National Fish and Wildlife Foundation
 NFWF Project ID: 0303.

 Fisheries Innovation Fund - 2015 - Submit Final Programmatic Report (New Metrics)
 Grantee Organization: FishAmerica Foundation

 Project Title: Initiating Barotrauma and Mortality Reduction Strategies with Gulf of Mexico Recreational Anglers

| Project Period Project Location Description (from Proposal) Project Summary (from Proposal) | 6/01/2015 - 3/01/2017 Coastal areas of the Gulf of Mexico.Advance the implementation of FishSmart Best Practices designed to reduce mortality of fish released during recreational fishing. Project will distribute descending devices on recreational for-hire vessels and select recreational anglers to assess the adoption of Best Practices and potential reduction of post- |
|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| _ | release mortality. |
| Project Status and Accomplishments | Project Status: Completed Objective: Reduce the mortality of released fish in distressed recreational fisheries in the Gulf of Mexico through increasing adoption of Best Practices and use of recompression devices. |
| | "Initiating Barotrauma and Mortality Reduction Strategies with Gulf of Mexico Recreational Anglers" demonstrated that active education and outreach programs can result in changed behavior to the benefit of fisheries conservation. This project: |
| | • Increased awareness and application of Best Practices for handling and releasing fish (67% found Best Practices materials helpful to improving the way that they release fish or recognize the signs of harotrauma) |
| | • Increased awareness and application of tools and techniques for improving the survival of released reef fish in the recreational fisheries of the Gulf of Mexico and South Atlantic(72% had little or no knowledge of descender devices prior to participating) and. |
| | when needed). The established network of ~1,100 participants will likely serve as a core node of information to their peers in the recreational fishing community, with 95% communicating with, or involving other anglers in, the use of descending devices, reaching an additional 3,100-6,000 people. Immediate conservation benefits from the participants in this project alone resulted in an estimated 3,000-9,000 red snapper (and additional other species) surviving that would not otherwise have survived, not accounting for the extension of the applied results to others. |
| Lessons Learned | There are a number of lessons learned (or reinforced) during this project that supplement the results outline earlier: |
| | 1.Recreational anglers and industry are eager participants in efforts to develop and implement ways to improve the survival of released fish and appreciate the opportunity to be co-partners in these types of efforts. This sentiment was reflected in a number of open-ended comments submitted to the survey, such as: |
| | "As a fisherman, I want to do my part to make sure that the fish survive. I am a firm believer in don't kill it unless you plan on eating it. Since I cannot keep all the fish I catch, I do my best to keep the fish alive when released." |
| | Additionally, the amount of support generated for this project from industry (60% of project budget) exceeded all other support. Manufacturers provided substantial discounts for project supplies (SeaQualizers) and donated other incentives for survey participants, indicating a strong willingness for businesses to invest in developing ways to conserve and enhance fish stocks. |
| | 2.Partnerships that are mutually beneficial are imperative to the success of projects, particularly those of large geographic scope. More than a dozen partnerships with state agencies, NGOs, universities, trade associations and others were necessary to reach out to the anglers in an effective way, which substantially contributed to the high success rate (and response rate) of the survey. Matching partner needs to project needs without concern for "who gets the credit' substantially enhances the effectiveness for all. |

3.Although new tools (such as descending devices) and techniques are developed, extensive outreach and networking are necessary to get them into the hands of anglers where on-the-water conservation can take place. Leveraging peer-to-peer networking in particular can be effective.

Funding Strategy: Planning, Research, Monitoring

Metric: FIF - Reduction in by-catch - # of individuals saved Required: Recommended

Description: For this metric, use the expected reduction in bycatch from current levels (baseline) via the use of risk pools, improved gear, improved fishing practices, voluntary avoidance, etc. If #s of individuals cannot be forecasted, please enter a biomass estimate and provide the average weight of an individual fish.

| Starting Value | 0.00 # of individuals saved |
|----------------|---------------------------------|
| Value To Date | 9000.00 # of individuals saved |
| Target value | 10000.00 # of individuals saved |

Note: There were 3,000-9,000+ red snapper directly saved as a result of the adoption of descending devices based on known improvements in survival rate. Additional, but nonquantifiable conservation benefits for red snapper resulted from the application of Best Practices for improving the survival of released fish. An unknown number of the 13,000-22,000 fish other than red snapper that were released likely benefited from use of descending devices and/or application of Best Practices.

Funding Strategy: Capacity, Outreach, Incentives

Metric: FIF - Outreach/ Education/ Technical Assistance - # people with changed behavior Required: Recommended

Description: For this metric, use the expected # of fishermen directly participating in/contributing to project activities. Examples are: # of fishermen expected to become members of a Community Fishing Association, to test/implement bycatch reduction initiatives (risk pools, improved gear, improved fishing practices, voluntary avoidance, etc), to test/implement monitoring devices (cameras, software systems, etc), to implement other improved management practices, etc.

| Starting Value | 0.00 # people with changed behavior |
|----------------|----------------------------------------|
| Value To Date | 1000.00 # people with changed behavior |
| Target value | 1500.00 # people with changed behavior |

Note: Approximately 3/4 of project participants indicated that they are now likely to use descending devices when needed and 2/3 found Best Practices materials helpful to improving the way that they release fish. Approximately 1,100 anglers participated directly in the project, reaching another 3,100-6,000 anglers via peer-to-peer interaction. Therefore, the number of anglers with changed behavior could range from approximately 825 (direct project participants only) to approximately 5,000 (if the same percentage of "indirect" contacts exhibited changed behavior). Conservatively, we have chosen to enter 1,000 but this number is very likely higher.

Funding Strategy: Capacity, Outreach, Incentives

Metric: FIF - Outreach/ Education/ Technical Assistance - # people reached Required: Recommended Description: For this metric, use the expected # of fishermen/stakeholders in attendance at informational meetings, workshops, or events

| Starting Value | 0.00 # people reached |
|----------------|--------------------------|
| Value To Date | 7100.00 # people reached |

Note: The project engaged 1,100 people directly. These participants involved another 3,100-6,000 people through direct per-to-peer interaction. Therefore, up to 7,100 anglers were reached with the information directly through project activities and very likely more who read about it or were made aware of the information through other communication channels.



The following pages contain the uploaded documents, in the order shown below, as provided by the grantee:

| Upload Type | File Name | Uploaded By | Uploaded Date |
|----------------------|-----------------------------------------|--------------|---------------|
| Final Report | FishSmart Final NFWF Report.pdf | Loftus, Andy | 06/01/2017 |
| Narrative - Standard | | | |
| Photos - Jpeg | FishSmart Best practices and | Loftus, Andy | 06/01/2017 |
| | SeaQualizer.jpg | | |
| Other Documents | ASA update March 2017.pdf | Loftus, Andy | 10/04/2017 |
| | | | |
| Other Documents | ASA update October 2016.pdf | Loftus, Andy | 10/04/2017 |
| | | | |
| Other Documents | FishSmart AFS presentation 2017.pdf | Loftus, Andy | 10/04/2017 |
| | | | |
| Other Documents | FishSmart NFWF presentation 3-9-17.pdf | Loftus, Andy | 10/04/2017 |
| | | | |
| Other Documents | FishSmart SAFMC presentation 6-12- | Loftus, Andy | 10/04/2017 |
| | 17.pdf | | |
| Other Documents | FishSmart update May 2016.pdf | Loftus, Andy | 10/04/2017 |
| | | | |
| Other Documents | NOAA Progress Report 1-31-15.pdf | Loftus, Andy | 10/04/2017 |
| | | | |
| Other Documents | Press Release Industry-Led Effort Saves | Loftus, Andy | 10/04/2017 |
| | Thousands of Reef Fish.pdf | | |

The following uploads do not have the same headers and footers as the previous sections of this document in order to preserve the integrity of the actual files uploaded.



Final Programmatic Report Narrative

Instructions: Save this document on your computer and complete the narrative in the format provided. The final narrative should not exceed ten (10) pages; do not delete the text provided below. Once complete, upload this document into the on-line final programmatic report task as instructed.

NFWF Grant: 303.15.048009

Title: Initiating Barotrauma and Mortality Reduction Strategies with Gulf of Mexico Recreational Anglers Funding Period: June 1, 2015 to February 28, 2017 Project Coordinator: Andrew Loftus (aloftus@andrewloftus.com)

1. Summary of Accomplishments

In four to five sentences, provide a brief summary of the project's key accomplishments and outcomes that were observed or measured.

"Initiating Barotrauma and Mortality Reduction Strategies with Gulf of Mexico Recreational Anglers" demonstrated that active education and outreach programs can result in changed behavior to the benefit of fisheries conservation. This project:

- Increased awareness and application of *Best Practices* for handling and releasing fish (67% found *Best Practices* materials helpful to improving the way that they release fish or recognize the signs of barotrauma).
- Increased awareness and application of tools and techniques for improving the survival of released reef fish in the recreational fisheries of the Gulf of Mexico and South Atlantic(72% had little or no knowledge of descender devices prior to participating) and.
- Changed behavior (76% are now likely to use a descender device to release most or all fish when needed).

