, Reef Fish Quota Bank).
Training Programs for the Next Generation of Fishermen	Training, networking, and apprenticeship programs that provide access and opportunities for young fishermen and new entrants to the fishery (e.g., Next Generation Commercial Fishing Crew Apprenticeship).
Training for Participation in Fisheries Management	Training programs that help fishermen and fishing communities actively engage in the fisheries management process by providing education on fisheries science and monitoring, such as the Marine Resource Education Program or others.
Aquaculture Business Development Training Programs	Training programs that help fishermen establish small-scale shellfish, finfish, and algae aquaculture farms.
Any of the following fisheries networking resources: EM4.Fish (formerly eminformation.com) https://em4.fish/ , LocalCatch.org: https://localcatch.org , Community Fisheries Network: http://www.communityfisheriesnetwork.net/	Online forums and workshops to support information sharing among fishing industry members nationwide.
Electronic Vessel Trip Reports (eVTR)	Tablet or computer-based electronic catch reporting (e.g., logbooks, VMS-enabled tablets) for for-hire recreational operators (including charter boats, headboats, party boats, Commercial Passenger Fishing Vessels, licensed fishing guides).

(continued)

Table 7. Innovations Included in the Survey

Commercial Innovations	Description
Electronic Reporting Apps	Smartphone applications that allow recreational anglers to report catch and effort information, such as iAngler, iSnapper, or other such apps.
Any of the following Best Management Practices and Programs to Reduce Discard Mortality: <ul style="list-style-type: none"> ▪ FishSmart Program ▪ Barotrauma Reduction/Descending Devices 	Strategies that provide recreational anglers with tools and training about best practices to reduce post-release discard mortality.
Training for Participation in Fisheries Management	Help fishermen actively engage in the fisheries management process by providing education on fisheries science and monitoring, such as the Marine Resource Education Program or others.
Hotspot Mapping to Minimize Discards	Online communication networks that generate maps in near real-time that display areas where high incidences of nontarget species have been reported.

2.5.1 Innovation—Gulf of Mexico Reef Fish Fishery

This section focuses on results from the Gulf of Mexico Reef Fish fishery, including survey respondents' awareness and adoption of specific fisheries innovations. To provide context for the results presented for specific innovations, fishermen-level results are presented first, followed by a discussion about awareness and adoption of specific innovations and the sources from which fishermen learned about innovative fisheries strategies.

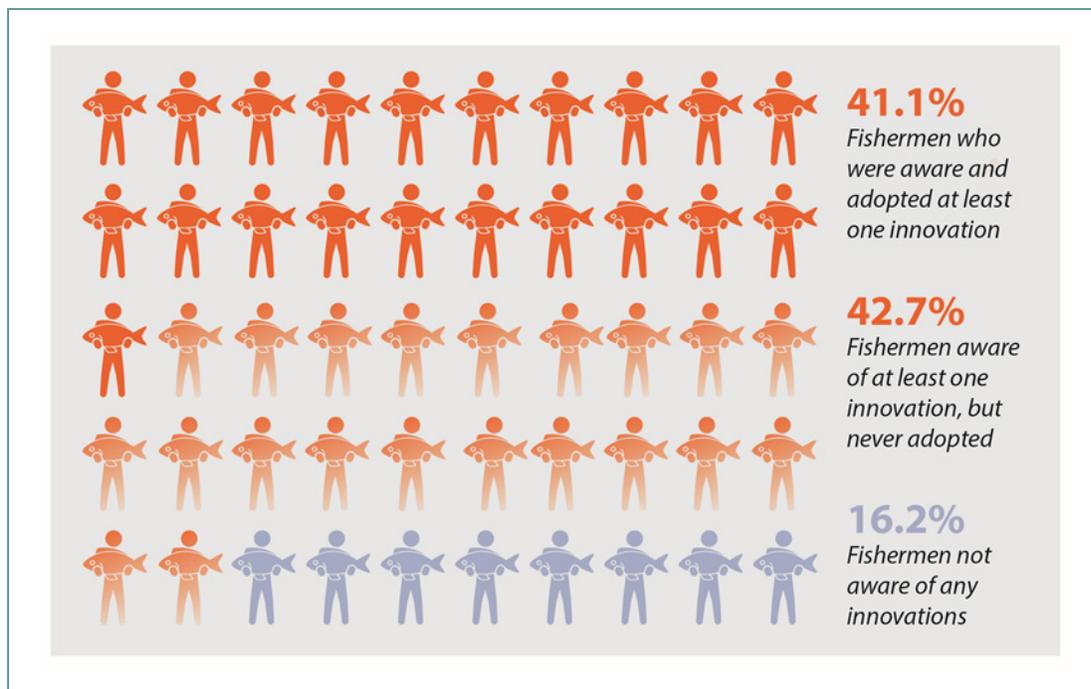
Awareness and Adoption by Fishermen

Baseline estimates of awareness, adoption, and FIF participation among all fishermen in the Gulf of Mexico Reef Fish fishery are presented. Future iterations of the survey can be compared to these estimates to determine if there has been an increased rate of awareness and adoption within the fishery across the set of 13 commercial items and five for-hire recreational innovations surveyed.

- 48.3% (43.2%, 53.3%) of fishermen in the fishery are estimated to be aware of the FIF or the EMR grant program.
- 22.3% (18.5%, 26.6%) are estimated to have participated in a NFWF-funded project (i.e., classified as FIF participants).
- 83.8% (79.8%, 87.2%) of fishermen in the Reef Fish fishery were aware of at least one innovation.

- 41.1% (36.3%, 46.0%) of all fishermen in the fishery adopted at least one innovation. Figure 19 depicts the proportion of fishermen who adopted an innovation, the proportion aware of an innovation but did not adopt, and the proportion who were not aware of any innovations.

Figure 19. Proportion of Fishermen Aware and Adopted, Aware but Did Not Adopt, and Not Aware of Innovations: Gulf of Mexico Reef Fish Fishery

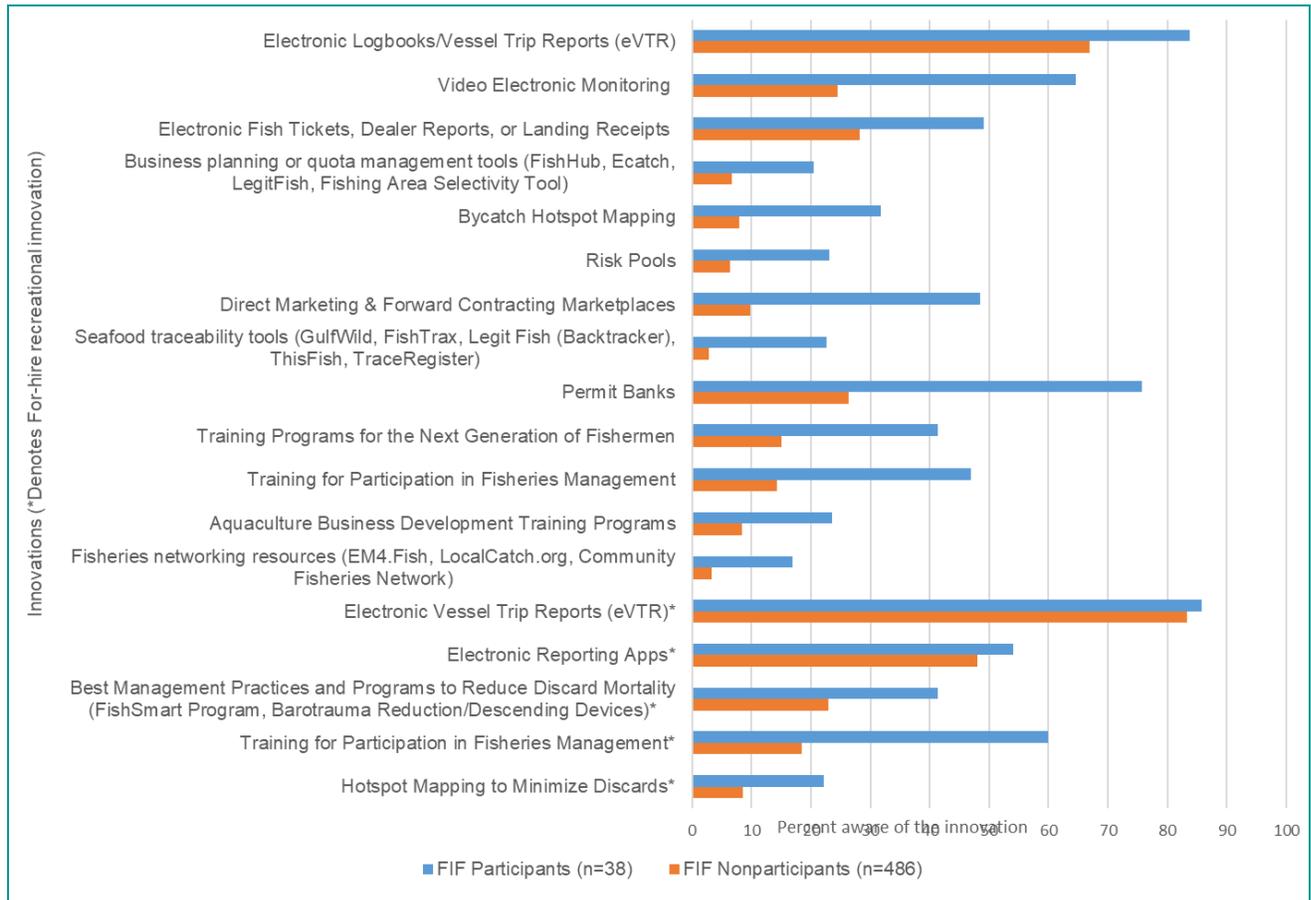


For the purposes of comparing subgroups, only awareness is evaluated. The sample size to inform estimates of adoption among those who are aware of individual innovations is too small to make reliable comparisons.

Across almost all innovation items, FIF participants have a higher rate of awareness than do nonparticipants with a median difference of 10.0% between FIF participants and nonparticipants. Figure 20 displays the difference between FIF participants and nonparticipants as the percentage of those aware of each of the 18 innovation items included in the survey. Refer to Appendix C-1 for more detail on the differences in awareness by FIF participants and nonparticipants for specific innovations, and table 7 for a detailed description of each innovation. Across almost all innovation items, those that actively fished in the past three years in the Gulf of Mexico Reef Fish fishery have higher rates of awareness than those who did not. Similarly, those receiving a majority of their fishing revenue from the Reef Fish fishery have higher rates of awareness than those who do not. FIF participation, actively fishing in the Reef Fish fishery, and the Reef Fish fishery being a majority of a fisherman’s fishing revenue all are associated with high levels of engagement in the Reef Fish fishery. All three of these

groups having increased awareness of innovations implies that a high level of engagement in the fishery corresponds with elevated awareness of innovations.

Figure 20. Difference Between FIF Participants and Nonparticipants in Percent Aware of Each Innovation Item: Gulf of Mexico Reef Fish Fishery



Awareness of Innovations in the Gulf of Mexico Reef Fish Fishery

Percent awareness across all commercial innovation items ranges from 3.1% (*Risk Pools*) to 55.1% (*Electronic Logbooks/Vessel Trip Reports (eVTR)*). The median awareness across all commercial items is 16.5% indicating many innovation items have a low proportion of awareness within the population.

For-hire recreational items ranged in awareness from 4.9% (*Hotspot Mapping to Minimize Discards*) to 71.3% (*Electronic Vessel Trip Reports (eVTR)*). Across the five for-hire recreational items, the median percent aware is 38.1%. Although considerably higher than commercial items, this still suggests there is considerable room for expansion of awareness for many innovations.

Irrespective of commercial or for-hire recreational innovation items, more fishermen are aware of *Electronic Vessel Trip Reports (eVTR)* than any other innovation.

Figure 21 depicts the percent aware of every commercial and for-hire-recreational innovation in the Gulf of Mexico Reef Fish fishery included in the survey. For more details on the percent of fishermen who are unaware and those who are aware but indicated the innovation is not applicable to their fishing business, please refer to Appendix C.

Figure 21. Percent of Fishermen Who Are Aware of Commercial and For-hire Innovations: Gulf of Mexico Reef Fish Fishery



Adoption of Innovations in the Gulf of Mexico Reef Fish Fishery

As previously stated, for the purposes of this analysis, adoption is defined by those fishermen that were interested, tried, and continued to use an innovation. The percentages of adoption within this section are among those aware of the given innovation; this excludes fishermen aware of an innovation for whom the innovation was not applicable to their fishing business. For those fishermen who are aware of a given commercial innovation, adoption ranges from 0.0% (*Bycatch Hotspot Mapping*) to 59.0% (*Training for Participation in Fisheries Management*). It should be noted that a very small sample size informs the estimate of 0.0% adoption as only 5.3% of fishermen reported being aware of *Bycatch Hotspot Mapping*. As such, this report is not estimating that 0.0% fishermen in the Gulf of Mexico Reef Fish fishery have adopted *Bycatch Hotspot Mapping*, rather that 0.0% of the fishermen who responded

indicated adopting the innovation. Any time an innovation has a low rate of awareness, the resulting percentage of adoption for attempting to measure diffusion of innovation is highly unreliable as an estimate and should be considered with care. Rather, readers—and any future intervention and initiative—should focus on the awareness of the innovation within the fishery. Among those who are aware of a given innovation in the Gulf of Mexico Reef Fish fishery, Figure 22 depicts the percentage of fishermen who adopted the innovative strategy. For more details on where other respondents who were aware of an innovation are in relation to the diffusion of innovation, please refer to Appendix C.

Figure 22. Percent of Fishermen who Adopted Commercial and For-hire Innovations Among Those Aware: Gulf of Mexico Reef Fish Fishery



Among those who were aware of each commercial innovation, the analysis determined the percentage of respondents who were interested in, tried, and adopted an innovation. This was done for all 13 commercial innovations surveyed. For the 13 commercial innovations combined, Figure 23 displays the median value along each milestone in the diffusion of innovation process; the median percent interested is 73.1%, median percent tried is 37.5%, and median percent adoption is 28.5%. This suggests the greatest gap in the diffusion of innovation consists of those who are interested but do not try the innovations. Across all

commercial innovations, the most common reasons provided for not trying an innovation are “don’t know/not sure” and “the innovation is not required by the regulations.” However, there is

A high rate of adoption when innovations are tried suggesting the innovative strategies are effective once implemented.

For diffusion of innovation for for-hire recreational items, among fishermen who are aware of a given innovation, adoption ranges from 31.9% (*Training for Participation in Fisheries Management*) to 51.4% (*Best Management Practices and Programs to Reduce Discard Mortality (FishSmart Program, Barotrauma Reduction/Descending Devices)*). As was done for commercial innovations, among those who were aware of each for-hire recreational innovation, the percentage of respondents who arrived at each milestone in the diffusion of innovation (interested, tried, adopted) was computed. For the five for-hire recreational innovations combined, among those aware, Figure 24 displays the median of each milestone in the

diffusion of innovation that was achieved; the median percent interested is 79.1%, median percent tried is 51.9%, and median percent adoption is 35.4%. For the for-hire recreational items, there is still a large portion who have not tried the innovations, but the majority of those aware did go on to try the innovations. The rate of adoption among those who try the for-hire recreational items is relatively low compared to commercial items. This suggests there are gaps in adoption of approximately equal size from those who are interested but do not try the innovations, and those who try the innovations but do not adopt. Given the high adoption rate for those aware of for-hire recreational innovation (35.4%) relative to commercial innovations (28.5%), this suggests that fishermen may need additional outreach or incentives to demonstrate the value of trying and continuing to use a given for-hire recreational innovation.

Figure 23. Commercial Innovations—Median Diffusion of Innovation Milestones Among Those Aware in the Gulf of Mexico Reef Fish Fishery



Figure 24. For-hire Recreational Innovations—Median Diffusion of Innovation Milestones Among Those Aware in the Gulf of Mexico Reef Fish Fishery



Spotlighting Specific Innovations in the Gulf of Mexico Reef Fish Fishery

Innovations with Low Awareness and High Adoption

Survey results identified two innovations with relatively low awareness and relatively high adoption among those aware. This suggests these innovations would benefit from increased awareness as those who are aware seem to benefit from it given the high rate of adoption. Note that innovations with very low rates of awareness, 10.0% or lower, lead to highly unstable estimates of adoption and thus are not considered for this analysis.

- Commercial Direct Marketing & Forward Contracting Marketplaces: 10.6% are aware, and of those, 43.9% adopted.
- Commercial Training for Participation in Fisheries Management: 17.5% are aware, and of those, 58.9% adopted.

Innovations with high awareness and low adoption

The survey revealed three innovations with relatively high awareness but relatively low rates of adoption. This suggests these innovations are unappealing to fishermen, have a high barrier to entry, or lack tangible benefits for some fishing businesses. Note that respondents could select multiple reasons for rejecting a given innovation.

- *Commercial Electronic Logbooks/Vessel Trip Reports (eVTR)*: 55.1% are aware, and of those, 31.5% adopted; 25.1% were not interested, and 38.5% were interested but did not try. This suggests most people have been unable to try the innovation despite interest in doing so, citing the following reasons for not trying the innovation:
 - 51.5% selected “don’t know/not sure”
 - 20.1% said it is not required in the regulations
 - 19.5% said it is too time consuming or complicated
- *For-hire Recreational Electronic Vessel Trip Reports (eVTR)*: 71.3% are aware, and of those, 37.7% adopted; 29.4% were not interested, and 21.1% were interested but did not try. This suggests many recreational vessels are not adopting electronic reporting because they are not interested in even trying the technology. It should be noted that as of January 2021, at the start of the implementation of this survey, eVTR are required for for-hire recreational vessels in the Gulf of Mexico (NOAA, 2021c). People not interested in trying eVTR provided the following reasons:
 - 61.9% said it is too time consuming or complicated
 - 35.8% said it is too expensive
 - 23.0% said it is not useful or relevant to me

- *For-hire Recreational Electronic Reporting Apps*: 64.7% are aware, and of those aware, 39.7% adopted; 23.8% were not interested, and 25.6% were interested but did not try electronic reporting applications. These are effectively equivalent proportions where people are dropping off in the diffusion of innovation. People not interested in trying the apps provided the following reasons:
 - 42.2% said it is too time consuming or complicated
 - 25.8% said it not useful or relevant to me
 - 13.7% said it is not required by the regulations

People who were interested but did not try the innovation provided the following reasons for not trying the innovation:

- 23.3% said it is not required by the regulations
- 20.8% selected “don’t know/not sure”
- 20.7% said it is too time consuming or complicated
- 16.1% selected “other” with the majority expressing that they do eventually plan to try an app, or they currently use something equivalent such as electronic logbooks or VMS

Commercial Video Electronic Monitoring in the Gulf of Mexico Reef Fish Fishery

NFWF and its partners have made concerted efforts to increase the awareness and adoption of commercial video electronic monitoring in the Gulf of Mexico Reef Fish fishery, and thus it is specifically discussed in this report. A total of 17.7% of fishermen indicated being aware of commercial video electronic monitoring. Of those aware, 28.5% have adopted it; 21.0% were not interested and 41.6% were interested but did not try it, which suggests not trying is where most people are stopping in the diffusion. People who were interested but did not try electronic monitoring provided the following reasons:

- 54.3% selected “don’t know/not sure”
- 25.2% said it is not required by the regulations
- 10.3% said it is too expensive

As previously discussed, comparisons of awareness and adoption between subgroups should be made with caution because of small sample sizes; however, some noteworthy trends were observed for *Commercial Video Electronic Monitoring*. Specifically, a higher rate of awareness and adoption is seen in FIF participants relative to nonparticipants, permit holders relative to non-holders, and quota share owners relative to non-owners.

In open-ended responses about innovation where fishermen were asked if they have anything additional to share about innovations, 19.8% of fishermen in the Gulf of Mexico Reef Fish fishery who provided a response talked about vessel monitoring. Not all remarks specifically pertained to video electronic monitoring, but some fishermen talked about how they perceived electronic monitoring as intrusive, and others expressed a strong resistance to having

monitoring equipment on their vessel. In general, the remarks revealed a negative sentiment toward electronic monitoring techniques such as cameras and Vessel Monitoring Systems (VMS). Electronic monitoring was the most common theme identified among all open-ended responses about innovation.

Sources of Awareness in the Gulf of Mexico Reef Fish Fishery

Word of mouth is the most common way fishermen in the Gulf of Mexico Reef Fish fishery learned about innovations they were aware of, as 46.5% of fishermen learned this way, followed by *Council meetings/Presentations* at 35.1%, *Fishing Association/Sector* at 29.5%, and *Online Forums/Direct Emailing* at 23.0%. *Social media*, *Other*, and *Trade journals/Newsletters* were all a source for 11%-13% of fishermen, and finally 7.4% listed *being recruited by an organization that received FIF award*. Note that respondents could select multiple sources.

There are numerous reasons *being recruited by an organization that received FIF award* could be the least common selection, including the possibility that fishermen were unaware of an organization's FIF involvement. However, those receiving a majority of their fishing revenue from the fishery were significantly more likely to list being *Recruited by an organization that received FIF award*.

FIF participants were significantly more likely to list *Council meetings/Presentations* and *Fishing Association/Sector* as a source than nonparticipants. Although the difference is not significant, they were also more likely to list being *recruited by organization that received FIF award*.

2.5.2 Innovation—Northeast Multispecies (Groundfish) Fishery

This section focuses on specific innovations and the awareness and adoption of them within the Northeast Multispecies (Groundfish) fishery. To provide context for the results presented by specific innovations, initially fishermen-level results are presented, followed by a discussion about awareness and adoption of specific innovations and the sources from which fishermen learned about them.

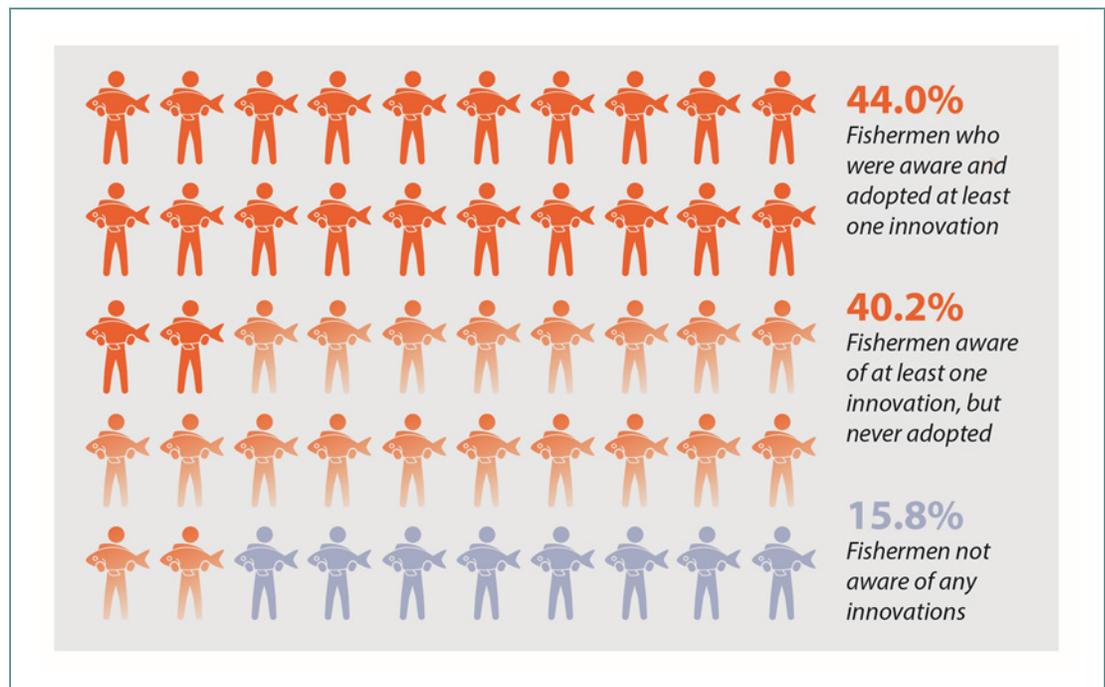
Awareness and Adoption by Fishermen

Baseline estimates of awareness and adoption among all fishermen in the Northeast Multispecies (Groundfish) fishery are presented. Future iterations of the survey can compare to these estimates to determine if there has been an increased rate of awareness and adoption within the fishery across the set of 13 commercial items and five for-hire recreational innovations surveyed.

- 37.0% (32.5%, 41.7%) of fishermen in the fishery are estimated to be aware of the FIF or EMR grant programs.
- 7.0% (5.9%, 11.0%) are estimated to have participated in a NFWF-funded project (i.e., classified as FIF participants).

- 84.2% (80.3%, 87.4%) of fishermen in the Northeast Multispecies (Groundfish) fishery were aware of at least one innovation
- 44.0% (39.6%, 48.6%) of all fishermen in the Fishery adopted at least one innovation
Figure 25 depicts the proportion of fishermen who adopted an innovation, the proportion aware of an innovation but did not adopt, and the proportion who were not aware of any innovations.

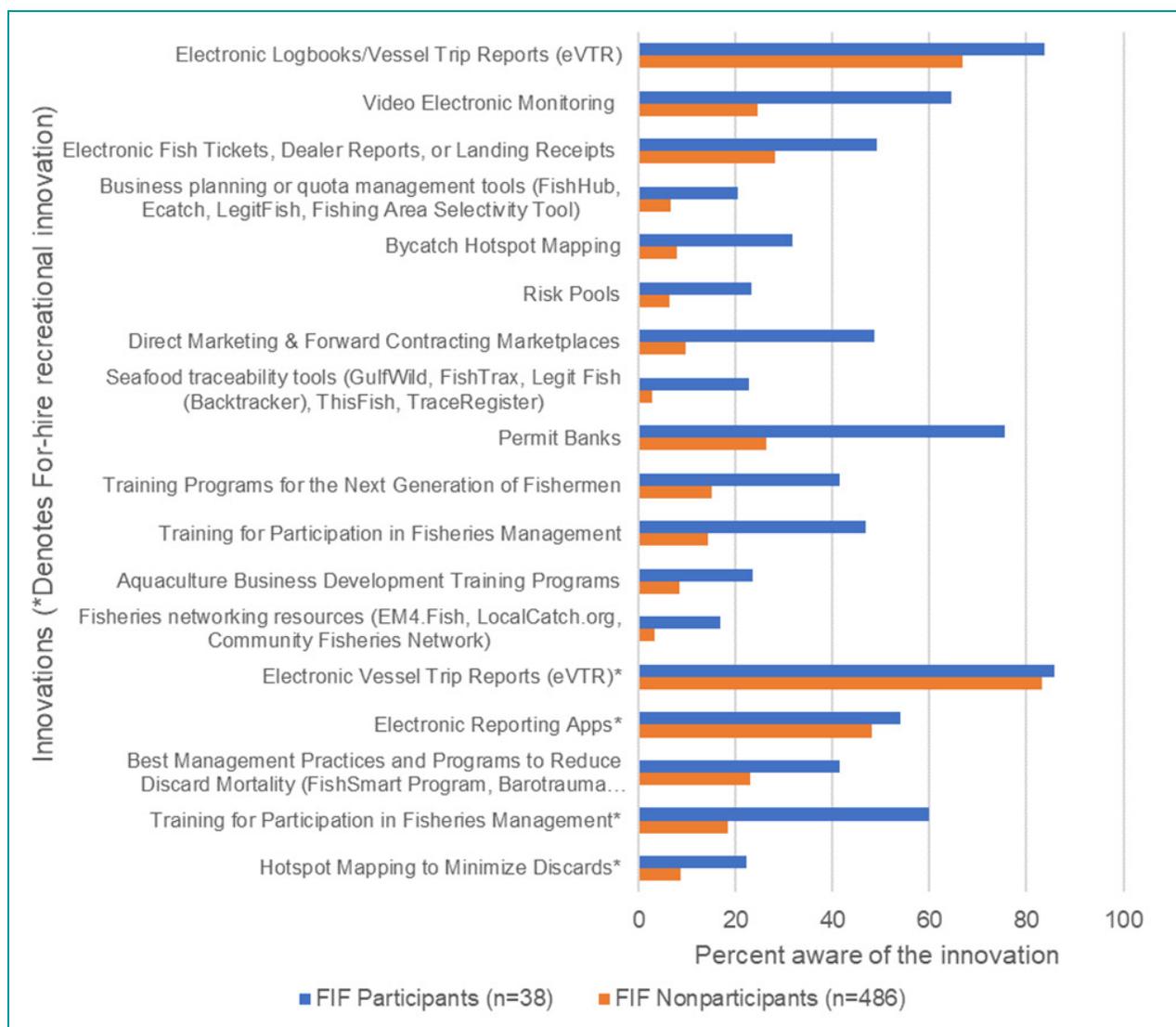
Figure 25. Proportion of Fishermen Aware and Adopted, Aware but Did Not Adopt, and Not Aware of Innovations in the Northeast Multispecies (Groundfish) Fishery



For the purposes of comparing subgroups, only awareness is evaluated. The sample size to inform estimates of adoption among those who are aware of individual innovations is too small to make reliable comparisons.

Across all innovation items, FIF participants have a higher rate of awareness than nonparticipants, with a median difference of 16.4% between FIF participants and nonparticipants. Figure 26 displays the difference between FIF participants and nonparticipants in percent aware of all 18 innovation items included in the survey. Refer to Appendix C-4 for more detail on the differences in awareness by FIF participants and nonparticipants for specific innovations, and table 7 for a detailed description of each innovation. The same holds true for those actively fishing in the fishery in the past three years relative to those who have not. Across most innovation items, those receiving a majority of their fishing revenue from the fishery have a higher rate of awareness. For each of these three groups it suggests that increased awareness of innovations is related to a high level of engagement in the fishery as each group’s identity implies a high level of engagement.

Figure 26. Difference Between FIF Participants and Nonparticipants in Percent Aware of Each Innovation Item: Northeast Multispecies (Groundfish) Fishery



Awareness of Innovations in the Northeast Multispecies (Groundfish) Fishery

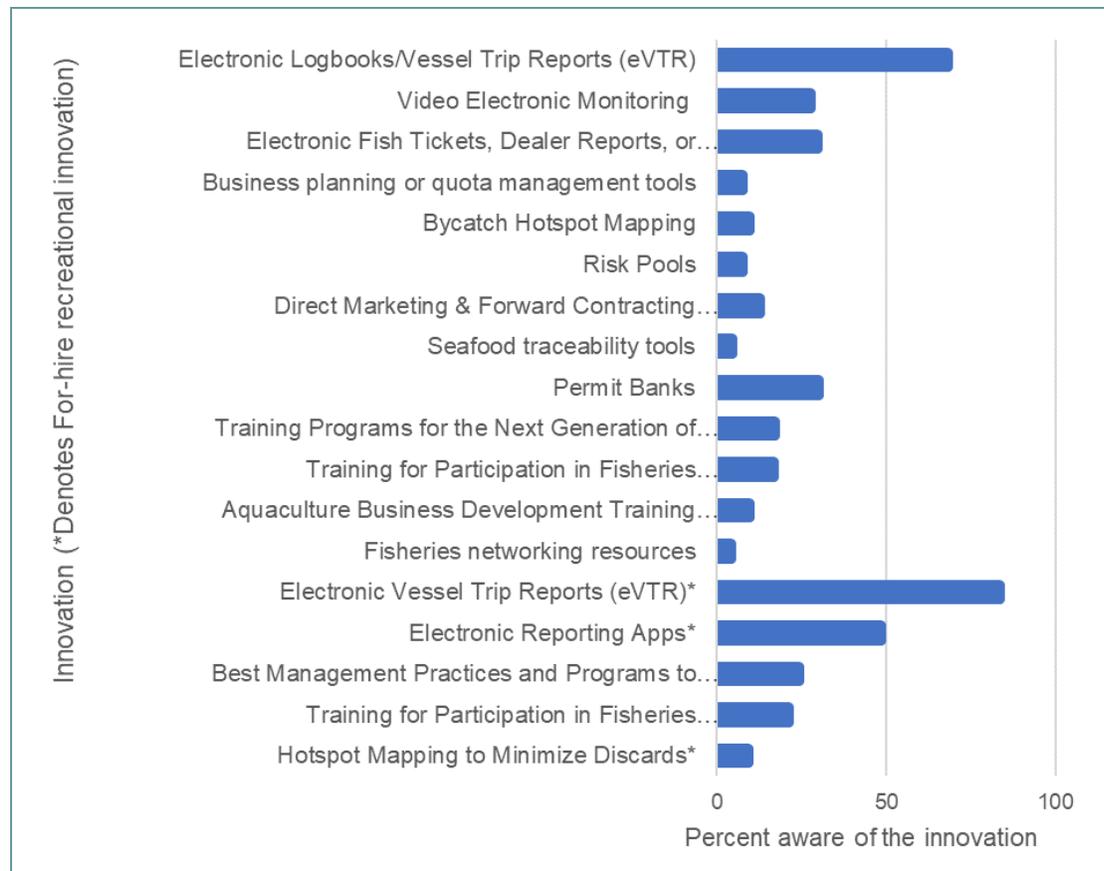
Percent awareness across all commercial innovation items ranges from 4.4% (*Any of the following fisheries networking resources (EM4.Fish, LocalCatch.org, Community Fisheries Network)*) to 68.2% (*Electronic Logbooks/Vessel Trip Reports (eVTR)*). The median awareness across the commercial items is 12.8% suggesting many innovation items have a low proportion of awareness among fishermen in the Northeast Multispecies (Groundfish) fishery.

