

WRITTEN TESTIMONY OF:

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HEARING: “Improvements and Innovations in Fishery Management and Data Collection”

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Good afternoon Chairman Rubio, Ranking Member Booker, and members of Committee. Thank you for giving me the opportunity to provide testimony regarding innovations in data collection for recreational fisheries. My name is Brett Fitzgerald, I am a former paratrooper in the US Army Special Forces, lifelong recreational angler and currently Executive Director of the Snook and Game Fish Foundation that was created in 1989 through the visionary work of William Mote of Mote Marine Laboratories in Sarasota, FL. In my tenure as Executive Director for the Snook and Game Fish Foundation I have guided the organization to play a leading role in smart-phone technology to make anglers part of the data collection process for management of fisheries.

For this hearing, I was asked to discuss the Foundation’s innovative Angler Action Program (AAP), which is used in recreational angler data collection and is showing signs of improving angler confidence in both the decisions that fishery managers make as well as the data and assessments those decisions are based on.

In Florida and South Texas, snook is a prized fishery that drives coastal fishing and tourism economies. Snook are hard fighting fish comparable to striped bass on the Atlantic Coast and salmon on the Pacific Coast. In 2010, the Florida Wildlife Research Institute (FWRI), the scientific arm to the State of Florida’s Fish and Wildlife Commission, faced a crisis in the snook fishery due to a historic cold event lasting several days that dropped water temperatures well below the range for snook to survive as far south as Everglades National Park on the southern most peninsular of mainland Florida. Thousands of fully mature snook perished, many of which were critical spawners to the preservation of the species. In that difficult time, Florida snook anglers were asked to help provide personal fishing data through the AAP. Today, after being used in two Florida state snook stock assessments and on deck to be used in a third this year, the AAP has grown into a network of tools that can collect recreational angler data for any species of fish, anywhere in the nation (and beyond). While the AAP is continuously evolving based on the needs of fishery managers and ever improving technology, the story of how the AAP has grown can shed light upon how it might be better used in the near future to assist fishery management at a national level.

Back in 2010, Jim Whittington, a lead snook biologist for FWRI, inquired whether the Snook & Gamefish Foundation (SGF) could inform his team on what snook anglers were catching after the weather event passed. There was a need to understand how badly the snook population was impacted by the extended

cold. It was an easy ask for passionate anglers who were equally concerned. Because the snook harvest season was placed into emergency closure by the Florida Fish and Wildlife Conservation Commission (FWC), the challenge of collecting timely, precise data meant the current angler dependent surveys that monitored caught and kept snook through boat ramp surveys could not meet the immediate need.

Under the guidance of biologists from FWRI, the Parks & Wildlife Department of Texas, independent statisticians and SGF volunteers, the first generation of the AAP was created. This first data collecting tool was based largely on a previously successful 'log book program' that FWRI had been using as part of a longitudinal study of a select panel of snook anglers. The AAP, it was agreed, needed to be more streamlined, easier for anglers to use, provide real-time data, and of course satisfy certain specific data needs. Those specific needs included data fields such as the size and distribution of released fish, general location of catch, time spent fishing, and others. Anglers were asked to record their information on a sheet of paper (to eliminate memory bias) then enter data at a new website, www.angleraction.org, which had corresponding data fields where anglers could easily transpose information from their paper record to the computer.

By the end of that first summer, thousands of snook directed fishing hours were logged into the system. Shortly thereafter, FWRI completed an interim snook stock assessment and the AAP data was requested.

FWRI scientist Dr. Robert Muller, who is in charge of Florida's fish stock assessments, found immediate use for certain data fields. "The distribution of snook released, and the size of those fish, was particularly helpful," Dr. Muller noted. This particular information, he continued, is not included in the current fishery dependent survey models, and therefore answered questions that previously were not addressed.

Participating snook anglers were elated that their data collecting efforts were helpful in such short notice. For our part, SGF worked diligently to ensure anglers not only provided accurate data, but kept expectations tempered when it came to application of data. The message that was handed down from FWRI was clear: This is a new concept, be patient, and don't expect the AAP to be a tool used to conduct a "snook census." Rather, anglers should continue to log trips so the AAP data can be applied where it can help, and supplement the current models to aid in improving overall stock assessment accuracy.

SGF, whose mission is to support the protection and preservation of current fish populations for future generations by facilitating coordination between anglers, researchers, and policy makers, kept busy keeping participating anglers informed and on track. Messaging highlighted the importance of things like accurate data, consistent reporting of "zero catch trips," and most importantly, the cultural shift that recreational anglers need embrace to become part of the answer in ensuring fisheries are well managed and abundant. Volunteer anglers seemed to take pride in knowing that they participated in a 'first ever' event – a database created by recreational anglers that was directly applied to a state level stock assessment.