The established network of \sim 1,100 participants will likely serve as a core node of information to their peers in the recreational fishing community, with 95% communicating with, or involving other anglers in, the use of descending devices, reaching an additional 3,100-6,000 people. Immediate conservation benefits from the participants in this project alone resulted in an estimated 3,000-9,000 red snapper (and additional other species) surviving that would not otherwise have survived, not accounting for the extension of the applied results to others.

2. Project Activities & Outcomes

Activities

Describe and quantify (using the approved metrics referenced in your grant agreement) the primary activities conducted during this grant.

Strategy: Capacity, Outreach, Incentives

Activities

3. Participant Recruitment and Training

Outcome: Outreach/ Education/ Technical Assistance - # people reached

Description: Enter the number of people reached by outreach, training, or technical assistance activities

Results:

Approximately 1,100 individual anglers, charterboat, and headboat operators participated directly in this project. An additional 3,100-6,000 were "first generation" recipients of the materials used in the program (the extension effect) through interaction with the participants. (This estimate is based on extrapolated responses to a survey question of project participants asking how many other people they involved in their application of *Best Practices*/descender device or communicate with about their experience).

The early phases of the project focused on working with the Recreational Boating & Fishing Foundation (RBFF) to develop and deploy the content for a web presence and participant registration portal. Most participants were directed to this site to review educational material on *Best Practices* for handling and releasing fish and the appropriate use of the descending devices. These educational materials consisted of the *FishSmart Best Practices* video (view at <u>www.fishsmart.org</u>), *FishSmart Best Practices* brochure (attached), and a supplemental video on using the SeaQualizer descending device. Following this, participants provided their contact information (mailing address to receive a

descending device and email address for follow up evaluation). Additionally, working through the American Sportfishing Association, we solidified an agreement with SeaQualizer, LLC to provide descender devices at substantially reduced costs for this program. As part of the arrangement, SeaQualizer produced a short "how to" video on appropriate use of the release device which is made available to project participants.

With this infrastructure in place, contact lists were developed of for-hire (charter and head boat) operators an in the South Atlantic and Gulf of Mexico (project area) and partners tapped their existing networks for participants. Materials were customized for each partnership (generally a 2-sided flyer with the partner logo prominent at the top) to use in conducting outreach to their constituents or members. These partnerships proved very beneficial to individual organizations and agencies for improving their relationships with their constituents/members while simultaneously accomplishing our project goal of reaching anglers. When requested by individual partners, the materials and approach were further refined to better meet their needs (e.g., transforming the materials into an e-blast format as opposed to a printed or portable document format for emailing). Partnerships working in this way included the International Game Fish Association, Florida Sea Grant, National Association of Charterboat Operators, Alabama Marine Resources Division, Texas Parks & Wildlife, and Coastal Conservation Association.

Early feedback from some of the charterboat operators indicated that, while they were interested in participating in the project, the timing of the request during their peak business period was hindering their ability to visit the website and register. To adapt to this, we initiated a supplemental program with some partners (Florida Fish and Wildlife Conservation Commission, Georgia Department of Natural Resources, Texas A&M University-Corpus Christi -Harte Research Institute for Gulf of Mexico Studies, South Carolina Department of Natural Resources) whereby charter operators and anglers were provided a SeaQualizer and educational materials (customized for each partner as described above) directly at dockside in exchange for their email address (which allowed follow up with an evaluation of their uses and experience). This worked extremely well and complimented the on-line educational and registration procedure.

During the project, we became more aware of an effort by the Texas A&M University-Corpus Christi Harte Research Institute for Gulf of Mexico Studies to further study the biological impacts of fish descenders on fish populations. As part of their efforts, researchers were recruiting charterboat operators to utilize SeaQualizers under research conditions. Upon consultation with Texas A&M, we determined that their efforts were extremely complimentary to ours, and therefore we forged a collaborative relationship that allowed both entities to exchange results upon completion for a more comprehensive evaluation of the impacts of this new technology on the populations of reef fish.

Approximately 1,106 participants were enrolled in this project as follows:

| | | Gu | If of Mexi | <u>co</u> | | | South / | <u>Atlantic</u> | | <u>Total</u> |
|------------|------------|--------------|------------|------------|-----------|----------------|----------|-----------------|----|--------------|
| | | | | | | FL- | | | | |
| State | AL | FL-Gulf | ТХ | LA | MS | Atlantic | GA | NC | SC | |
| Number | 252 | 296 | 242 | 69 | 25 | 85 | 47 | 30 | 60 | 1106 |
| Note: NFWF | funds were | used only to | support G | ulf of Mex | ico compo | onents of this | project. | | | |

Strategy: Capacity, Outreach, Incentives

Outcome: Outreach/ Education/ Technical Assistance - # people with changed behavior Description: Enter the number of individuals demonstrating a minimum threshold of behavior change Required: Recommended

Notes: "Number of people with changed behavior" will be a function of the extent to which a) project participants expose clients and other anglers to devices and techniques, and b) extent of the engagement of sport fishing publications/communications networks in disseminating project results following completion.

"Number of participants" is, in part, a function of funding availability. We anticipate reaching a minimum of 300 anglers/for-hire captains (and up to 1,000) who will directly participate, and through their interactions with clients and other anglers will influence behavior of a wider audience. Additionally, publicity associated with this project will reach and influence even more anglers.

Results:

A survey of registered participants conducted December, 2016 – February 2017 allowed the measurement of a number of impacts from this project, including the number people indicating changes in their behavior (handling of fish released). All estimates assume that survey respondents (response rate=50%) were representative of all project participants and therefore relative results can be extrapolated to the entire participant population (see an attachment for detailed survey methodology).

Based on this survey, 67% of participants (\sim 741) found educational materials to be "very helpful" for recognizing the signs of barotrauma and 28%% (\sim 310) "slightly helpful" for a total of 1,051 individuals being influenced to modify the ways in which they released fish.

In terms of awareness of descending devices, 29% (~321) had no knowledge of descending devices prior to this project; 33% (~365) had very little knowledge; 11% (~122) had little knowledge. Therefore, in general terms, approximately 800 people were made aware of the benefits and application of descending devices as a tool to improve the survival of released fish, in addition to the people with whom they interacted during the project period.

The awareness of *Best Practices* and descending devices form the crux for appropriate use of these tools and techniques in the field to actually achieve conservation benefits. It is important to note that while *Best Practices* contain actions that all anglers should take to minimize stress and improve the survival of released fish, they also contain information on the appropriate use of descending devices. In general, reef fish caught in shallow water and not exhibiting the signs of barotrauma should be released as quickly as possible without the use of descending devices; the appropriate use of such devices is for fish caught from deeper depths and exhibiting symptoms of barotrauma,

So, combining the increased awareness of both *Best Practices* and descending devices, participants were asked at the completion of the project how likely they were to use a descending device when needed. One-third (\sim 365) indicated that they would use it on all fish, 43% (\sim 476) on most fish, and 14% (\sim 155) on half the fish resulting in approximately 1,000 of the participants applying this technique to the majority of fish that they catch and release.

Strategy: Planning, Research, Monitoring

Outcome: - Reduction in by-catch - # of individuals saved

Description: Enter the number of individuals saved through use of safer gear or practices Required: Recommended

Notes: "Number of individuals saved-current" is unknown. This project will in part begin to quantity the extent of use of descending devices that are supplied.

"Number of individuals saved" during and following the project is also unknown. If 500 participants each use the device on 10 trips during the project period and "save" a 1-2 fish on each trip, up to 10,000 individual fish will survive each year that would have previously died. In reality, the effect is likely to be many times greater, particularly as use of the devices expand as a result of this project.

Results:

The aforementioned survey queried project participants on their extent of use of descending devices. On average, participants had the descending devices for eight months, each using it on approximately 15 fishing trips. Cumulatively (across all participants), this resulted in releasing an estimated 16,000 to 28,000 red snapper and 13,000 to 22,000 fish of other species using the descending device and applying *Best Practices* (based on extrapolated results of survey respondents' estimates of numbers of fish released).

Recreational release mortality of red snapper and other reef fish in this region is highly variable and dependent on many factors including surface water temperature, presence of thermoclines, depth of capture, predation, and many more. This project extended across all seasons (summer to winter) and geographic areas that are vastly different in hydrology (e.g., western versus eastern Gulf of Mexico, South Atlantic) and fishing conditions. Recent studies have demonstrated substantial improvements in survival of released red snapper with the use of descending devices. Sauls et al. (2016) found that "red snapper that were descended to 70' or greater were 4.5 times more likely to be recaptured than those vented and released at the surface." Similarly, Curtis et al. (2015) found that, in general, nonvented red snapper were three times more likely to perish when released on the surface compared to fish that were descended, although many caveats related to fishing conditions, temperature, etc. were identified that would impact this estimate.