For-hire recreational items, had levels of awareness ranging from 9.5% (*Hotspot Mapping to Minimize Discards*) to 83.4% (*Electronic Vessel Trip Reports (eVTR)*). Across the five for-hire

recreational items, the median percent aware is 22.8%. Although somewhat higher than commercial items, this still suggests many for-hire recreational innovation items have a low proportion of awareness within the population.

Irrespective of commercial or for-hire recreational innovation items, *Electronic Vessel Trip Reports (eVTR)* is the innovation more fishermen are aware of than any other innovation. Figure 27 depicts the percentage of fisherman aware each commercial and for-hire-recreational innovation included in the survey in the Northeast Multispecies (Groundfish) fishery. For more details on the percent who are unaware and those who are aware, but indicated the innovation is not applicable to their fishing business, please refer to Appendix C.

Figure 27. Percent Aware of Commercial and For-hire Innovations: Northeast Multispecies (Groundfish) Fishery



Adoption of Innovations in the Northeast Multispecies (Groundfish) Fishery

Adoption is defined by fisherman were interested, tried, and continued to use an innovation. For diffusion of innovation for commercial items, among fishermen who are aware of a given

innovation,⁵ adoption ranges from 2.8% (*Aquaculture Business Development Training Programs*) to 45.0% (*Electronic Logbooks/Vessel Trip Reports (eVTR)*). As discussed in the equivalent section for the Gulf of Mexico Reef Fish fishery, anytime a small sample size informs the estimate of adoption because of low awareness, as is the case for *Aquaculture Business Development Training Programs*, the resulting estimate of adoption is highly unreliable. Rather, for such items the focus of the reader, and any future intervention and initiative, should be on the awareness of the innovation within the fishery. Among those who are aware of a given innovation in the Northeast Multispecies (Groundfish) fishery, Figure 28 depicts the percentage of fishermen who adopted the innovative strategy. For more details on where other respondents who were aware of an innovation are in relation to the diffusion of innovation, please refer to Appendix C.

Figure 28. Percent Adopted Commercial and For-hire Innovations Among Those Aware: Northeast Multispecies (Groundfish) Fishery



⁵ This excludes fishermen aware of an innovation for whom the innovation was not applicable to their fishing business.

Among those who were aware of each commercial innovation, the percentage of respondents who were interested, tried, adopted an innovation was computed. This was done for all 13 commercial innovations surveyed. For the 13 commercial innovations combined, among those aware, Figure 29 displays the median value along each milestone in the diffusion of innovation process; the median percent interested is 62.5%, median percent tried is 27.6%, and median percent adoption is 12.4%. This suggests the greatest gap in the diffusion of

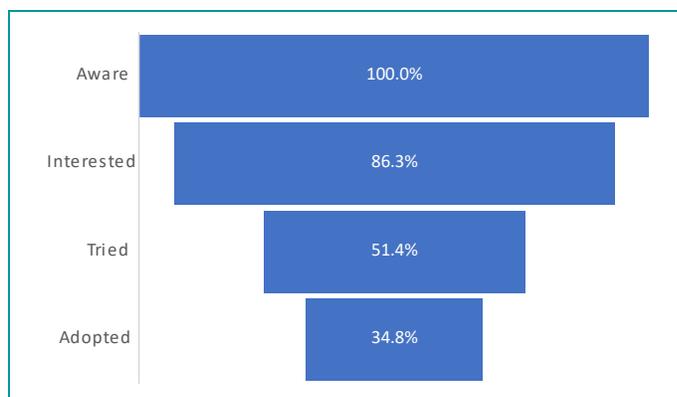
Figure 29. Commercial Innovations—Median Diffusion of Innovation Milestones Among Those Aware in the Northeast Multispecies (Groundfish) Fishery



innovation consists of those who are interested but do not try the innovations. Across all commercial innovations, the most common reasons provided for not trying an innovation are “don’t know/not sure” and “the innovation is not required by the regulations.” Although a small number of fishermen tried the innovations on average, there is also proportionally a large gap between trying and adopting, suggesting many fishermen who try an innovation do not ultimately adopt it.

For diffusion of innovation of for-hire recreational items, among fishermen who are aware of a given innovation, adoption ranges from 18.5% (*Hotspot Mapping to Minimize Discards*) to 67.0% (*Electronic Vessel Trip Reports (eVTR)*). As was done for commercial innovations, among those who were aware of each for-hire recreational innovation, the percentage of respondents who arrived at each milestone in the diffusion of

Figure 30. For-hire Recreational Innovations—Median Diffusion of Innovation Milestones Among Those Aware in the Northeast Multispecies (Groundfish) Fishery



innovation (interested, tried, adopted) was computed. For the five for-hire recreational innovations combined, among those aware, Figure 30 displays the median of each milestone in the diffusion of innovation that was achieved; the median percent interested is 86.3%, median percent tried is 51.4%, and median percent adoption is 34.8%. For the for-hire recreational items, the majority of those aware have tried the innovations, but there is still a large portion who have not tried, and those who are interested and have not tried is the greatest gap in the diffusion of innovation for the for-hire recreational innovation items. Across

the for-hire recreational innovations, the most common reasons provided for never trying an innovation were “don’t know/not sure” and “too time consuming or complicated.”

Spotlighting Specific Innovations in the Northeast Multispecies (Groundfish) Fishery

Innovations with Low Awareness and High Adoption

The survey highlighted two innovations with relatively low awareness and relatively high adoption among those aware. This suggests these innovations would benefit from increased awareness as those who are aware seem to be inclined to benefit from it given the relatively high rate of adoption. Note that innovations with very low rates of awareness, 10.0% or lower, lead to highly unstable estimates of diffusion and thus are not considered for this analysis. Both innovations below are for for-hire recreational fishermen as no commercial innovations satisfied this criterion.

- For-hire Recreational Best Management Practices and Programs to Reduce Discard Mortality (FishSmart Program, Barotrauma Reduction/Descending Devices): 24.2% are aware, and of those aware, 34.6% adopted.
- For-hire Recreational Training for Participation in Fisheries Management: 21.4% are aware, and of those aware, 35.0% adopted.

Innovation with High Awareness and Low Adoption in the Northeast Multispecies (Groundfish) Fishery

Within the Northeast Multispecies (Groundfish) fishery, there was only one innovation with relatively high awareness but relatively low rates of adoption: *Commercial Video Electronic Monitoring*. This suggests the innovation is unappealing to fishermen, has a high barrier to entry, or lacks a tangible benefit for some fishing businesses. Note that respondents could select multiple reasons for rejecting a given innovation.

For *Commercial Video Electronic Monitoring*, 27.7% are aware, and of those aware, 11.7% adopted; 59.2% were not interested, and 22.9% were interested but did not try. This suggests that most people are not getting to adoption because they are not interested in trying electronic monitoring citing the following reasons:

- 46.2% said it is not useful or relevant to me
- 24.0% said it is not required by the regulations
- 23.8% said it is too expensive

As previously discussed, comparisons of awareness and adoption between subgroups should be made with caution because of restrictive sample sizes; however, some noteworthy trends were observed for *Commercial Video Electronic Monitoring*. Specifically, a higher rate of awareness and adoption is seen for the following groups when compared to their respective counterparts:

- Fishermen participating in a groundfish sector have higher awareness and adoption than those in the common pool.
- FIF participants have higher awareness and adoption than nonparticipants.
- Limited access permit holders have higher awareness and adoption than open access permit holders.
- Those actively fishing in the Groundfish fishery in the past three years have higher awareness and adoption than those not actively fishing in the target fishery.
- Those receiving a majority of their fishing revenue from the Groundfish fishery have higher awareness and adoption than those receiving less than 50% of their fishing revenue from the target fishery.

In open-ended responses about innovation where fishermen were asked if they have anything additional to share about innovations, 13.7% of those who provided a response talked about vessel monitoring. Not all remarks specifically pertained to video electronic monitoring, but some fishermen expressed resentment toward cameras on vessels, whereas others specifically called for more electronic monitoring to increase accountability. Electronic monitoring was the most common theme identified among all open-ended responses about innovation.

Source of Awareness in the Northeast Multispecies (Groundfish) Fishery

Word of mouth is the most common way fishermen in the Northeast Multispecies (Groundfish) fishery learned about innovations they were aware of, as 40.7% of fishermen learned this way. This was followed by *Fishing Association/Sector* at 30.9%. *Online Forums/Direct Emailing, Council meetings/Presentations, Trade journals/Newsletters, and Other*, were all a source for 15%-20% of fishermen, followed by 8.0% of fishermen citing *social media*, and 4.5% being *recruited by an organization that received FIF award*. Note that respondents could select multiple sources.

FIF participants were significantly more likely to report being *Recruited by organization that received FIF award* and to list *Fishing Association/Sector* as a source. Even when differences were not significant, FIF participants listed every source more than nonparticipants, except for social media, which indicates FIF participants have a higher level of engagement in the fishery than observed in other subgroups.

2.6 Recommendations

The results of the survey provided important baseline information about fishermen's perceptions of wellbeing and their awareness and adoption of important fisheries innovations. If the survey of well-being and innovation is conducted in the future for the purposes of obtaining longitudinal results in the Gulf of Mexico Reef Fish and Northeast Multispecies (Groundfish) fisheries the following recommendations are provided to ensure that the follow-up survey maximizes analytic utility:

- **Focused recruitment on baseline respondents.** An updated frame of fishermen in both fisheries should be created based on the latest data available at the time of survey implementation. All of these fishermen in the updated frame, likely many of whom would have been on the baseline survey's frame, should be included in the survey outreach. Fishermen who responded in the baseline should have additional recruitment effort to maximize their likelihood of response as their data will be of increased value for longitudinal analysis with regard to the precision of estimates and the ability to detect changes in the fishery over time.
- **Determine the state of the fishery.** As discussed in this report, baseline measures for material well-being are established by feelings about the sufficiency of household income before the onset of the COVID-19 pandemic in March 2020. The hope is that these fisheries return to pre-pandemic operating conditions. However, targeted survey questions to assess the state of these fisheries in subsequent follow-ups will be imperative to understand whether the fisheries have recovered, or if the pandemic has resulted in long-term changes. Specifically, respondents should be asked questions regarding the suspension of fishing business operations, the longevity of those suspensions, and if they have had to permanently cease or alter operations. Additionally, feelings about household income at the time of follow-up should be compared to the same measure from before March 2020, and also after March 2020, to determine which time point most resembles the state of material well-being in the fisheries at the time of follow-up.
- **Additional questions about specific innovations.** As described in this report there have been concerted efforts to increase the awareness and adoption of eVTR and video electronic monitoring. For innovations such as these which are of heightened interest to NFWF, it is recommended that specific questions are presented to solicit suggestions for reducing barriers to entry. Either through multiple choice or open-ended questions, giving fishermen an opportunity to share what would increase the likelihood of themselves or their peers adopting innovations could prove to be valuable information to inform future NFWF efforts.
- **Leverage baseline open-ended responses.** Throughout this report numerous topics emerged as points of emphasis in open-ended responses. In a follow-up study, multiple choice questions should provide respondents with the opportunity to select all the topics that apply to them to provide further insight into the state of the fishery and what matters to fishermen. Questions could include what regulations are concerning to fishermen and why are they concerning, how quotas impact fishermen's businesses, what are the financial drivers of fishermen's businesses, and what do they love about their work. All of these would build on the open-ended responses provided in the baseline and allow for data which are much more quantifiable than open-ended responses.

References

- NOAA Technical Memorandum NMFS-NE-230 (2014).
- NOAA (2021a). *Southeast fisheries impacts from COVID-19*. Retrieved from <https://media.fisheries.noaa.gov/2021-02/Southeast-COVID-19-Impact-Snapshot-webready.pdf>
- NOAA (2021b). *Northeast fisheries impacts from COVID-19*. Retrieved from <https://media.fisheries.noaa.gov/2021-02/Northeast-COVID-19-Impact-Snapshot-webready.pdf>
- NOAA (2021c). *Southeast For-Hire Integrated Electronic Reporting Program: Electronic reporting by federal for-hire vessels in the Gulf of Mexico and South Atlantic*. Retrieved from <https://www.fisheries.noaa.gov/southeast/recreational-fishing-data/southeast-hire-integrated-electronic-reporting-program>
- Pollnac, R. B., Searad, T., & Colburn, U. L. (2014). Aspects of fishery management, job satisfaction, and well-being among commercial fishermen in the northeast region of the United States. *Society and Natural Resources*, 0, 1–18. doi: 10.1080/08941920.2014.933924
- Rogers, E.M. (2003). *Diffusion of innovations* (5th ed.). New York: Free Press.
- Smith, C. L., & Clay, P. M. (2010). Measuring subjective and objective well-being: Analyses from five marine commercial fisheries. *Human Organization*, 69(2).
- Willis, G. B. (2005). *Cognitive interviewing: A tool for improving questionnaire design*. Thousand Oaks, CA: Sage Publications.



Appendix A: Survey Methods

Appendix A includes a detailed discussion about the methods used to implement the survey of well-being and innovation in the Gulf of Mexico Reef Fish and Northeast Multispecies (Groundfish) fisheries. This includes a description of instrument development, cognitive testing, and the questionnaire deployed (A.1); the target population, frame, and sample (A.2); the data collection approach, mailings, and systems (A.3); methods for classifying open-ended responses (A.4); and limitations of surveys (A.5).

The NFWF FIF instrument was designed as a mixed-mode, web/mail instrument to accommodate fishermen who can be away at sea for extended periods of time. The web version of the instrument allowed respondents to seamlessly navigate the complex question branching for efficiency and to reduce respondent burden. The paper instrument provided an alternate mode for respondents that lack internet access or prefer to complete the instrument on paper. RTI was able to develop a paper survey instrument that allowed respondents to navigate the question branching through a series of skip instructions.

A.1 Instrument Development

RTI was initially provided with a draft survey instrument by NFWF for review. The instrument had been previously pretested and refined by NFWF and its partners. The instrumentation task leader along with the analytic task leader conducted an initial review of the survey instrument, with input from the entire RTI team. The review prompted a series of iterative design meetings between RTI and NFWF to refine the survey instrument, focused on the web version of the survey. Web specifications were developed and reviewed by the RTI programmer, which prompted some additional edits.

Once a clean draft of the survey instrument was ready, RTI began programming the survey using Voxco software. Voxco is RTI's preferred software package for programming of web-based survey instrument as this software offers responsive web design and optimization abilities. Voxco's automatic mobile device detection technology adapts the survey display to the device used by the respondent, ensuring a comfortable respondent experience and reducing breakoffs that can occur when respondents use a mobile device to complete a survey developed only for desktop computers.

The web version of the survey underwent internal testing by the RTI project team and external testing by NFWF. Additional changes were made to ensure correct routing based on answers provided by respondents at the beginning of the survey. Since the questionnaire involves complex routing, RTI prepared a simulation of 300 test cases that were auto executed by Voxco. This allowed the instrumentation and analytic task leaders an opportunity to review the data file produced by the simulations to ensure expected question routing and look for unexpected item nonresponse that would indicate broken or incorrect branching. Following this exercise, the instrument was ready for cognitive pretesting.

Once the web version specifications were finalized, the instrument was provided to an RTI staff member who specializes in development of paper survey questionnaires. A paper version of the survey was designed, with all efforts to reduce overall burden to respondents, and ensure that the logic branching was easy to understand and follow. The paper instrument would then be pretested along with the web version.

A.1.1 Cognitive Pretesting

The next step in instrument development involved conducting a series of cognitive interviews with the survey instruments. Cognitive interviews are one-on-one interviews used to assess the questionnaire in terms of general understanding, question and response wording, skip logic, and visual aids. The goal is to gain an understanding of how well the questions work

when administered to members of the survey's target population (Willis 2005).¹ The interview follows a cognitive protocol with pre-scripted probes (Appendix C). Cognitive interviewers also use spontaneous probes to gain a better understanding of questions. The interviews also served to assess the usability of each instrument.

In advance of the interviews, NFWF provided RTI with a list of 15 potential cognitive participants. RTI then began contacting these individuals and invited them to take part in a cognitive test of either the web or paper version of the survey.

RTI initially intended to conduct a total of nine cognitive interviews with an even distribution by location (Gulf/New England), type of participant (for-hire recreational/dual permitted) and interview mode (web/ paper). As we began recruitment, it was difficult to recruit participants from the limited number of potential contacts that were provided. RTI completed a total of six cognitive interviews, had one refusal, two unable to attend the scheduled interviews, and the remainder did not respond. The for-hire recreational fishermen were easier to reach. Although, one dual permitted fisherman agreed to participate. Table A-1 shows the distribution of participant characteristics for the completed interviews.

Table A-1. Cognitive Participant Characteristics

Participant	Location	Type of Participant	Mode of Interview
P1	Gulf	For-hire recreational	Web
P2	Gulf	For-hire recreational	Web
P3	Gulf	Dual permitted	Web
P4	New England	For-hire recreational	Paper
P5	New England	For-hire recreational	Web
P6	New England	For-hire recreational	Web

RTI initially assigned all the interviews to be administered by web to ensure that the web instrument was operating properly. It was assumed that most surveys would be completed by web, so there was less value in conducting paper interviews. Even still, RTI hoped to add more paper interviews, but recruitment only produced a total of six interviews.

Cognitive interviews were conducted by two survey methodologists at RTI using scripted concurrent and spontaneous probing techniques in December 2020. Interviews were audio recorded if the participant consented to being recorded. Each interview lasted up to an hour in length and participants were provided a \$40 Visa gift card as a token of appreciation for their time. As time permitted, participants were asked to review the FIF Introduction Letter and FIF Postcard Reminder. They provided feedback on their impressions of these materials, content, and clarity. Participants were asked if they had a preference between two proposed survey

¹ Willis GB. *Cognitive Interviewing: A Tool for Improving Questionnaire Design*. Thousand Oaks, CA: Sage Publications; 2005.

URLs: FIFSurvey.org and FIFSurvey.com. Finally, a few debriefing probes were asked of participants to get their overall impression of the survey instrument.

Initial findings from the cognitive interviews were summarized and provided to NFWF. As a result of the interviews, additional changes were made to the survey instrument.

A few global findings indicated that the first few cognitive participants found it challenging to answer the series of questions on innovations based on whether they were permitted as commercial or for-hire recreational. This was most prominent among for-hire recreational participants that were unaware of tools that would apply to commercial operations. As a result, additional logic was programmed to ensure that respondents were displayed only the tables in B3 that were applicable to their fishing operation. This helped to reduce confusion and overall respondent burden with this section of questions.

Additional comments provided during the first few interviews involved the response categories presented in the innovation series of tables (section B3 in the survey as described in appendix A, pages A-13 through A-20). The wording of these categories was reviewed and edited, fills were included to reference the fishery, and some categories removed to streamline the responses. Following these revisions, participants in the remaining interviews found the categories easy to understand and navigate. Participants did feel that this section was somewhat tedious in answering a series of questions for each tool that they were aware of. Additional skip logic helped to reduce the burden of follow-up questions.

One specific recommendation that came out of cognitive testing was to display all the tools that fishermen were aware of and applicable to their operation into one table. Collectively, respondents would then provide responses for all the ways they learned about these tools.

We found relatively few issues with the remaining domains (those on well-being and job satisfaction and about the respondent). However, there were some additional wording changes that resulted from the cognitive findings.

Some notable question-level findings from the cognitive interviews included:

- A7_ACTIVE: Participant found the note defining an active vessel very helpful and necessary.
- A8_ROLE: Participant liked that the question text included the instruction to select a response for each category as some people fit into multiple categories, and this instruction made it clearer how to answer this question.
- B2_FIF: Participant answered “Don’t know” to this question and said that it is not always clear who funds events and projects. Often, fishermen are wary of funding from outside of their fishery and view this as a threat (i.e., “I can’t do anything on that project because they’re trying to put me out of business.”) even if the project will help them.
- B3A5_VALUE: Participant noted that reading the additional text below eVTR helped him answer the question – there are several kinds of this tool and the additional text made it clear that the type he has used would be included in the category.

- B3A5_IMPLEMENT and B3A5_REJECT: Interviewer noticed that the rows are not highlighted in alternating colors in these grids.

Participant overall comments after the initial survey was revised:

- This is so much easier. It flows much better, it's all in one place and is streamlined.
- It seems much more functional.
- The [grids] are a more effective way to navigate the survey. It's a much better survey and easier to use.

Attachment 1: Cognitive Protocol

Fisheries Innovation Fund: Well-being and Innovation Survey
Cognitive Test Protocol

Participant ID:

Interview Date:

Interviewer:

Mode: WEB:
PAPER:

SECTION I: INTRODUCTION

Hello, I'm [NAME] with RTI International, a survey research company based in Durham, North Carolina. We have been contracted by the National Fish and Wildlife Foundation (NFWF) to develop a survey instrument that will be used to evaluate the impact of activities sponsored by the Fisheries Innovation Fund. The Fisheries Innovation Fund was developed by NFWF in 2010 to foster innovation and support effective participation of fishermen and fishing communities in the implementation of sustainable fisheries in the United States. Today we will ask your help testing the proposed questions to be used in this survey so we can evaluate how well they work.

During the interview, I will ask you to read each survey question out loud and provide your response. Occasionally, I will ask you follow-up questions to understand how you came up with your answer. Some of the questions I will ask you may sound a little strange. For example, I might ask you what a certain word means to you. The reason for this is to learn about the process you go through in your mind when you answer the questions. However, there are no right or wrong answers. We are interviewing up to 9 people that work in the fishing industry to provide feedback on these questions and today's interview will last no longer than 60 minutes. Following this interview, we will provide you with a \$40 Visa gift card as a token of appreciation for your time. Your participation in this interview is very important because it will help the National Fish and Wildlife Foundation to improve this survey.

SECTION II: CONSENT

Before we begin, I would like to go over the consent form that we sent to you prior to this interview. As you review the consent form, please feel free to ask any questions you may have. This document explains the following:

With your permission, I would like to audio-record our conversation. This will allow me to concentrate on what you are saying instead of taking a lot of notes while you are talking. It will also help me write a summary of the interview. However, if you prefer not to be recorded, just let me know.

All your responses and everything you say will be kept strictly confidential, and only researchers working on this project will see your answers or hear the recording. Your name will not be used in any of our reports.

Your participation is voluntary, and you may stop at any time. You may choose not to answer any questions you don't want to answer.

The interview should take about 1 hour.

The form also has the contact name and telephone number of the project director, should you have any additional questions about the study. It also contains information about how to get in touch with the Institutional Review Board representative if you have any questions about your rights as a research participant in this study.

[IF OBSERVER IS PRESENT:] I also wanted to let you know that this interview is being observed by someone who works on the survey. They are observing the interview because they are also interested in learning how the questions work, and whether we need to change something that does not work.

This form contains all of the things I just told you about, including your rights in this interview. Please read over the form and ask me questions if there is anything you don't understand. If you are willing to take part in the study, please provide your verbal approval to continue with the interview.

INTERVIEWER:

1. DID THE PARTICIPANT HAVE ANY QUESTIONS OR CONCERNS?

Yes
No → **(SKIP TO QUESTION 3)**

2. PLEASE SPECIFY:

3. HAS THE PARTICIPANT AGREED TO PARTICIPATE?

Yes
No → **(END INTERVIEW)**

SECTION III: COGNITIVE INTERVIEW

IF CONSENT WAS GIVEN, START AUDIO RECORDER. COLLECT VERBAL CONSENT FOR RECORDING.

Now, if you're ready, I'd like to get started. As a reminder, I ask that you read each question out loud and tell me your response. After you answer some of the survey questions, I will ask you questions about your thought process and opinions on certain words and questions.

Do you have any questions about the process before we begin?

Ok you can begin with the survey when you are ready.

IF WEB: PROVIDE THE SURVEY ACCESS CODE TO ENTER THE SURVEY INSTRUMENT

INTRO. This survey is intended for permit holders in [FILL: FISHERY]. If someone at your business or in your household, other than yourself, is or was a permit holder of a fishing vessel in [FILL: FISHERY] then please have them complete this survey.

BLOCK A: INTRO AND INFORMED CONSENT

A_INTRO. The Fisheries Innovation Fund (FIF) was developed in 2010 to foster innovation and support effective participation of fishermen and fishing communities in the implementation of sustainable fisheries in the United States. This survey, being conducted by RTI International (RTI), is one of the ways the National Fish and Wildlife Foundation (NFWF) is evaluating the impact of FIF activities. This survey will take approximately 30 minutes to complete and will ask questions about your fishing practices and general well-being. The survey is voluntary. You can choose not to participate, and you can choose not to answer any question. Please be assured that RTI and NFWF will keep all your answers completely confidential and they will only be reported in group form so that no one will be able to identify you from your answers. If you do not complete it in one sitting you will be able to save your answers and come back to the survey.

Do you agree to participate in this survey?

1. Yes
2. No – [GOTO TERMINATE]

Probe: What are your thoughts after reading this introduction?

Probe: Do you have any concerns about the protection of confidential information after reading this introduction? IF YES: How so?

A_SECTOR_INTRO. The first set of questions are for informational purposes only.

A1_SECTOR. Within the past 5 years, have you owned a permit for or worked in the commercial fishing sector, for-hire recreational fishing sector, or both?

1. Commercial
2. For-hire recreational
3. Both Commercial and For-hire recreational (dual-permitted)
77. Don't know/Not sure

Probe: How did you come up with your answer to this question?

A1_PERMIT. Under which permit does your vessel(s) currently spend the majority of time on the water?"

1. Only commercial
2. Majority commercial
3. Approximately equal between commercial and recreational for-hire
4. Majority recreational for-hire
5. Only recreational for-hire
77. Don't know/Not sure

Probe: What do you think is meant by “...the majority of time on the water” as used in this question?

A2_FEDSTATE. Have you participated in a federal fishery, a state fishery, or both within the past 5 years? [PROGRAM AS HARD CHECK]

1. Federal fishery
2. State fishery
3. Both federal and state fisheries
4. Don't know/Not sure

A3_VESSEL. Are you currently the permit owner of a single vessel or multiple vessels? [PROGRAM AS HARD CHECK]

1. Single vessel
2. Multiple vessels
77. Don't Know/Not sure

A4_COMM_CATCH. [\[IF A1_SECTOR = 1 OR 3 CONTINUE, ELSE GOTO A5_REC_CATCH\]](#)

Do you currently own a fishing permit or target fish managed under one or more of the following commercial catch share or limited access federal fisheries? Please select all that apply.

1. Gulf of Mexico Reef Fish Limited Access Commercial Fishery
2. Northeast Multispecies (Groundfish) Fishery – Sector
3. Northeast Multispecies (Groundfish) Fishery – Common Pool
4. Other Federally-managed fishery - specify: **A4_COMM_CATCH_5SPEC** [ALLOW 60]
5. Other State-managed fishery - specify: **A4_COMM_CATCH_6SPEC** [ALLOW 60]
77. Don't Know/Not Sure

Probe: Is anything about this question confusing or unclear?

Probe: What time frame were you thinking about as you answered this question?

A5_REC_CATCH. [\[IF A1_SECTOR = 2 OR 3 CONTINUE, ELSE GOTO A6_REV\]](#)

Do you currently own a fishing permit or harvest fish managed under one or more of the following for-hire recreational fisheries? Please select all that apply.

1. Gulf of Mexico Reef Fish Federal Charter/Headboat Fishery
2. Northeast Multispecies (Groundfish) Fishery
3. Other Federally-managed fishery - specify: **A5_REC_CATCH_3SPEC** [ALLOW 60]

4. Other state-managed fishery - specify: **A5_REC_CATCH_4SPEC** [ALLOW 60]
77. Don't Know/Not Sure

Probe: Is anything about this question confusing or unclear?

A6_REV.

[IF LOCATION=1]: Does the [IF A1_SECTOR=1 FILL RESPONSE ["Gulf of Mexico Reef Fish Limited Access Commercial Fishery"]; [IF A1_SECTOR=2 FILL RESPONSE ["Gulf of Mexico Reef Fish Federal Charter/Headboat Fishery"]; [IF A1_SECTOR=3 FILL RESPONSE ["Gulf of Mexico Reef Fish Limited Access Commercial Fishery and Gulf of Mexico Reef Fish Federal Charter/Headboat Fishery"]] represent at least 50% of your fishing revenue?

[IF LOCATION=2]: Does the Northeast Multispecies (Groundfish) fishery represent at least 50% of your fishing revenue?

1. Yes
2. No
77. Don't know/Not sure

Probe: What do you think this question is asking about in your own words?

A7_ACTIVE. [IF LOCATION=1] Thinking about the past 3 years, have you (or the vessel(s) with which you are associated) actively fished for species managed in the ["Gulf of Mexico Reef Fish Limited Access Commercial Fishery"]; [IF A1_SECTOR=2 FILL RESPONSE ["Gulf of Mexico Reef Fish Federal Charter/Headboat Fishery"]; [IF A1_SECTOR=3 FILL RESPONSE ["Gulf of Mexico Reef Fish Limited Access Commercial Fishery and Gulf of Mexico Reef Fish Federal Charter/Headboat Fishery"]]?

[IF LOCATION=2] Thinking about the past 3 years, have you (or the vessel(s) with which you are associated) actively fished for species managed in the Northeast Multispecies (Groundfish) Fishery?

Note: An active fishing vessel is one that received revenue from at least one fishing trip that targeted species within the fishery specified above.

1. Yes
2. No
77. Don't know/Not sure

Probe: What time frame were you thinking about as you answered this question?

Probe: Did you notice the note under the question? IF NO: After reading this note, would you change your answer?

Probe: Is anything about this question confusing or unclear?

A8_ROLE: Which of the following best describes your current role in the fishing industry? Please provide a response for each category.	1. Yes	2. No	77. Don't Know/Not Sure
1. Owner – an individual who serves as a vessel owner, and may own/lease a limited entry permit and/or quota			
2. Captain/Crew – an individual who plays a role on a fishing vessel that harvests, takes, or catches fish			
3. Permit Holder – an individual who owns a limited entry permit			
4. Quota Share Owner – an individual who has received or holds quota share			
5. Buyer/ First Receiver – an individual(s) or organization(s) who receives, purchases, or takes custody, control, or possession of commercially caught fish onshore directly from a vessel			
6. Other Please specify: D8_ROLE11_SPEC. [ALLOW 100]			

Probe: Is anything about this question confusing or unclear? How about the descriptions after each of the roles?**Probe: Are there any roles that we should add to this question or do these cover the ones you can think of?****BLOCK B: INNOVATIONS**

B_INNOVATE_INTRO. Now we would like to ask you about some innovative, new, or emerging concepts in U.S. fisheries and some of the tools and resources you may use, or have considered using, in your everyday fishing operations.

B1_AWAREFIF. Before today, have you ever heard of the National Fish and Wildlife Foundation's Fisheries Innovation Fund (FIF) or the Electronic Monitoring and Reporting Grant Program?

1. Yes
2. No
77. Don't know/not sure

B2_FIF: [\[IF B1_AWAREFIF = 1 CONTINUE, ELSE GOTO B3_AWARE1\]](#)
Have you ever participated in a FIF-sponsored project, training, or event?

1. Yes, within the past 5 years
2. Yes, more than 5 years ago
3. No
77. Don't know/not sure

<u>B3 AWARE1:</u> <u>Which of the following electronic monitoring and reporting tools are you aware of?</u>	1. Not at all aware	2. Slightly Aware	3. Somewhat Aware	4. Considerably aware	5. Extremely aware
a. Electronic Logbooks/Vessel Trip Reports (eVTR) Using tablet (such as an iPad), smartphone, or computer-based electronic logbooks to report catch on federal commercial fishing trips					
b. Video Electronic Monitoring Video cameras instead of, or in addition to, human observers for catch accounting, discard monitoring, and/or compliance monitoring					
c. Electronic Fish Tickets, Dealer Reports, or Landing Receipts Tablet (e.g., iPad) or computer-based electronic fish ticket reports					
d. Any of the following business planning or quota management tools: <ul style="list-style-type: none"> • <i>FishHub</i> • <i>ECatch</i> • <i>LegitFish</i> • <i>Fishing Area Selectivity Tool</i> Online platforms that help you manage your fishing business, gain access to quota, and monitor bycatch interactions					

Probe: IF YES, can you describe the sponsored project, training, or event that you participated in?