12 months later, AAP data was once again tapped when a follow-up snook stock assessment was completed. Around this time, SGF was asked if the volunteer survey could be expanded to other game fish. Scientist and fishery survey experts particularly noted that the discard data of catch and release fishing captured by the AAP was extremely helpful, and biologists wanted to know if it could be applied

to other species. To accomplish this, the AAP needed upgrades – anglers needed a faster, easier way to input data.

SGF consulted with scientists and studied options for mobile smart device logging such as the new Texas based iSnapper. SGF then facilitated a group of biologists, anglers, programmers and other fishery experts to address the primary question, ‘How can the AAP maintain its scientific integrity yet add new technology (and the inherent biases of fishery surveys) into the equation?’

Little did we know at the time that Snook and Game Fish Foundation was on the cutting edge in processes of e-survey design (and upgrades) - SGF brings in scientists/managers (mostly on loan from FWRI), fishing captains, recreational anglers, and programmers to help design the changes/upgrades so that the AAP satisfies as many needs as possible without accidentally introducing biases that limit fishery managers utilizing the AAP for management decisions.

Current state of the AAP

The number of loggers in Florida has grown, as has geographic distribution and available platforms for anglers to participate. Anglers are able to continue logging in the original format (writing information down then transposing directly to the website), or they have a variety of mobile smart device applications which allow more immediate data input. The first generation AAP mobile application, iAngler, is designed to capture whole trip information at the completion of a fishing trip. Recently a new mobile app, iAngler-lite, was developed with the intent to allow anglers to enter fish “real time.” Anglers are able to start a fishing trip then quickly snap a photo of caught fish and enter data essential to fishery managers – a process that literally takes seconds to complete. Both iAngler versions are trending towards a more comprehensive tool for anglers where they can already weather, tides, and specific locations to improve their angling skill and collect useful information for science. We foresee both versions continuing to evolve as they’re scrutinized by anglers and scientists in the effort to design platforms with expanding functional value for both.

The value of AAP data has reached outside the state of Florida as well. In the Chesapeake region, a handful of fishing groups organized a program called “Chesapeake Catch,” an AAP affiliate program which includes a mobile smart device application. Now anglers in that region can log catch data into the AAP in the same manner as Florida anglers. The data is flagged in the database so local agencies can perform analysis and use data accordingly. The Maryland Department of Natural Resources (MD DNR) has committed to using AAP data provided by Chesapeake Catch anglers in a variety of specific ways. Not surprisingly, discard information is the primary draw for scientists. Dr. Joseph W Love (MD DNR) reported that “The Chesapeake Catch [mobile smart device] app works great and I look forward to using it and promoting it in the future.” Several species of concern were noted directly for analysis, including Atlantic Croaker, Red Drum, Spotted Sea Trout, Shad, Yellow Perch, Spot, and of course Striped Bass.

With over \$200,000 invested in refining angler self-reporting apps (much of which provided through funding by the Repass Foundation and the National Fish and Wildlife Foundation), the Snook and Gamefish Foundation has begun to work with multiple partners to skin the AAP to suit specific purposes. For example, Guy Harvey Outpost, which has a strong sense of conservation ethos, offered to contribute directly to the AAP by creating a branded “skin” of the iAngler-lite app. The Snook and Gamefish Foundation designed, tested and recently launched the iGhoFish mobile smart device app which is now promoted globally through Guy Harveys Outposts. This will add a new level of data collection which will

help to fortify our database as a data reference point to validate stock assessment conclusions and management decisions related to discard mortality in fisheries.

The network of AAP affiliates will likely grow as regions across the country recognize the functional use of self-reported data and the AAP continues to represent an established, trusted source for data collection.