Likewise, the baseline release mortality rates for red snapper (from which to quantify the conservation benefits of the application of descender devices) for the Gulf and Mexico and South Atlantic can also be highly variable. SEDAR 7 (2004) approximated red snapper recreational release mortality between .15 and .40 depending on geographic area and season. The most recent report (SEDAR 15 - 2014 update) utilizes estimates of .21 or .22 depending on geographic region (Cass-Calay et al. 2015).

With these estimates and caveats in mind, calculation of "conservation benefits" or "number of individuals saved" can be tenuous. Applying a range of baseline release mortality estimates (.15, .21, and .40), range of estimated number of red snapper released by project participants (16,000 - 28,000), and estimated improvement in survival (3x and 4x improvement in survival when using a descending device) results in a conservation benefit ranging between3,000 and 9,000 red snapper saved directly *during this project period only*. The actual realized conservation benefits are dependent on many factors in addition to those listed previously including abenefit from improved handling due to *Best Practices*.

In addition to red snapper, an unknown number of the 13,000 to 22,000 other fish reported as released by participants in this study potentially benefitted from improved handling techniques and the use of descending devices. Without knowing which species these are, calculations cannot be conducted for "number of individuals saved" since baseline release mortality rates and the effect of descender devices are not known.

The conservation benefits during the project period will continue to accrue well after the project completion as anglers continue to apply *Best Practices*, use the descending devices, and convey the information to fellow anglers.

Summary Metrics Outcomes

- Describe and quantify progress towards achieving the project outcomes described in your grant agreement. (Quantify using the approved metrics referenced in your grant agreement or by using more relevant metrics not included in the application.)
- Briefly explain discrepancies between what actually happened compared to what was anticipated to happen.
- Provide any further information (such as unexpected outcomes) important for understanding project activities and outcome results.

| | Beginning of Grant | Expected End of Grant | Actual End of Grant |
|--------------------------------|-----------------------|--------------------------|----------------------------------------|
| # people with changed behavior | 0 | 150 | 1,000 |
| # of individuals saved | 0 | 10,000 | 3,000-9,000+ red snapper |
| | | | Unknown number other fish |
| # people reached | 0 | 1,000 | 1,100 direct; |
| | | | 3,100-6,000 via peer-to-peer extension |

The quantitative metrics outlined at the beginning of this project were achieved and in some cases exceeded. Uncertainty at the beginning of the project related to the number of people who could be recruited to participate resulted in an under - estimation of the number of people with changed behavior and number of people reached. Additionally, the success of the educational materials as indicated by the project participants was much higher than our expectations (67% found Best Practices materials helpful to improving the way that they release fish or recognize the signs of barotrauma; 72% had little or no knowledge of descender devices prior to participating, and;76% are now likely to use a descender device to release most or all fish when needed).

3. Lessons Learned

Describe the key lessons learned from this project, such as the least and most effective conservation practices or notable aspects of the project's methods, monitoring, or results. How could other conservation organizations adapt their projects to build upon some of these key lessons about what worked best and what did not?

There are a number of lessons learned (or reinforced) during this project that supplement the results outline earlier:

1. Recreational anglers <u>and</u> industry are eager participants in efforts to develop and implement ways to improve the survival of released fish and appreciate the opportunity to be co-partners in these types of efforts. This sentiment was reflected in a number of open-ended comments submitted to the survey, such as:

"As a fisherman, I want to do my part to make sure that the fish survive. I am a firm believer in don't kill it unless you plan on eating it. Since I cannot keep all the fish I catch, I do my best to keep the fish alive when released."

Additionally, the amount of support generated for this project from industry (60% of project budget) exceeded all other support. Manufacturers provided substantial discounts for project supplies (SeaQualizers) and donated other incentives for survey participants, indicating a strong willingness for businesses to invest in developing ways to conserve and enhance fish stocks.

- 2. Partnerships that are mutually beneficial are imperative to the success of projects, particularly those of large geographic scope. More than a dozen partnerships with state agencies, NGOs, universities, trade associations and others were necessary to reach out to the anglers in an effective way, which substantially contributed to the high success rate (and response rate) of the survey. Matching partner needs to project needs without concern for "who gets the credit' substantially enhances the effectiveness for all.
- 3. Although new tools (such as descending devices) and techniques are developed, extensive outreach and networking are necessary to get them into the hands of anglers where on-the-water conservation can take place. Leveraging peer-to-peer networking in particular can be effective.

4. Dissemination

Briefly identify any dissemination of lessons learned or other project results to external audiences, such as the public or other conservation organizations.

Results of this work will be disseminated as follows:

- Presentations
 - o South Atlantic Fishery management Council Workshop on Best Practices, June 12, 2017.
 - American Fisheries Society Annual Meeting, August 2017, Tampa Florida
 - Others as available
- Peer-reviewed publications
 - o Manuscript planned for American Fisheries Society "Fisheries" magazine.
 - Portions of this work will also appear in additional manuscripts prepared by project cooperators at Texas A & M University.
- Popular Articles
 - Popular articles planned for major sport fishing and industry trade publications in coordination with the American Sportfishing Association.
 - Other: Project results provided to industry and agency partners in final reports and updates to the American Sportfishing Association committees.

5. Project Documents Attached

- List of Supporters and Partners
- Survey Methodology
- FishSmart best Practices
- Sample flyer

Videos and Photos

See <u>www.seaqualizer.com</u> for photos of device used.

See <u>www.fishsmart.org</u> for *Best Practices* video

See <u>https://www.youtube.com/watch?v=mFNPiqNVj8c</u> for "How to Use a SeaQualizer

Include in your final programmatic report, via the Uploads section of this task, the following:

- 2-10 representative photos from the project. Photos need to have a minimum resolution of 300 dpi and must be accompanied with a legend or caption describing the file name and content of the photos;
- report publications, GIS data, brochures, videos, outreach tools, press releases, media coverage;
- any project deliverables per the terms of your grant agreement.

POSTING OF FINAL REPORT: This report and attached project documents may be shared by the Foundation and any Funding Source for the Project via their respective websites. In the event that the Recipient intends to claim that its final report or project documents contains material that does not have to be posted on such websites because it is protected from disclosure by statutory or regulatory provisions, the Recipient shall clearly mark all such potentially protected materials as "PROTECTED" and provide an explanation and complete citation to the statutory or regulatory source for such protection.

References

Cass-Calay, S.L., C.E. Porch, D.R. Goethel, M.W. Smith, V. Matter, and K.J. McCarthy. 2015. Stock assessment of red snapper in the Gulf of Mexico 1872 – 2013 - with provisional 2014 landings. SEDAR Red Snapper 2014 Update Assessment: September 7, 2015. Prepared for the Science And Statistical Committee, Gulf Fishery Management Council. 242p.

Curtis, J., M.W. Johnson, S.L. Diamond, and G.W. Stunz. 2015. Quantifying delayed mortality from barotrauma impairment in discarded red snapper using acoustic telemetry. Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science 7:434–449.

Sauls, B. T. Cross, O. Ayala. 2016. Testing an alternative method for the safe release of reef fishes caught on hook-andline gear in the recreational fishery in the Gulf of Mexico. Final report to the NOAA Bycatch Reduction Engineering Program. Grant Number NA13NMF4720270. 35p.

Southeast Data Assessment and Review (SEDAR). 2004. SEDAR 7: Gulf of Mexico red snapper: Red snapper data workshop report. 6/17/04. 89p.

List of Project Supporters and Partners

<u>Financial</u> Brunswick Foundation Guy Harvey Ocean Foundation Grizzly Smokeless Tobacco NOAA Fisheries National Fish & Wildlife Foundation American Sportfishing Association

In-kind Contributions Recreational Boating & Fishing Foundation - Participant Registration and Education Website Design/Hosting Shimano – incentives for survey responses SeaQualizer, LLC - reduced product pricing and video production American Sportfishing Association – donated labor for administration and other project support

<u>On-site (dockside) Distribution of Materials</u> Florida Fish and Wildlife Conservation Commission Georgia Department of Natural Resources Texas A&M University-Corpus Christi (Harte Research Institute for Gulf of Mexico Studies) South Carolina Department of Natural Resources

Distribution of Materials and Program Information via Social Media and Other Avenues International Game Fish Association Florida Sea Grant National Association of Charterboat Operators Alabama Marine Resources Division Texas Parks & Wildlife Coastal Conservation Association Keep America Fishing

<u>Survey Co-Design and Consultation</u> Texas A&M University-Corpus Christi (Harte Research Institute for Gulf of Mexico Studies)

Survey Methodology

All participants in this project were required to provide an email address upon registration. Email addresses were verified prior to shipment of descending devices if registration took place via the online website. The South Carolina Department of Natural Resources chose to administer the program internally and therefore managed distribution of the survey link for their registrants. A total of 1,106 anglers participated (1,113 devices were distributed including those used to replace lost/damaged devices) but only 1,101 email addresses were found to be usable (due to errors in recording addresses).