Probe: Is anything about this question confusing or unclear? How about the descriptions after each of the tools?

<p><u>B3_AWARE2.</u></p> <p><u>Which of the following bycatch reduction tools are you aware of?</u></p>	1. Not at all aware	2. Slightly Aware	3. Somewhat Aware	4. Considerably aware	5. Extremely aware
<p>a. Bycatch Hotspot Mapping Online communication networks that generate maps in near real-time and display areas where high incidences of bycatch have been reported</p>					
<p>b. Risk Pools Arrangement in which several fishermen pool their quota/allowances of constraining species so that rare overages by a few members of the pool are covered by the group's pooled allotment</p>					

<p><u>B3_AWARE3.</u></p> <p><u>Which of the following seafood marketing and traceability tools are you aware of?</u></p>	1. Not at all aware	2. Slightly Aware	3. Somewhat Aware	4. Considerably aware	5. Extremely aware
<p>a. Direct Marketing & Forward Contracting Marketplaces Marketing arrangements that enable fishermen to better plan or market their catches based on demand from seafood buyers by targeting species at prearranged prices. Examples include: Community and Restaurant Supported Fisheries and direct marketing arrangements with consumers, schools, universities, or hospitals.</p>					
<p>b. Any of the following seafood traceability tools:</p> <ul style="list-style-type: none"> • <i>GulfWild</i> • <i>FishTrax</i> • <i>Legit Fish (Backtracker)</i> • <i>ThisFish</i> • <i>TraceRegister</i> <p>Electronic tools and record-keeping systems that allow seafood buyers to track seafood products through the supply chain, from harvester to consumer</p>					

B3_AWARE4. <u>Which of the following Community & Fishermen Capacity Building tools are you aware of? Please select all that apply.</u>	1. Not at all aware	2. Slightly Aware	3. Somewhat Aware	4. Considerably aware	5. Extremely aware
a. Permit Banks A collection of fishing permits managed by an organization or individual for the purpose of leasing the associated fishing privileges to qualifying fishermen. Examples include: Cape Cod Fisheries Trust, Gloucester Fishing Community Preservation Fund, and Reef Fish Quota Bank among others					
b. Training Programs for the Next Generation of Fishermen Training, networking, and apprenticeship programs that provide access and opportunities for young fishermen and new entrants to the fishery. Examples include: Next Generation Commercial Fishing Crew Apprenticeship or others					
c. Training for Participation in Fisheries Management Training programs that help fishermen and fishing communities actively engage in the fisheries management process by providing education on fisheries science and monitoring, such as the Marine Resource Education Program or others					
d. Aquaculture Business Development Training Programs Training programs that help fishermen establish small-scale shellfish, finfish, and algae aquaculture farms					
e. Any of the following fisheries networking resources: <ul style="list-style-type: none"> • <i>EM4.Fish (formerly eminformation.com) https://em4.fish/: www.eminformation.com</i> • <i>LocalCatch.org: https://localcatch.org</i> • <i>Community Fisheries Network: http://www.communityfisheriesnetwork.net/</i> <p>Online forums and workshops to support information sharing among fishing industry members nationwide</p>					

Probe: The last few questions used a scale of 5 response options. How would you have answered this question if only 3 responses were presented? The responses would be

1. Not at all aware
2. Somewhat aware
3. Very aware

Probe: Again, the alternative response options would be 1. Not at all aware, 2. Somewhat aware, and 3. Very aware. Do you prefer to answer these questions using the current scale of 5 responses or the alternative set of 3 responses? Why?

<p>B3_AWARE5. [IF A3_SECTOR = 2 OR 3 CONTINUE, ELSE GOTO B3_AWARE_CHECK]</p> <p><u>Which of the following for-hire recreational tools are you aware of?</u></p>	1. Not at all aware	2. Slightly Aware	3. Somewhat Aware	4. Considerably aware	5. Extremely aware
<p>a. Electronic Vessel Trip Reports (eVTR) Tablet or computer-based electronic catch reporting (e.g., logbooks, VMS-enabled tablets) for for-hire recreational operators (including charter boats, headboats, party boats, Commercial Passenger Fishing Vessels, licensed fishing guides, etc.)</p>					
<p>b. Electronic Reporting Apps Smartphone applications that allow recreational anglers to report catch and effort information, such as iAngler, iSnapper, or other such apps</p>					
<p>c. Any of the following Best Management Practices and Programs to Reduce Discard Mortality:</p> <ul style="list-style-type: none"> • <i>FishSmart Program</i> • <i>Barotrauma Reduction/Descending Devices</i> <p>Strategies that provide recreational anglers with tools and training about best practices to reduce post-release discard mortality</p>					
<p>d. Training for Participation in Fisheries Management Help fishermen actively engage in the fisheries management process by providing education on fisheries science and monitoring, such as the Marine Resource Education Program or others</p>					
<p>e. Hotspot Mapping to Minimize Discards Online communication networks that generates maps in near real-time that display areas where high incidences of non-target species have been reported</p>					

Probe: Is anything about this question confusing or unclear? How about the descriptions after each of the tools?

<p><u>B4 SOURCE:</u></p> <p>Where did you learn about this practice, tool, or resource? Please select all that apply.</p>	<p>1. Recruited by organization that received Fisheries Innovation Fund award</p>	<p>2. Online Forums/Direct Emailing</p>	<p>3. Council meetings/Presentations</p>	<p>4. Trade journals/Newsletters</p>	<p>5. Word of Mouth</p>	<p>6. Social media</p>	<p>7. Fishing Association/Sector</p>	<p>77. Don't know/not sure</p>	<p>8. B4_SOURCE_OTH_a-x:Other. Please Specify</p>
<p>a. [FILL ALL RESPONSES FROM B3_AWARE1 THROUGH B3_AWARE5 IF RESPONSE WAS 3, 4, OR 5]</p>									<p>[ALLOW 60]</p>
<p>b. [FILL ALL RESPONSES FROM B3_AWARE1 THROUGH B3_AWARE5 IF RESPONSE WAS 3, 4, OR 5]</p>									<p>[ALLOW 60]</p>
<p>c. [FILL ALL RESPONSES FROM B3_AWARE1 THROUGH B3_AWARE5 IF RESPONSE WAS 3, 4, OR 5]</p>									<p>[ALLOW 60]</p>
<p>d. Etc..</p>									<p>[ALLOW 60]</p>

B3_AWARE_CHECK. [[IF B3_AWARE1a THROUGH B3_AWARE1d = 99] AND [B3_AWARE2a THROUGH B3_AWARE2c = 99] AND [B3_AWARE3a AND B3_AWARE3b = 99] AND [B3_AWARE4a THROUGH B3_AWARE4e = 99] AND [B3_AWARE5a THROUGH B3_AWARE 5e] = 99 THEN GOTO C1_JOBSAT]

Probe: Is anything about this question confusing or unclear?

Probe: Is it clear what the “Fisheries Innovation Fund” in #1 is referring to?

<p><u>B5 VALUE:</u></p> <p><u>After learning about this practice, tool, or resource, were you interested in potentially trying it?</u></p>	<p>1. Yes, I was interested</p>	<p>2. No, I was not interested</p>	<p>77. Don't know/Not Sure</p>
<p>a. [FILL ALL RESPONSES FROM B3_AWARE1 THROUGH B3_AWARE5 IF RESPONSE WAS 3, 4, OR 5]</p>			
<p>b. [FILL ALL RESPONSES FROM B3_AWARE1 THROUGH B3_AWARE5 IF RESPONSE WAS 3, 4, OR 5]</p>			
<p>c. [FILL ALL RESPONSES FROM B3_AWARE1 THROUGH B3_AWARE5 IF RESPONSE WAS 3, 4, OR 5]</p>			
<p>d. Etc..</p>			

<p><u>B6 ADOPT.</u></p> <p><u>After learning about this practice, tool, or resource, did you try it at least once?</u></p>	<p>1. Yes, I have tried it on <u>my vessels</u></p>	<p>2. Yes, I tried it on <u>some of my vessels</u></p>	<p>3. No, I did not want to try it</p>	<p>4. No, I did not have the opportunity to try it</p>	<p>77. Don't know/Not Sure</p>
<p>a. [FILL ALL RESPONSES FROM B3_AWARE1 THROUGH B3_AWARE5 IF RESPONSE WAS 3, 4, OR 5]</p>					
<p>b. [FILL ALL RESPONSES FROM B3_AWARE1 THROUGH B3_AWARE5 IF RESPONSE WAS 3, 4, OR 5]</p>					
<p>c. [FILL ALL RESPONSES FROM B3_AWARE1 THROUGH B3_AWARE5 IF RESPONSE WAS 3, 4, OR 5]</p>					
<p>d. Etc..</p>					

PROGRAMMING NOTE: IF A5_VESSEL=1 display version of table with 3 responses [1. Yes, I have tried it, 2. No, I did not want to try it 3. No, I did not have the opportunity to try it 77. Don't know/Not sure]. IF A5_VESSEL=2 display table as shown above.

<p><u>B7 IMPLEMENT. [IF ANY B6_ADOPTa THROUGH B6_ADOPTx = 1 or 2]</u></p> <p><u>Which of the following statements BEST DESCRIBES your use of this practice or resource?</u></p>	<p>1. I tried this practice/resource in the past, but then stopped</p>	<p>2. I am currently using this practice/resource, but I am not sure I will continue in the future</p>	<p>3. I am currently using this practice/resource on some of my vessels and plan to continue in the future</p>	<p>4. I am currently using this practice/resource on <u>some of my vessels</u>, and plan to expand to <u>more vessels in the future</u></p>	<p>5. I am currently using this practice/resource on <u>all my vessels</u> and plan to continue as such in the future</p>	<p>77. Don't know/not sure</p>	<p>6. B7_IMPLEMENT_OTH_a-x. Other. Please Specify</p>
<p>a. [FILL ALL RESPONSES FROM B6_ADOPTa THROUGH B6_ADOPTx IF RESPONSE = 1]</p>							<p>[ALLOW 60]</p>
<p>b. [FILL ALL RESPONSES FROM B6_ADOPTa THROUGH B6_ADOPTx IF RESPONSE = 1]</p>							<p>[ALLOW 60]</p>
<p>c. [FILL ALL RESPONSES FROM B6_ADOPTa THROUGH B6_ADOPTx IF RESPONSE = 1]</p>							<p>[ALLOW 60]</p>
<p>d. Etc..</p>							<p>[ALLOW 60]</p>

PROGRAMMING NOTE: IF A5_VESSEL=1 display version of table with 3 responses [1. I tried this practice/resource in the past, but then stopped 2. I am currently using this practice/resource, but I am not sure I will continue in the future 3. I am currently using this practice/resource, and plan to continue in the future 77. Don't know/Not sure 4. Other. Please Specify].
IF A5_VESSEL=2 display table as shown above.

Probe: Is anything about this question confusing or unclear?

<p><u>B8 REJECT: [IF ANY B7 IMPLEMENTa THROUGH B7 IMPLEMENTx = 1 OR 2]</u></p> <p>Why do you no longer use or plan to discontinue using this practice, tool, or resource? Please select all that apply.</p>	1. Too expensive	2. Too time consuming	3. Too complicated	4. I don't believe it will be useful to me	5. It is no longer relevant to me	6. It's not required by the regulations	7. Don't know/not sure [EXCLUSIVE]	7. B8_REJECT_OTH_a-x. Other. Please Specify
a. [FILL ALL RESPONSES FROM B7_IMPLEMENTa THROUGH B7_IMPLEMENTx IF RESPONSE = 1 OR 2]								[ALLOW 60]
b. [FILL ALL RESPONSES FROM B7_IMPLEMENTa THROUGH B7_IMPLEMENTx IF RESPONSE = 1 OR 2]								[ALLOW 60]
c. [FILL ALL RESPONSES FROM B7_IMPLEMENTa THROUGH B7_IMPLEMENTx IF RESPONSE = 1 OR 2]								[ALLOW 60]
d. Etc.								[ALLOW 60]

BLOCK C: WELL BEING AND JOB SATISFACTION

C_INTRO. The following questions ask about your overall well-being and job satisfaction.

C1_JOBSAT. On a scale of 0– 10, with 10 being very satisfied and 0 being very dissatisfied, how would you describe your overall satisfaction with your job(s) in the fishing industry?

- 10. Very satisfied
- 9.
- 8.
- 7.
- 6.
- 5.

- 4.
- 3.
- 2.
- 1.
0. Very dissatisfied

Probe: Can you explain why you selected #__?

C1_JOBSAT_OPEN.

What factors did you consider when rating your overall satisfaction with your job(s) in the fishing industry? [OPEN - ALLOW 500]

Probe: Can you think of any other factors that fisherman might consider when rating the overall satisfaction with their job in the fishing industry?

C2_MANSATF: [IF A4_FEDSTATE = 1 OR 3 CONTINUE, ELSE GOTO A5_MANSATS]

On a scale of 0 – 10, with 10 being very satisfied and 0 being very dissatisfied, how would you describe your overall satisfaction with Federal fisheries management?

10. Very satisfied
- 9.
- 8.
- 7.
- 6.
- 5.
- 4.
- 3.
- 2.
- 1.
0. Very dissatisfied
99. Not applicable

Probe: [IF 0 THROUGH 4]: Can you explain why you selected #__?

C2_MANSATF_OPEN.

What factors did you consider when rating your overall satisfaction with **Federal fisheries management?** [OPEN - ALLOW 500]

Probe: Can you think of any other factors that fisherman might consider when rating the overall satisfaction with Federal fisheries management?

C3_MANSATS: [\[IF A4_FEDSTATE = 2 OR 3 CONTINUE, ELSE GOTO C4_PA_INTRO\]](#)

If you participate in any state fisheries, on a scale of 0 – 10, with 10 being very satisfied and 0 being very dissatisfied, how would you describe your overall satisfaction with state fisheries management?

10. Very satisfied
- 9.
- 8.
- 7.
- 6.
- 5.
- 4.
- 3.
- 2.
- 1.
0. Very dissatisfied

Probe: [IF 0 THROUGH 4]: Can you explain why you selected #__?

C3_MANSATS_OPEN.

[What factors did you consider when rating your overall satisfaction with state fisheries management?](#) [\[OPEN - ALLOW 500\]](#)

Probe: Can you think of any other factors that fisherman might consider when rating the overall satisfaction with state fisheries management?

C4_COVID_INC. The Coronavirus or COVID-19 pandemic has affected Americans in many ways. Have you, or has anyone in your household, experienced a loss of employment income since March 2020?

1. Yes
2. No
3. I prefer not to answer
4. Don't Know/Not Sure

C4_COVID_SUSP. Since March 2020, have your fishing business operations been suspended for a duration of one month or more due to the COVID-19 pandemic or other unforeseen events such as hurricanes, etc.?

1. Yes, and operations are currently suspended
2. Yes, and operations have resumed
3. No

Probe: IF YES: Can you tell me more about why you answered “Yes”?

Probe: Is it easy or difficult to recall the March 2020 timeframe?

C5_INTRO. We realize the next few questions, which ask about your level of satisfaction with life, health, and overall happiness, are personal. Your individual responses, which will be kept confidential, will be combined with other responses to help us understand the experiences of fishermen and fishing communities.

C5a_LIFE. How satisfied are you with your life?

1. Very dissatisfied
2. Dissatisfied
3. Neutral
4. Satisfied
5. Very satisfied

C5b_HEALTH. How satisfied are you with your physical health?

1. Very dissatisfied
2. Dissatisfied
3. Neutral
4. Satisfied
5. Very satisfied

C5c_HAPPY. How often do you feel really happy?

1. Never
2. Sometimes
3. Neutral
4. Often
5. All of the time

Probe: After answering the last three questions, what are your thoughts about the questions? **IF NEEDED:** Did they seem strange or awkward to answer, or not?

Probe: What are your thoughts about the introduction?

Probe: Would you be hesitant to answer these questions on a real survey or not?

C6_RELATE. Do you have friends in your community you can count on if needed?

1. Yes
2. No
77. Don't know/Not sure

Probe: What do you think is meant by “community” as used in this question?

C7_PRIOR_MATERIAL: Prior to March 2020, which of the following best describes how you felt about your household income. Would you say you...

1. Lived comfortably on your household income
2. Got by on your household income
3. Found it somewhat difficult to get by on your household income
4. Found it very difficult to get by on your household income
77. Don't know/Not sure

C7_POST_MATERIAL: Since March 2020, which of the following best describes how you feel about your household income. Would you say you are...

1. Living comfortably on your household income
2. Getting by on your household income
3. Finding it somewhat difficult to get by on your household income
4. Finding it very difficult to get by on your household income
77. Don't know/Not sure

Probe: How did you decide which response option to select?

BLOCK D: DEMOGRAPHICS

D_INTRO. Now we have a few more questions about you that are for informational purposes only. Please be assured that all your answers will remain completely confidential.

D1_PRIOR_INCOME. Prior to March 2020, did at least 50% of your household income come from the fishing industry, including all species and fisheries?

1. Yes
2. No
77. Don't know/Not Sure

D1_POST_INCOME. Since March 2020, does at least 50% of your household income come from the fishing industry, including all species and fisheries?

1. Yes
2. No
78. Don't know/Not Sure

Probe: Is it easy or difficult to recall the March 2020 timeframe as it pertains to household income?

Was it clear that the question was not just asking about fishing income?

D2_AGE. What is your current age?

1. 18-29 years of age
2. 30-39 years of age
3. 40-49 years of age
4. 50-64 years of age
5. 65 years or older

D3_COMMENT. Is there anything else you would like to share with NFWF regarding the Fisheries Innovation Fund or other aspects of this survey? As a reminder, your response will be kept confidential. [MAX LENGTH 500]

TERMINATE: Thank you, if you wish to reconsider your decision not to participate in the survey, please contact us at [EMAIL].

END. Thank you! You have completed the survey. If you have any additional questions about this survey or the FIF, please contact the National Fish and Wildlife Foundation (NFWF) at [*CONTACT INFORMATION WILL BE ADDED ONCE SURVEY IS FINAL.*]

Please click [SUBMIT] to complete the survey.

SECTION IV: REVIEW OF CONTACT MATERIALS

NOTE: THIS SECTION SHOULD TAKE 5-10 MINUTES TO ADMINISTER. IF RUNNING LOW ON TIME – GO TO SECTION V: CLOSING PROBES.

When I sent the confirmation email for this interview, I included a few items that I would like you to review.

The first, is titled “FIF Introduction Letter”. If you could open this up and let me know when you have it open. This is the letter we will send to Fisherman inviting them to complete the survey.

Please take a moment to review this letter. [PROVIDE A MINUTE OR TWO FOR REVIEW]

Probe: What are your initial impressions of this letter?

Probe: If you received this letter, along with the survey invitation, would you be likely to complete the survey or not? IF NOT: Why?

Probe: Is there anything that you think is missing from this letter? Anything you would remove?

The second item we would like you to review, is titled “FIF postcard reminder”. If you could open this up and let me know when you have it open. This is a postcard that

would be sent to you a few weeks after receiving the initial introduction letter. It would be folded over and sealed, including the information needed to complete the survey.

Please take a moment to review this postcard. [PROVIDE A MINUTE FOR REVIEW]

Probe: What are your impressions of this postcard?

Probe: Is there anything that you think is missing from the postcard? Anything you would remove?

Probe: We are also interested in your thoughts about the survey URL or link that would be printed on the cover letter and postcard reminder. This is the address you would type into your browser to begin completing the survey. The URL that would be presented would be either [FIFSurvey.org] or [FIFSurvey.com]. Do either of these appear more legitimate to you?

Would you have any concerns receiving an invitation with either of these printed for you to enter to complete the survey or are they about the same?

Which would you prefer, or does it not make any difference to you?

SECTION V: CLOSING PROBES

Thank you. We are almost done, but I just have a few remaining questions for you.

Probe: Overall, what did you think of the survey?

Probe: What did you think of the survey's length?

Probe: Aside from those issues we already discussed, are there any questions from the survey that you think people might find difficult to answer?

Probe: Do you have any other comments or concerns about the survey?

Thank you very much for your responses.

[IF OBSERVERS] Before we finish, I want to give my colleagues that are observing a chance to let me know if they have any other questions for you. [INTERVIEWER: CHECK EMAIL FOR OBSERVER QUESTIONS]

STOP RECORDING.

Those are all the questions I have for you. Thank you so much! As I mentioned, we will be sending you a \$40 VISA gift card as a thank you for participating. Could I get your mailing address to send you the gift card:

STREET ADDRESS:

CITY:

STATE:

ZIP CODE:

A.2 Target Population

The target population consists of individuals actively participating in the two target fisheries as either a vessel owner, captain or crew member, quota share owner, or vessel permit holder. Individuals can simultaneously be considered any combination of the four categories. Active participation was defined through the survey questionnaire by respondents who identified with one or more of the following: currently owning a fishing permit in the target fishery, receiving at least 50% of fishing revenue from the target fishery, or actively fishing within the target fishery in the past 3 years. If any of the three criteria was satisfied for either the Gulf of Mexico Reef Fish fishery or the Northeast Multispecies (Groundfish) Fishery, then the respondent was considered a part of the target population and considered for analysis.

Note that the intent of survey distribution was to send one survey invitation to a representative of each permit holder in each of the target fisheries. A permit holder is an individual or entity which holds a fishing permit for one or more vessels. In instances where a permit holder holds permits for multiple vessels, only one survey invitation was sent to the permit holder or representative.

A.2.1 Frame

For both target fisheries, frame files were generated from publicly available files maintained by NOAA. These files are vessel-level files. That is, in each file, there is one unique record for each vessel. As previously discussed, the target population consists of those actively fishing in the target fisheries. The intent of frame creation was to reduce the vessel-level files into a single file for each target fishery, which contains all permit holders therein such that permit holders were representative of the target population of individuals actively participating in the target fishery. This ensured that the following three conditions are satisfied: (1) there is a single frame record for each permit holder in the target fishery, (2) every vessel in the vessel-level files from NOAA is represented under a permit holder on the frame file, and (3) a single permit holder record on the frame may have multiple vessel-level records that correspond to it.

To create a file with one record for each permit holder, the vessel-level files were collapsed such that there is one record for each address and “mail recipient.”² Note that there are specific nuances in the respective vessel-level files for each fishery that are discussed in the sections below. The “mail recipient” is a field which includes the name of a person or corporation associated with the vessel of record. Multiple mail recipients at a single address were investigated to determine if the multiple records correspond to a single permit holder. When the multiple mail recipients at a single address were determined to correspond to multiple permit holders, a record for each permit holder was retained, otherwise only one record for each address was retained on the frame. Similarly, when a single “mail recipient” appeared across multiple addresses, a manual review was performed to determine if the records corresponded to a single permit holder. If so, only one record was retained on the

² In the Northeast Multispecies (Groundfish) Fishery files, the equivalent field was called “owner name.” In the Gulf of Mexico Reef Fish fishery, it was called “mail recipient.”

frame for the permit holder. The result is a single frame file for each target fishery, which includes one record for each permit holder in the respective fishery.

Further discussion of the creation of the frame is divided by fishery as the frame for the Gulf of Mexico Reef Fish fishery and the Northeast Multispecies (Groundfish) Fishery were created independently through different processes because of their differing file structures.

Gulf of Mexico Reef Fish Fishery

Table A-2 includes the three files used to produce the frame in the Gulf of Mexico Reef Fish fishery and the number of records contained within each. The files are updated on a rolling basis and were last accessed on December 17, 2020.

Table A-2. Files for Frame Creation of Gulf of Mexico Reef Fish Fishery

File name	Number of Records	
	Vessel	Collapsed
Limited Access Commercial Permits Gulf of Mexico Reef Fish	831	731
Gulf of Mexico Charter-Headboat for Reef Fish	1,291	1,128
Historical Captain Gulf of Mexico Charter-Headboat for Reef Fish	25	25

To create the frame file with one record for each permit holder, the three vessel-level files were each collapsed such that there is one record for each address and “mail recipient” then merged by address and “mail recipient.” No records were eliminated for consideration for the frame such that vessels whose permits may have lapsed would still be included in the frame. The result of the merge was a file containing 1,694 records with one record for each address and “mail recipient” that appeared in any of the three files. Prior to merging the files, addresses were reviewed and standardized. The file with 1,694 records was reviewed as previously discussed to determine if multiple permit holders appeared at a single address or if the same permit holder appeared across multiple addresses. After the file was cleaned accordingly, the frame file with one record for each permit holder in the Gulf of Mexico Reef Fish fishery was produced with 1,530 unique records.

Northeast Multispecies (Groundfish) Fishery

Table A-3 includes the two files used to produce the frame in the Northeast Multispecies (Groundfish) Fishery and the number of records contained within each. Note that 2020 was the latest year for available data at the time of frame creation.

Both the 2019 and 2020 vessel permit files contain vessels which do not have a Northeast Multispecies permit. There is a field in the data files that identifies whether a vessel holds a permit for the Northeast Multispecies (Groundfish) Fishery, and the type of permit within the fishery (e.g., open or limited access, handgear A or B, etc.).³ As displayed in Table A-2, for

³ <https://www.fisheries.noaa.gov/permit/northeast-multispecies-groundfish-permits>

frame creation both files were subset to only include vessels indicated as being permitted for the Northeast Multispecies (Groundfish) Fishery.

Table A-3. Files for Frame Creation of Northeast Multispecies (Groundfish) Fishery

File Name	Number of Records		
	Vessel	Vessel with a Northeast Multispecies Permit	Collapsed
2020 Vessel Permits	4,442	2,441	2,179
2019 Vessel Permits	4,236	2,476	2,192

The 2020 vessel permit file was the most recent permit file at the time of frame creation and thus was considered the “base” file for the purposes of frame creation for the Northeast Multispecies (Groundfish) Fishery. It was then supplemented by the 2019 file to account for permit holders whose permits may have lapsed but recently participated in the fishery. More specifically if a record in the 2019 file had a vessel, address, permit number, or combination of mail recipient and phone number that was already in the 2020 file, then it was not added to the frame. Additional manual review was given to matches of permit numbers and combinations of mail recipient and phone number to ensure that the records were correctly excluded from the frame. All vessel-level records with a Northeast Multispecies permit in the 2020 vessel permit file and vessel-level records in the 2019 vessel file to be added to the frame were collapsed such that there is one record for each address and “mail recipient.” The result was a file containing 2,369 records, 2,179 of which originated from the 2020 file, and 190 additions from the 2019 file.

As discussed at the beginning of Section 2, within the file containing 2,369 records, mail recipients who appeared across multiple addresses were reviewed to determine if they corresponded to the same permit holder. In addition to “mail recipient” the frame files for the Northeast include phone number, which was similarly treated such that instances of the same phone number appearing across multiple addresses were reviewed to determine if they correspond to the same permit holder. If so, only one record corresponding to the permit holder was retained. As previously discussed, multiple records corresponding to the same address were assumed to belong to the same permit holder such that a single record for each address was retained, barring exceptions discovered through manual review. The result of performing these cleanings on the file with 2,369 records was the frame file with one record for each permit holder in the Northeast Multispecies (Groundfish) Fishery having 1,951 unique records.

A.2.2 Sample

All records included in the frame for each fishery were sent an invitation to the survey and no sampling was performed. Effectively the study was conducted as a census of all permit holders in the Gulf of Mexico Reef Fish fishery, and separately a census of all permit holders in the Northeast Multispecies (Groundfish) Fishery. For the discussion that follows, a

“complete” is defined to be any case who made it through the entire survey. A “partial complete” is a case who did not make it to the end of the survey but answered questions at least through the well-being portion of the survey: section C in web mode, and through question 42 in paper mode. A “respondent” is the union of completes and partial completes. Cases retained for analysis are respondents who were deemed to be active participants in the fishery, as defined previously.

Within the Gulf of Mexico Reef Fish fishery, of the 1,530 cases invited to the survey, 433 completed the survey with an additional six considered partial completes, for a total of 439 respondents and an AAPOR2⁴ response rate of 28.7%. Note that because this is a census, this response weight is unweighted as the sampling weight for all cases is the same. Of the 439 respondents, 420 were classified as active participants in the fishery and thus retained for analysis.

Within the Northeast Multispecies (Groundfish) Fishery, of the 1,951 cases invited to the survey, 593 completed the survey with an additional 10 cases considered partial completes, for a total of 603 respondents and an unweighted AAPOR2 response rate of 30.9%. Of the 603 respondents, 524 were classified as active participants in the fishery and thus retained for analysis.

Within each fishery, a nonresponse bias analysis was conducted across key characteristics available from the frame for respondents and nonrespondents alike. A model-based nonresponse weight adjustment was implemented to mitigate nonresponse bias and preserve weight sums across key characteristics, such that only cases retained for analysis had a nonzero weight after the weighting adjustment. A calibration adjustment was not conducted as the frame was determined to be the best estimate available of population totals. All analyses conducted within this report are weighted analyses using the nonresponse adjusted weight.

⁴ <https://www.aapor.org/Education-Resources/For-Researchers/Poll-Survey-FAQ/Response-Rates-An-Overview.aspx>

A.3 Data Collection Approach

A.3.1 Mailing Materials

RTI designed all materials that were printed and sent to respondents, including invitation letters, reminder self-mailers, outer envelopes containing contact materials and paper survey packets, and business reply envelopes for returning completed paper surveys to RTI (see Appendix D for the invitation letters).

To make it clear how the respondent could complete the survey, RTI designed simple graphics with images of a computer and a smartphone to denote that the survey could be completed on a computer or smartphone via web. Another graphic included an image of an envelope to denote that the respondent could also complete the survey on paper and send it back in the mail. These graphics were placed side by side in the letters and included the amount of the promised incentive in larger, bold orange text. Each respondent's personalized login credentials were printed on their letters and self-mailers along with a customized URL to access the survey.

Similar to our approach with the paper survey, RTI designed all of the materials using best practices for formatting and readability. RTI also designed the contact materials to encourage participation. To that end, NFWF's branding was featured as often as possible. The full-color NFWF logo was used as the letterhead in the invitation and reminder self-mailers. Also, RTI developed custom color graphics for each of the two fisheries (Northeast Multispecies Groundfish fishery and Gulf of Mexico Reef Fish fishery) that were also included on mailing materials and on the paper survey cover. Erika Feller, Director, Marine and Coastal Conservation, for NFWF was also featured as part of the survey branding, and with her permission and approval, her signature appears in all letters. The cover letters and surveys were customized for each of the two fisheries.

A.3.2 Systems and Applications

RTI used the following systems, processes, and applications during the fielding of the Fisheries Innovation Fund Well-being and Innovation Survey:

EPP—Entry Point Plus (EPP) is the software RTI used to program the paper survey. Entry Point Plus is a centralized data capture tool that allows for data entry and verification of data.

Voxco—Voxco is the software RTI used to program the web survey. It is a multimode data collection system that tracks survey activities and sample cases across modes and provides a centralized survey management portal to manage survey progress.

Symphony—Symphony serves as the database management system for projects that use mailings, like the Fisheries Innovation Fund Well-being and Innovation Survey. All mailings must be logged into the system to enable tracking of all sample records. All returns are receipted and coded as “stages” and “events,” such as “undeliverable” and “completed survey.”

Mail receipting/Data Capture—RTI has a team of data capture clerks, who opened all returned mail for the project and sorted the mail based on their stage. All paper

surveys were batched and scanned. Scanned data were then committed into the survey dataset on RTI's secure network, which merged both web and paper survey data. All paper data were verified using a two-step process, where one clerk entered data and a senior clerk verified and made necessary corrections.

ATD Dashboard—RTI used its Adaptive Total Design (ATD) dashboard to monitor data collection during fielding. The ATD dashboard uses inputs from Voxco and Symphony to display outcomes and data points of interest to the project team. The dashboard is updated daily, which enables the team to introduce interventions faster during data collection.

A.3.3 Mailing Protocol

RTI mailed survey materials to everyone who met the sampling criteria. We sent the first two mailings to the entire sample, while later mailings were sent only to nonrespondents (Table A-4). For instances when multiple permit holders had the same mailing address, RTI mailed a single package, containing individually packaged mailing materials, to each address. All mailings were sent using USPS first-class mail.