SGF also recognized the preponderance of fishing tournaments as a source of opportunity for self-reporting. Not only are fishing tournaments themselves a potential source of data, they also create an avenue of communication to a sector of recreational anglers who might not otherwise hear about programs like the AAP. To maximize opportunities in this arena of angling, SGF once again called upon a well-rounded team to design and develop a tournament management system that would familiarize tournament anglers with the process of self-reporting. With funding from the Fleming Family Foundation, the iAngler-Tournament system was created.

iAngler-Tournament was originally designed to facilitate the cultural change of electronic self-reporting to experienced anglers. Quite simply, that change means that fishing public trust natural resources should include a conservation ethic to assist with reliable information to best manage fisheries and that it can be done with relatively little effort. Surprisingly, the tournament management and data collecting system has proved to be wildly popular. Managing tournaments can be a laborious labor of love for committed fishing groups across the country and i-Angler-Tournament has streamlined that process. As well, with the unique dataset provided through tournaments, even more resolution at the “per-fish” level is generated with highly accurate size, location, and time of catch information provided (with time-stamped images of each catch). Because of the iAngler-Tournament data is not designed as a voluntary survey in the same manner of the AAP and affiliated apps and brings a host of new potential biases, the data is flagged in the database so future analysis can be contemplated by stock assessment analysts as to the usefulness of the reference point in full stock assessment analysis. SGF sees this type of data becoming very useful in arenas other than stock assessment analysis, such as functional habitat mapping and prey/predator geospatial relationships.

Finally and most importantly, the Coastal Conservation Association (CCA), one of the largest private recreational fishing organizations in the country, has partnered with SGF in Florida to use the AAP platform for their forthcoming STAR tournament projected to include over 5000 anglers across the state in the first year alone. CCA-Florida Star will bring awareness of the importance of self-reporting to legions of anglers and at the same time do incredible service to conservation of the state’s fisheries by embracing a catch and photo release e-reporting tournament system.

The additional functionalities and partnerships of the AAP and expanded format has not decreased the value of the data. In fact, FWRI called for AAP data to be used in the upcoming snook stock assessment, and the expansion to other species of fish is on track to provide helpful data in other fisheries. FWRI’s Dr. Muller provided some details to that point:

“In Florida, the three most popular fish caught by recreational anglers, spotted sea trout, red drum, and snook, all have slot limits and snook has either a six or seven month closure depending on the coast. This means that each year many fish are released. National Oceanic and Atmospheric Administration’s (NOAA) Marine Recreational Information Program (MRIP) estimates the numbers of fish harvested and released, but creel samplers at the dock cannot measure a fish that was released. Further, adding an

observer to a flats boat is not feasible either. Therefore, having anglers record the size of fish caught in the Angler Action Program is invaluable. Assessment biologists want to know the size and ages of fish removed from the population and, with so many fish being released, the length data from the AAP lets us quantify how many legal-sized fish were released as well as how many under-sized fish and how many over-sized fish were released. Data from the AAP has been used in two recent snook stock assessments and will be used in another assessment later this year.”

As AAP data carves out a niche in Florida’s stock assessment process, biologists and scientists who supported the program continue to pursue methods of ensuring validity of the data. No individual from the science community has provided more guidance and leadership than Dr. Luiz Barbieri of FWRI. Dr. Barbieri’s consistent messages of encouragement to SGF and our volunteers, measured with doses of tempered expectations and patience, have been extremely valuable. His understanding of the complexity of stock assessments at the state and federal level have allowed the AAP to grow in such a way that, so far, we have not inadvertently introduced any biased information, which might invalidate the project.

In his pursuit of capturing the best available data, Dr. Barbieri and his staff coordinated funding which allowed an independent third party to begin some much needed analysis of the AAP database. The University of Florida’s Fisheries and Aquatic Sciences lab, directed by Dr. Robert Ahrens, was tapped with the task of data analysis. Funding was to allow for a multi-year analysis of data, focusing on a variety of data applications and functions. The first year of analysis, led by graduate student Ryan Jiorle, was recently completed and a summary of results were shared at the FWRI headquarters in St. Petersburg, Florida in April 2015. The first year of analysis focused on comparing catch rates of AAP volunteers to those in the MRIP survey.

Jiorle’s results suggested that in areas where AAP logging has gained a foothold among anglers, the data compares very well to MRIP data for the most commonly logged species. Jiorle noted, “Most of the saltwater fishing trips reported through the AAP targeted three specific species: common snook, spotted seatrout (*Cynoscion nebulosus*), and red drum (*Sciaenops ocellatus*). While there is not nearly as much data on the many other species fished for in Florida, the amount of information regarding these three species of fish still provides valuable information for *their* assessment.

“When considered at appropriate spatial levels, AAP data for these three species provide similar mean catch-per-trip values (i.e. average number of fish caught in a single fishing trip) to those of MRIP’s survey. These “catch rates” are very important metrics for the assessment of fisheries, and analysis of the AAP database has shown that there is potential for these electronic, self-reporting programs to provide representative information for recreational fisheries – provided there is sufficient coverage across the spatial region in question.”