The survey instrument was designed by FishSmart project personnel in conjunction with Texas A&M University-Corpus Christi (Harte Research Institute for Gulf of Mexico Studies) using SurveyMonkey. A pretest was distributed via email on September 29, 2016 to 38 randomly chosen participants who had enrolled more than six months prior (i.e., prior to March 29, 2016) with a two week deadline for completing the survey. One address was returned as undeliverable. A follow up reminder email was sent to 28 nonrespondents on October 10, 2016. Based on this pretest, minor adjustments were made to the survey but pretest responses were still valid for inclusion in the final database used for analysis.

Round I of the survey was distributed using Mail Chimp on December 14, 2016 to 676 participants who had been enrolled six months or longer. A reminder email was sent on December 28, 2016 to 327 nonrespondents . A total of 19 emails were returned as non-deliverable.

Round II of the survey was sent using Mail Chimp on January 5, 2017 to the remaining participants who had not received the initial survey (some may have had device less than 6 months). A reminder was sent on January 19, 2017 to 235 nonrespondents. A total of 4 emails were returned as non-deliverable.

On January 26, 2017 the survey link was sent using Constant Contact to 355 addresses which "did not open" in both Round I and Round II; 65 emails were opened, and 34 took the survey. Finally, in February, 2017, direct emails were sent to all remaining non-respondents.

The South Carolina Department of Natural Resources chose to administer the survey and reminders by sending the survey link and message directly to their 44 registrants (4 were returned as non-deliverable).

Across all rounds and methods, the total survey distribution was1,101 unique addresses of which 27 were returned as nondeliverable for a total of 1,074 "successful" deliveries. Of these, 541 people responded to the survey for a minimum response rate of 50%. The true response rate (% of people who had the option to take or decline the survey) is higher since (based on some pretesting) even though Constant Contact and Mail Chimp both report emails "successfully delivered," this only means delivered to the ISP mail server, not to the individual recipient's in-box (the difference being the ISP's spam filters) but this cannot be quantified.

| | Best Practices for Releasing | Deep Water Release |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Fish | Saltwater fish caught in deep water may be |
| | Plan Ahead - Expect to release fish on any given trip and prepare the equipment necessary to do so. | suffering from "barotrauma," a buildup of swim bladder gases that makes it difficult for them to go back down. Generally, fish caught deeper than 30 feet will suffer some |
| FISHUMALT | Avoidance - Develop skills to target the size | effects. Follow these basic tips: |
| Best Practices for the Safe | and species you desire. Amropriate Gear - I lee gear suited to the | Assess condition while reeling in fish -Signs of barotrauma include: |
| Release of your Fish | size of fish that you are trying to catch. Use circle hooks where recommended and | Sluggish swimming. Eyes bulging ("pop eye"). |
| t's ok to keep fish that you are allowed | be aware that fishing techniques are different from "J" style hooks. | Stomach protruding from mouth. |
| under fishing regulations. However, at some boint <u>all</u> anglers will be faced with returning ish to the water that they are not allowed | Landing Fish -Don't play fish to exhaustion. | Bloated mid section. If the fish appears normal release it without removing it from the water. |
| o keep – due to size, season, or creel limits - or if they are voluntarily practicing catch- and-release. | Handling Fish-Use knotless rubberized landing nets and rubberized gloves, to avoid removing the slime layer from their body. | Recompression - Rapidly returning fish to depth is the method of choice for returning barotrauma affected fish. A variety of tools |
| Vearly ½ billion saltwater fish are caught sach year with 59% being returned to the | DON'T DROP THE FISH onto hard | are on the market, including descender devices, release weights & baskets, etc. |
| water. Improving survival of these fish by even 1% will save 3 million fish annually! | surfaces or long distances! | Return to Depth -Return fish to the depth |
| n freshwater 84% of anglers <i>voluntarily</i> elease fish that they could have kept. | Releasing Fish- If needed, use a release tool (dehookers, recompression tools) to minimize handling. | of capture. If catching fish at very deep depths, returning them as deep as possible will dramatically improve survival. |
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| | | stomacn. |



CHARTER BOAT CAPTAINS and *AVID* REEF ANGLERS: WE NEED YOUR FEEDBACK!

Who: Charter boat Captains and Avid Anglers fishing for snapper and grouper.

What: Evaluation of FishSmart "Best Practices" for releasing fish and the use of descending devices.

Why? Every year, nearly ½ billion saltwater fish are caught by recreational anglers throughout the U.S. with 60% being returned to the water. Improving survival of these fish by even 1% could save 3 million fish annually! Although all fish are important, improving the survival of large spawners in particular can make a big difference to fishing over time.

FishSmart – a program of the sportfishing industry, anglers, and fisheries managers – would like you to evaluate the application of "Best Practices" for releasing fish and the use of descending devices for releasing deep caught fish such as snapper and grouper. Information will be used to refine FishSmart Best Practices based on your actual on-the-water experiences and learn more about the actual use of descending devices.

We would like you to use this device and provide information about your experience with the device.

We hope that you will participate in this project. It's through anglers such as you that we can improve the future of sport fishing.

Funding or project support is provided by the following organizations. Use of any logo on this page does not constitute endorsement of any product.







Best Practices for the Safe Release of your Fish

It's ok to keep fish that you are allowed under fishing regulations. However, at some point <u>all</u> anglers will be faced with returning fish to the water that they are not allowed to keep – due to size, season, or creel limits – or if they are voluntarily practicing catchand-release.

Nearly ½ billion saltwater fish are caught each year with 59% being returned to the water. Improving survival of these fish by even 1% will save 3 million fish annually! In freshwater 84% of anglers voluntarily release fish that they could have kept.

Implementing "Best Practices" for releasing fish in *is* the right thing to do and will help ensure sound fisheries in the future. Uve release in many fisheries (bass and trout for example) has contributed to healthy and sustainable fishery resources.

Best Practices for Releasing Fish

Plan Ahead - Expect to release fish on any given trip and prepare the equipment necessary to do so.

Avoidance - Develop skills to target the size and species you desire.

Appropriate Gear - Use gear suited to the size of fish that you are trying to catch. Use circle hooks where recommended and be aware that fishing techniques are different from "J" style hooks.

Landing Fish -Don't play fish to exhaustion.

Handling Fish-Use knotless rubberized landing nets and rubberized gloves, to avoid removing the slime layer from their body.

- Keep the fish horizontal; support the body when lifting large fish.
- DON'T DROP THE FISH onto hard surfaces or long distances!

Releasing Fish- If needed, use a release tool (dehookers, recompression tools) to minimize handling.

Time is of the essence!

Release fish as soon as practical and do not keep them out of the water longer than necessary.

Deep Water Release

Saltwater fish caught in deep water may be suffering from "barotrauma," a buildup of swim bladder gases that makes it difficult for them to go back down. Generally, fish caught deeper than 30 feet will suffer some effects. Follow these basic tips:

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- Sluggish swimming.
- Eyes bulging ("pop eye").
- Stomach protruding from
- mouth.
- Bloated mid section.

If the fish appears normal release it without removing it from the water.

Recompression - Rapidly returning fish to depth is the method of choice for returning barotrauma affected fish. A variety of tools are on the market, including descender devices, release weights & baskets, etc.

Return to Depth -Return fish to the depth of capture. If catching fish at very deep depths, returning them as deep as possible will dramatically improve survival.

Venting: If rapid descent is not possible, venting is another option. Use established guidelines for venting such as found at http://catchandrelease.org. Note that the fish's stomach may protrude

from its mouth. Do NOT puncture the stomach.



Agenda item: FishSmart Update, March 2017

Background: FishSmart is a program initiated by ASA to reduce the mortality of released fish (not a program to promote catch and release as a practice). "*Best Practices*" for handling and releasing fish, focusing on those caught in deep water and suffering from barotrauma, were developed through FishSmart workshops involving industry, anglers, scientists and managers (2010-2014). A framework was developed for a comprehensive communication/education campaign to put this information into the hands of anglers.

Project Summary: To gauge the effectiveness of *Best Practices* to the conservation of saltwater fisheries, anglers in the South Atlantic and Gulf of Mexico were recruited to participate in an evaluation program. Participants were provided with education material on *Best Practices* (video and/or brochures) and a descending device (SeaQualizer). Descending devices have been shown to improve the survival of saltwater fish caught and released in deep waters. Working with partners including Recreational Boating & Fishing Foundation, CCA, IGFA, Florida Fish and Wildlife Conservation Commission, Georgia Coastal Resources Division, Florida Sea Grant, South Carolina DNR, Texas Parks & Wildlife, Alabama Department of Conservation, and Texas A&M/Harte Research Institute, nearly 1,100 participants were enrolled during 2015-2016. Participants were surveyed in December 2016-February 2017 on the rate of use, issues with use of the devices, number of fish released with devices, approximate number of customers and other anglers exposed to the devices and other metrics allowing evaluation of the extent of implementation and communication.