Table A-4. Data Collection Protocol

Mailing	Description	Contents	Mail Date
1	Introductory letter and web invitation	Cover letter with web credentials in 9x12 or 9x6 window envelope with \$5 cash pre-incentive.	2/9/21
2	Self-mailer 1	Self-mailer with web credentials.	2/16/21
3	Full survey mailing and web invitation	Cover letter with web credentials, paper survey, and business reply envelope in 9x12 envelope.	3/8/21
4	Self-mailer 2	Self-mailer with web credentials and option to complete previously mailed paper survey.	3/23/21
5	Second full survey mailing and web invitation (if needed)	Cover letter with web credentials, paper instrument, and business reply envelope in 9x12 envelope.	4/13/21

Incentives

To encourage response to the survey, RTI sent all survey recipients a \$5 cash pre-incentive with the first survey packet mailing. To encourage response, respondents who completed the computer-assisted web interviewing (CAWI) instrument received a \$15 post-incentive in the mode of their choice—either an electronic gift card or mailed check. Respondents who completed a paper instrument were mailed a \$15 check.

Mail receipting

All paper surveys were received at RTI's Research Operations Center in Raleigh, North Carolina. All returned mail was sorted by mailing stage. Undeliverable mail was sorted

separately. Once opened, mail was further sorted based on stage and status (i.e., full item received, partial item received, refusal, duplicate survey, blank survey) and receipted in RTI's Symphony Control System. Undeliverable statuses were also sorted and updated in Symphony based on undeliverable type (i.e., vacant, temporarily away, not deliverable as addressed, unable to forward, no mail receptacle). Mail receipt was prioritized to have an up-to-date count of received surveys.

Once receipted, surveys were sorted in batches based on stage status. Refusals, duplicates, and blank questionnaires were receipted and batched separately, and case statuses were updated in the data set and then stored in archives. Full or partially completed surveys were entered in the EPP system.

Data were keyed from hard copy and verified by a senior data entry clerk to ensure the highest accuracy. Any data entered by the verifier that differed from the data entered by the keyer prompted a Data Discrepancy warning message displaying the data entered by each keyer. The verifier re-reviewed the data on the hard copy and decided on the final data to record. Consistency codes were used to code bad data (i.e., illegible, out of range, multiple responses to single choice items).

Once the verification was completed, the verifier committed the data to the dataset.

Study Contact Information

RTI set up a toll-free phone number to respond to any inquiries from respondents. The phone number was set up to ring the direct line of RTI's data collection task leader. If they were unavailable, the phone call would be directed to a voicemail recording indicating the caller had reached the Fisheries Innovation Fund Well-being and Innovation Survey study line and asking them to leave a message. The RTI project team monitored the voicemail box every business day, logged each call in a file that resided in our secure network, and responded within 48 hours as necessary.

RTI drafted a guide that outlined the most common reasons for calling and provided guidance on resolving inquiries. Common reasons for calling included survey access issues, refusals, requests for new surveys, reports of already completing the survey, reports of not being able to complete the survey (e.g., because of a disability, death), and reports of the survey not being applicable (e.g., no longer fished in the permitted area).

RTI also created an email address specifically for the survey. The inbox was monitored each business day, and issues were resolved using the same guidance provided for phone calls. RTI forwarded to NFWF inquiries that were more appropriately handled by NFWF.

RTI created a website for the Fisheries Innovation Fund Well-being and Innovation Survey where respondents entered their personal PIN to access the Voxco survey. No one could access the Voxco survey without a valid PIN that matched RTI's sample file. Each PIN was unique to a sample record and could not be used to complete the survey more than once.

Monitoring

RTI created a custom ATD dashboard that was updated daily to assist the project team in monitoring data collection. NFWF could track fielding progress every day of data collection using the dashboard and view data according to metrics customized for the project, including completes by mode, refusals, and undeliverable mail. These metrics can be further sorted based on state region, replicate, and language of completion.

Using various data sources, including sample flags, case dispositions, and web paradata, the ATD dashboard presented the most important metrics while minimizing superfluous information to enable timely decision-making. Key information included number of web and paper interviews completed, and undeliverables by fishery and permit type.

A.4 Methods for Classifying Open-ended Responses

Definitions:

Tag or Label - A binary (yes/no) topical classification applied to a response

Keyword Tags

A response was tagged with a keyword tag if its verbatim text contained any keyword for a certain topic surrounded on both sides by word boundaries (spaces or punctuation). A topical keyword list was initially developed by reviewing background materials, client priorities, and an initial set of responses to the open-ended questions. This keyword list was expanded, both by adding additional keywords to flag existing topics and developing new topics, through an iterative review process. This process involved applying an initial set of keywords and then reviewing responses that were not assigned any keyword tags to identify common words or phrases used in those untagged responses. This process was repeated until the most commonly used words and phrases in untagged responses were functional terms (also known as stop words), such as “the,” “a,” and “and,” ensuring that no potentially meaningful keywords were missed in the untagged responses.

Keywords and new topics were also identified based on the manual review of the clustering process described in the Semantic Cluster Tag section below.

The final keyword set covers (53 topics) defined by the presence of (151 keywords).

Semantic Cluster Tags

To identify common topics that are semantically related, whose similarity could not be detected using a keyword approach, we applied a clustering process on responses. First, the responses were split into sentences to help standardize the length of the text input into our algorithm. Second, an *embedding* for each response was generated. Metaphorically, an embedding is a way of assigning an “address” to a piece of text by generating a numeric representation of the text; texts with similar meanings are closer to one other. These embeddings come from a large language model that has learned from several million examples of similar/dissimilar sentences what makes two pieces of text semantically similar. Third, these response sentence embeddings were “projected” down to two dimensions (from 768) so that they could be visualized and clustered. Finally, we applied a clustering algorithm that identifies dense groups of response sentences if there are more than 10 responses in a cluster. This process was applied to responses grouped by question, based on a review of the topics contained in those questions. Responses to questions 30 and 46 (innovation and closing remarks, respectively) were grouped together, questions 33a and 34a (satisfaction with federal and state management, respectively) were grouped, and responses to question 32 (Job satisfaction) were in a third grouping. For more detail regarding the specific survey questions, please refer to Appendix E.

This process results in an assignment of one cluster per sentence per response, or an assignment as an “outlier” if the sentence is not near a group of other similar responses. Large

language models often detect linguistic properties unrelated to the meaning of the text (i.e., sentence length, common grammatical structures), so these clusters were manually reviewed for meaning. Each cluster from this process was flagged as “inconsequential” (not able to interpret the meaning or the pattern was spurious to meaning), “convert to keyword” (the clustering picked up on use of a common keyword or keyphrase which was then added to the keyword tags), or “keep” (if the cluster identified a coherent, meaningful group of sentences whose similarity could not be captured by an existing keyword-based topic).

Sentences in clusters identified as “keep” were then aggregated back to the response level. For example, a response with one sentence assigned to the Conservation cluster and another assigned Finance would get tagged as being about both topics.

To identify responses about the cluster topics that were not identified in the original clustering (because the sentences were assigned an inconsequential cluster), we sought to find responses marked as “inconsequential” that were similar to the “average” response in a cluster. For each cluster, we consider the embedding for the cluster centroid based on all response embeddings assigned that cluster to be our “average” response (much how RTP is a centroid of the locations of Raleigh, Durham, and Chapel Hill). Using this centroid, we can identify responses that have embeddings similar to existing clusters that were not previously assigned a cluster. To do this, we calculate the similarity values between each cluster centroid and all response embeddings. We then mark the response “highly similar” to the cluster topic if the similarity value is higher than the 85th percentile of all similarity values for that cluster. In this way, we are able to identify responses that were originally marked as “inconsequential” that are actually “Highly Similar” to responses in meaningful clusters.

A.5 Limitations of Surveys

As discussed in Appendix A.2, a weighting adjustment was conducted to control for response bias among survey respondents. In this survey, and any survey, if a disproportionate number of cases respond from a certain subgroup, then survey data may be subject to nonresponse bias. For example, if proportionately more commercial fishermen respond than for-hire recreational fishermen in a fishery, then the results of that fishery may be biased toward the well-being and innovation measures observed for the commercial fishermen, rather than the fishery as a whole. A nonresponse weighting adjustment, as was done for this survey within both the Gulf of Mexico Reef Fish and Northeast Multispecies (Groundfish) fisheries, is intended to mitigate the risk of these nonresponse biases. Thus, any time data is analyzed from the survey of well-being and innovation in the Reef Fish and Groundfish fisheries, the nonresponse adjusted analysis weight should be used. The survey data should be analyzed separately for each fishery because the analysis weights for each fishery were created independently, and each fishery is a separate population of interest.

Within this report the significance of differences is considered to determine whether a difference between two subgroups is something truly indicative of the underlying population. To avoid the risk of coming to false conclusions, conducting significance tests for differences, either t-tests for continuous measures, or chi-squared tests for categorical measures, is highly recommended. Similarly, although there is sufficient power within the number of cases retained for analysis to detect differences between subgroups for overarching measures applicable to everyone in the population, such as well-being, there is not always sufficient sample size to detect differences or produce reliable inference for estimates where the number of respondents that informs the estimate is very small (e.g., adoption of a single innovation). As such, special consideration should be given to the number of unweighted respondents who comprise a given analysis and the confidence intervals of the associated estimates. The confidence intervals indicate the amount of precision for a given estimate. In general, the fewer cases comprising an estimate, the less precise and reliable an estimate will be.



Appendix B: Well-Being Estimates

This appendix includes estimates for subjective, relational, and material well-being in the Gulf of Mexico Reef Fish and Northeast Multispecies (Groundfish) fisheries.

Appendix B-1. Well-being in the Gulf of Mexico Reef Fish Fishery. See [Supplemental Material](#) for complete data tables.

Measure	Overall	Sector			FIF Participation	
		Commercial Only	For-hire Recreational Only	Dual Permit	Participant	Non-Participant
Unweighted Sample Size	n=420	n=125	n=211	n=84	n=93	n=327
<i>Subjective Well-being</i>						
Job satisfaction (0-10)	7.18	6.56	7.33	7.74	7.57	7.06
Personal satisfaction/happiness score (3-15)	11.61	11.49	11.50	12.09	11.76	11.57
<i>Relational Well-being</i>						
Federal management satisfaction (0-10)	4.82	4.78	4.71	5.16	5.55	4.58
State management satisfaction (0-10)	6.39	5.58	6.88	5.91	6.26	6.43
Friends in community can count on (% yes)	92.09	87.04	92.46	98.70	92.49	91.97
<i>Material Well-being</i>						
Felt about personal income prior to March 2020						
Lived comfortably household income	58.47	56.25	58.43	62.02	57.25	58.82
Got by on household income	27.21	23.98	29.19	26.71	28.00	26.99
Found it somewhat difficult to get by household income	9.06	10.39	10.00	4.34	7.85	9.40
Found it very difficult to get by household income	5.26	9.38	2.38	6.92	6.90	4.79
Felt about personal income after to March 2020						
Lived comfortably household income	31.99	40.85	26.70	33.04	30.06	32.55
Got by on household income	37.22	31.69	40.14	37.65	38.68	36.80
Found it somewhat difficult to get by household income	19.09	11.58	22.92	20.05	18.45	19.27
Found it very difficult to get by household income	11.70	15.88	10.24	9.26	12.81	11.38

(continued)

Appendix B-1. Well-being in the Gulf of Mexico Reef Fish Fishery (continued)

Measure	Overall	Sector			FIF Participation	
		Commercial Only	For-hire Recreational Only	Dual Permit	Participant	Non-Participant
Unweighted Sample Size	n=420	n=125	n=211	n=84	n=93	n=327
Since March 2020, fishing business operations suspended						
Ever suspended (% yes)	85.04	80.64	86.65	87.17	92.55	82.88
Suspended and currently suspended (% yes among ever suspended)	22.81	23.22	23.04	21.55	19.50	23.87
Suspended and resumed (% yes among ever suspended)	77.19	76.78	76.96	78.45	80.50	76.13

Appendix B-2. Well-being in the Northeast Multispecies (Groundfish) Fishery. See [Supplemental Material](#) for complete data tables.

Measure	Overall	Sector		FIF Participation	
		Commercial	For-hire Recreational	Participant	Non-Participant
Unweighted Sample Size	n=524	n=307	n=217	n=38	n=486
<i>Subjective Well-being</i>					
Job satisfaction (0-10)	6.86	6.60	7.41	6.94	6.86
Personal satisfaction/happiness score (3-15)	11.13	11.01	11.37	10.78	11.16
<i>Relational Well-being</i>					
Federal management satisfaction (0-10)	4.49	4.17	5.14	4.02	4.53
State management satisfaction (0-10)	5.82	5.73	5.98	6.15	5.79
Friends in community can count on (% yes)	93.99	93.33	95.35	94.30	93.96
<i>Material Well-being</i>					
Felt about personal income prior to March 2020					
Lived comfortably household income	49.67	46.23	56.85	55.50	49.22
Got by on household income	38.01	39.28	35.35	32.87	38.41
Found it somewhat difficult to get by household income	10.03	11.78	6.39	11.63	9.91
Found it very difficult to get by household income	2.29	2.71	1.41	0.00	2.47
Felt about personal income after March 2020					
Lived comfortably household income	29.11	29.03	29.28	27.79	29.21
Got by on household income	43.61	42.17	46.61	42.13	43.72
Found it somewhat difficult to get by household income	19.58	20.95	16.74	21.52	19.43
Found it very difficult to get by household income	7.70	7.85	7.37	8.55	7.63
Since March 2020, fishing business operations suspended					
Ever suspended (% yes)	72.05	63.34	89.78	63.19	72.74
Suspended and currently suspended (% yes among ever suspended)	33.52	39.33	25.19	43.24	32.87
Suspended and resumed (% yes among ever suspended)	66.48	60.67	74.81	56.76	67.13



Appendix C: Innovation Estimates

This appendix includes estimates for awareness and diffusion of innovation for innovation items in the Gulf of Mexico Reef Fish and Northeast Multispecies (Groundfish) fisheries. Also included are visualizations depicting the associated estimates of awareness and diffusion of innovation. The appendix also displays estimates for the source of hearing about innovations.

Appendix C-1. Awareness of Innovation Items in the Gulf of Mexico Reef Fish Fishery. See [Supplemental Material](#) for complete data tables.

Awareness	Overall	Sector			FIF Participation	
		Commercial Only	For-hire Recreational Only	Dual Permit	Participant	Non-Participant
Unweighted Sample Size	n=420	n=125	n=211	n=84	n=93	n=327
Commercial electronic monitoring and reporting tools						
<i>Electronic Logbooks/Vessel Trip Reports (eVTR)</i>						
Aware N/A	16.14	17.53	23.06	9.09	21.73	14.81
Not aware	28.75	29.45	30.91	25.77	2.67	35.00
Aware	55.10	53.02	46.02	65.14	75.60	50.19
<i>Video Electronic Monitoring</i>						
Aware N/A	32.91	35.12	24.76	29.82	18.41	36.41
Not aware	49.43	44.35	62.91	58.66	51.21	49.00
Aware	17.66	20.53	12.33	11.52	30.38	14.59
<i>Electronic Fish Tickets, Dealer Reports, or Landing Receipts</i>						
Aware N/A	13.99	14.77	21.48	8.67	15.29	13.69
Not aware	44.00	44.68	60.45	35.29	36.62	45.70
Aware	42.00	40.55	18.07	56.03	48.09	40.60
<i>Any of the following business planning or quota management tools (FishHub, Ecatch, LegitFish, Fishing Area Selectivity Tool)</i>						
Aware N/A	11.30	10.75	15.46	11.19	18.97	9.53
Not aware	84.81	86.33	84.54	80.50	74.49	87.19
Aware	3.89	2.92	0.00	8.31	6.54	3.28
Commercial bycatch reduction tools						
<i>Bycatch Hotspot Mapping</i>						
Aware N/A	10.24	11.01	12.04	7.28	16.28	8.91
Not aware	84.49	83.94	87.96	84.66	71.80	87.30
Aware	5.27	5.05	0.00	8.06	11.92	3.79
<i>Risk Pools</i>						
Aware N/A	13.35	12.01	12.04	17.84	19.92	11.92
Not aware	83.61	84.72	87.96	78.52	74.36	85.62
Aware	3.05	3.27	0.00	3.64	5.72	2.47
Commercial seafood marketing and traceability tools						
<i>Direct Marketing & Forward Contracting Marketplaces</i>						
Aware N/A	10.90	12.50	6.02	8.16	7.27	11.70
Not aware	78.48	77.15	87.96	78.49	78.54	78.47
Aware	10.61	10.35	6.02	13.35	14.19	9.83

(continued)

Appendix C-1. Awareness of Innovation Items in the Gulf of Mexico Reef Fish Fishery (continued)

Awareness	Overall	Sector			FIF Participation	
		Commercial Only	For-hire Recreational Only	Dual Permit	Participant	Non-Participant
Unweighted Sample Size	n=420	n=125	n=211	n=84	n=93	n=327
<i>Any of the following seafood traceability tools (GulfWild, FishTrax, Legit Fish (Backtracer), ThisFish, TraceRegister)</i>						
Aware N/A	11.24	13.60	6.02	6.37	8.91	11.76
Not aware	63.53	56.89	78.52	77.06	59.30	64.47
Aware	25.23	29.50	15.46	16.56	31.78	23.77
Commercial Community & Fishermen Capacity Building tools						
<i>Permit Banks</i>						
Aware N/A	12.51	11.76	19.23	12.11	13.56	12.27
Not aware	64.33	60.30	67.96	75.05	63.54	64.51
Aware	23.16	27.94	12.82	12.84	22.90	23.22
<i>Training Programs for the Next Generation of Fishermen</i>						
Aware N/A	12.07	11.91	12.82	12.26	13.56	11.73
Not aware	71.44	67.99	77.28	79.53	63.38	73.23
Aware	16.49	20.10	9.90	8.21	23.05	15.03
<i>Training for Participation in Fisheries Management</i>						
Aware N/A	8.37	8.62	6.41	8.41	5.63	8.99
Not aware	74.11	71.28	74.37	82.54	65.10	76.12
Aware	17.52	20.10	19.23	9.06	29.27	14.90
<i>Aquaculture Business Development Training Programs</i>						
Aware N/A	11.02	9.89	12.82	13.74	17.72	9.60
Not aware	80.26	80.35	80.77	79.76	74.06	81.57
Aware	8.72	9.75	6.41	6.51	8.22	8.83
<i>Any of the following fisheries networking resources (EM4.Fish, LocalCatch.org, Community Fisheries Network)</i>						
Aware N/A	6.39	6.98	0.00	7.70	13.11	4.89
Not aware	88.89	88.08	94.75	88.52	71.60	92.74
Aware	4.72	4.94	5.25	3.79	15.29	2.37
For-hire recreational tools						
<i>Electronic Vessel Trip Reports (eVTR)</i>						
Aware N/A	14.71	0.00	17.45	7.17	11.50	15.84
Not aware	14.00	53.11	12.86	13.96	0.00	18.94
Aware	71.29	46.89	69.69	78.86	88.50	65.22

(continued)

Appendix C-1. Awareness of Innovation Items in the Gulf of Mexico Reef Fish Fishery (continued)

Awareness	Overall	Sector			FIF Participation	
		Commercial Only	For-hire Recreational Only	Dual Permit	Participant	Non-Participant
Unweighted Sample Size	n=420	n=125	n=211	n=84	n=93	n=327
<i>Electronic Reporting Apps</i>						
Aware N/A	10.46	16.10	11.56	6.23	5.42	12.26
Not aware	24.80	59.28	20.43	35.24	13.22	28.93
Aware	64.75	24.62	68.01	58.53	81.37	58.81
<i>The following Best Management Practices and Programs to Reduce Discard Mortality (FishSmart Program, Barotrauma Reduction/Descending Devices)</i>						
Aware N/A	7.84	0.00	9.27	3.85	6.32	8.38
Not aware	44.25	100.00	42.39	44.97	25.21	50.99
Aware	47.91	0.00	48.34	51.19	68.47	40.63
<i>Training for Participation in Fisheries Management</i>						
Aware N/A	7.97	0.00	9.73	3.03	7.87	8.01
Not aware	63.67	86.87	61.81	67.22	41.47	71.63
Aware	28.36	13.13	28.46	29.75	50.66	20.36
<i>Hotspot Mapping to Minimize Discards</i>						
Aware N/A	11.86	0.00	11.76	13.50	16.28	10.28
Not aware	83.23	86.87	83.39	82.30	74.32	86.41
Aware	4.92	13.13	4.86	4.20	9.40	3.31

Appendix C-2. Diffusion of Innovation for Innovation Items in the Gulf of Mexico Reef Fish Fishery. See [Supplemental Material](#) for complete data tables.

Awareness	Overall	Sector			FIF Participation	
		Commercial Only	For-hire Recreational Only	Dual Permit	Participant	Non-Participant
Unweighted Sample Size	n=420	n=125	n=211	n=84	n=93	n=327
Commercial electronic monitoring and reporting tools						
<i>Electronic Logbooks/Vessel Trip Reports (eVTR)</i>						
1) Not interested	25.14	26.61	24.37	21.81	22.30	26.21
2) Interested, no try	38.51	44.92	0.00	37.54	25.66	43.33
3) Interested, tried, stopped	0.00	0.00	0.00	0.00	0.00	0.00
4) Interested, tried, not sure if will continue	4.84	0.00	0.00	18.76	4.48	4.98
5) Interested, tried, will continue	31.51	28.48	75.63	21.89	47.57	25.47
<i>Video Electronic Monitoring</i>						
1) Not interested	20.99	21.18	51.14	0.00	11.20	27.48
2) Interested, no try	41.55	38.90	48.86	52.40	31.26	48.38
3) Interested, tried, stopped	6.68	5.47	0.00	18.22	6.06	7.09
4) Interested, tried, not sure if will continue	2.26	2.90	0.00	0.00	0.00	3.76
5) Interested, tried, will continue	28.52	31.56	0.00	29.38	51.49	13.30
<i>Electronic Fish Tickets, Dealer Reports, or Landing Receipts</i>						
1) Not interested	19.37	21.46	0.00	17.04	20.80	18.97
2) Interested, no try	28.39	27.96	0.00	32.81	14.19	32.46
3) Interested, tried, stopped	3.61	5.41	0.00	0.00	0.00	4.65
4) Interested, tried, not sure if will continue	3.39	5.07	0.00	0.00	0.00	4.36
5) Interested, tried, will continue	45.24	40.10	100.00	50.15	65.02	39.57
<i>Any of the following business planning or quota management tools (FishHub, Ecatch, LegitFish, Fishing Area Selectivity Tool)</i>						
1) Not interested	26.86	28.93	0.00	23.85	49.32	21.36
2) Interested, no try	17.15	28.93	0.00	0.00	0.00	21.36
3) Interested, tried, stopped	21.02	0.00	0.00	51.63	0.00	26.17
4) Interested, tried, not sure if will continue	0.00	0.00	0.00	0.00	0.00	0.00
5) Interested, tried, will continue	34.96	42.14	0.00	24.51	50.68	31.11
Commercial bycatch reduction tools						
<i>Bycatch Hotspot Mapping</i>						
1) Not interested	60.56	32.26	0.00	100.00	53.32	64.49
2) Interested, no try	39.44	67.74	0.00	0.00	46.68	35.51
3) Interested, tried, stopped	0.00	0.00	0.00	0.00	0.00	0.00
4) Interested, tried, not sure if will continue	0.00	0.00	0.00	0.00	0.00	0.00
5) Interested, tried, will continue	0.00	0.00	0.00	0.00	0.00	0.00

(continued)

Appendix C-2. Diffusion of Innovation for Innovation Items in the Gulf of Mexico Reef Fish Fishery (continued)

Awareness	Overall	Sector			FIF Participation	
		Commercial Only	For-hire Recreational Only	Dual Permit	Participant	Non-Participant
Unweighted Sample Size	n=420	n=125	n=211	n=84	n=93	n=327
<i>Risk Pools</i>						
1) Not interested	57.84	100.00	0.00	0.00	0.00	78.58
2) Interested, no try	0.00	0.00	0.00	0.00	0.00	0.00
3) Interested, tried, stopped	15.77	0.00	0.00	37.39	0.00	21.42
4) Interested, tried, not sure if will continue	0.00	0.00	0.00	0.00	0.00	0.00
5) Interested, tried, will continue	26.39	0.00	0.00	62.61	100.00	0.00
Commercial seafood marketing and traceability tools						
<i>Direct Marketing & Forward Contracting Marketplaces</i>						
1) Not interested	24.92	11.76	0.00	54.35	44.15	16.13
2) Interested, no try	24.75	33.81	0.00	13.48	0.00	36.05
3) Interested, tried, stopped	6.45	0.00	0.00	19.65	20.57	0.00
4) Interested, tried, not sure if will continue	0.00	0.00	0.00	0.00	0.00	0.00
5) Interested, tried, will continue	43.88	54.42	100.00	12.52	35.28	47.81
<i>Any of the following seafood traceability tools (GulfWild, FishTrax, Legit Fish (Backtracker), ThisFish, TraceRegister)</i>						
1) Not interested	27.98	29.15	38.96	17.45	22.44	29.70
2) Interested, no try	24.07	25.80	0.00	25.67	19.61	25.45
3) Interested, tried, stopped	17.61	22.62	0.00	0.00	0.00	23.05
4) Interested, tried, not sure if will continue	3.53	0.00	0.00	22.76	14.96	0.00
5) Interested, tried, will continue	26.81	22.43	61.04	34.12	42.99	21.80
Commercial Community & Fishermen Capacity Building tools						
<i>Permit Banks</i>						
1) Not interested	36.01	33.50	50.00	45.14	26.23	38.66
2) Interested, no try	26.75	24.09	50.00	32.73	32.29	25.25
3) Interested, tried, stopped	17.36	21.46	0.00	0.00	25.72	15.09
4) Interested, tried, not sure if will continue	5.30	6.55	0.00	0.00	7.98	4.57
5) Interested, tried, will continue	14.58	14.39	0.00	22.13	7.77	16.43
<i>Training Programs for the Next Generation of Fishermen</i>						
1) Not interested	16.44	16.33	0.00	23.30	0.00	22.30
2) Interested, no try	68.18	65.20	100.00	76.70	75.13	65.70
3) Interested, tried, stopped	0.00	0.00	0.00	0.00	0.00	0.00
4) Interested, tried, not sure if will continue	0.00	0.00	0.00	0.00	0.00	0.00
5) Interested, tried, will continue	15.38	18.46	0.00	0.00	24.87	11.99

(continued)

Appendix C-2. Diffusion of Innovation for Innovation Items in the Gulf of Mexico Reef Fish Fishery (continued)

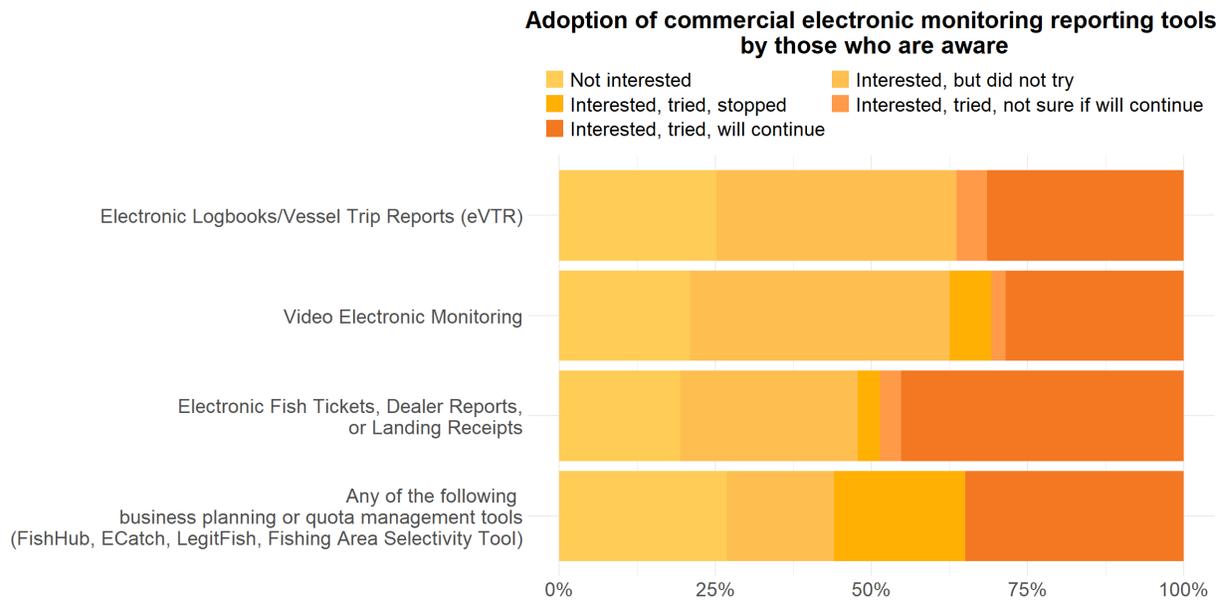
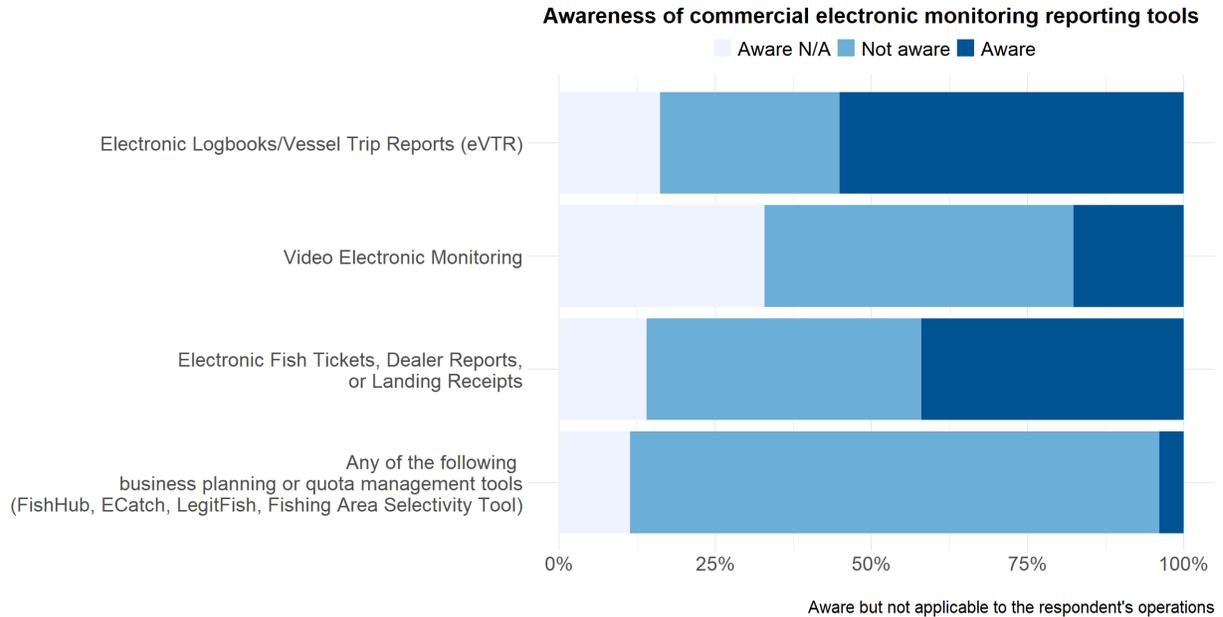
Awareness	Overall	Sector			FIF Participation	
		Commercial Only	For-hire Recreational Only	Dual Permit	Participant	Non-Participant
Unweighted Sample Size	n=420	n=125	n=211	n=84	n=93	n=327
<i>Training for Participation in Fisheries Management</i>						
1) Not interested	9.84	13.23	0.00	0.00	0.00	14.55
2) Interested, no try	27.32	26.03	33.33	29.16	12.57	34.37
3) Interested, tried, stopped	3.89	5.23	0.00	0.00	0.00	5.75
4) Interested, tried, not sure if will continue	0.00	0.00	0.00	0.00	0.00	0.00
5) Interested, tried, will continue	58.95	55.51	66.67	70.84	87.43	45.32
<i>Aquaculture Business Development Training Programs</i>						
1) Not interested	56.54	61.73	100.00	22.90	0.00	62.12
2) Interested, no try	26.96	27.47	0.00	35.93	0.00	29.62
3) Interested, tried, stopped	0.00	0.00	0.00	0.00	0.00	0.00
4) Interested, tried, not sure if will continue	0.00	0.00	0.00	0.00	0.00	0.00
5) Interested, tried, will continue	16.50	10.80	0.00	41.17	100.00	8.26
<i>Any of the following fisheries networking resources (EM4.Fish, LocalCatch.org, Community Fisheries Network)</i>						
1) Not interested	28.51	17.47	0.00	100.00	34.22	0.00
2) Interested, no try	38.12	30.00	100.00	0.00	45.76	0.00
3) Interested, tried, stopped	0.00	0.00	0.00	0.00	0.00	0.00
4) Interested, tried, not sure if will continue	0.00	0.00	0.00	0.00	0.00	0.00
5) Interested, tried, will continue	33.37	52.53	0.00	0.00	20.03	100.00
For-hire recreational tools						
<i>Electronic Vessel Trip Reports (eVTR)</i>						
1) Not interested	29.44	39.52	32.74	18.08	13.50	36.75
2) Interested, no try	21.13	0.00	22.26	18.94	7.16	27.53
3) Interested, tried, stopped	7.70	0.00	8.08	7.00	14.38	4.63
4) Interested, tried, not sure if will continue	4.07	60.48	3.41	2.26	6.48	2.97
5) Interested, tried, will continue	37.66	0.00	33.51	53.72	58.47	28.12
<i>Electronic Reporting Apps</i>						
1) Not interested	23.79	0.00	22.52	30.41	14.72	28.36
2) Interested, no try	25.61	0.00	25.46	27.69	22.55	27.16
3) Interested, tried, stopped	3.78	0.00	4.29	1.86	4.50	3.42
4) Interested, tried, not sure if will continue	7.14	46.66	8.33	0.00	9.25	6.08
5) Interested, tried, will continue	39.67	53.34	39.40	40.04	48.97	34.99