Jiorle’s analysis supported Dr. Muller’s comments regarding the value of discard data by AAP volunteers. “One of the largest advantages for these electronic, self-reporting programs is the ability to provide extensive information on discarded (released) fish. The MRIP survey is conducted from land, and it is difficult for the interviewers to obtain information on fish that were released at sea. However, many recreational fisheries are “catch and release” fisheries, meaning most if not all fish are discarded by the angler. Because electronic self-reporting programs allow recreational fishers to keep track of fish as the catches happen, they can provide the number, species, lengths, weights, and locations of fish caught and released (the latter being unavailable from the MRIP survey). These novel pieces of information that

are possible to gather under a program like the AAP would provide large contributions to fisheries stock assessments.

“Another advantage of an electronic, self-reporting program is the ability to collect sufficient information for very rare species. Certain species have so few fishers targeting them that a sampling-style program like MRIP does not adequately cover them. However a program that theoretically allows all of those trips to be reported represents a large advantage for the assessment of those rare fish populations.”

Jiorle’s analysis did reveal certain data biases. First, for the three species addressed, “the AAP dataset contains a spatial bias towards the central-south Atlantic coast of Florida. A stretch of five coastal counties accounts for half of all of the saltwater fishing trips in the AAP. This same stretch of counties only accounts for 17.6% of all saltwater fishing trips surveyed through the MRIP program – which is considered the most extensive recreational fisheries data collection program.”

This spatial bias is a very important consideration as the AAP moves forward. Essentially, this finding suggests that in regions where a sufficient number of recreational anglers participate in the AAP, catch rates can validly be compared with MRIP data. The spatial bias issue seems to suggest that a more aggressive approach with angler self-reporting might be warranted. Already states such as Alabama, Mississippi, Louisiana and Florida are moving towards special reef fish permits for anglers pursuing federally managed species. Alabama and Mississippi are also moving toward mandatory e-reporting apps for greater accountability and validation on the precision of MRIP data used for management in those fisheries. It should be noted that the National Marine Fisheries Service has prioritized angler self-reporting in their recent Electronic Monitoring and Reporting Regional Implementation Plan released earlier this year.

To be clear though, angler self-reporting is not a silver bullet to fishery data needs, it is a reference point with growing usefulness - an extremely important one being the involvement and rebuilding of trust among anglers in the stock assessment process. Fisheries, particularly those in which barotrauma (the rapid ascent of a fish from depth that causes injuries precluding successful catch and release) require long term, committed investment of funds to ensure the long term sustainability of stocks. A recent bill passed by the House Appropriations Subcommittee on Commerce, Justice, Science, and Related Agencies would invest \$10 million in Fiscal Year 2016 to the Gulf of Mexico alone to ensure appropriate fishery monitoring. The Southeast United States, including the Gulf and Caribbean has more saltwater recreational anglers than any other region and a complexity of natural resources such as reefs, corals and marine mammals that necessitate numerous methodologies to appropriately monitor fish stocks without harming other resources. Yet, the Southeast is the only region in which one fishery science center must service the needs of 3 regional councils (Gulf, South Atlantic, Caribbean) and it has been chronically underfunded to meet demands.

AAP and Future Applications

SGF has come to appreciate the complexities of stock assessments at both the state and federal level. It is clearly understood that recreational angler data presently suffers from both a less than optimal level of precision for managers to base decisions on as well as the untimely availability of information for

managers to make decisions *during fishing seasons*. One might say our fisheries (particularly co-managed state and federal fisheries) have evolved into “pulse” fisheries where a tremendous amount of fishing activity occurs within weeks. At the same time, data collection systems designed to archive those catches have not evolved to meet the needs of managers. For example, Gulf of Mexico Red Snapper data is collected in two month waves and each wave takes time to be processed and certified – the season comes and goes without managers having any real sense of how many fish were caught.

Without question there is a need for improved recreational data collection. The archival style of data collection that informs long term analysis of U.S. fisheries must be supplemented with real-time information and e-reporting tools for fishery managers to maximize fishing opportunities with the confidence that they are not allowing overfishing and risking the economic stability that long term sustainability provides coastal communities.

To that end, SGF seeks to continue coordinating with NOAA’s scientific community and move forward in providing more precise and timely voluntary recreational angler data. In particular the nexus between app self reporting and defined universes of anglers mandatorily required by states to secure a permit are opening opportunities for ‘mark and recapture’ as well as panel studies to provide essential validation estimates on angler self-reported data. These are immense challenges that will require better cooperation between the states that employ dock-side surveyors and MRIP which provides funding to the states to cover portions of the costs to employ those surveyors.