Relevant Update: Select Survey Responses through February 2017 (preliminary):

- **Exposure**: On average, anglers used the devices for 8 months, on15 fishing trips, with nearly ³/₄ indicating that they *released more than 75 fish*.
- **Increased Awareness**: <u>72%</u> had little or no knowledge of descender devices prior to participating in this project.
- **Effective Education**: <u>67%</u> found *Best Practices* materials helpful to improving the way that they release fish or recognize the signs of barotrauma;
- **Changed Behavior**: <u>76%</u> are now likely to use a descender device to release most or all fish *when needed*.
- **Changed Preferences**: <u>70%</u> prefer to descender devices over venting tools for fish exhibiting barotrauma following their participation in the project.
- **Improved Perceptions**; <u>78%</u> believe descender devices would be helpful or very helpful to reducing discard mortality in the Red Snapper fishery.
- **Extended Communication:** <u>95%</u> talked with, or involved other anglers in, the use of descending devices.

Additional results to follow

Funding for the FishSmart Descender Distribution and Education program total \$205,000 from ASA, FishAmerica, National Fish and Wildlife Foundation, Brunswick Foundation, NOAA Fisheries, Grizzly Smokeless Tobacco, SeaQualizer and Guy Harvey Ocean Foundation.

Action Item: None at this time.





Agenda item: FishSmart Update

Background: FishSmart is a program initiated by ASA to reduce the mortality of released fish. It is not a program to promote catch and release as a practice. From 2010-2014, fact finding workshops were conducted in all coastal regions of the U.S. (plus a comprehensive national workshop) to determine the state of knowledge of scientific aspects, develop a consistent set of "Best Practices," and establish the framework for a comprehensive communication/education campaign to put this information into the hands of anglers. **Project Summary:** With the completion of R&D, an initial step toward implementing the Best Practices was begun in 2015 by distributing descending devices and educational materials on Best Practices as part of an outreach program to charter boats and avid reeffish anglers in the South Atlantic and Gulf of Mexico. RBFF developed a registration site containing information on Best Practices (and appropriate use of release devices) where participants registered to receive a complimentary release device. Additional partnerships were formed with Florida Fish and Wildlife Conservation Commission, Georgia Coastal Resources Division, Florida Sea Grant, International Game Fish Association, South Carolina DNR, Texas Parks & Wildlife, Alabama Department of Conservation & Natural Resources, and Texas A&M/Harte Research Institute on outreach and various aspects of this project (some are also conducting direct "dockside distribution" of devices/materials). **Relevant Update:** Nearly 1,100 participants have enrolled to date, and beginning in October, 2016, will be surveyed for information on the rate of use, issues with use of the

October, 2016, will be surveyed for information on the rate of use, issues with use of the devices, number of fish released with devices, approximate number of customers and other anglers exposed to the devices and other metrics allowing approximate evaluation of the extent of implementation and communication. Funding for the FishSmart Descender Distribution and Education program total \$205,000 from ASA, FishAmerica, National Fish and Wildlife Foundation, Brunswick Foundation, NOAA Fisheries, SeaQualizer and Guy Harvey Ocean Foundation. As of 9/23/16, devices/materials have been distributed as:

| Alabama | 252 |
|--------------------------------------------------|--------------|
| Florida | 373 |
| Georgia | 48 |
| Louisiana | 69 |
| Mississippi | 25 |
| North Carolina | 31 |
| South Carolina | 54 |
| Texas | 242 |
| Shipped for Dockside Distribution but not yet of | distributed: |
| Georgia | 42 |
| South Carolina | 15 |
| Texas (Texas A&M) | 47 |
| Florida | 52 |
| Total | 1,250 |

Action Item: None at this time.



FishSmart: Bringing Anglers, Industry, and Agencies Together to Initiate Barotrauma and Mortality Reduction Strategies in the Gulf of Mexico and South Atlantic

Presented At:

Cooperative Fisheries Research: Lessons Learned, Continuing Collaborations and Future Applications II – Symposium 147th Annual Meeting of the American Fisheries Society August 22nd, 2017 Tampa, FL

Andrew J. Loftus, Loftus Consulting/FishAmerica Michael Leonard, American Sportfishing Association Gilbert C. Radonski, Loftus Consulting



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What is FishSmart.....

Is a <u>science-based</u> program driven by the sport fishing community to increase the survival of angler caught and released fish

Not a program to promote catch & release



Basic Tenets

- * <u>Science-based</u> guidance to drive actions to reduce release mortality.
- * Release mortality in recreational fisheries is the culmination of millions of *individual* encounters.
- The solution therefore is empowering *individuals* with information and tools to improve the survival of *each* fish released.



FishSmart 2010-2014* www.FishSmart.org

- * One national and three regional workshops
 - * anglers, scientists, managers, and businesses addressed core issues on released fish survival.
- * Identified regional research and management priorities.
- Developed scientifically-based consensus on Best Practices for Improving Survival of Released Fish.
- * General Guidelines; For all fisheries.
 - Specific guidelines for deepwater fisheries impacted by barotrauma.
 - Basic outreach materials and video.

* Core funding 2010-2014 from NOAA Fisheries

Best Practices for Releasing Fish



Best Practices for the Safe Release of your Fish

It's ok to keep fish that you are allowed under fishing regulations. However, at some point <u>all</u> anglers will be faced with returning fish to the water that they are not allowed to keep – due to size, season, or creel limits – or if they are voluntarily practicing catchand-release.

Nearly ½ billion saltwater fish are caught each year with 59% being returned to the water. Improving survival of these fish by even 1% will save 3 million fish annually! In freshwater 84% of anglers *voluntarily* release fish that they could have kept.

Implementing "Best Practices" for releasing fish in *is the right thing to do* and will help ensure sound fisheries in the future. Live release in many fisheries (bass and trout for example) has contributed to healthy and sustainable fishery resources.

Best Practices for Releasing Fish

<u>Plan Ahead</u> - Expect to release fish on any given trip and prepare the equipment necessary to do so.

Avoidance - Develop skills to target the size and species you desire.

Appropriate Gear - Use gear suited to the size of fish that you are trying to catch. Use circle hooks where recommended and be aware that fishing techniques are different from "J" style hooks.

Landing Fish - Don't play fish to exhaustion.

Handling Fish-Use knotless rubberized landing nets and rubberized gloves, to avoid removing the slime layer from their body.

- Keep the fish horizontal; support the body when lifting large fish.
- DON'T DROP THE FISH onto hard surfaces or long distances!

<u>Releasing Fish-</u> If needed, use a release tool (dehookers, recompression tools) to minimize handling.

Time is of the essence!

Release fish as soon as practical and do not keep them out of the water longer than necessary.

Deep Water Release

Saltwater fish caught in deep water may be suffering from "barotrauma," a buildup of swim bladder gases that makes it difficult for them to go back down. Generally, fish caught deeper than 30 feet will suffer some effects. Follow these basic tips:

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- Eyes bulging ("pop eye").
- Stomach protruding from mouth.
- Bloated mid section.

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<u>Recompression</u> - Rapidly returning fish to depth is the method of choice for returning barotrauma affected fish. A variety of tools are on the market, including descender devices, release weights & baskets, etc.

Return to Depth -Return fish to the depth of capture. If catching fish at very deep depths, returning them as deep as possible will dramatically improve survival.

Venting- If rapid descent is not possible, venting is another option. Use established guidelines for venting such as found at http://catchandrelease.org. Note that the fish's stomach may protrude from its mouth. Do NOT puncture the stomach.



Initiating Barotrauma and Mortality Reduction Strategies with Gulf of Mexico and South Atlantic Recreational Anglers

Broad Goals

- Gauge the effectiveness of descending devices in the conservation of saltwater fisheries.
- Increase the awareness of Best Practices and descending devices.



Brief Methods

- * ~1,100 for-hire operators and avid reef anglers in the South Atlantic and Gulf of Mexico recruited to participate.
- Participants provided with educational material on Best Practices (video and/or brochures) and "how to" videos on descending devices.

* Supplied with a descender device (SeaQualizer).

Asked to participate in a survey.



Distribution of Participants in the FishSmart Descender Distribution and Education Project

| | Gulf of Mexico | | | | | South Atlantic | | | ic | Total |
|--------|----------------|------------|-----|----|----|----------------|----|----|----|-------|
| State | AL | FL Gulf | ΤХ | LA | MS | FL Atl. | GA | NC | SC | |
| Number | 252 | 296 | 242 | 69 | 25 | 85 | 47 | 30 | 60 | 1106 |

Note: NFWF funds were used only to support Gulf of Mexico components of this project.





- * 1,106 potential participants.
- * 1,074 successful email deliveries.
- * 541 people responded (web based survey).
- * A "minimum response rate" of 49% (true rate is higher).
 - All responses validated as participants in the project.