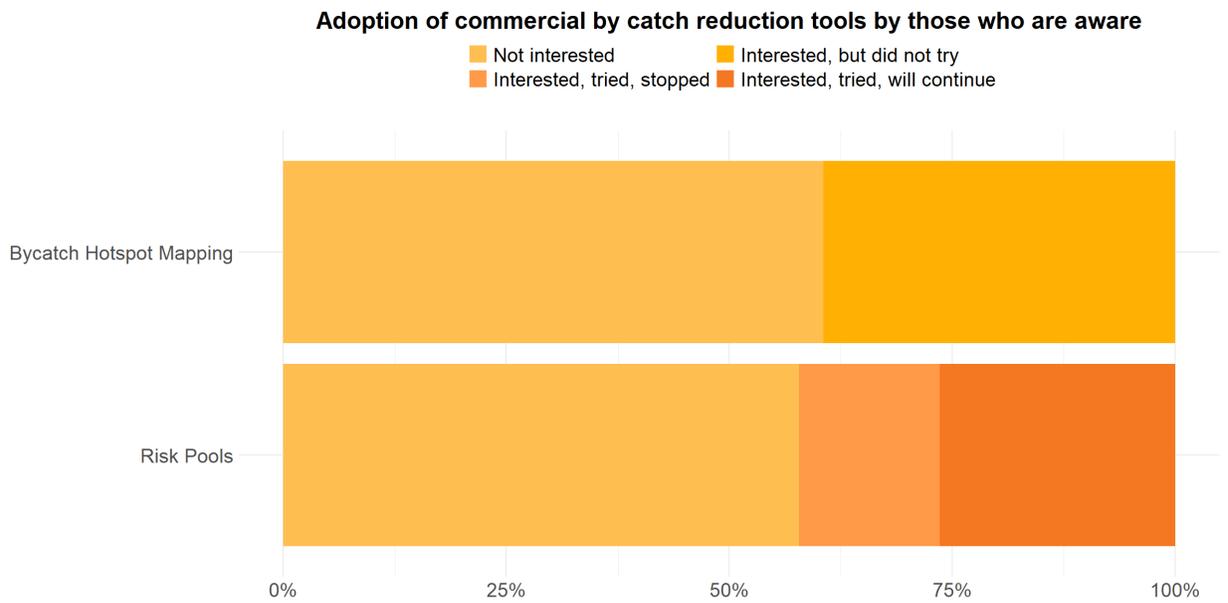
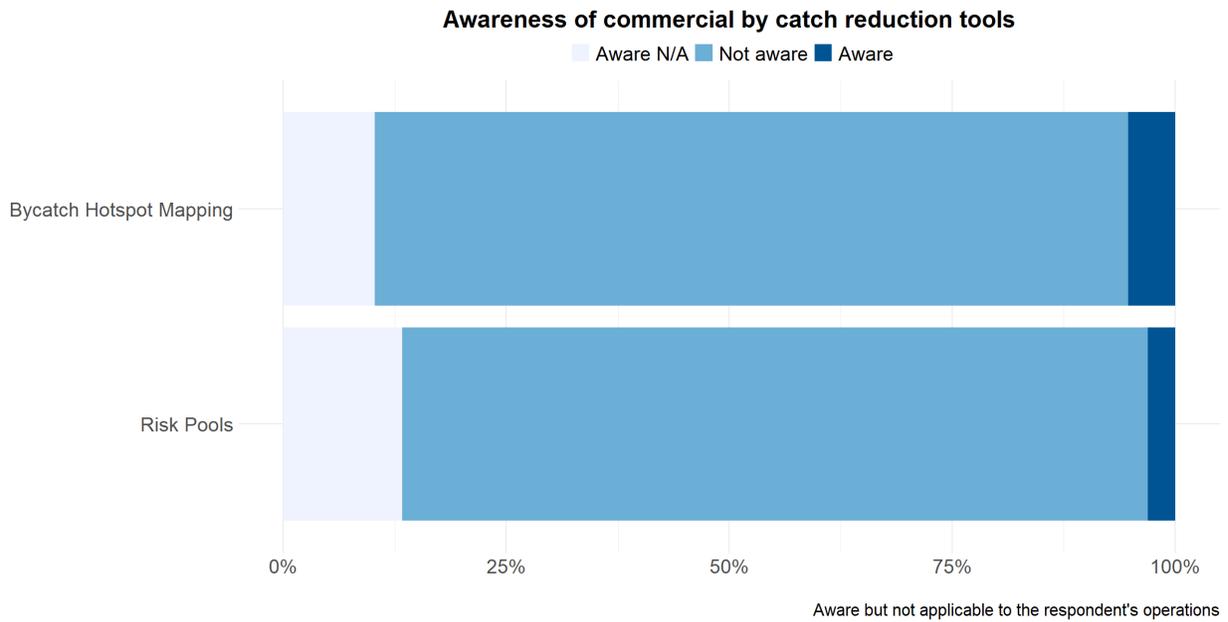
(continued)

Appendix C-2. Diffusion of Innovation for Innovation Items in the Gulf of Mexico Reef Fish Fishery (continued)

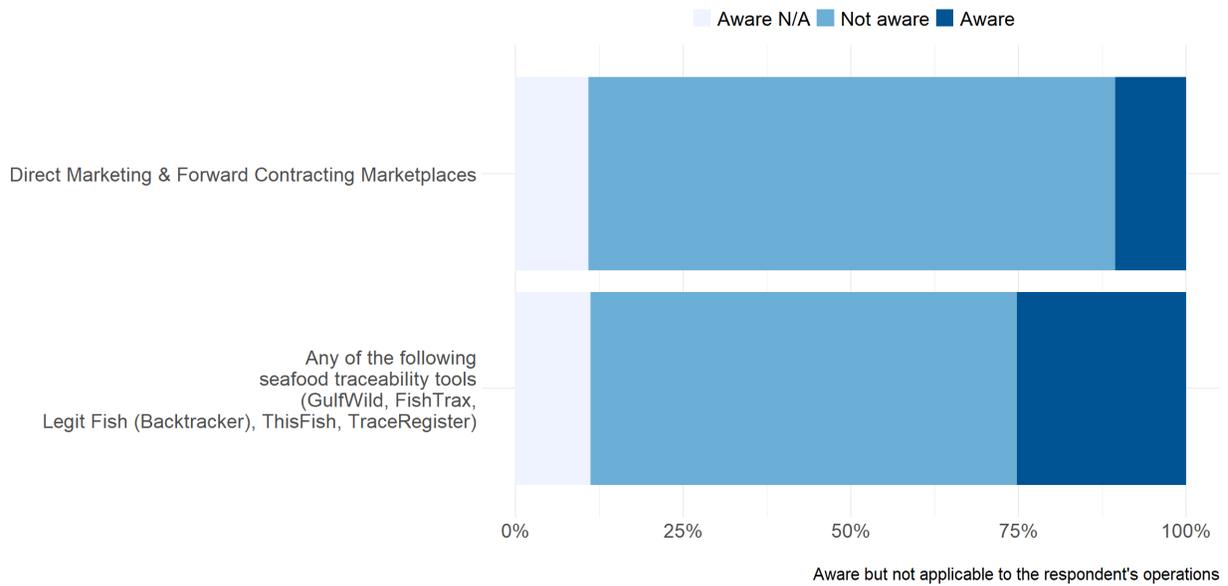
Awareness	Overall	Sector			FIF Participation	
		Commercial Only	For-hire Recreational Only	Dual Permit	Participant	Non-Participant
Unweighted Sample Size	n=420	n=125	n=211	n=84	n=93	n=327
<i>The following Best Management Practices and Programs to Reduce Discard Mortality (FishSmart Program, Barotrauma Reduction/Descending Devices)</i>						
1) Not interested	14.80	0.00	16.30	10.03	8.63	18.51
2) Interested, no try	19.27	0.00	16.97	26.59	12.31	23.45
3) Interested, tried, stopped	9.10	0.00	7.88	12.98	16.09	4.90
4) Interested, tried, not sure if will continue	5.40	0.00	6.40	2.21	5.72	5.20
5) Interested, tried, will continue	51.43	0.00	52.44	48.20	57.25	47.93
<i>Training for Participation in Fisheries Management</i>						
1) Not interested	18.04	0.00	16.72	22.71	14.80	20.91
2) Interested, no try	33.98	0.00	29.48	48.43	27.31	39.90
3) Interested, tried, stopped	10.04	0.00	13.83	0.00	15.18	5.47
4) Interested, tried, not sure if will continue	6.05	0.00	8.33	0.00	6.15	5.95
5) Interested, tried, will continue	31.90	100.00	31.63	28.85	36.56	27.76
<i>Hotspot Mapping to Minimize Discards</i>						
1) Not interested	29.05	100.00	9.87	63.57	44.05	13.83
2) Interested, no try	17.83	0.00	13.82	36.43	0.00	35.93
3) Interested, tried, stopped	10.72	0.00	15.40	0.00	21.27	0.00
4) Interested, tried, not sure if will continue	9.23	0.00	13.26	0.00	0.00	18.60
5) Interested, tried, will continue	33.17	0.00	47.65	0.00	34.68	31.63

C-3 Gulf of Mexico Reef Fish Fishery – Awareness and Diffusion of Innovation Among Those Who Are Aware

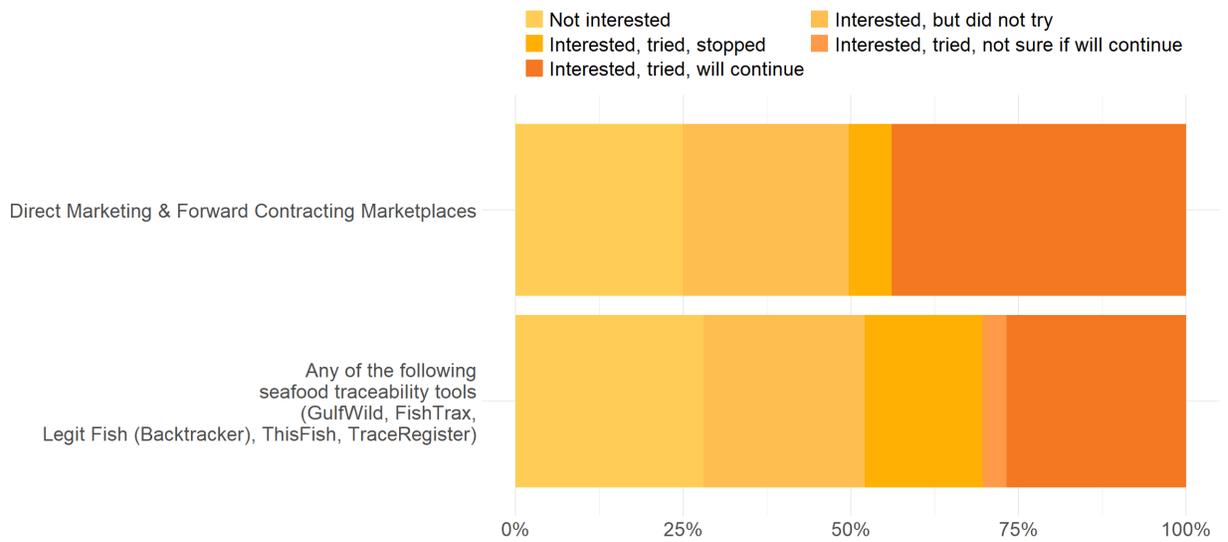




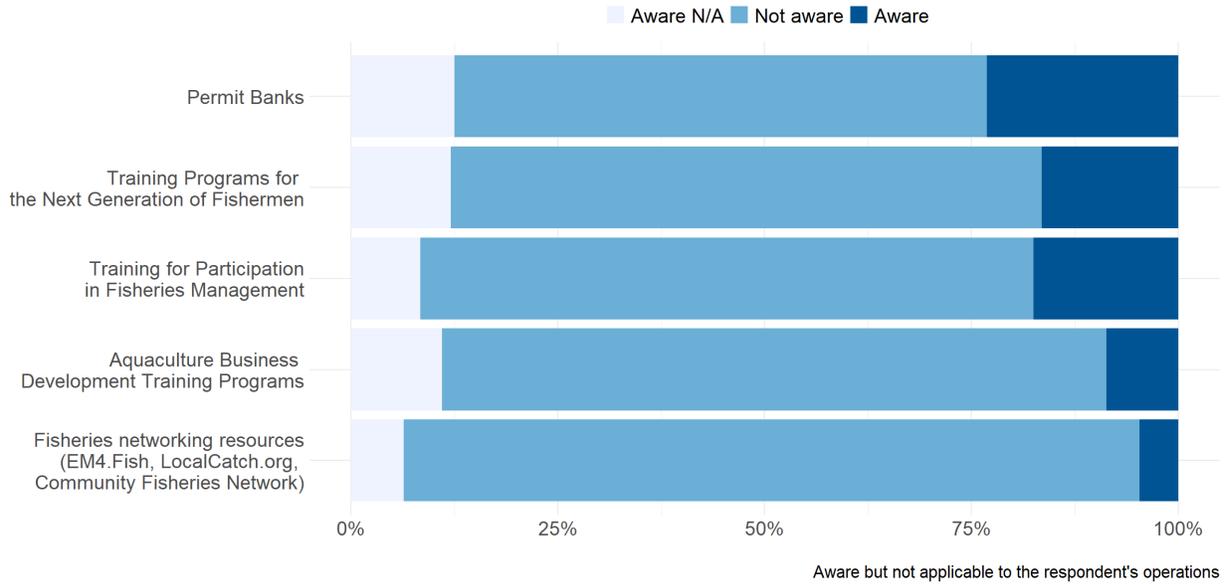
Awareness of commercial seafood marketing and traceability tools



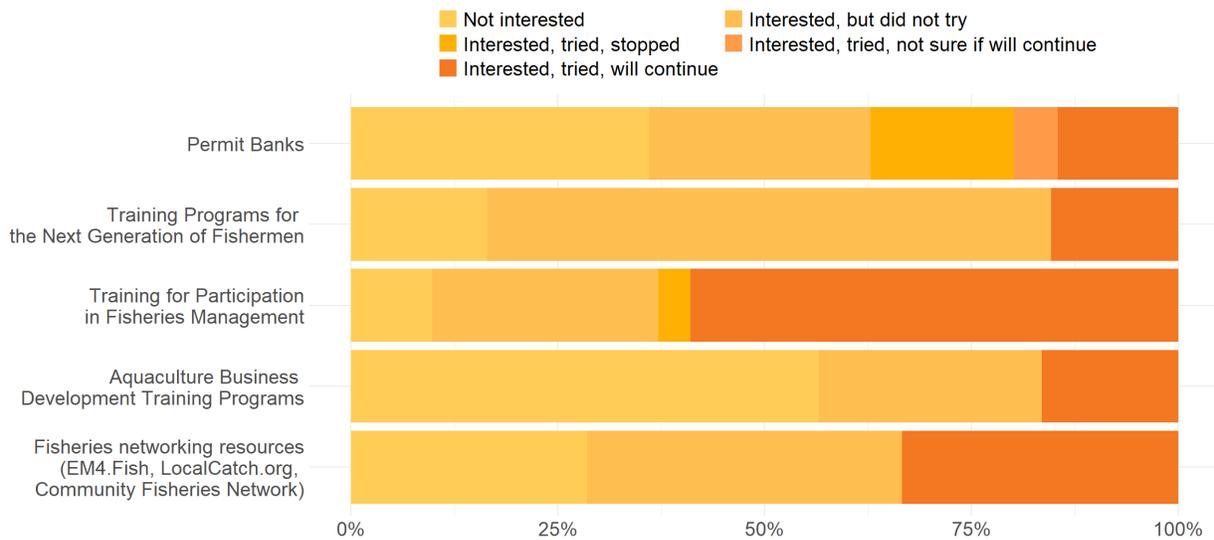
Adoption of commercial seafood marketing and traceability tools by those who are aware

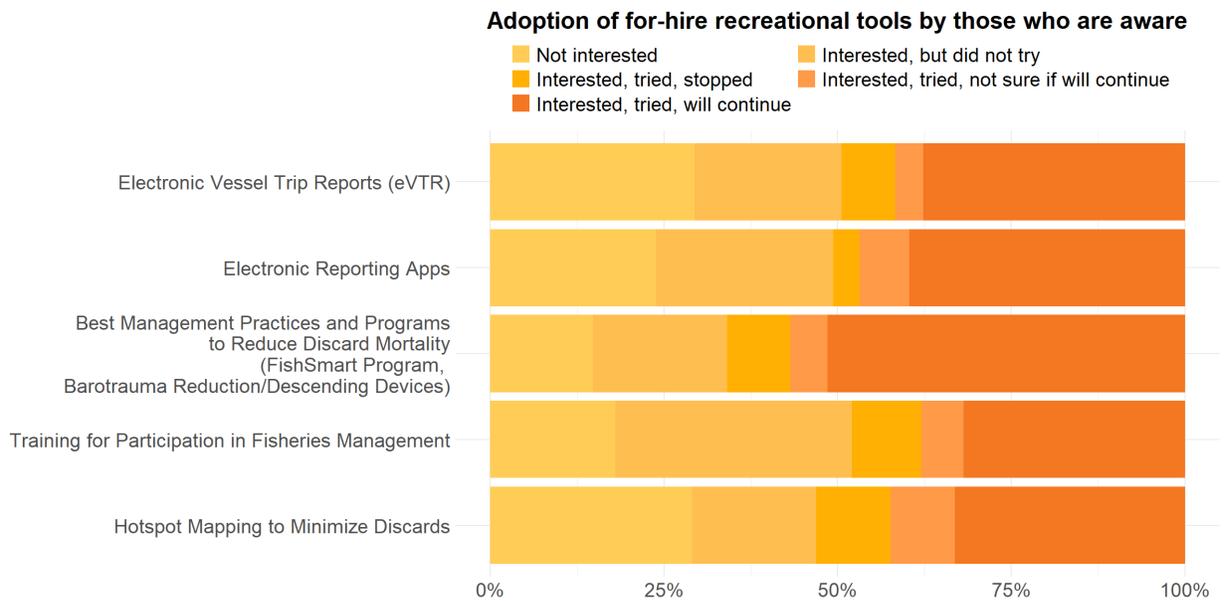
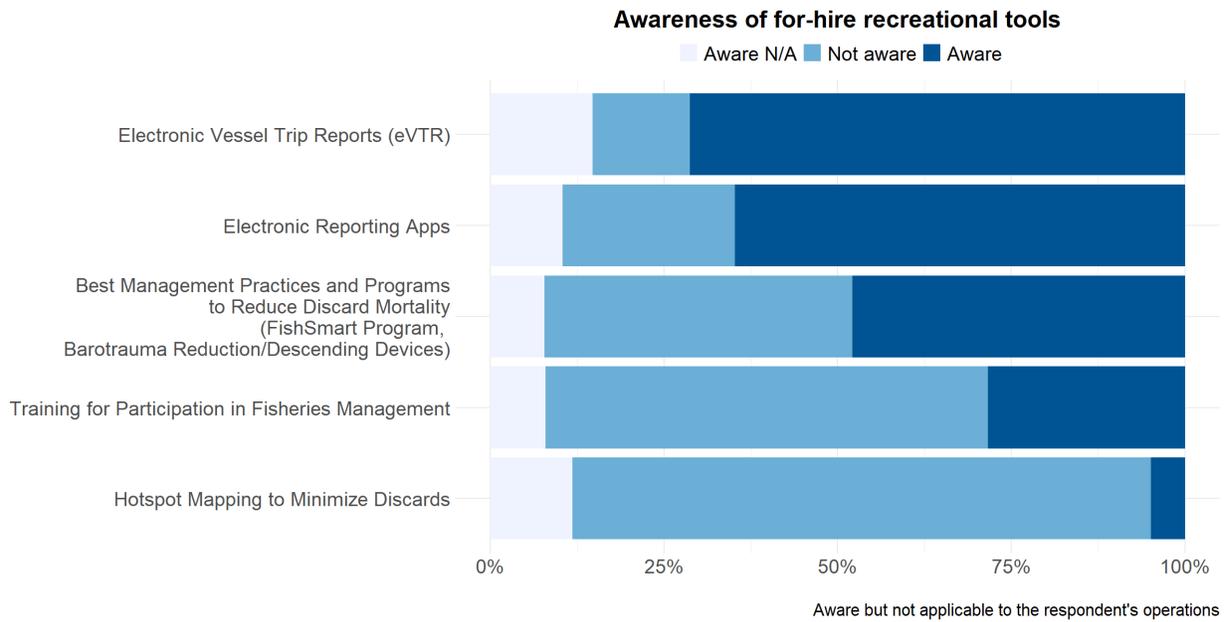


Awareness of commercial community & fishermen capacity building tools



Adoption of commercial community & fishermen capacity building tools by those who are aware





Appendix C-4. Source of Learning About Innovations in the Gulf of Mexico Reef Fish Fishery.
See [Supplemental Material](#) for complete data tables.

Source	Overall	Sector			FIF Participation	
		Commercial Only	For-hire Recreational Only	Dual Permit	Participant	Non-Participant
Unweighted Sample Size	n=420	n=125	n=211	n=84	n=93	n=327
Recruited by organization that received FIF award	7.43	10.62	5.91	7.49	11.31	6.10
Online Forums/Direct Emailing	23.04	10.95	30.32	18.70	17.33	24.99
Council meetings/Presentations	35.09	35.18	33.99	38.00	47.05	30.99
Trade journals/Newsletters	11.35	12.99	10.05	12.77	3.67	13.97
Word of Mouth	46.53	52.83	45.15	42.13	48.12	45.98
Social media	12.21	14.12	12.71	8.35	11.58	12.43
Fishing Association/Sector	29.46	29.32	30.21	27.57	47.19	23.39
Other	11.96	12.69	10.82	14.97	13.25	11.58

Appendix C-5. Awareness of Innovation Items in the Northeast Multispecies (Groundfish) Fishery. See Supplemental Material for complete data tables.

Awareness	Overall	Sector		FIF Participation	
		Commercial	For-hire Recreational	Participant	Non-Participant
Unweighted Sample Size	n=524	n=307	n=217	n=38	n=486
Commercial electronic monitoring and reporting tools					
<i>Electronic Logbooks/Vessel Trip Reports (eVTR)</i>					
Aware N/A	17.61	18.18	11.26	12.21	18.08
Not aware	14.19	14.44	11.50	4.09	15.07
Aware	68.20	67.38	77.24	83.71	66.85
<i>Video Electronic Monitoring</i>					
Aware N/A	35.70	34.48	48.61	25.84	36.55
Not aware	36.58	35.84	44.48	9.60	38.91
Aware	27.72	29.68	6.91	64.56	24.54
<i>Electronic Fish Tickets, Dealer Reports, or Landing Receipts</i>					
Aware N/A	20.89	19.31	37.61	14.76	21.42
Not aware	49.22	50.24	38.46	36.11	50.36
Aware	29.89	30.45	23.93	49.13	28.22
<i>Any of the following business planning or quota management tools (FishHub, Ecatch, LegitFish, Fishing Area Selectivity Tool)</i>					
Aware N/A	15.80	16.33	10.29	23.37	15.15
Not aware	76.42	75.78	83.17	56.12	78.19
Aware	7.77	7.89	6.54	20.51	6.67
Commercial bycatch reduction tools					
<i>Bycatch Hotspot Mapping</i>					
Aware N/A	14.33	14.75	9.86	26.43	13.29
Not aware	75.82	74.89	85.73	41.77	78.76
Aware	9.85	10.36	4.41	31.79	7.96
<i>Risk Pools</i>					
Aware N/A	12.94	13.23	9.86	18.96	12.44
Not aware	79.41	78.61	87.96	57.89	81.18
Aware	7.65	8.16	2.18	23.15	6.38
Commercial seafood marketing and traceability tools					
<i>Direct Marketing & Forward Contracting Marketplaces</i>					
Aware N/A	10.44	10.62	8.54	17.77	9.81
Not aware	76.77	75.80	87.06	33.69	80.47
Aware	12.79	13.58	4.41	48.54	9.72

(continued)

Appendix C-5. Awareness of Innovation Items in the Northeast Multispecies (Groundfish) Fishery (continued)

Awareness	Overall	Sector		FIF Participation	
		Commercial	For-hire Recreational	Participant	Non-Participant
Unweighted Sample Size	n=524	n=307	n=217	n=38	n=486

Any of the following seafood traceability tools (GulfWild, FishTrax, Legit Fish (Backtracker), ThisFish, TraceRegister)

Aware N/A	9.05	9.16	7.86	17.77	8.30
Not aware	86.53	86.42	87.73	59.58	88.85
Aware	4.42	4.42	4.41	22.65	2.85

Commercial Community & Fishermen Capacity Building tools

<i>Permit Banks</i>					
Aware N/A	13.07	13.09	12.90	13.45	13.04
Not aware	56.68	54.24	82.70	10.91	60.61
Aware	30.25	32.67	4.41	75.64	26.35

Training Programs for the Next Generation of Fishermen

Aware N/A	11.61	11.49	12.90	13.63	11.43
Not aware	71.26	70.18	82.70	45.04	73.54
Aware	17.13	18.33	4.41	41.33	15.03

Training for Participation in Fisheries Management

Aware N/A	11.13	10.85	14.17	11.07	11.14
Not aware	72.02	71.50	77.55	42.01	74.60
Aware	16.85	17.65	8.28	46.92	14.26

Aquaculture Business Development Training Programs

Aware N/A	19.17	19.64	14.12	32.72	18.00
Not aware	71.26	70.31	81.28	43.72	73.63
Aware	9.58	10.04	4.60	23.56	8.37

Any of the following fisheries networking resources (EM4.Fish, LocalCatch.org, Community Fisheries Network)

Aware N/A	7.03	7.05	6.84	15.55	6.30
Not aware	88.62	88.60	88.75	67.58	90.43
Aware	4.35	4.35	4.41	16.87	3.27

For-hire recreational tools

<i>Electronic Vessel Trip Reports (eVTR)</i>					
Aware N/A	7.28	16.66	4.28	8.53	7.19
Not aware	9.29	20.43	5.72	5.70	9.57
Aware	83.42	62.91	90.01	85.77	83.24

(continued)

Appendix C-5. Awareness of Innovation Items in the Northeast Multispecies (Groundfish) Fishery (continued)

Awareness	Overall	Sector		FIF Participation	
		Commercial	For-hire Recreational	Participant	Non-Participant
Unweighted Sample Size	n=524	n=307	n=217	n=38	n=486
<i>Electronic Reporting Apps</i>					
Aware N/A	10.87	9.95	11.19	10.21	10.92
Not aware	40.65	64.64	32.45	35.73	41.02
Aware	48.48	25.41	56.36	54.06	48.06
<i>Any of the following Best Management Practices and Programs to Reduce Discard Mortality (FishSmart Program, Barotrauma Reduction/Descending Devices)</i>					
Aware N/A	9.88	3.46	11.99	9.21	9.93
Not aware	65.88	84.36	59.81	49.38	67.14
Aware	24.24	12.19	28.21	41.41	22.93
<i>Training for Participation in Fisheries Management</i>					
Aware N/A	9.46	6.13	10.57	9.55	9.46
Not aware	69.15	71.65	68.33	30.53	72.10
Aware	21.38	22.23	21.10	59.92	18.45
<i>Hotspot Mapping to Minimize Discards</i>					
Aware N/A	9.50	6.71	10.43	14.24	9.14
Not aware	81.00	87.24	78.91	63.57	82.32
Aware	9.51	6.05	10.66	22.19	8.54

Appendix C-6. Diffusion of Innovation for Innovation Items in the Northeast Multispecies (Groundfish) Fishery. See Supplemental Material for complete data tables.