SGF also recognizes the need for some kind of national standard for electronic self-reporting systems. While there is risk in ‘farming out’ data collection, the growing number of private and state level data collection programs calls for unified guidance. Through our extensive design process, SGF has come to understand that any variance from the standard can potentially introduce a bias – real or perceived – which in either case can cause data to be rendered invalid or damage public perception of the project such that the necessary voluntary participation is extremely difficult to attain. This truth speaks to the value of the AAP affiliate system, which allows participating groups to benefit from systemic design changes that are properly vetted by the AAP design team.

Beyond Stock Assessments

With the understanding that this hearing is focused on using voluntary self-reporting systems to assist with fishery management, SGF also has heard from legions of anglers who hope to see the AAP database used in several other ways, and we would be remiss if we did not mention just a couple of those points. Habitat mapping is a very common theme, and discussions with interested parties have begun, including several counties in Florida who are groping for methods to quantify the money spent on much needed habitat restoration projects. Especially with Restore Act funds becoming available in the Gulf of Mexico, SGF sees the AAP (and iAngler-Tournament system) as vehicles of positive influence in this arena.

Finally, with the recent awareness campaigns focusing on forage fish, SGF sees opportunities to provide functional avenues of contribution from recreational anglers. Successful management of forage (bait) fish is a priority issue for recreational fishers. As the food supply for game fish from tarpon to tuna, the importance of comprehensive management of forage fish is evident. This was a key recommendation in the 2014 Morris-Deal report, “A Vision for Managing America’s Saltwater Recreational Fisheries.” It is also one of the few marine fisheries issues where there seems to be broad agreement amongst recreational, commercial and conservation organizations. Currently, the very few forage fish that are

under federal fishery management are not managed to meet the needs of predators that depend on them. At the same time, market pressure is increasing to expand industrial fishing for these prey species, which often end up being used as pet food or fertilizer. SGF sees the importance of investing in monitoring and data collection of prey species to provide more and better information on the catch and status of forage species. Electronic self-reporting can allow recreational anglers to play a direct role in this critical management issue. With the understanding that important design changes would be required, AAP-type reporting can provide essential scientific information on prey species, which is needed to guide management of these fish, and ensure enough forage fish are left in the water to meet the food needs of predators that fuel the recreational fishing industry.

The purpose of introducing habitat mapping and increased forage fish protection is to highlight the point that voluntary recreational data will have extensive functional uses as the database grows in size and power. These types of data-driven goals work in concert with the main focus of this testimony, improved fishery management through innovative technologies, especially with the effort to encourage a growing number of anglers to record accurate information.

With these points in mind, there are a few specific items which SGF feels are of particular importance moving forward:

1. Match the funding (\$10million) secured by the House Committee of Appropriations to invest in data collection in the Gulf of Mexico.
2. Increase the precision of stock assessments by directing NOAA to invest restoration funds towards habitat mapping so a full and complete inventory, rather than an estimate, of habitat for assessed species is finally known.
3. Fund and direct MRIP to return to the one month waves of data collection during peak recreational fishing season from spring to fall, much like was done during the oil spill so managers have information much faster to make important decisions.
4. Currently, the National Research Council (NRC) is conducting a review of MRIP. That Review should be directed to include if and how MRIP can have greater precision in its estimates, possibly a benchmark goal of no greater than +/- 10% as well as timeliness to meet the management needs of pulse fisheries that require information real-time to maximize fishing opportunities. If the NRC concludes these objectives cannot be met within the paradigm of MRIP they should recommend alternatives to spin-off these much needed improvements.
5. NOAA must be funded and directed with both existing appropriations and oil spill funds to prioritize investments outlined in their regional Electronic Monitoring and Reporting Plans, and these plans should be updated every two years to keep pace with the changing improvements of technology.
6. NOAA must direct the eight regional councils to prioritize Exempted Fishing Permits that use small portions of recreational quota to test new technologies for advancing modern data and management technologies in real world applications so valuable lessons can be learned and rapid improvement for application can be obtained.
7. States should be incentivized to streamline their current fishery data collection systems to meet a minimal level of federal fishery assessment protocols in order to increase timeliness and avoid the long delays of recalibrating one set of assessment protocols to integrate to different ones.

8. Finally, resources should be dedicated to the design and implementation of a self-reporting system which will allow for more precise and timely assessment of all of our prey species.

Thank you for the opportunity to testify today. I would be happy to answer any questions that you have.