* Survey conducted jointly with Texas A&M University-Corpus Christi, Harte Research Institute for Gulf of Mexico Studies





n=541 responses (49%)

- Exposure: On average, anglers used the devices for 8 months, on 15 fishing trips,; nearly ¾ indicated that they released more than 75 fish using the descending device.
- Increased Awareness: <u>72%</u> had little or no knowledge of descender devices prior to participating in this project.
- Effective Education: <u>67%</u> found Best Practices materials helpful to improving the way that they release fish or recognize the signs of barotrauma;

Changed Behavior: <u>76%</u> are now likely to use a descender device to release most or all fish when needed.



- Changed Preferences: <u>70%</u> prefer to descender devices over venting tools for fish exhibiting barotrauma following their participation in the project.
- Improved Perceptions; <u>78%</u> believe descender devices would be helpful or very helpful to reducing discard mortality in the Red Snapper fishery.

Extended Communication: 95% talked with, or involved other anglers in, the use of descending devices.



Results Extrapolated to Participant Base

- * **3,100-6,000** additional individuals exposed to the materials used in the program (the extension effect).
- * 16,000 28,000 Red Snapper released by project participants.
- * 13,000 22,000 other fish reported as released.



Conservation Effect: Inputs

| Input | Range of Values | Source |
|-------------------------------------------------|-----------------|-----------------------------------------|
| Baseline Release Mortality | .15, .21, .40 | SEDAR 7 SEDAR 15 (2014 update) |
| # Red Snapper released during project period | 16,000-28,000 | Survey extrapolation |
| Improved survival using descender | 3x, 4.5x | Curtis et al. 2015 Sauls et al. 2016 |



Conservation Effect: Results

- * 3,000 9,000 red snapper "saved" directly during this project period only.
- unknown number of the 13,000 22,000 other fish released benefitted from improved handling techniques and use of descending devices.
- * Unknown benefit of Best Practices alone.
 - Conservation benefits will accrue further as anglers continue to apply Best Practices, use descending devices, and convey information to fellow anglers.











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FishSmart: Bringing Anglers, Industry, and Agencies Together to Initiate Barotrauma and Mortality Reduction Strategies in the Gulf of Mexico and South Atlantic

> Prepared for the National Fish and Wildlife Foundation Recreational Fisheries Webinar March 9, 2017

Andrew J. Loftus, FishAmerica Foundation Michael Leonard, American Sportfishing Association



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What is FishSmart.....

Is a <u>science-based</u> program driven by the sport fishing community to increase the survival of angler caught and released fish

Not a program to promote catch & release



What's the Problem?

 Release mortality severely impacts marine recreational fisheries.

* Nearly 250 million fish on average are released annually by marine recreational anglers.

 In some recreational fisheries, dead discards may exceed retained catch.



What's the Solution?

* <u>Science-based</u> guidance to drive actions to reduce release mortality.

- * Release mortality in recreational fisheries is the culmination of millions of *individual* encounters.
- The solution therefore is empowering *individuals* with information and tools to improve the survival of *each* fish released.



2010-2014 FishSmart*

Development of Best Practices

- One national and three regional workshops
 - * anglers, scientists, managers, and businesses addressed core issues on released fish survival.
- * Identified regional research and management priorities.
- * Developed scientifically-based consensus on **Best Practices for** Improving Survival of Released Fish.
- * General Guidelines; For all fisheries.
 - Specific guidelines for deepwater fisheries impacted by barotrauma www.FishSmart.org

* Core funding 2010-2014 from NOAA Fisheries

Best Practices for Releasing Fish



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It's ok to keep fish that you are allowed under fishing regulations. However, at some point <u>all</u> anglers will be faced with returning fish to the water that they are not allowed to keep – due to size, season, or creel limits – or if they are voluntarily practicing catchand-release.

Nearly ½ billion saltwater fish are caught each year with 59% being returned to the water. Improving survival of these fish by even 1% will save 3 million fish annually! In freshwater 84% of anglers *voluntarily* release fish that they could have kept.

Implementing "Best Practices" for releasing fish in *is the right thing to do* and will help ensure sound fisheries in the future. Live release in many fisheries (bass and trout for example) has contributed to healthy and sustainable fishery resources.

Best Practices for Releasing Fish

<u>Plan Ahead</u> - Expect to release fish on any given trip and prepare the equipment necessary to do so.

Avoidance - Develop skills to target the size and species you desire.

Appropriate Gear - Use gear suited to the size of fish that you are trying to catch. Use circle hooks where recommended and be aware that fishing techniques are different from "J" style hooks.

Landing Fish - Don't play fish to exhaustion.

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- Keep the fish horizontal; support the body when lifting large fish.
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<u>Releasing Fish-</u> If needed, use a release tool (dehookers, recompression tools) to minimize handling.

Time is of the essence!

Release fish as soon as practical and do not keep them out of the water longer than necessary.

Deep Water Release

Saltwater fish caught in deep water may be suffering from "barotrauma," a buildup of swim bladder gases that makes it difficult for them to go back down. Generally, fish caught deeper than 30 feet will suffer some effects. Follow these basic tips:

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<u>Recompression</u> - Rapidly returning fish to depth is the method of choice for returning barotrauma affected fish. A variety of tools are on the market, including descender devices, release weights & baskets, etc.

Return to Depth -Return fish to the depth of capture. If catching fish at very deep depths, returning them as deep as possible will dramatically improve survival.

Venting- If rapid descent is not possible, venting is another option. Use established guidelines for venting such as found at http://catchandrelease.org. Note that the fish's stomach may protrude from its mouth. Do NOT puncture the stomach.



Initiating Barotrauma and Mortality Reduction Strategies with Gulf of Mexico and South Atlantic Recreational Anglers*

Broad Goals

- Gauge the effectiveness of Best Practices in the conservation of saltwater fisheries.
- Increase the awareness of Best Practices and descending devices.

*NFWF funds only applied in the Gulf of Mexico



Initiating Barotrauma and Mortality Reduction Strategies with Gulf of Mexico and South Atlantic Recreational

Anglers

Funding * NFWF-BP America \$48,473 * NFWF-NOAA \$11,527 * NOAA Fisheries \$20,000 * Sport Fishing Industry \$115,050

TOTAL (approximate)

\$195,050

Additional in-kind contributions from FishAmerica/American Sportfishing Association, Recreational Boating & Fishing Foundation, Seaqualizer, Shimano, state agencies and NGOs.



Brief Methods

 * ~1,100 for-hire operators and avid anglers in the South Atlantic and Gulf of Mexico recruited to participate

 Participants provided with educational material on Best Practices (video and/or brochures) and "how to" videos on descending devices.

* Supplied with a descender device (SeaQualizer)

Asked to participate in a survey.

| FishSm | Distribution of Participants in the FishSmart Descender Distribution and Education Project | | | | | | | nart 1 | |
|--------|-----------------------------------------------------------------------------------------------------------------------|-----|----|----|-----------|----|----|-----------|-------|
| | AL | FL | GA | LA | <u>MS</u> | NC | SC | ΤX | Total |
| Total | 252 | 380 | 81 | 69 | 25 | 31 | 69 | 242 | 1,149 |
| | | | | | | | | | |



FishSmart Preliminary Survey Results*

- **Exposure**: On average, anglers used the devices for 8 months, on 15 fishing trips,; nearly ³/₄ indicated that they released more than 75 fish.
- **Increased Awareness:** <u>72%</u> had little or no knowledge of descender * devices prior to participating in this project.
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Changed Behavior: 76% are now likely to use a descender device to release most or all fish when needed.

* Survey conducted jointly with Texas A&M University-Corpus Christi, Harte Research Institute for Gulf of Mexico Studies



Preliminary Survey Results (continued)

- Changed Preferences: <u>70%</u> prefer to descender devices over venting tools for fish exhibiting barotrauma following their participation in the project.
- * **Improved Perceptions;** <u>78%</u> believe descender devices would be helpful or very helpful to reducing discard mortality in the Red Snapper fishery.
- Extended Communication: <u>95%</u> talked with, or involved other anglers in, the use of descending devices.

Additional results to follow



Still to Come

- Complete analysis of survey results.
- * Estimation of number of fish released using devices.
- Rough estimation of conservation benefit resulting from increased survival and release rates.
- Theoretical expansion of conservation benefits to larger scales/time frames in the Gulf and/or South Atlantic.