Diffusion among those who are aware	Overall	Sector		FIF Participation	
		Commercial	For-hire Recreational	Participant	Non-Participant
Unweighted Sample Size	n=524	n=307	n=217	n=38	n=486
Commercial electronic monitoring and reporting tools					
<i>Electronic Logbooks/Vessel Trip Reports (eVTR)</i>					
1) Not interested	22.95	24.39	9.70	6.63	24.63
2) Interested, no try	21.07	22.94	3.93	0.00	23.24
3) Interested, tried, stopped	6.14	6.36	4.15	10.85	5.66
4) Interested, tried, not sure if will continue	4.84	4.94	3.91	15.49	3.74
5) Interested, tried, will continue	45.00	41.37	78.31	67.03	42.73
<i>Video Electronic Monitoring</i>					
1) Not interested	59.24	59.31	55.64	28.28	65.90
2) Interested, no try	22.95	22.58	44.36	5.68	26.66
3) Interested, tried, stopped	4.00	4.07	0.00	8.03	3.14
4) Interested, tried, not sure if will continue	2.06	2.10	0.00	6.01	1.22
5) Interested, tried, will continue	11.74	11.94	0.00	51.99	3.09
<i>Electronic Fish Tickets, Dealer Reports, or Landing Receipts</i>					
1) Not interested	39.41	40.61	23.30	10.36	43.35
2) Interested, no try	26.48	27.22	16.46	34.36	25.41
3) Interested, tried, stopped	2.89	3.11	0.00	10.36	1.88
4) Interested, tried, not sure if will continue	2.57	2.77	0.00	13.84	1.05
5) Interested, tried, will continue	28.65	26.29	60.24	31.09	28.32
<i>Any of the following business planning or quota management tools (FishHub, Ecatch, LegitFish, Fishing Area Selectivity Tool)</i>					
1) Not interested	41.66	40.10	62.73	23.28	49.04
2) Interested, no try	39.75	42.69	0.00	53.42	34.25
3) Interested, tried, stopped	0.00	0.00	0.00	0.00	0.00
4) Interested, tried, not sure if will continue	4.67	5.02	0.00	0.00	6.55
5) Interested, tried, will continue	13.92	12.19	37.27	23.30	10.15

(continued)

Appendix C-6. Diffusion of Innovation for Innovation Items in the Northeast Multispecies (Groundfish) Fishery (continued)

Diffusion among those who are aware	Overall	Sector		FIF Participation	
		Commercial	For-hire Recreational	Participant	Non-Participant
Unweighted Sample Size	n=524	n=307	n=217	n=38	n=486
Commercial bycatch reduction tools					
<i>Bycatch Hotspot Mapping</i>					
1) Not interested	43.99	41.09	100.00	37.25	46.21
2) Interested, no try	43.94	46.21	0.00	13.94	53.79
3) Interested, tried, stopped	3.25	3.42	0.00	13.13	0.00
4) Interested, tried, not sure if will continue	0.00	0.00	0.00	0.00	0.00
5) Interested, tried, will continue	8.82	9.28	0.00	35.67	0.00
<i>Risk Pools</i>					
1) Not interested	48.15	46.46	100.00	40.57	50.68
2) Interested, no try	32.59	33.65	0.00	41.63	29.57
3) Interested, tried, stopped	4.22	4.36	0.00	0.00	5.63
4) Interested, tried, not sure if will continue	10.59	10.93	0.00	0.00	14.13
5) Interested, tried, will continue	4.46	4.61	0.00	17.80	0.00
Commercial seafood marketing and traceability tools					
<i>Direct Marketing & Forward Contracting Marketplaces</i>					
1) Not interested	22.74	19.87	100.00	11.68	27.66
2) Interested, no try	49.64	51.49	0.00	34.27	56.47
3) Interested, tried, stopped	9.46	9.82	0.00	10.92	8.82
4) Interested, tried, not sure if will continue	5.73	5.95	0.00	10.92	3.43
5) Interested, tried, will continue	12.42	12.88	0.00	32.21	3.63

(continued)

Appendix C-6. Diffusion of Innovation for Innovation Items in the Northeast Multispecies (Groundfish) Fishery (continued)

Diffusion among those who are aware	Overall	Sector		FIF Participation	
		Commercial	For-hire Recreational	Participant	Non-Participant
Unweighted Sample Size	n=524	n=307	n=217	n=38	n=486
<i>Any of the following seafood traceability tools (GulfWild, FishTrax, Legit Fish (Backtracker), ThisFish, TraceRegister)</i>					
1) Not interested	8.71	9.61	0.00	0.00	13.50
2) Interested, no try	50.90	45.85	100.00	75.42	37.42
3) Interested, tried, stopped	8.71	9.61	0.00	24.58	0.00
4) Interested, tried, not sure if will continue	9.32	10.28	0.00	0.00	14.44
5) Interested, tried, will continue	22.36	24.65	0.00	0.00	34.64
Commercial Community & Fishermen Capacity Building tools					
<i>Permit Banks</i>					
1) Not interested	26.55	25.43	100.00	9.94	30.70
2) Interested, no try	26.69	27.10	0.00	30.79	25.67
3) Interested, tried, stopped	4.16	4.22	0.00	0.00	5.20
4) Interested, tried, not sure if will continue	10.44	10.60	0.00	12.82	9.85
5) Interested, tried, will continue	32.15	32.64	0.00	46.44	28.58
<i>Training Programs for the Next Generation of Fishermen</i>					
1) Not interested	52.31	51.01	100.00	35.37	57.32
2) Interested, no try	37.24	38.25	0.00	45.73	34.73
3) Interested, tried, stopped	0.00	0.00	0.00	0.00	0.00
4) Interested, tried, not sure if will continue	6.23	6.40	0.00	8.09	5.68
5) Interested, tried, will continue	4.22	4.33	0.00	10.81	2.27
<i>Training for Participation in Fisheries Management</i>					
1) Not interested	28.40	26.87	66.89	21.79	30.35
2) Interested, no try	36.59	38.04	0.00	37.09	36.44
3) Interested, tried, stopped	16.66	17.32	0.00	15.29	17.06
4) Interested, tried, not sure if will continue	4.25	4.42	0.00	0.00	5.50
5) Interested, tried, will continue	14.10	13.35	33.11	25.83	10.65

(continued)

Appendix C-6. Diffusion of Innovation for Innovation Items in the Northeast Multispecies (Groundfish) Fishery (continued)

Diffusion among those who are aware	Overall	Sector		FIF Participation	
		Commercial	For-hire Recreational	Participant	Non-Participant
Unweighted Sample Size	n=524	n=307	n=217	n=38	n=486
<i>Aquaculture Business Development Training Programs</i>					
1) Not interested	37.45	38.53	0.00	52.38	34.77
2) Interested, no try	42.73	43.97	0.00	47.62	41.86
3) Interested, tried, stopped	12.76	13.13	0.00	0.00	15.04
4) Interested, tried, not sure if will continue	4.25	4.38	0.00	0.00	5.02
5) Interested, tried, will continue	2.81	0.00	100.00	0.00	3.31
<i>Any of the following fisheries networking resources (EM4.Fish, LocalCatch.org, Community Fisheries Network)</i>					
1) Not interested	37.50	37.50	0.00	61.45	28.54
2) Interested, no try	24.37	24.37	0.00	0.00	33.48
3) Interested, tried, stopped	20.31	20.31	0.00	38.55	13.48
4) Interested, tried, not sure if will continue	10.48	10.48	0.00	0.00	14.41
5) Interested, tried, will continue	7.34	7.34	0.00	0.00	10.09
<i>For-hire recreational tools</i>					
<i>Electronic Vessel Trip Reports (eVTR)</i>					
1) Not interested	8.04	15.45	6.47	0.00	8.72
2) Interested, no try	11.27	10.81	11.37	0.00	12.22
3) Interested, tried, stopped	6.84	9.71	6.23	14.33	6.21
4) Interested, tried, not sure if will continue	6.90	3.30	7.66	8.57	6.76
5) Interested, tried, will continue	66.95	60.72	68.27	77.10	66.10
<i>Electronic Reporting Apps</i>					
1) Not interested	14.98	11.09	15.52	17.79	14.75
2) Interested, no try	20.26	22.93	19.88	34.32	19.10
3) Interested, tried, stopped	3.37	7.84	2.76	0.00	3.65
4) Interested, tried, not sure if will continue	6.41	0.00	7.30	9.90	6.12
5) Interested, tried, will continue	54.98	58.14	54.54	37.98	56.37

(continued)

Appendix C-6. Diffusion of Innovation for Innovation Items in the Northeast Multispecies (Groundfish) Fishery (continued)

Diffusion among those who are aware	Overall	Sector		FIF Participation	
		Commercial	For-hire Recreational	Participant	Non-Participant
Unweighted Sample Size	n=524	n=307	n=217	n=38	n=486

The following Best Management Practices and Programs to Reduce Discard Mortality (FishSmart Program, Barotrauma Reduction/Descending Devices)

1) Not interested	12.37	14.20	12.06	32.32	9.06
2) Interested, no try	43.08	30.05	45.31	10.91	48.42
3) Interested, tried, stopped	6.76	21.46	4.25	0.00	7.88
4) Interested, tried, not sure if will continue	3.15	0.00	3.69	0.00	3.67
5) Interested, tried, will continue	34.63	34.29	34.69	56.77	30.96

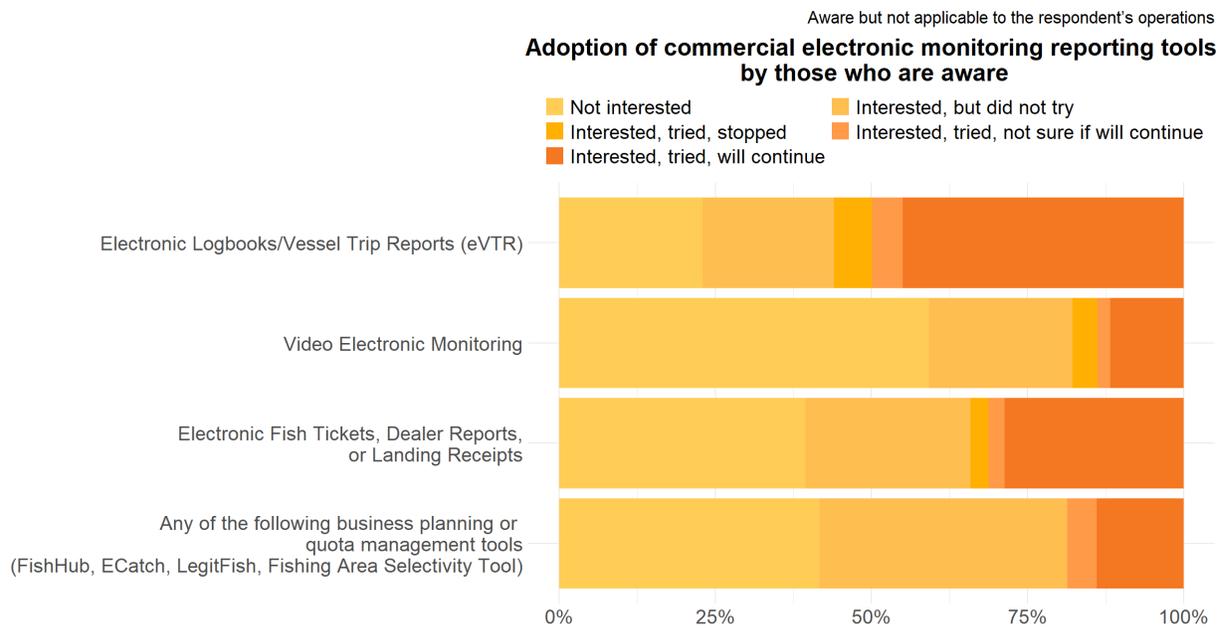
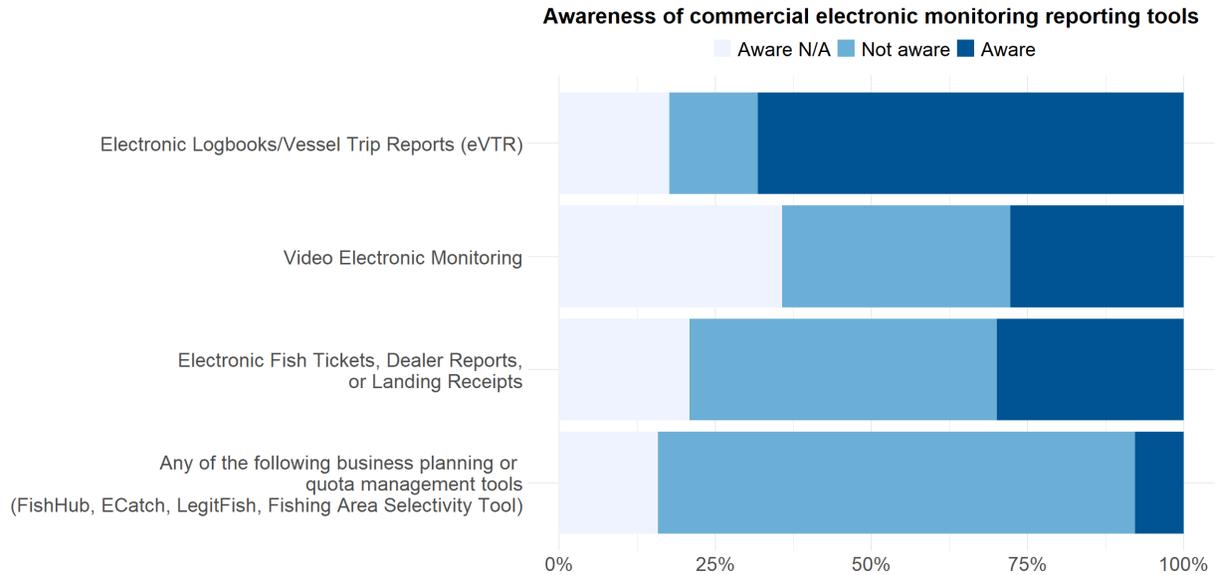
Training for Participation in Fisheries Management

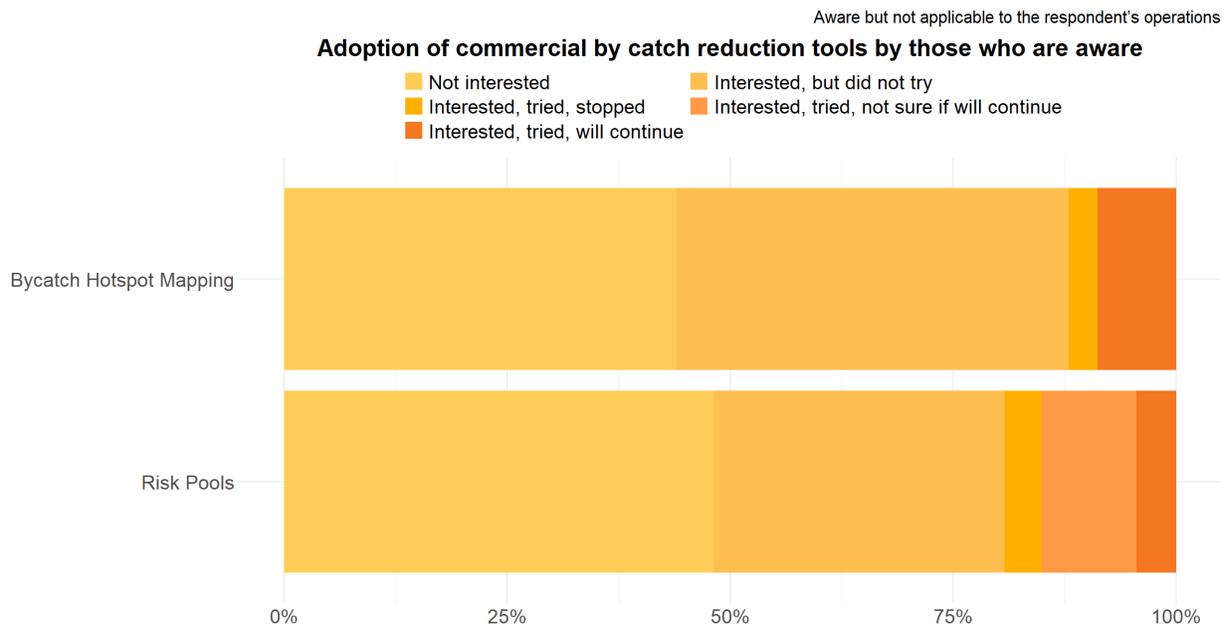
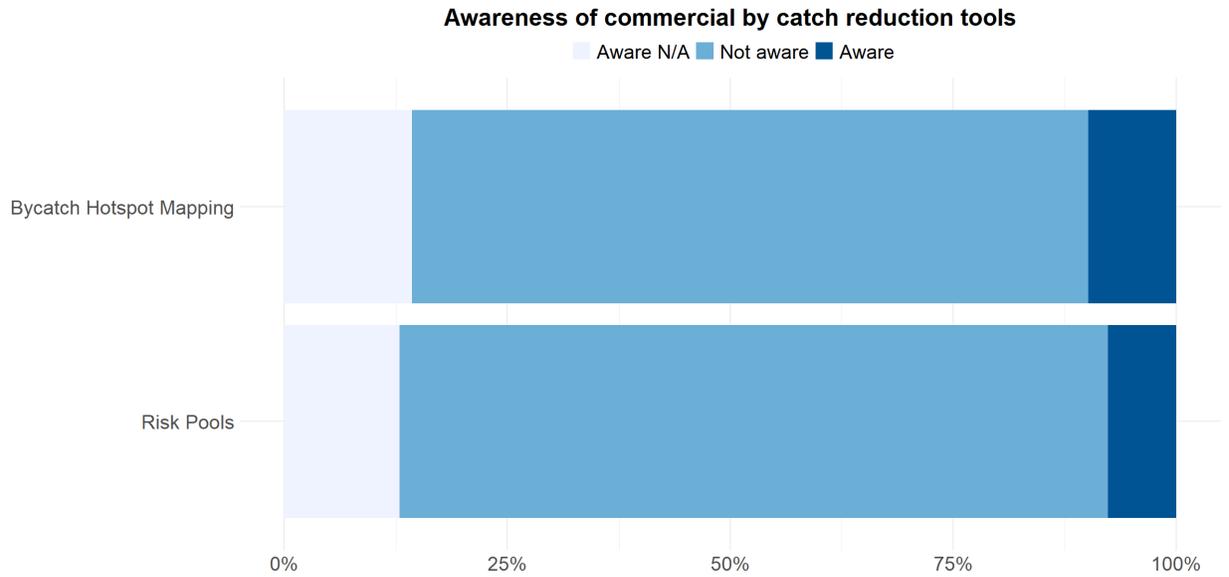
1) Not interested	21.96	28.32	20.34	16.62	23.31
2) Interested, no try	19.76	36.61	15.49	8.79	22.55
3) Interested, tried, stopped	11.09	17.77	9.40	43.16	2.97
4) Interested, tried, not sure if will continue	12.15	0.00	15.23	11.09	12.42
5) Interested, tried, will continue	35.04	17.30	39.53	20.34	38.76

Hotspot Mapping to Minimize Discards

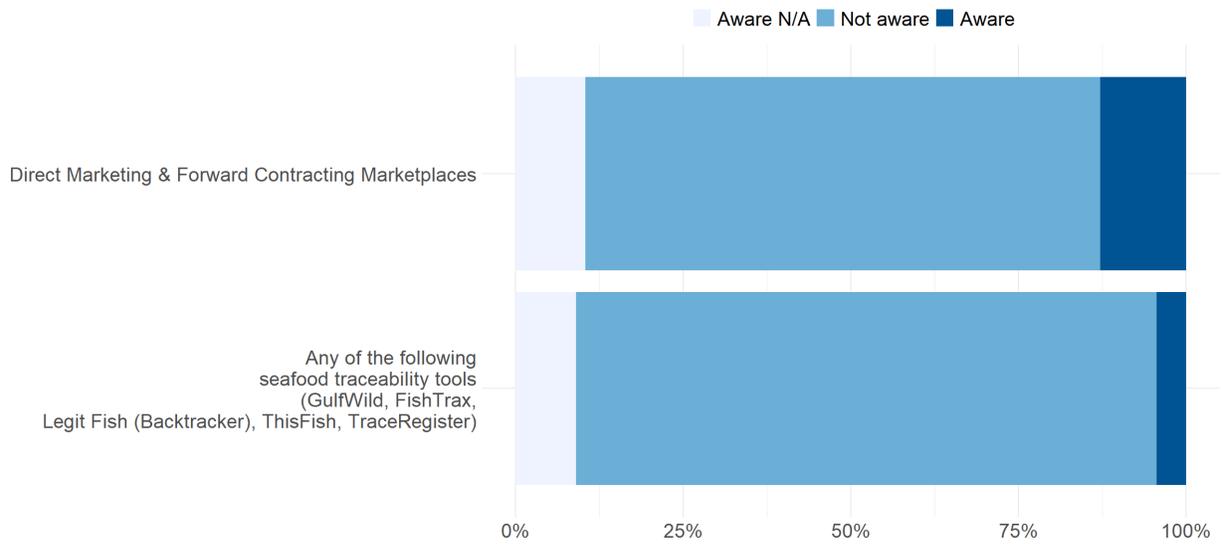
1) Not interested	12.44	0.00	15.01	27.22	9.26
2) Interested, no try	58.32	57.38	58.51	51.35	59.82
3) Interested, tried, stopped	10.75	42.62	4.18	0.00	13.07
4) Interested, tried, not sure if will continue	0.00	0.00	0.00	0.00	0.00
5) Interested, tried, will continue	18.49	0.00	22.30	21.43	17.86

C-7 Northeast Multispecies (Groundfish) Fishery – Awareness and Diffusion of Innovation Among Those Who Are Aware



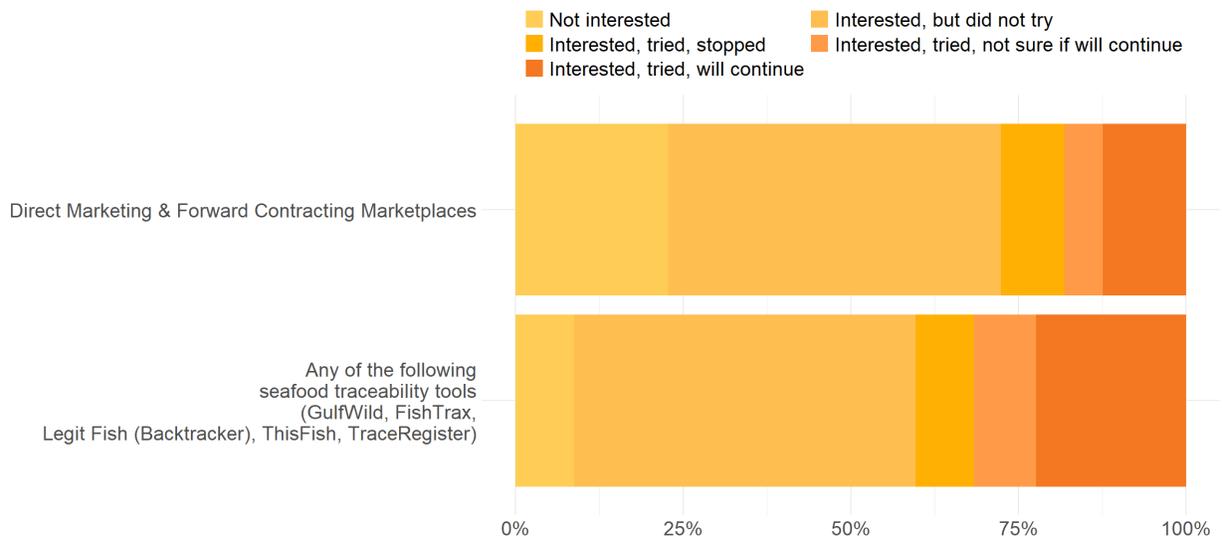


Awareness of commercial seafood marketing and traceability tools

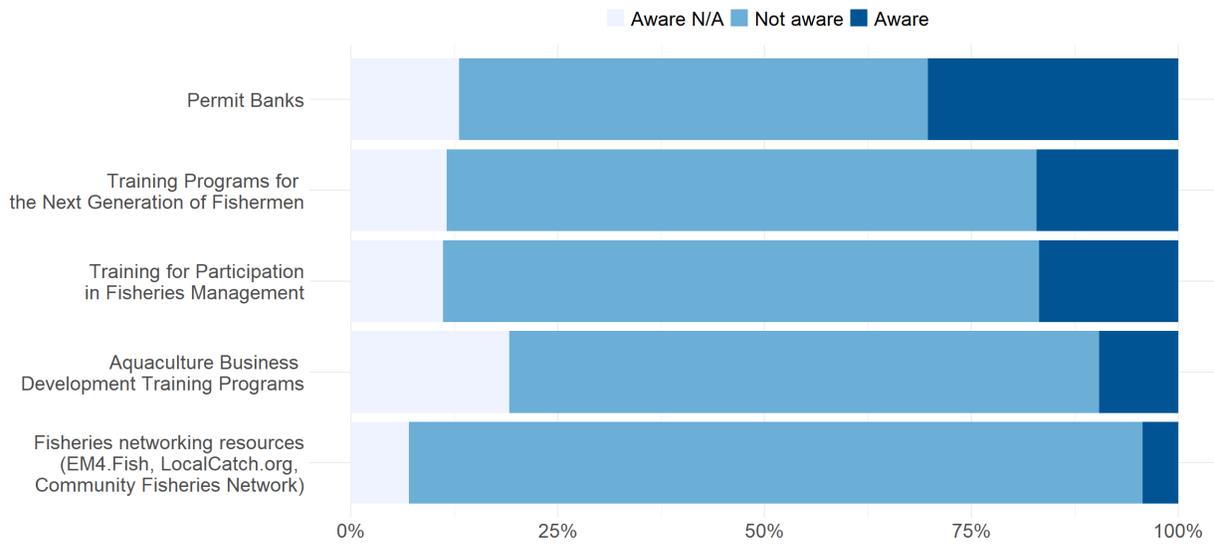


Aware but not applicable to the respondent's operations

Adoption of commercial seafood marketing and traceability tools by those who are aware

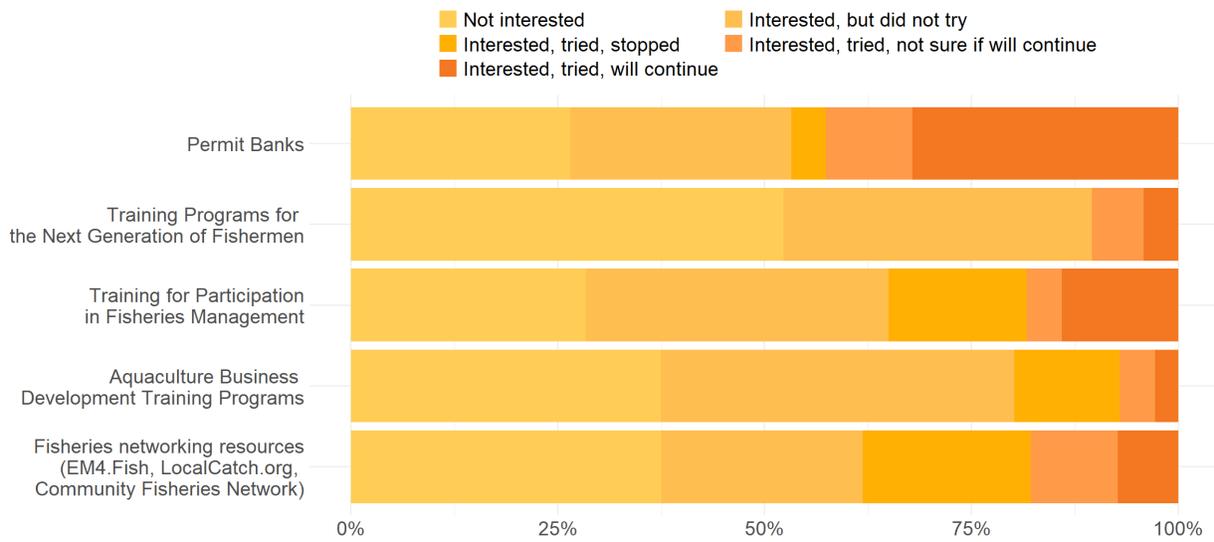


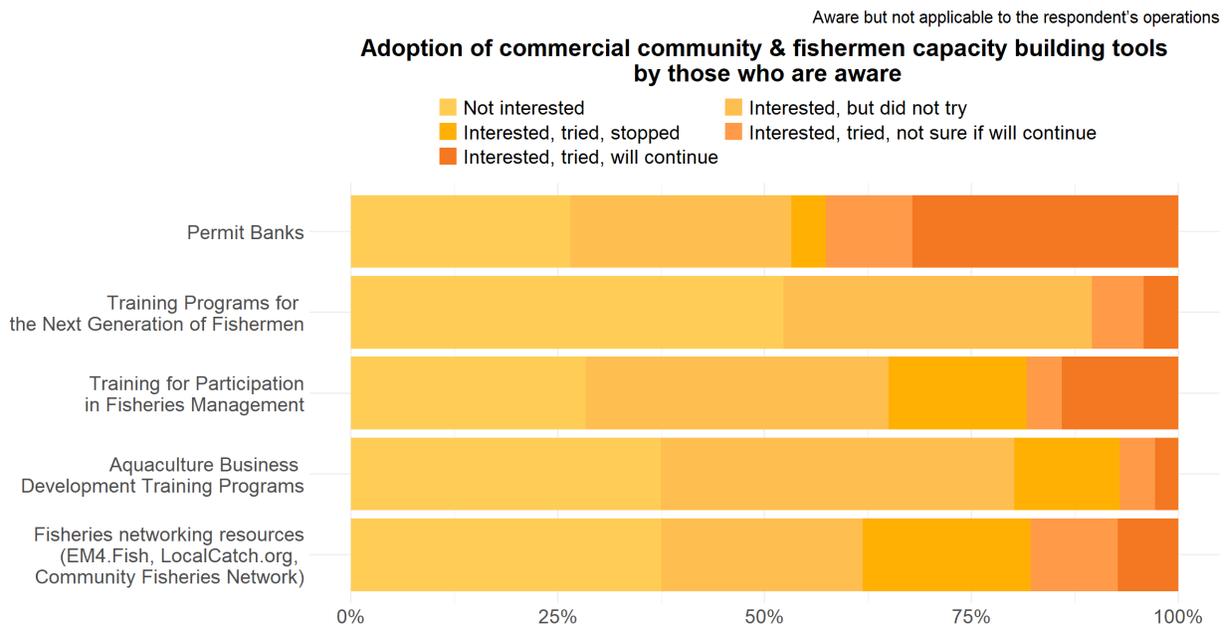
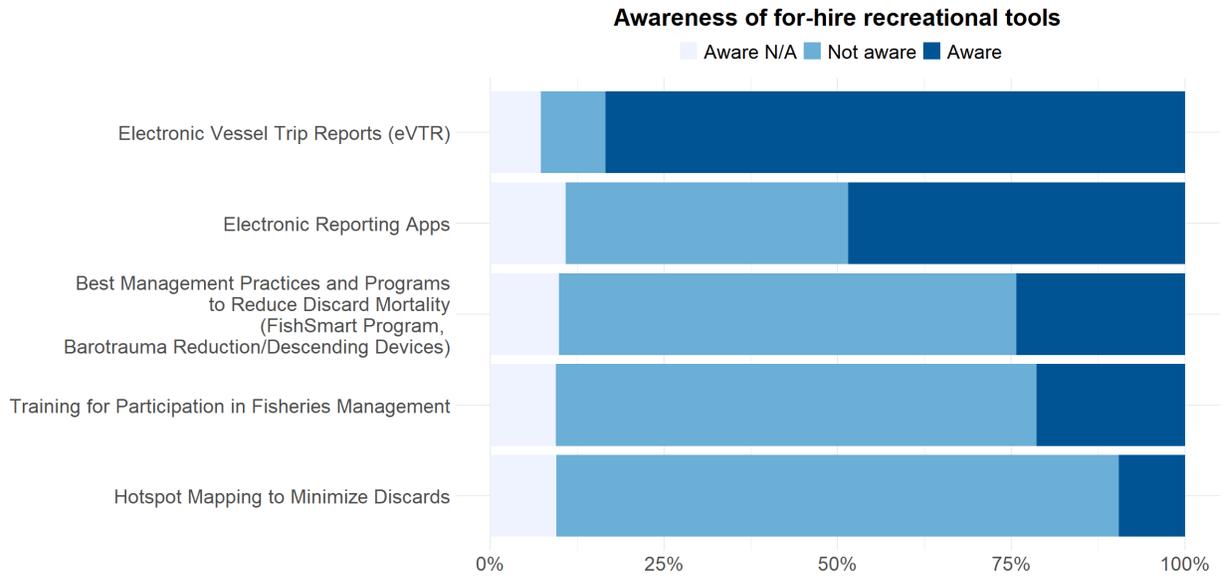
Awareness of commercial community & fishermen capacity building tools



Aware but not applicable to the respondent's operations

Adoption of commercial community & fishermen capacity building tools by those who are aware





Appendix C-8. Source of Learning About Innovations in the Northeast Multispecies (Groundfish) Fishery. See [Supplemental Material](#) for complete data tables.

Source	Overall	Sector		FIF Participation	
		Commercial	For-hire Recreational	Participant	Non-Participant
Unweighted Sample Size	n=524	n=307	n=217	n=38	n=486
Recruited by organization that received FIF award	4.54	4.75	4.18	19.22	3.07
Online Forums/Direct Emailing	18.92	14.58	26.32	19.17	18.90
Council meetings/Presentations	15.77	14.87	17.30	26.13	14.73
Trade journals/Newsletters	18.96	22.16	13.52	32.44	17.61
Word of Mouth	40.74	43.33	36.33	51.41	39.68
Social media	8.01	7.89	8.20	7.89	8.02
Fishing Association/Sector	30.93	34.70	24.49	56.13	28.40
Other	18.79	17.40	21.05	18.71	18.80



Appendix D: Cover Letters



<<CaseID Barcode>>
<<SYMPH_CaseID>>/<<StageID>>/<<Control#>>
<<Business or Permit Holder Name>>
<<ADDRESS_1>> <<ADDRESS_2>>
<<CITY>> <<ST>> <<ZIP>>



February 2021

Dear Vessel Permit Holder:

You have been selected to participate in the Fisheries Innovation Fund (FIF) voluntary *Well-being and Innovation Survey*. FIF supports effective participation of fishermen and fishing communities in the implementation of sustainable fisheries in the United States. By completing this survey, you will help the National Fish and Wildlife Foundation (NFWF) learn about the fishing practices and general well-being of permit holders in the Gulf of Mexico Reef Fish fishery. This is an opportunity for your voice to be heard and provide feedback that will inform the programs that NFWF funds.

The survey is easy to complete online:

Get **\$15**,
after you complete
the survey online



ONLINE

www.FIFsurvey.org

Enter your Access Code: <<PIN>>

Again, participation is completely voluntary, and all your answers will be kept private and confidential. This survey is sponsored by NFWF (www.nfwf.org) and is being conducted by RTI International. It will take approximately 30 minutes. If you have questions or concerns about this survey, please visit www.FIFsurvey.org, call us toll-free at 1-833-997-2720 or email us at FIFsurvey@rti.org.

Sincerely,

Erika Feller, Director, Marine and Coastal Conservation
National Fish and Wildlife Foundation



<<CaseID Barcode>>

<<SYMPH_CaseID>>/<<StageID>>/<<Control#>>
<<Business or Permit Holder Name>>
<<ADDRESS_1>> <<ADDRESS_2>>
<<CITY>> <<ST>> <<ZIP>>



February 2021

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The survey is easy to complete online:

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the survey online



ONLINE

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Enter your Access Code: <<PIN>>

Again, participation is completely voluntary, and all your answers will be kept private and confidential. This survey is sponsored by NFWF (www.nfwf.org) and is being conducted by RTI International. It will take approximately 30 minutes. If you have questions or concerns about this survey, please visit www.FIFsurvey.org, call us toll-free at 1-833-997-2720 or email us at FIFsurvey@rti.org.

Sincerely,

A handwritten signature in black ink that reads "Erika Feller".

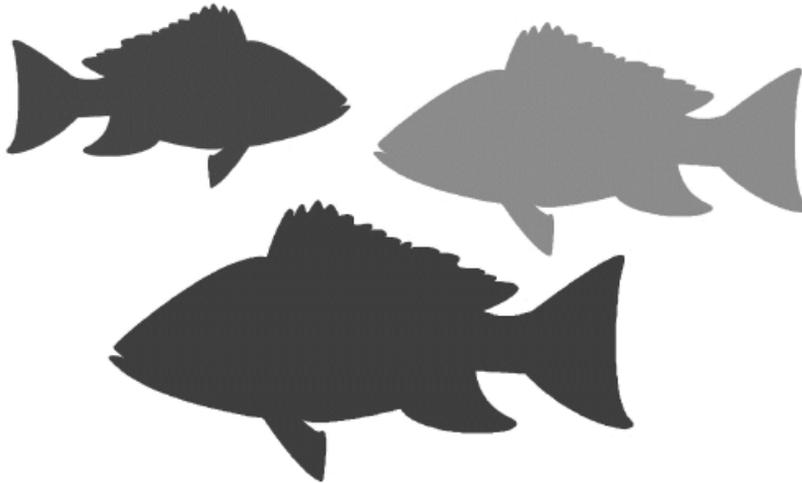
Erika Feller, Director, Marine and Coastal Conservation
National Fish and Wildlife Foundation



Appendix E: Final Paper And Pencil Instruments (PAPI)

Fisheries Innovation Fund Well-being and Innovation Survey

Gulf of Mexico Reef Fish Fishery



This survey is intended for permit holders in the Gulf of Mexico Reef Fish Limited Access Commercial Fishery and/or Federal Charter/Headboat Fishery. If someone at your business or in your household, other than yourself, is or was a permit holder of a fishing vessel in the Gulf of Mexico Reef Fish Limited Access Commercial Fishery and/or Federal Charter/Headboat Fishery then please have them complete this survey.

The Fisheries Innovation Fund (FIF) was developed in 2010 to foster innovation and support effective participation of fishermen and fishing communities in the implementation of sustainable fisheries in the United States. This survey, being conducted by RTI International (RTI), is one of the ways the National Fish and Wildlife Foundation (NFWF) is evaluating the impact of FIF activities. This survey will take approximately 30 minutes to complete and will ask questions about your fishing practices and general well-being. The survey is voluntary. You can choose not to participate, and you can choose not to answer any question. Please be assured that RTI and NFWF will keep all your answers completely confidential and they will only be reported in group form so that no one will be able to identify you from your answers.

If you have any questions about this survey or the FIF, please contact the FIF Well-being Study at FIFSurvey@rti.org or call us toll-free at 833-997-2720.

General Information

1. Within the past 5 years, have you owned a permit for or worked in the commercial fishing sector, for-hire recreational fishing sector, or both?

- Commercial
- For-hire recreational
- Both Commercial and For-hire recreational (dual-permitted)
- Neither commercial nor for-hire recreational
- Don't know/Not sure

} → **Go to 9 on page 3**

2. Have you participated in a federal fishery, a state fishery, or both within the past 5 years?

- Federal fishery
- State fishery
- Both federal and state fisheries
- Neither federal nor state fisheries
- Don't know/Not sure

3. Do you currently own permits for a single vessel or multiple vessels?

- Single vessel
- Multiple vessels
- Neither single nor multiple vessels
- Don't know/Not sure

4. Do you currently own a fishing permit or target fish managed under any of the following commercial categories? Please select all that apply.

- Gulf of Mexico Reef Fish Limited Access Commercial Fishery → **Go to 5**
- Other Federally-managed commercial fishery
- Other State-managed commercial fishery
- None of the above
- Don't know/Not sure

} → **Go to 5**

4a. If other, please specify the other federally or state-managed commercial fisheries.

5. Do you currently own a fishing permit or harvest fish managed under any of the following for-hire recreational fisheries? Please select all that apply.

- Gulf of Mexico Reef Fish Federal Charter/Headboat Fishery → **Go to 6**
- Other Federally-managed for-hire recreational fishery
- Other State-managed for-hire recreational fishery
- None of the above
- Don't know/Not sure

} → **Go to 6**

5a. If other, please specify the other federally or state-managed for-hire recreational fisheries.

6. Under which permit does your vessel(s) currently spend the majority of time on the water in the Gulf of Mexico Reef Fish Fishery?

- Only commercial
- Majority commercial
- Approximately equal between commercial and recreational for-hire
- Majority recreational for-hire
- Only recreational for-hire
- Don't know/Not sure

7. Does the Gulf of Mexico Reef Fish Fishery represent at least 50% of your fishing revenue?

- Yes
- No
- Don't know/Not sure

8. Thinking about the **past 3 years**, have you (or the vessel(s) with which you are associated) actively fished for species managed in the Gulf of Mexico Reef Fish Fishery? *Note: An active fishing vessel is one that received revenue from at least one fishing trip that targeted species within the fishery specified above.*

Yes
 No
 Don't know/Not sure

9. Which of the following best describes your current role in the fishing industry? Please provide a response for each category.

	Yes	No	Don't know/Not sure
1. Owner – an individual who serves as a vessel owner, and may own/lease a limited entry permit and/or quota	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Captain/Crew – an individual who plays a role on a fishing vessel that harvests, takes, or catches fish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Permit Holder – an individual who owns a limited entry permit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Quota Share Owner – an individual who has received or holds quota share	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Buyer/First Receiver – an individual or organization who receives, purchases, or takes custody, control, or possession of commercially caught fish onshore directly from a vessel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Other – Please Specify: <input type="checkbox"/> If no other role, select “no”	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Now we would like to ask you about some innovative, new, or emerging concepts in U.S. fisheries and some of the tools and resources you may use, or have considered using, in your everyday fishing operations.

10. Before today, have you ever heard of the National Fish and Wildlife Foundation's Fisheries Innovation Fund (FIF) or the Electronic Monitoring and Reporting Grant Program?

- Yes
 No
 Don't know/Not sure
- } → *Go to next page*

10a. If yes, have you ever participated in a FIF-sponsored or Electronic Monitoring and Reporting Grant Program sponsored project, training, or event?

- Yes, within the past 5 years
 Yes, more than 5 years ago
 No
 Don't know/Not sure

Commercial Sector: Awareness and Use of Electronic Monitoring and Reporting Tools

⚠ If you have **not** worked in the **commercial fishing sector**, go to **question 24** on **page 10**.

11. Are you aware of Electronic Logbooks/Vessel Trip Reports (eVTR)? Using tablet (such as an iPad), smartphone, or computer-based electronic logbooks to report catch on federal commercial fishing trips.

- Aware and applicable to the Gulf of Mexico Reef Fish Fishery
- Aware but NOT applicable to the Gulf of Mexico Reef Fish Fishery
- Not aware

} → **Go to 12**

11a. After learning about Electronic Logbooks/Vessel Trip Reports (eVTR), were you interested in trying it?

- Yes, I was interested and tried it
- Yes, I was interested but did not try it
- No, I was not interested
- Don't know/Not sure

} → **Go to 11c**

} → **Go to 12**

11b. If you tried it, which of the following statements best describes your use of Electronic Logbooks/Vessel Trip Reports (eVTR)?

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels
- Don't know/Not sure
- Other – Please Specify

} → **Go to 12**

11c. Why did you not try, stop using or plan to discontinue using Electronic Logbooks/Vessel Trip Reports (eVTR)? Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify

12. Are you aware of Video Electronic Monitoring? Video cameras instead of, or in addition to, human observers for catch accounting, discard monitoring, and/or compliance monitoring.

- Aware and applicable to the Gulf of Mexico Reef Fish Fishery
- Aware but NOT applicable to the Gulf of Mexico Reef Fish Fishery
- Not aware

} → **Go to 13**

12a. After learning about Video Electronic Monitoring, were you interested in trying it?

- Yes, I was interested and tried it
- Yes, I was interested but did not try it
- No, I was not interested
- Don't know/Not sure

} → **Go to 12c**

} → **Go to 13**

12b. If you tried it, which of the following statements best describes your use of Video Electronic Monitoring?

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels
- Don't know/Not sure
- Other – Please Specify

} → **Go to 13**

12c. Why did you not try, stop using or plan to discontinue using Video Electronic Monitoring? Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify

13. Are you aware of Electronic Fish Tickets, Dealer Reports, or Landing Receipts? Tablet (e.g., iPad) or computer-based electronic fish ticket reports.

- Aware and applicable to the Gulf of Mexico Reef Fish Fishery
- Aware but NOT applicable to the Gulf of Mexico Reef Fish Fishery
- Not aware

} → **Go to 14**

13a. After learning about Electronic Fish Tickets, Dealer Reports, or Landing Receipts, were you interested in trying it?

- Yes, I was interested and tried it
- Yes, I was interested but did not try it
- No, I was not interested
- Don't know/Not sure

} → **Go to 13c**
→ **Go to 14**

13b. If you tried it, which of the following statements best describes your use of Electronic Fish Tickets, Dealer Reports, or Landing Receipts?

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels
- Don't know/Not sure
- Other – Please Specify

} → **Go to 14**

13c. Why did you not try, stop using or plan to discontinue using Electronic Fish Tickets, Dealer Reports, or Landing Receipts? Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify

14. Are you aware of the following business planning or quota management tools: FishHub, ECatch, LegitFish, and Fishing Area Selectivity Tool? Online platforms that help you manage your fishing business, gain access to quota, and monitor bycatch interactions.

- Aware and applicable to the Gulf of Mexico Reef Fish Fishery
- Aware but NOT applicable to the Gulf of Mexico Reef Fish Fishery
- Not aware

} → **Go to 15**

14a. After learning about the following business planning or quota management tools: FishHub, ECatch, LegitFish, and Fishing Area Selectivity Tool, were you interested in trying it?

- Yes, I was interested and tried it
- Yes, I was interested but did not try it
- No, I was not interested
- Don't know/Not sure

} → **Go to 14c**
→ **Go to 15**

14b. If you tried it, which of the following statements best describes your use of the following business planning or quota management tools: FishHub, ECatch, LegitFish, and Fishing Area Selectivity Tool?

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels
- Don't know/Not sure
- Other – Please Specify

} → **Go to 15**

14c. Why did you not try, stop using or plan to discontinue using the following business planning or quota management tools: FishHub, ECatch, LegitFish, and Fishing Area Selectivity Tool? Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify

Commercial Sector: Awareness and Use of Bycatch Reduction Tools

15. Are you aware of Bycatch Hotspot Mapping?
Online communication networks that generate maps in near real-time and display areas where high incidences of bycatch have been reported.

- Aware and applicable to the Gulf of Mexico Reef Fish Fishery
- Aware but NOT applicable to the Gulf of Mexico Reef Fish Fishery
- Not aware

} → **Go to 16**

15a. After learning about Bycatch Hotspot Mapping, were you interested in trying it?

- Yes, I was interested and tried it
- Yes, I was interested but did not try it
- No, I was not interested
- Don't know/Not sure

} → **Go to 15c**

} → **Go to 16**

15b. If you tried it, which of the following statements best describes your use of Bycatch Hotspot Mapping?

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels
- Don't know/Not sure
- Other – Please Specify

} → **Go to 16**

15c. Why did you not try, stop using or plan to discontinue using Bycatch Hotspot Mapping? Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify

16. Are you aware of Risk Pools? Arrangement in which several fishermen pool their quota/allowances of constraining species so that rare overages by a few members of the pool are covered by the group's pooled allotment.

- Aware and applicable to the Gulf of Mexico Reef Fish Fishery
- Aware but NOT applicable to the Gulf of Mexico Reef Fish Fishery
- Not aware

} → **Go to 17**

16a. After learning about Risk Pools, were you interested in trying it?

- Yes, I was interested and tried it
- Yes, I was interested but did not try it
- No, I was not interested
- Don't know/Not sure

} → **Go to 16c**

} → **Go to 17**

16b. If you tried it, which of the following statements best describes your use of Risk Pools?

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels
- Don't know/Not sure
- Other – Please Specify

} → **Go to 17**

16c. Why did you not try, stop using or plan to discontinue using Risk Pools? Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify

Commercial Sector: Awareness and Use of Seafood Marketing and Traceability Tools

17. Are you aware of Direct Marketing & Forward Contracting Marketplaces? Marketing arrangements that enable fishermen to better plan or market their catches based on demand from seafood buyers by targeting species at prearranged prices (e.g., community and restaurant supported fisheries and direct marketing arrangements with consumers, schools, universities, or hospitals).

- Aware and applicable to the Gulf of Mexico Reef Fish Fishery
- Aware but NOT applicable to the Gulf of Mexico Reef Fish Fishery
- Not aware

} → **Go to 18**

17a. After learning about Direct Marketing & Forward Contracting Marketplaces, were you interested in trying it?

- Yes, I was interested and tried it
- Yes, I was interested but did not try it
- No, I was not interested
- Don't know/Not sure

} → **Go to 17c**

} → **Go to 18**

17b. If you tried it, which of the following statements best describes your use of Direct Marketing & Forward Contracting Marketplaces?

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels
- Don't know/Not sure
- Other – Please Specify

} → **Go to 18**

17c. Why did you not try, stop using or plan to discontinue using Direct Marketing & Forward Contracting Marketplaces? Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify

18. Are you aware of the following seafood traceability tools: GulfWild, FishTrax, Legit Fish (Backtracker), ThisFish, TraceRegister? Electronic tools and record-keeping systems that allow seafood buyers to track seafood products through the supply chain, from harvester to consumer.

- Aware and applicable to the Gulf of Mexico Reef Fish Fishery
- Aware but NOT applicable to the Gulf of Mexico Reef Fish Fishery
- Not aware

} → **Go to 19**

18a. After learning about the following seafood traceability tools: GulfWild, FishTrax, Legit Fish (Backtracker), ThisFish, TraceRegister, were you interested in trying it?

- Yes, I was interested and tried it
- Yes, I was interested but did not try it
- No, I was not interested
- Don't know/Not sure

} → **Go to 18c**

} → **Go to 19**

18b. If you tried it, which of the following statements best describes your use of the following seafood traceability tools: GulfWild, FishTrax, Legit Fish (Backtracker), ThisFish, TraceRegister?

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels
- Don't know/Not sure
- Other – Please Specify

} → **Go to 19**

18c. Why did you not try, stop using or plan to discontinue using the following seafood traceability tools: GulfWild, FishTrax, Legit Fish (Backtracker), ThisFish, TraceRegister? Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify

Commercial Sector: Awareness and Use of Community & Fishermen Capacity Building Tools

19. Are you aware of Permit Banks? A collection of fishing permits managed by an organization or individual for the purpose of leasing the associated fishing privileges to qualifying fishermen (e.g., Reef Fish Quota Bank, Cape Cod Fisheries Trust, and Gloucester Fishing Community Preservation Fund among others).

- Aware and applicable to the Gulf of Mexico Reef Fish Fishery
- Aware but NOT applicable to the Gulf of Mexico Reef Fish Fishery } → **Go to 20**
- Not aware

→ **19a. After learning about Permit Banks, were you interested in trying it?**

- Yes, I was interested and tried it
- Yes, I was interested but did not try it } → **Go to 19c**
- No, I was not interested
- Don't know/Not sure → **Go to 20**

→ **19b. If you tried it, which of the following statements best describes your use of Permit Banks?**

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels } → **Go to 20**
- Don't know/Not sure
- Other – Please Specify ↓

→ **19c. Why did you not try, stop using or plan to discontinue using Permit Banks?** Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify ↓

20. Are you aware of Training Programs for the Next Generation of Fishermen? Training, networking, and apprenticeship programs that provide access and opportunities for young fishermen and new entrants to the fishery (e.g., Next Generation Commercial Fishing Crew Apprenticeship or others).

- Aware and applicable to the Gulf of Mexico Reef Fish Fishery
- Aware but NOT applicable to the Gulf of Mexico Reef Fish Fishery } → **Go to 21**
- Not aware

→ **20a. After learning about Training Programs for the Next Generation of Fishermen, were you interested in trying it?**

- Yes, I was interested and tried it
- Yes, I was interested but did not try it } → **Go to 20c**
- No, I was not interested
- Don't know/Not sure → **Go to 21**

→ **20b. If you tried it, which of the following statements best describes your use of Training Programs for the Next Generation of Fishermen?**

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels } → **Go to 21**
- Don't know/Not sure
- Other – Please Specify ↓

→ **20c. Why did you not try, stop using or plan to discontinue using Training Programs for the Next Generation of Fishermen?** Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify ↓

21. Are you aware of Trainings for Participation in Fisheries Management? Training programs that help fishermen and fishing communities actively engage in the fisheries management process by providing education on fisheries science and monitoring, such as the Marine Resource Education Program or others.

- Aware and applicable to the Gulf of Mexico Reef Fish Fishery
- Aware but NOT applicable to the Gulf of Mexico Reef Fish Fishery } → **Go to 22**
- Not aware

→ **21a. After learning about Trainings for Participation in Fisheries Management, were you interested in trying it?**

- Yes, I was interested and tried it
- Yes, I was interested but did not try it } → **Go to 21c**
- No, I was not interested
- Don't know/Not sure → **Go to 22**

↓ **21b. If you tried it, which of the following statements best describes your use of Trainings for Participation in Fisheries Management?**

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels } → **Go to 22**
- Don't know/Not sure
- Other – Please Specify ↓

↓ **21c. Why did you not try, stop using or plan to discontinue using Trainings for Participation in Fisheries Management? Please select all that apply.**

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify ↓

22. Are you aware of Aquaculture Business Development Training Programs? Training programs that help fishermen establish small-scale shellfish, finfish, and algae aquaculture farms.

- Aware and applicable to the Gulf of Mexico Reef Fish Fishery
- Aware but NOT applicable to the Gulf of Mexico Reef Fish Fishery } → **Go to 23**
- Not aware

→ **22a. After learning about Aquaculture Business Development Training Programs, were you interested in trying it?**

- Yes, I was interested and tried it
- Yes, I was interested but did not try it } → **Go to 22c**
- No, I was not interested
- Don't know/Not sure → **Go to 23**

↓ **22b. If you tried it, which of the following statements best describes your use of Aquaculture Business Development Training Programs?**

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels } → **Go to 23**
- Don't know/Not sure
- Other – Please Specify ↓

↓ **22c. Why did you not try, stop using or plan to discontinue using Aquaculture Business Development Training Programs? Please select all that apply.**

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify ↓

23. Are you aware of the following fisheries networking resources: EM4.Fish (formerly eminformation.com), LocalCatch.org, Community Fisheries Network? Online forums and workshops to support information sharing among fishing industry members nationwide.

- Aware and applicable to the Gulf of Mexico Reef Fish Fishery
- Aware but NOT applicable to the Gulf of Mexico Reef Fish Fishery
- Not aware

→ Go to 24

→ 23a. After learning about the following fisheries networking resources: EM4.Fish (formerly eminformation.com), LocalCatch.org, Community Fisheries Network, were you interested in trying it?

- Yes, I was interested and tried it
- Yes, I was interested but did not try it
- No, I was not interested
- Don't know/Not sure

→ Go to 23c

→ 23b. If you tried it, which of the following statements best describes your use of the following fisheries networking resources: EM4.Fish (formerly eminformation.com), LocalCatch.org, Community Fisheries Network?

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels
- Don't know/Not sure
- Other – Please Specify ↓

→ Go to 24

→ 23c. Why did you not try, stop using or plan to discontinue using the following fisheries networking resources: EM4.Fish (formerly eminformation.com), LocalCatch.org, Community Fisheries Network? Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify ↓

Recreational Sector: Awareness and Use of For-Hire Recreational Tools

⚠ If you have **not** worked in the for-hire recreational fishing sector, go to question 29 on page 13.

24. Are you aware of Electronic Vessel Trip Reports (eVTR)? Tablet or computer-based electronic catch reporting (e.g., logbooks, VMS-enabled tablets) for for-hire recreational operators (including charter boats, headboats, party boats, Commercial Passenger Fishing Vessels, licensed fishing guides, etc.).

- Aware and applicable to the Gulf of Mexico Reef Fish Fishery
- Aware but NOT applicable to the Gulf of Mexico Reef Fish Fishery
- Not aware

→ Go to 25

→ 24a. After learning about Electronic Vessel Trip Reports (eVTR), were you interested in trying it?

- Yes, I was interested and tried it
- Yes, I was interested but did not try it
- No, I was not interested
- Don't know/Not sure

→ Go to 24c

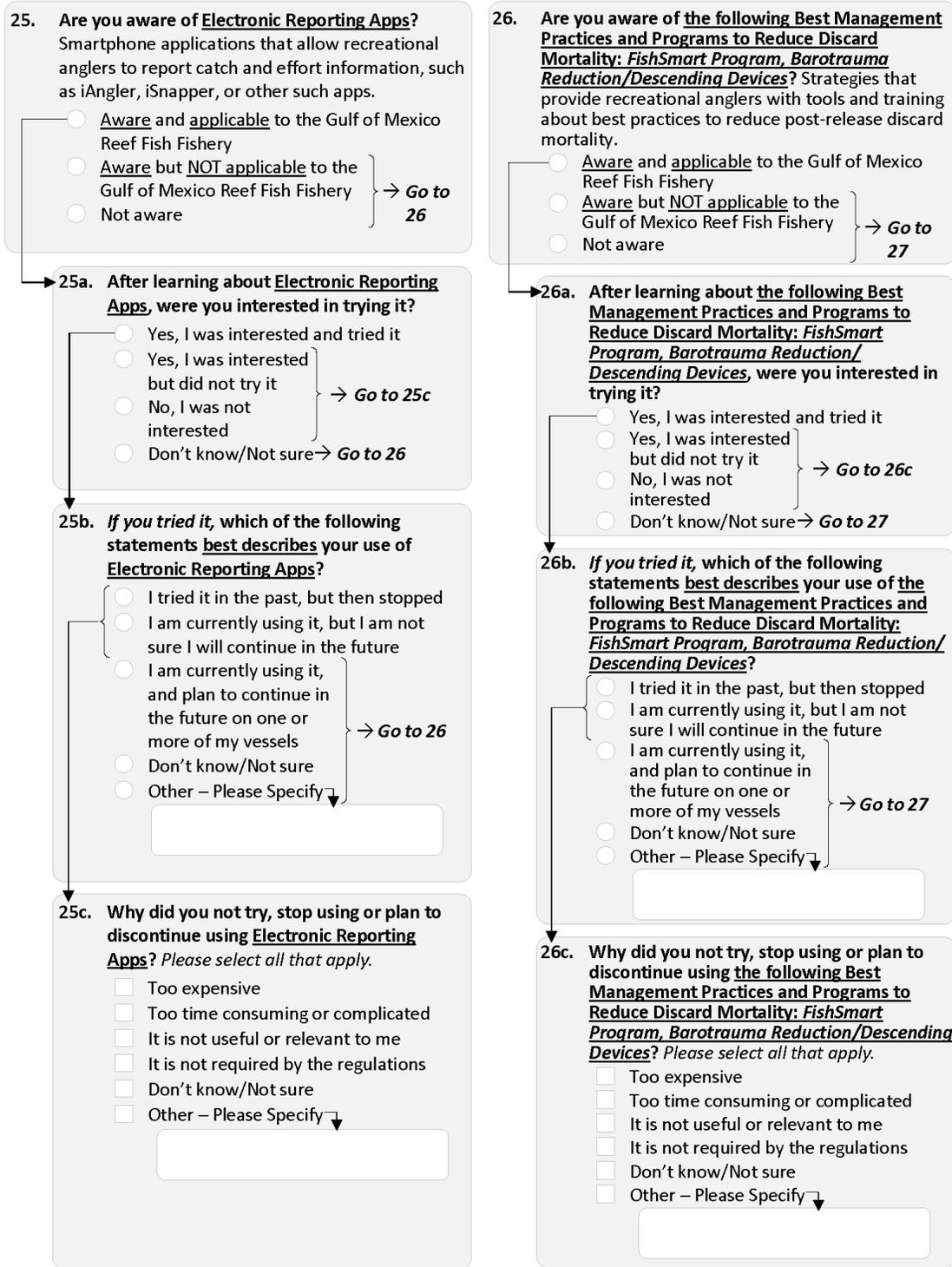
→ 24b. If you tried it, which of the following statements best describes your use of Electronic Vessel Trip Reports (eVTR)?

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels
- Don't know/Not sure
- Other – Please Specify ↓

→ Go to 25

→ 24c. Why did you not try, stop using or plan to discontinue using Electronic Vessel Trip Reports (eVTR)? Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify ↓



27. Are you aware of Trainings for Participation in Fisheries Management? Help fishermen actively engage in the fisheries management process by providing education on fisheries science and monitoring, such as the Marine Resource Education Program or others.

- Aware and applicable to the Gulf of Mexico Reef Fish Fishery
- Aware but NOT applicable to the Gulf of Mexico Reef Fish Fishery } → **Go to 28**
- Not aware

→ **27a. After learning about Trainings for Participation in Fisheries Management, were you interested in trying it?**

- Yes, I was interested and tried it
- Yes, I was interested but did not try it } → **Go to 27c**
- No, I was not interested
- Don't know/Not sure → **Go to 28**

→ **27b. If you tried it, which of the following statements best describes your use of Trainings for Participation in Fisheries Management?**

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels } → **Go to 28**
- Don't know/Not sure
- Other – Please Specify ↓

→ **27c. Why did you not try, stop using or plan to discontinue using Trainings for Participation in Fisheries Management?** Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify ↓

28. Are you aware of Hotspot Mapping to Minimize Discards? Online communication networks that generate maps in near real-time that display areas where high incidences of non-target species have been reported.

- Aware and applicable to the Gulf of Mexico Reef Fish Fishery
- Aware but NOT applicable to the Gulf of Mexico Reef Fish Fishery } → **Go to 29**
- Not aware

→ **28a. After learning about Hotspot Mapping to Minimize Discards, were you interested in trying it?**

- Yes, I was interested and tried it
- Yes, I was interested but did not try it } → **Go to 28c**
- No, I was not interested
- Don't know/Not sure → **Go to 29**

→ **28b. If you tried it, which of the following statements best describes your use of Hotspot Mapping to Minimize Discards?**

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels } → **Go to 29**
- Don't know/Not sure
- Other – Please Specify ↓

→ **28c. Why did you not try, stop using or plan to discontinue using Hotspot Mapping to Minimize Discards?** Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify ↓

29. For any of the practices, tools, or resources you indicated you were aware of and are applicable to the Gulf of Mexico Reef Fish Fishery (Q11-28), where did you learn about them?

Please select all that apply.

- Recruited by organization that received Fisheries Innovation Fund award
- Online Forums/Direct Emailing
- Council meetings/Presentations
- Trade journals/Newsletters
- Word of Mouth
- Social media
- Fishing Association/Sector
- Don't know/Not sure
- Other – Please Specify →

30. These questions (Q11-28) covered some innovative, new, or emerging concepts in U.S. fisheries and some of the tools and resources you may use, or have considered using, in your everyday fishing operations.

Do you have any additional comments which you would like to add?

Well Being and Job Satisfaction

The following questions ask about your overall well-being and job satisfaction.

31. On a scale of 0–10, with 10 being very satisfied and 0 being very dissatisfied, how would you describe your overall satisfaction with your job(s) in the fishing industry?

- 10. Very satisfied
- 9.
- 8.
- 7.
- 6.
- 5.
- 4.
- 3.
- 2.
- 1.
- 0. Very dissatisfied

32. What factors did you consider when rating your overall satisfaction with your job(s) in the fishing industry?

33. If you participate in any federal fisheries, on a scale of 0 – 10, with 10 being very satisfied and 0 being very dissatisfied, how would you describe your overall satisfaction with Federal fisheries management?

- 10. Very satisfied
- 9.
- 8.
- 7.
- 6.
- 5.
- 4.
- 3.
- 2.
- 1.
- 0. Very dissatisfied

Not Applicable → Go to 34

→33a. What factors did you consider when rating your overall satisfaction with Federal fisheries management?

34. **If you participate in any state fisheries, on a scale of 0 – 10, with 10 being very satisfied and 0 being very dissatisfied, how would you describe your overall satisfaction with state fisheries management?**

- 10. Very satisfied
- 9.
- 8.
- 7.
- 6.
- 5.
- 4.
- 3.
- 2.
- 1.
- 0. Very dissatisfied
- Not Applicable → **Go to 35**

→ 34a. **What factors did you consider when rating your overall satisfaction with state fisheries management?**

35. **The Coronavirus or COVID-19 pandemic has affected Americans in many ways. Have you, or has anyone in your household, experienced a loss of employment income since March 2020?**

- Yes
- No
- I prefer not to answer
- Don't know/Not sure

36. **Since March 2020, have your fishing business operations been suspended for a duration of one month or more due to the COVID-19 pandemic or other unforeseen events such as hurricanes, etc.?**

- Yes, and operations are currently suspended
- Yes, and operations have resumed
- No
- Don't know/Not sure

We realize the next few questions, which ask about your level of satisfaction with life, health, and overall happiness, are personal. Your individual responses, which will be kept confidential, will be combined with other responses to help us understand the experiences of fishermen and fishing communities.

37. **How satisfied are you with your life?**

- Not at all satisfied
- Slightly satisfied
- Moderately satisfied
- Very Satisfied
- Extremely Satisfied

38. **How satisfied are you with your physical health?**

- Not at all satisfied
- Slightly satisfied
- Moderately satisfied
- Very Satisfied
- Extremely Satisfied

39. **How often do you feel really happy?**

- Never
- Rarely
- Sometimes
- Often
- Always

40. **Do you have friends in your community you can count on if needed?**

- Yes
- No
- Don't know/Not sure

41. **Prior to March 2020 and the onset of the COVID-19 pandemic, which of the following best describes how you felt about your household income? Would you say you...**

- Lived comfortably on your household income
- Got by on your household income
- Found it somewhat difficult to get by on your household income
- Found it very difficult to get by on your household income
- Don't know/Not sure

42. **Since March 2020 and after the onset of the COVID-19 pandemic, which of the following best describes how you feel about your household income? Would you say you are...**

- Living comfortably on your household income
- Getting by on your household income
- Finding it somewhat difficult to get by on your household income
- Finding it very difficult to get by on your household income
- Don't know/Not sure

About You

The last few questions are about you. These are for informational purposes only. Please be assured that all your answers will remain completely confidential.

43. In the year prior to March 2020 and the onset of the COVID-19 pandemic, did at least 50% of your household income come from the fishing industry, including all species and fisheries? Do not consider funds from federal disaster relief payments in your answer.

- Yes
- No
- Don't know/Not sure

44. Since March 2020 and after the onset of the COVID-19 pandemic, does at least 50% of your household income come from the fishing industry, including all species and fisheries? Do not consider funds from federal disaster relief payments or COVID relief payments in your answer.

- Yes
- No
- Don't know/Not sure

45. What is your current age?

- 18-29 years of age
- 30-39 years of age
- 40-49 years of age
- 50-64 years of age
- 65 years or older

46. Is there anything else you would like to share with NFWF regarding the Fisheries Innovation Fund or other aspects of this survey? As a reminder, your response will be kept confidential.

47. To show our appreciation for completing this survey, we would like to send you a \$15 check. Please enter your first and last name and current address to receive this check. Print in all CAPS.

Please allow up to 4 weeks for processing and delivery.

First Name:

Last Name:

Address Line 1:

Address Line 2:

City: State:

Please return your questionnaire in the enclosed return envelope or mail it to:

FIF Wellbeing and Innovation Survey
RTI International
ATTN: Data Capture
5265 Capital Boulevard
Raleigh, NC 27690

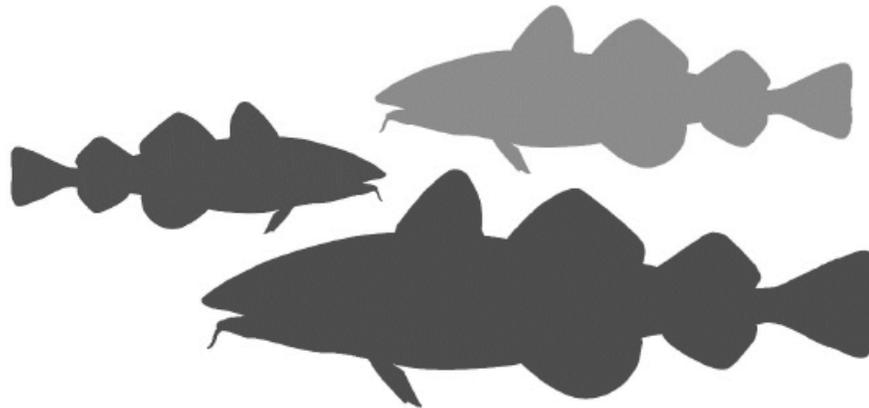
**Thank you for participating in the
FIF Wellbeing and Innovation Survey**



RTI Project #0217649.000.004

Fisheries Innovation Fund Well-being and Innovation Survey

Northeast Multispecies (Groundfish) Fishery



This survey is intended for permit holders in the Northeast Multispecies (Groundfish) Commercial Fishery and/or Recreational Fishery. If someone at your business or in your household, other than yourself, is or was a permit holder of a fishing vessel in the Northeast Multispecies (Groundfish) Commercial Fishery and/or Recreational Fishery then please have them complete this survey.