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ALIZER

FishSmart: Bringing Anglers, Industry, and Agencies Together to Initiate Barotrauma and Mortality Reduction Strategies in the Gulf of Mexico and South Atlantic

Prepared for the South Atlantic Fishery Management Council Workshop on Improving Survival of Released Fish Ponte Vedra Beach, FL June 12, 2017

Andrew J. Loftus, Loftus Consulting/FishAmerica Michael Leonard, American Sportfishing Association Gilbert C. Radonski, Loftus Consulting



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Distribution of Participants in the FishSmart Descender Distribution and Education Project

| | Gulf of Mexico | | | | South Atlantic | | | Total | | |
|--------|----------------|------------|-----|----|----------------|------------|----|-------|----|------|
| State | AL | FL Gulf | ΤХ | LA | MS | FL Atl. | GA | NC | SC | |
| Number | 252 | 296 | 242 | 69 | 25 | 85 | 47 | 30 | 60 | 1106 |

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* Survey conducted jointly with Texas A&M University-Corpus Christi, Harte Research Institute for Gulf of Mexico Studies





n=541 responses (49%)

- Exposure: On average, anglers used the devices for 8 months, on 15 fishing trips,; nearly ¾ indicated that they released more than 75 fish using the descending device.
- Increased Awareness: <u>72%</u> had little or no knowledge of descender devices prior to participating in this project.
- Effective Education: <u>67%</u> found Best Practices materials helpful to improving the way that they release fish or recognize the signs of barotrauma;

Changed Behavior: <u>76%</u> are now likely to use a descender device to release most or all fish when needed.



- Changed Preferences: <u>70%</u> prefer to descender devices over venting tools for fish exhibiting barotrauma following their participation in the project.
- Improved Perceptions; <u>78%</u> believe descender devices would be helpful or very helpful to reducing discard mortality in the Red Snapper fishery.

Extended Communication: 95% talked with, or involved other anglers in, the use of descending devices.



Results Extrapolated to Participant Base

- * **3,100-6,000** additional individuals exposed to the materials used in the program (the extension effect).
- * 16,000 28,000 Red Snapper released by project participants.
- * 13,000 22,000 other fish reported as released.



Conservation Effect: Inputs

| Input | Range of Values | Source |
|-------------------------------------------------|-----------------|-----------------------------------------|
| Baseline Release Mortality | .15, .21, .40 | SEDAR 7 SEDAR 15 (2014 update) |
| # Red Snapper released during project period | 16,000-28,000 | Survey extrapolation |
| Improved survival using descender | 3x, 4.5x | Curtis et al. 2015 Sauls et al. 2016 |



Conservation Effect: Results

- * 3,000 9,000 red snapper "saved" directly during this project period only.
- unknown number of the 13,000 22,000 other fish released benefitted from improved handling techniques and use of descending devices.
- * Unknown benefit of Best Practices alone.
 - Conservation benefits will accrue further as anglers continue to apply Best Practices, use descending devices, and convey information to fellow anglers.











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COASTAL RESOURCES DIVISION







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FishSmart Descender Distribution and Best Practices Awareness Update

Background: FishSmart is a program of the sport fishing community to reduce the mortality of released fish. It is not a program to promote catch and release as a practice. During the past several years, under a grant from NOAA, fact finding workshops were conducted in all coastal regions of the U.S. (plus a comprehensive national workshop) to determine the state of knowledge of scientific aspects, develop a consistent set of "Best Practices," and establish the framework for a comprehensive communication/education campaign to put this information into the hands of anglers.

Relevant Update: As an initial step to implementing the *Best Practices* developed in Phase I of this project, we are distributing descending devices and educational materials on *Best* Practices as part of an outreach program to charter boats and avid reef-fish anglers in the South Atlantic and Gulf of Mexico. RBFF has developed a registration site containing information on Best Practices (and appropriate use of release devices) where participants register to receive a complimentary release device. Partnerships have been formed with Florida Fish and Wildlife Conservation Commission, Georgia Coastal Resources Division, Florida Sea Grant, International Game Fish Association, South Carolina DNR, Texas Parks & Wildlife, Alabama Department of Conservation & Natural Resources, and Texas A&M/Harte Research Institute on outreach and various aspects of this project (some are also conducting direct "dockside distribution" of devices/materials). At intervals during the coming year, participants will be asked to provide information on the rate of use, issues with use of the devices, number of fish released with devices, approximate number of customers and other anglers exposed to the devices and other metrics allowing approximate evaluation of the extent of implementation and communication. Funding for the FishSmart Descender Distribution and Education program total \$205,000 from ASA, FishAmerica, National Fish and Wildlife Foundation, Brunswick Foundation, NOAA Fisheries, SeaQualizer and Guy Harvey Ocean Foundation. As of 4/25/16, devices have been distributed as:

| Alabama | 230 | | | |
|------------------------------------------------------------|-----|--|--|--|
| Florida | 218 | | | |
| Georgia | 30 | | | |
| Louisiana | 17 | | | |
| Mississippi | 15 | | | |
| North Carolina | 2 | | | |
| South Carolina | 40 | | | |
| Texas | 45 | | | |
| Shipped for Dockside Distribution but not yet distributed: | | | | |
| South Carolina | 24 | | | |
| Texas (Texas A&M) | 100 | | | |
| Florida | 90 | | | |
| Total | 811 | | | |

Action Item: None at this time.



Progress Report FishSmart Descender Distribution and Education Program NA14NMF4720224 August 1, 2014-January 31, 2015

Progress during this grant period related to:

- 1. Establishing the foundation for implementation of this program during the spring and summer 2015, and;
- 2. Filling out the necessary funding base needed for full implementation of this program.

Establishing Foundation

Two meetings have been held between ASA/FishAmerica personnel and the FishSmart coordinator to establish the foundation of a work plan to guide the completion of this project. The FishSmart coordinator has also met via teleconference with staff of the Recreational Boating and Fishing Foundation (RBFF) who will be instrumental in the distribution mechanics and provide the the communication platform for the educational component of this effort. With the assistance of FishSmart personnel, RBFF will be enhancing the content of their current web presence (www.takemefishing.org/fishsmart) to focus more on use of descending devices, particularly with the target audience of this project (charter boat operators). Once participants in this program have completed a "short course" on Best Practices for Releasing Fish (and appropriate use of release devices) they will register to receive a complimentary release device. At intervals during the following 6-12 months, participants will be directed to an evaluation page at www.fishsmart.org to determine the rate of use, issues with use of the devices, number of fish released with devices, approximate number of customers and other anglers exposed to the devices and other metrics allowing approximate evaluation of the extent of implementation and communication.

Solidifying Funding Base

As of December 31, confirmed funding commitments for the FishSmart Descender Distribution and Education program totaled \$145,000 of the \$151,200 needed for full implementation. This was felt to be sufficient to begin project implementation with the expectation that remaining funds will be developed. Financial commitments to date include

- \$25,000 Brunswick Foundation
- \$20,000 NOAA Fisheries
- \$25.000 American Sportfishing Association
- \$50,000 FishAmerica Foundation (through a grant from Grizzly Smokeless Tobacco)
- \$25,000 Guy Harvey (secured January, 2015)

Substantial non-financial support is being provided by the Recreational Boating and Fishing Foundation.

Additional funding is being sought from various sources. FishSmart project personnel and ASA staff met with the National Fish and Wildlife Foundation who were enthusiastic about the opportunity to work with the recreational fisheries community on this fisheries conservation and restoration program. Subsequently, FishAmerica was invited to submit a full proposal to their Fisheries Innovation Fund program for support.

Obstacles Encountered

Development of the full funding base necessary for all three phases of this project (education, device distribution, and evaluation) took longer than expected and delayed implementation of the project by a few months. However, funding has now been secured to the level that full project implementation is underway.

Planned Activities in Next Quarter

- Round out work plan to guide the remainder of this project.
- Work with RBFF to develop content for web presence and participant registration.
- Initiate development of a "how to" video on appropriate use of release device. Two possible sources of the video exist: Guy Harvey and RBFF.
- Begin assembling contact list of for-hire (charter) operators in the South Atlantic and Gulf of Mexico (project area).
- Begin work on agreements with willing manufacturers to obtain release devices at reduced costs.
- Develop proposal for funding to the National Fish and Wildlife Foundation. Meet with other potential funding sources as necessary to fully support this project.



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For Immediate Release Mary Jane Williamson, Communications Director 703-519-9691, x227 www.asafishing.org

Industry-Led Effort Saves Thousands of Reef Fish

Distribution of descending devices and best practices among anglers provides significant boost to fisheries conservation

Alexandria, VA – October 4, 2017– A cooperative effort among the recreational fishing industry, anglers and state and federal agencies has resulted in reduced mortality for thousands of red snapper and other reef fish in the Gulf of Mexico and South Atlantic.

Throughout 2015-2017, the FishSmart Best Practices and Descender Education project, coordinated through the FishAmerica Foundation, engaged more than 1,100 anglers in the Gulf of Mexico and South Atlantic regions to improve the survival of angler caught-and-released fish. Participants in the project were provided with: information on best practices for handling and releasing fish; and with SeaQualizer descending devices. They were then asked to evaluate their experience.

"Through the FishSmart project, the recreational fishing industry is leading the way to improve the survival of caught-and-released fish and help ensure the future of our sport" said Mike Nussman, president and CEO of the American Sportfishing Association (ASA). "The FishSmart Best Practices and Descender Education project represents the continued growth and evolution of this program, which reflects anglers' and the industry's longstanding and continued commitment to fisheries conservation."