The Fisheries Innovation Fund (FIF) was developed in 2010 to foster innovation and support effective participation of fishermen and fishing communities in the implementation of sustainable fisheries in the United States. This survey, being conducted by RTI International (RTI), is one of the ways the National Fish and Wildlife Foundation (NFWF) is evaluating the impact of FIF activities. This survey will take approximately 30 minutes to complete and will ask questions about your fishing practices and general well-being. The survey is voluntary. You can choose not to participate, and you can choose not to answer any question. Please be assured that RTI and NFWF will keep all your answers completely confidential and they will only be reported in group form so that no one will be able to identify you from your answers.

If you have any questions about this survey or the FIF, please contact the FIF Well-being Study at FIFSurvey@rti.org or call us toll-free at 833-997-2720.

General Information

1. Within the past 5 years, have you owned a permit for or worked in the commercial fishing sector, for-hire recreational fishing sector, or both?

- Commercial
- For-hire recreational
- Both Commercial and For-hire recreational (dual-permitted)
- Neither commercial nor for-hire recreational
- Don't know/Not sure

} → **Go to 9 on page 3**

2. Have you participated in a federal fishery, a state fishery, or both within the past 5 years?

- Federal fishery
- State fishery
- Both federal and state fisheries
- Neither federal nor state fisheries
- Don't know/Not sure

3. Do you currently own permits for a single vessel or multiple vessels?

- Single vessel
- Multiple vessels
- Neither single nor multiple vessels
- Don't know/Not sure

4. Do you currently own a fishing permit or target fish managed under any of the following commercial categories? Please select all that apply.

- Northeast Multispecies (Groundfish) Fishery – Sector
- Northeast Multispecies (Groundfish) Fishery – Common Pool
- Other Federally-managed commercial fishery
- Other State-managed commercial fishery
- None of the above
- Don't know/Not sure

} → **Go to 5**

} → **Go to 5**

4a. *If other, please specify the other federally or state-managed commercial fisheries.*

5. Do you currently own a fishing permit or harvest fish managed under any of the following for-hire recreational fisheries? Please select all that apply.

- Northeast Multispecies (Groundfish) Fishery → **Go to 6**
- Other Federally-managed for-hire recreational fishery
- Other State-managed for-hire recreational fishery
- None of the above
- Don't know/Not sure

} → **Go to 6**

5a. *If other, please specify the other federally or state-managed for-hire recreational fisheries.*

6. Under which permit does your vessel(s) currently spend the majority of time on the water in the Northeast Multispecies (Groundfish) Fishery?

- Only commercial
- Majority commercial
- Approximately equal between commercial and recreational for-hire
- Majority recreational for-hire
- Only recreational for-hire
- Don't know/Not sure

7. Does the Northeast Multispecies (Groundfish) Fishery represent at least 50% of your fishing revenue?

- Yes
- No
- Don't know/Not sure

8. Thinking about the **past 3 years**, have you (or the vessel(s) with which you are associated) actively fished for species managed in the Northeast Multispecies (Groundfish) Fishery? *Note: An active fishing vessel is one that received revenue from at least one fishing trip that targeted species within the fishery specified above.*
- Yes
 - No
 - Don't know/Not sure

9. Which of the following best describes your current role in the fishing industry? Please provide a response for each category.

	Yes	No	Don't know/Not sure
1. Owner – an individual who serves as a vessel owner, and may own/lease a limited entry permit and/or quota	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Captain/Crew – an individual who plays a role on a fishing vessel that harvests, takes, or catches fish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Permit Holder – an individual who owns a limited entry permit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Quota Share Owner – an individual who has received or holds quota share	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Buyer/First Receiver – an individual or organization who receives, purchases, or takes custody, control, or possession of commercially caught fish onshore directly from a vessel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Other – Please Specify: <input type="checkbox"/> If no other role, select “no”	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Now we would like to ask you about some innovative, new, or emerging concepts in U.S. fisheries and some of the tools and resources you may use, or have considered using, in your everyday fishing operations.

10. Before today, have you ever heard of the National Fish and Wildlife Foundation's Fisheries Innovation Fund (FIF) or the Electronic Monitoring and Reporting Grant Program?

- Yes
 - No
 - Don't know/Not sure
- } → *Go to next page*

→ 10a. *If yes*, have you ever participated in a FIF-sponsored or Electronic Monitoring and Reporting Grant Program sponsored project, training, or event?

- Yes, within the past 5 years
- Yes, more than 5 years ago
- No
- Don't know/Not sure

Commercial Sector: Awareness and Use of Electronic Monitoring and Reporting Tools

⚠ If you have not worked in the commercial fishing sector, go to question 24 on page 10.

11. Are you aware of Electronic Logbooks/Vessel Trip Reports (eVTR)? Using tablet (such as an iPad), smartphone, or computer-based electronic logbooks to report catch on federal commercial fishing trips.

- Aware and applicable to the Northeast Multispecies (Groundfish) Fishery
- Aware but NOT applicable to the Northeast Multispecies (Groundfish) Fishery } → **Go to 12**
- Not aware

11a. After learning about Electronic Logbooks/Vessel Trip Reports (eVTR), were you interested in trying it?

- Yes, I was interested and tried it
- Yes, I was interested but did not try it } → **Go to 11c**
- No, I was not interested
- Don't know/Not sure → **Go to 12**

11b. If you tried it, which of the following statements best describes your use of Electronic Logbooks/Vessel Trip Reports (eVTR)?

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels } → **Go to 12**
- Don't know/Not sure
- Other – Please Specify ↓

11c. Why did you not try, stop using or plan to discontinue using Electronic Logbooks/Vessel Trip Reports (eVTR)? Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify ↓

12. Are you aware of Video Electronic Monitoring? Video cameras instead of, or in addition to, human observers for catch accounting, discard monitoring, and/or compliance monitoring.

- Aware and applicable to the Northeast Multispecies (Groundfish) Fishery
- Aware but NOT applicable to the Northeast Multispecies (Groundfish) Fishery } → **Go to 13**
- Not aware

12a. After learning about Video Electronic Monitoring, were you interested in trying it?

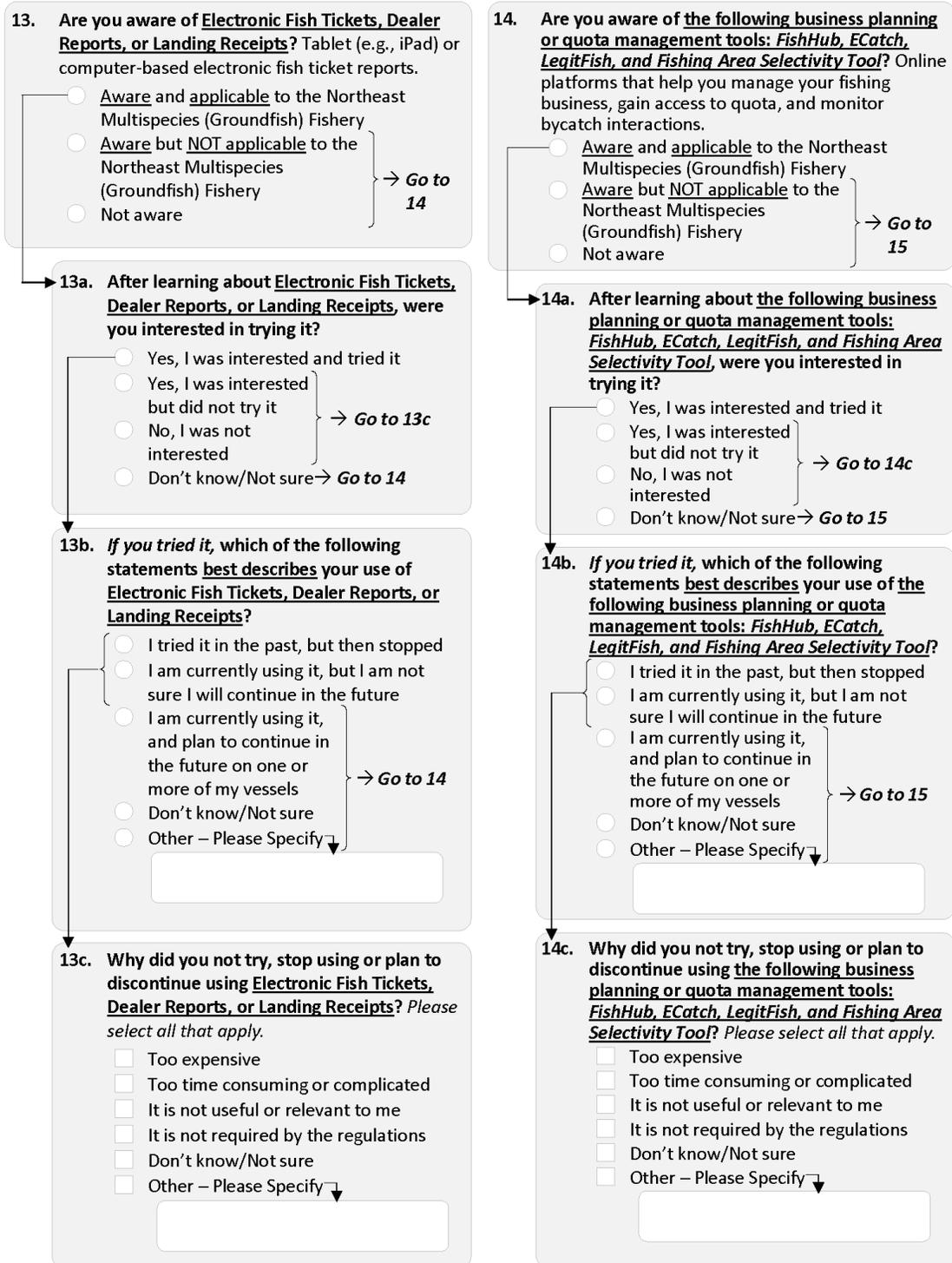
- Yes, I was interested and tried it
- Yes, I was interested but did not try it } → **Go to 12c**
- No, I was not interested
- Don't know/Not sure → **Go to 13**

12b. If you tried it, which of the following statements best describes your use of Video Electronic Monitoring?

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels } → **Go to 13**
- Don't know/Not sure
- Other – Please Specify ↓

12c. Why did you not try, stop using or plan to discontinue using Video Electronic Monitoring? Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify ↓



Commercial Sector: Awareness and Use of Bycatch Reduction Tools

15. Are you aware of Bycatch Hotspot Mapping?
Online communication networks that generate maps in near real-time and display areas where high incidences of bycatch have been reported.

- Aware and applicable to the Northeast Multispecies (Groundfish) Fishery
- Aware but NOT applicable to the Northeast Multispecies (Groundfish) Fishery
- Not aware

} → **Go to 16**

15a. After learning about Bycatch Hotspot Mapping, were you interested in trying it?

- Yes, I was interested and tried it
- Yes, I was interested but did not try it
- No, I was not interested
- Don't know/Not sure

} → **Go to 15c**
→ **Go to 16**

15b. If you tried it, which of the following statements best describes your use of Bycatch Hotspot Mapping?

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels
- Don't know/Not sure
- Other – Please Specify

} → **Go to 16**

15c. Why did you not try, stop using or plan to discontinue using Bycatch Hotspot Mapping? Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify

16. Are you aware of Risk Pools? Arrangement in which several fishermen pool their quota/allowances of constraining species so that rare overages by a few members of the pool are covered by the group's pooled allotment.

- Aware and applicable to the Northeast Multispecies (Groundfish) Fishery
- Aware but NOT applicable to the Northeast Multispecies (Groundfish) Fishery
- Not aware

} → **Go to 17**

16a. After learning about Risk Pools, were you interested in trying it?

- Yes, I was interested and tried it
- Yes, I was interested but did not try it
- No, I was not interested
- Don't know/Not sure

} → **Go to 16c**
→ **Go to 17**

16b. If you tried it, which of the following statements best describes your use of Risk Pools?

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels
- Don't know/Not sure
- Other – Please Specify

} → **Go to 17**

16c. Why did you not try, stop using or plan to discontinue using Risk Pools? Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify

Commercial Sector: Awareness and Use of Seafood Marketing and Traceability Tools

17. Are you aware of Direct Marketing & Forward Contracting Marketplaces? Marketing arrangements that enable fishermen to better plan or market their catches based on demand from seafood buyers by targeting species at prearranged prices (e.g., community and restaurant supported fisheries and direct marketing arrangements with consumers, schools, universities, or hospitals).

- Aware and applicable to the Northeast Multispecies (Groundfish) Fishery
- Aware but NOT applicable to the Northeast Multispecies (Groundfish) Fishery
- Not aware

} → **Go to 18**

17a. After learning about Direct Marketing & Forward Contracting Marketplaces, were you interested in trying it?

- Yes, I was interested and tried it
- Yes, I was interested but did not try it
- No, I was not interested
- Don't know/Not sure

} → **Go to 17c**
→ **Go to 18**

17b. If you tried it, which of the following statements best describes your use of Direct Marketing & Forward Contracting Marketplaces?

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels
- Don't know/Not sure
- Other – Please Specify

} → **Go to 18**

17c. Why did you not try, stop using or plan to discontinue using Direct Marketing & Forward Contracting Marketplaces? Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify

18. Are you aware of the following seafood traceability tools: GulfWild, FishTrax, Legit Fish (Backtracker), ThisFish, TraceRegister? Electronic tools and record-keeping systems that allow seafood buyers to track seafood products through the supply chain, from harvester to consumer.

- Aware and applicable to the Northeast Multispecies (Groundfish) Fishery
- Aware but NOT applicable to the Northeast Multispecies (Groundfish) Fishery
- Not aware

} → **Go to 19**

18a. After learning about the following seafood traceability tools: GulfWild, FishTrax, Legit Fish (Backtracker), ThisFish, TraceRegister, were you interested in trying it?

- Yes, I was interested and tried it
- Yes, I was interested but did not try it
- No, I was not interested
- Don't know/Not sure

} → **Go to 18c**
→ **Go to 19**

18b. If you tried it, which of the following statements best describes your use of the following seafood traceability tools: GulfWild, FishTrax, Legit Fish (Backtracker), ThisFish, TraceRegister?

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels
- Don't know/Not sure
- Other – Please Specify

} → **Go to 19**

18c. Why did you not try, stop using or plan to discontinue using the following seafood traceability tools: GulfWild, FishTrax, Legit Fish (Backtracker), ThisFish, TraceRegister? Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify

Commercial Sector: Awareness and Use of Community & Fishermen Capacity Building Tools

19. Are you aware of Permit Banks? A collection of fishing permits managed by an organization or individual for the purpose of leasing the associated fishing privileges to qualifying fishermen (e.g., Cape Cod Fisheries Trust, Gloucester Fishing Community Preservation Fund, and Reef Fish Quota Bank among others).

- Aware and applicable to the Northeast Multispecies (Groundfish) Fishery
- Aware but NOT applicable to the Northeast Multispecies (Groundfish) Fishery
- Not aware

} → **Go to 20**

19a. After learning about Permit Banks, were you interested in trying it?

- Yes, I was interested and tried it
- Yes, I was interested but did not try it
- No, I was not interested
- Don't know/Not sure

} → **Go to 19c**

} → **Go to 20**

19b. If you tried it, which of the following statements best describes your use of Permit Banks?

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels
- Don't know/Not sure
- Other – Please Specify

} → **Go to 20**

19c. Why did you not try, stop using or plan to discontinue using Permit Banks? Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify

20. Are you aware of Training Programs for the Next Generation of Fishermen? Training, networking, and apprenticeship programs that provide access and opportunities for young fishermen and new entrants to the fishery (e.g., Next Generation Commercial Fishing Crew Apprenticeship or others).

- Aware and applicable to the Northeast Multispecies (Groundfish) Fishery
- Aware but NOT applicable to the Northeast Multispecies (Groundfish) Fishery
- Not aware

} → **Go to 21**

20a. After learning about Training Programs for the Next Generation of Fishermen, were you interested in trying it?

- Yes, I was interested and tried it
- Yes, I was interested but did not try it
- No, I was not interested
- Don't know/Not sure

} → **Go to 20c**

} → **Go to 21**

20b. If you tried it, which of the following statements best describes your use of Training Programs for the Next Generation of Fishermen?

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels
- Don't know/Not sure
- Other – Please Specify

} → **Go to 21**

20c. Why did you not try, stop using or plan to discontinue using Training Programs for the Next Generation of Fishermen? Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify

21. Are you aware of Trainings for Participation in Fisheries Management? Training programs that help fishermen and fishing communities actively engage in the fisheries management process by providing education on fisheries science and monitoring, such as the Marine Resource Education Program or others.

- Aware and applicable to the Northeast Multispecies (Groundfish) Fishery
- Aware but NOT applicable to the Northeast Multispecies (Groundfish) Fishery
- Not aware

} → **Go to 22**

21a. After learning about Trainings for Participation in Fisheries Management, were you interested in trying it?

- Yes, I was interested and tried it
- Yes, I was interested but did not try it
- No, I was not interested
- Don't know/Not sure

} → **Go to 21c**
→ **Go to 22**

21b. If you tried it, which of the following statements best describes your use of Trainings for Participation in Fisheries Management?

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels
- Don't know/Not sure
- Other – Please Specify

} → **Go to 22**

21c. Why did you not try, stop using or plan to discontinue using Trainings for Participation in Fisheries Management? Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify

22. Are you aware of Aquaculture Business Development Training Programs? Training programs that help fishermen establish small-scale shellfish, finfish, and algae aquaculture farms.

- Aware and applicable to the Northeast Multispecies (Groundfish) Fishery
- Aware but NOT applicable to the Northeast Multispecies (Groundfish) Fishery
- Not aware

} → **Go to 23**

22a. After learning about Aquaculture Business Development Training Programs, were you interested in trying it?

- Yes, I was interested and tried it
- Yes, I was interested but did not try it
- No, I was not interested
- Don't know/Not sure

} → **Go to 22c**
→ **Go to 23**

22b. If you tried it, which of the following statements best describes your use of Aquaculture Business Development Training Programs?

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels
- Don't know/Not sure
- Other – Please Specify

} → **Go to 23**

22c. Why did you not try, stop using or plan to discontinue using Aquaculture Business Development Training Programs? Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify

23. Are you aware of the following fisheries networking resources: EM4.Fish (formerly eminformation.com), LocalCatch.org, Community Fisheries Network? Online forums and workshops to support information sharing among fishing industry members nationwide.

- Aware and applicable to the Northeast Multispecies (Groundfish) Fishery
- Aware but **NOT** applicable to the Northeast Multispecies (Groundfish) Fishery
- Not aware

} → Go to 24

23a. After learning about the following fisheries networking resources: EM4.Fish (formerly eminformation.com), LocalCatch.org, Community Fisheries Network, were you interested in trying it?

- Yes, I was interested and tried it
- Yes, I was interested but did not try it
- No, I was not interested
- Don't know/Not sure

} → Go to 23c

} → Go to 24

23b. If you tried it, which of the following statements best describes your use of the following fisheries networking resources: EM4.Fish (formerly eminformation.com), LocalCatch.org, Community Fisheries Network?

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels
- Don't know/Not sure
- Other – Please Specify ↓

} → Go to 24

23c. Why did you not try, stop using or plan to discontinue using the following fisheries networking resources: EM4.Fish (formerly eminformation.com), LocalCatch.org, Community Fisheries Network? Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify ↓

**Recreational Sector:
Awareness and Use of
For-Hire Recreational Tools**

⚠ If you have not worked in the for-hire recreational fishing sector, go to question 29 on page 13.

24. Are you aware of Electronic Vessel Trip Reports (eVTR)? Tablet or computer-based electronic catch reporting (e.g., logbooks, VMS-enabled tablets) for for-hire recreational operators (including charter boats, headboats, party boats, Commercial Passenger Fishing Vessels, licensed fishing guides, etc.).

- Aware and applicable to the Northeast Multispecies (Groundfish) Fishery
- Aware but **NOT** applicable to the Northeast Multispecies (Groundfish) Fishery
- Not aware

} → Go to 25

24a. After learning about Electronic Vessel Trip Reports (eVTR), were you interested in trying it?

- Yes, I was interested and tried it
- Yes, I was interested but did not try it
- No, I was not interested
- Don't know/Not sure

} → Go to 24c

} → Go to 25

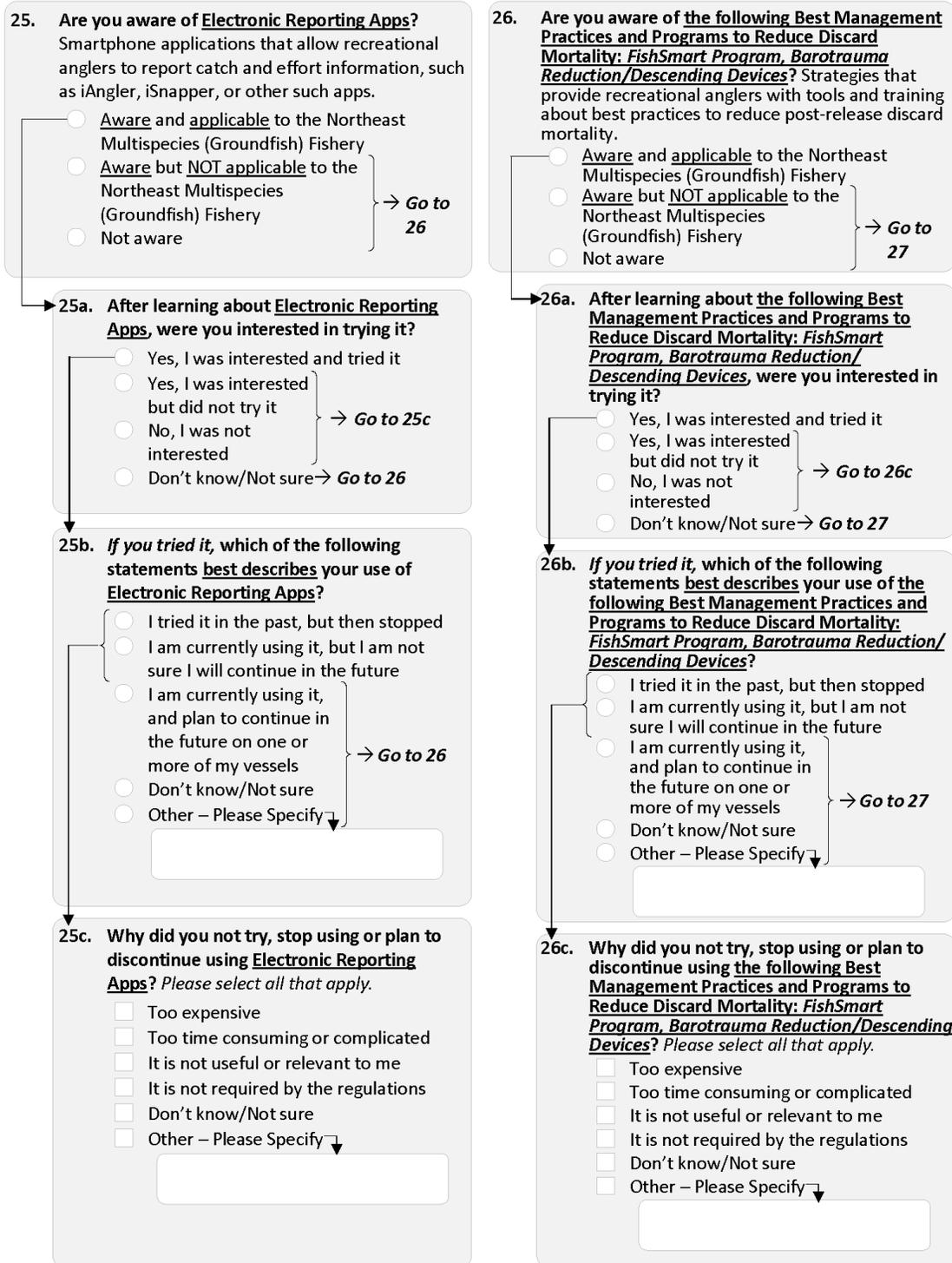
24b. If you tried it, which of the following statements best describes your use of Electronic Vessel Trip Reports (eVTR)?

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels
- Don't know/Not sure
- Other – Please Specify ↓

} → Go to 25c

24c. Why did you not try, stop using or plan to discontinue using Electronic Vessel Trip Reports (eVTR)? Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify ↓



27. Are you aware of Trainings for Participation in Fisheries Management? Help fishermen actively engage in the fisheries management process by providing education on fisheries science and monitoring, such as the Marine Resource Education Program or others.

- Aware and applicable to the Northeast Multispecies (Groundfish) Fishery
- Aware but NOT applicable to the Northeast Multispecies (Groundfish) Fishery
- Not aware

} → **Go to 28**

27a. After learning about Trainings for Participation in Fisheries Management, were you interested in trying it?

- Yes, I was interested and tried it
- Yes, I was interested but did not try it
- No, I was not interested
- Don't know/Not sure

} → **Go to 27c**
 } → **Go to 28**

27b. If you tried it, which of the following statements best describes your use of Trainings for Participation in Fisheries Management?

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels
- Don't know/Not sure
- Other – Please Specify ↓

} → **Go to 28**

27c. Why did you not try, stop using or plan to discontinue using Trainings for Participation in Fisheries Management? Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify ↓

28. Are you aware of Hotspot Mapping to Minimize Discards? Online communication networks that generate maps in near real-time that display areas where high incidences of non-target species have been reported.

- Aware and applicable to the Northeast Multispecies (Groundfish) Fishery
- Aware but NOT applicable to the Northeast Multispecies (Groundfish) Fishery
- Not aware

} → **Go to 29**

28a. After learning about Hotspot Mapping to Minimize Discards, were you interested in trying it?

- Yes, I was interested and tried it
- Yes, I was interested but did not try it
- No, I was not interested
- Don't know/Not sure

} → **Go to 28c**
 } → **Go to 29**

28b. If you tried it, which of the following statements best describes your use of Hotspot Mapping to Minimize Discards?

- I tried it in the past, but then stopped
- I am currently using it, but I am not sure I will continue in the future
- I am currently using it, and plan to continue in the future on one or more of my vessels
- Don't know/Not sure
- Other – Please Specify ↓

} → **Go to 29**

28c. Why did you not try, stop using or plan to discontinue using Hotspot Mapping to Minimize Discards? Please select all that apply.

- Too expensive
- Too time consuming or complicated
- It is not useful or relevant to me
- It is not required by the regulations
- Don't know/Not sure
- Other – Please Specify ↓

29. For any of the practices, tools, or resources you indicated you were aware of and are applicable to the Northeast Multispecies (Groundfish) Fishery (Q11-28), where did you learn about them?

Please select all that apply.

- Recruited by organization that received Fisheries Innovation Fund award
- Online Forums/Direct Emailing
- Council meetings/Presentations
- Trade journals/Newsletters
- Word of Mouth
- Social media
- Fishing Association/Sector
- Don't know/Not sure
- Other – Please Specify →

30. These questions (Q11-28) covered some innovative, new, or emerging concepts in U.S. fisheries and some of the tools and resources you may use, or have considered using, in your everyday fishing operations.

Do you have any additional comments which you would like to add?

Well Being and Job Satisfaction

The following questions ask about your overall well-being and job satisfaction.

31. On a scale of 0–10, with 10 being very satisfied and 0 being very dissatisfied, how would you describe your overall satisfaction with your job(s) in the fishing industry?

- 10. Very satisfied
- 9.
- 8.
- 7.
- 6.
- 5.
- 4.
- 3.
- 2.
- 1.
- 0. Very dissatisfied

32. What factors did you consider when rating your overall satisfaction with your job(s) in the fishing industry?

33. If you participate in any federal fisheries, on a scale of 0 – 10, with 10 being very satisfied and 0 being very dissatisfied, how would you describe your overall satisfaction with Federal fisheries management?

- 10. Very satisfied
- 9.
- 8.
- 7.
- 6.
- 5.
- 4.
- 3.
- 2.
- 1.
- 0. Very dissatisfied

Not Applicable → Go to 34

→33a. What factors did you consider when rating your overall satisfaction with Federal fisheries management?

34. **If you participate in any state fisheries, on a scale of 0 – 10, with 10 being very satisfied and 0 being very dissatisfied, how would you describe your overall satisfaction with state fisheries management?**

- 10. Very satisfied
- 9.
- 8.
- 7.
- 6.
- 5.
- 4.
- 3.
- 2.
- 1.
- 0. Very dissatisfied
- Not Applicable → **Go to 35**

→ 34a. **What factors did you consider when rating your overall satisfaction with state fisheries management?**

35. **The Coronavirus or COVID-19 pandemic has affected Americans in many ways. Have you, or has anyone in your household, experienced a loss of employment income since March 2020?**

- Yes
- No
- I prefer not to answer
- Don't know/Not sure

36. **Since March 2020, have your fishing business operations been suspended for a duration of one month or more due to the COVID-19 pandemic or other unforeseen events such as hurricanes, etc.?**

- Yes, and operations are currently suspended
- Yes, and operations have resumed
- No
- Don't know/Not sure

We realize the next few questions, which ask about your level of satisfaction with life, health, and overall happiness, are personal. Your individual responses, which will be kept confidential, will be combined with other responses to help us understand the experiences of fishermen and fishing communities.

37. **How satisfied are you with your life?**

- Not at all satisfied
- Slightly satisfied
- Moderately satisfied
- Very Satisfied
- Extremely Satisfied

38. **How satisfied are you with your physical health?**

- Not at all satisfied
- Slightly satisfied
- Moderately satisfied
- Very Satisfied
- Extremely Satisfied

39. **How often do you feel really happy?**

- Never
- Rarely
- Sometimes
- Often
- Always

40. **Do you have friends in your community you can count on if needed?**

- Yes
- No
- Don't know/Not sure

41. **Prior to March 2020 and the onset of the COVID-19 pandemic, which of the following best describes how you felt about your household income? Would you say you...**

- Lived comfortably on your household income
- Got by on your household income
- Found it somewhat difficult to get by on your household income
- Found it very difficult to get by on your household income
- Don't know/Not sure

42. **Since March 2020 and after the onset of the COVID-19 pandemic, which of the following best describes how you feel about your household income? Would you say you are...**

- Living comfortably on your household income
- Getting by on your household income
- Finding it somewhat difficult to get by on your household income
- Finding it very difficult to get by on your household income
- Don't know/Not sure

About You

The last few questions are about you. These are for informational purposes only. Please be assured that all your answers will remain completely confidential.

43. In the year prior to March 2020 and the onset of the COVID-19 pandemic, did at least 50% of your household income come from the fishing industry, including all species and fisheries? *Do not consider funds from federal disaster relief payments in your answer.*

- Yes
- No
- Don't know/Not sure

44. Since March 2020 and after the onset of the COVID-19 pandemic, does at least 50% of your household income come from the fishing industry, including all species and fisheries? *Do not consider funds from federal disaster relief payments or COVID relief payments in your answer.*

- Yes
- No
- Don't know/Not sure

45. What is your current age?

- 18-29 years of age
- 30-39 years of age
- 40-49 years of age
- 50-64 years of age
- 65 years or older

46. Is there anything else you would like to share with NFWF regarding the Fisheries Innovation Fund or other aspects of this survey? *As a reminder, your response will be kept confidential.*

47. To show our appreciation for completing this survey, we would like to send you a \$15 check. Please enter your first and last name and current address to receive this check. Print in all CAPS.

Please allow up to 4 weeks for processing and delivery.

First Name:

Last Name:

Address Line 1:

Address Line 2:

City: State:

Please return your questionnaire in the enclosed return envelope or mail it to:

FIF Wellbeing and Innovation Survey
RTI International
ATTN: Data Capture
5265 Capital Boulevard
Raleigh, NC 27690

**Thank you for participating in the
FIF Wellbeing and Innovation Survey**



RTI Project #0217649.000.007