One of the key findings of the four regional workshops was that returning saltwater fish caught in deep water to the depth at which they were caught – or as close as possible – can significantly improve their chances of survival. In the Gulf of Mexico and South Atlantic, many reef fish such as red snapper are being released due to

increasingly shorter seasons and higher rates of encounter. Without proper handling techniques, such as use of descending devices, a significant percentage of released fish die, to the detriment of fisheries conservation and future fishing opportunities.

However, since release mortality in recreational fisheries is the culmination of millions of individual encounters between anglers and fish, true conservation benefits will be achieved by empowering individual anglers with information, training and tools to improve the survival of each individual fish that they return to the water.

Through the FishSmart Best Practices and Descender Education project, anglers collectively reported releasing 16,000 – 28,000 red snapper and 13,000 – 22,000 other fish by applying best practices techniques and using the SeaQualizer when needed. Based on the most recent research on the benefits of descending fish under conditions typically encountered in the Gulf of Mexico, an estimated 3,000 – 9,000 red snapper survived during this project period through the use of the SeaQualizer alone, plus an unknown number of fish that survived as a result of improved handling techniques.

"Some of the key findings of the project involved the changes that anglers voluntarily made in the way that they released fish," remarked Mike Leonard, ASA's Conservation director. "The vast majority of project participants found that information provided on how to properly handle fish improved the way that they release fish."

Leonard further said, "Nearly 75 percent had little or no knowledge of descender devices prior to participating in this project and indicated that are now likely to use a descender device to release most or all fish when needed. This reinforces the well-known fact that anglers are true conservationists at heart: provide them with the tools and techniques to do the right thing and they readily embrace it."

Additional information about the results of the project are included in this information sheet.

This FishSmart Best Practices and Descender Education project was the result of numerous partnerships. Major funding support was provided through the American Sportfishing Association, the Brunswick Foundation, Guy Harvey Ocean Foundation, National Fish and Wildlife Foundation, NOAA Fisheries, SeaQualizer, LLC, and Grizzly Smokeless Tobacco. Educational materials and descending devices were distributed through the assistance of partners including Recreational Boating & Fishing Foundation, Coastal Conservation Association. International Game Fish Association, Florida Fish and Wildlife Conservation Commission, Georgia Coastal Resources Division, Florida Sea Grant, South Carolina DNR, Texas Parks & Wildlife, Alabama Department of Conservation, and Texas A&M/Harte Research Institute.

About the FishAmerica Foundation:

The FishAmerica Foundation is the conservation and research foundation of the American Sportfishing Association. Since 1983, FishAmerica has united the sportfishing industry with conservation groups, government natural resource agencies, corporations and foundations to invest in sportfish and habitat conservation and research across the country to help ensure recreational fishing's future.

About FishSmart:

FishSmart is a proactive approach driven by the sport fishing community to addressing one of the most significant challenges to sustaining recreational fishing in the future: reducing the mortality of fish stocks while enhancing the fishing experience. This is being accomplished through two basic approaches: 1) developing

fishing techniques and management approaches that reduce the catch of unwanted species or sizes, and; 2) improving the survival of released fish through promotion of science-based Best Practices, research, and communication. More information is available through www.fishsmart.org.

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The American Sportfishing Association (ASA) is the sportfishing industry's trade association committed to representing the interests of the sportfishing and boating industries as well as the entire sportfishing community. We give the industry and anglers a unified voice when emerging laws and policies could significantly affect sportfishing business or sportfishing itself. ASA invests in long-term ventures to ensure the industry will remain strong and prosperous, as well as safeguard and promote the enduring economic, conservation and social values of sportfishing in America. ASA also gives America's 46 million anglers a voice in policy decisions that affect their ability to sustainably fish on our nation's waterways through Keep America Fishing®, our national angler advocacy campaign. America's anglers generate more than \$48 billion in retail sales with a \$115 billion impact on the nation's economy creating employment for more than 828,000 people.

FishSmart Update, July 2017 www.fishsmart.org



<u>Background</u>:

- *FishSmart* is a program initiated by ASA to reduce the mortality of released fish (*not a program to promote catch and release as a practice*).
- "Best Practices" for handling and releasing fish, focusing on those caught in deep water were developed through *FishSmart* workshops involving industry, anglers, scientists and managers (2010-2014).
- A framework was developed for a communication/education campaign to put this information into the hands of anglers.

2015-2017 Project Summary:

- *Purpose* was to gauge the effectiveness of *Best Practices* on the conservation of saltwater fisheries.
- 1,100 anglers in the South Atlantic/Gulf of Mexico were provided with videos & brochures on *Best Practices* and a descending device (SeaQualizer). Descending devices improve the survival of saltwater fish caught and released in deep waters under certain circumstances.
- Partners included RBFF, CCA, IGFA, Florida Fish and Wildlife Conservation Commission, Georgia Coastal Resources Division, Florida Sea Grant, South Carolina DNR, Texas Parks & Wildlife, Alabama Department of Conservation, and Texas A&M.
- Participants were surveyed on used of *Best Practices*, use of the devices, number of fish released, number of customers and other anglers exposed to the devices and other metrics.
- 60% of project funding from sport fishing industry.

<u>Select Results:</u>

- **Exposure**: On average, anglers used the devices for 8 months, on15 fishing trips, with nearly ³/₄ indicating that they *released more than 75 fish*.
- **Increased Awareness**: <u>72%</u> had little or no knowledge of descender devices prior to participating in this project.
- **Effective Education**: <u>67%</u> found *Best Practices* materials helpful to improving the way that they release fish or recognize the signs of barotrauma;
- **Changed Behavior**: <u>76%</u> are now likely to use a descender device to release most or all fish *when needed*.
- **Changed Preferences**: <u>70%</u> prefer to descender devices over venting tools for fish exhibiting barotrauma following their participation in the project.
- **Improved Perceptions**; <u>78%</u> believe descender devices would be helpful or very helpful to reducing discard mortality in the Red Snapper fishery.
- **Extended Communication:** <u>95%</u> talked with, or involved other anglers in, the use of descending devices.

Funding for the 2015-2017 phase was provided by ASA, FishAmerica, National Fish and Wildlife Foundation, Brunswick Foundation, NOAA Fisheries, Grizzly Smokeless Tobacco, SeaQualizer and Guy Harvey Ocean Foundation.



Why "Best Practices" for the Release of Fish?

It's ok to keep fish that you are allowed to retain under fishing regulations. However, at some point <u>all</u> anglers will be faced with returning fish to the water that they are not allowed to keep – due to size, season, or creel limits – or if they are voluntarily practicing catch-and-release.

Nearly ½ billion saltwater fish are caught each year with 59% of those being returned to the water. Improving survival of these fish by even 1% will save 3 million fish annually! In freshwater 84% of anglers *voluntarily* release fish that they could have legally kept.

Implementing "Best Practices" for releasing fish in is the right thing to do and will help ensure sound fisheries in the future. Live release in many fisheries (bass and trout for example) has contributed to healthy and sustainable fishery resources.

FishSmart....for the future of fishing.



Best Practices for Releasing Fish

<u>Plan Ahead</u> - Expect to release fish on any given trip and prepare the equipment necessary to do so.

<u>Avoidance</u> - Develop skills to target the size and species you desire.

<u>Appropriate Gear</u> - Use gear suited to the size of fish that you are trying to catch. Use circle hooks where recommended and be aware that fishing techniques are different from "J" style hooks.

Landing Fish - Don't play fish to exhaustion.

<u>Handling Fish</u>-Use knotless rubberized landing nets and rubberized gloves, to avoid removing the slime layer from their body.

- Keep the fish horizontal; support the body when lifting large fish.
- DON'T DROP THE FISH onto hard surfaces or long distances!

<u>Releasing Fish</u>- If needed, use a release tool (dehookers, recompression tools) to minimize handling.

Time is of the essence!

Release fish as soon as practical and do not keep them out of the water longer than necessary.

Deep Water Release

Saltwater fish caught in deep water may be suffering from "barotrauma," a buildup of swim bladder gases that makes it difficult for them to go back down. Generally, fish caught deeper than 30 feet will suffer some effects. Follow these basic tips:

Assess condition while reeling in fish -Signs of barotrauma include:

- Sluggish swimming.
- Eyes bulging ("pop eye").
- Stomach protruding from mouth.
- Bloated mid section.

If the fish appears normal release it without removing it from the water.

<u>Recompression</u> - Rapidly returning fish to depth is the method of choice for returning barotrauma affected fish. A variety of tools are on the market, including descender devices, release weights & baskets, etc.

<u>Return to Depth</u> -Return fish to the depth of capture. If catching fish at very deep depths, returning them as deep as possible will dramatically improve survival.

<u>Venting-</u> If rapid descent is not possible, venting is another option. Use established guidelines for venting such as found at http://catchandrelease.org. Note that the fish's stomach may protrude from its mouth. Do NOT puncture the stomach.