

**Synopsis of the
Seventh North Carolina
Marine
Recreational
Fishing
Forum**

**Improving Engagement with the
Recreational Fishing Community**



**Held on
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Table of Contents

Abstract.....	1
Welcome and Objectives	2
Invited Speakers.....	3
Making Anglers’ Catch Count.....	3
Recreational Fishing Research in Australia and the United States	5
Marine Recreational Fishing Data Collection Programs in North Carolina.....	6
Overview of the MRIP Volunteer Angler Data Workshop	9
North Carolina Coastal Angling Journal	11
Morning Wrap-up and Discussion	11
Invited Speakers (<i>continued after lunch</i>)	12
North Carolina General Assembly’s Marine Fisheries Study Committee	12
What’s on the Horizon for the Recreational Industry?.....	15
Protected Species in North Carolina	16
Marine Debris in Coastal North Carolina Saltmarsh and Underwater Habitats	17
Mid-Atlantic Fishery Management Council Visioning Project	18
Afternoon Wrap-up and Discussion.....	18

Appendices

Appendix A: Agenda.....	20
Appendix B: Speaker Biographies with Contact Information	21
Appendix C: Attendee List.....	24
Appendix D: Exit Survey Results.....	25

Cover photo of Venezuelan ballyhoo rig by Scott Baker.

Abstract

On April 21, 2012, North Carolina Sea Grant reestablished a **Marine Recreational Fishing Forum** held on the campus of North Carolina State University (McKimmon Center) in Raleigh. Sea Grant had hosted an annual forum series from 1992 to 1997. Like those sessions, the 2012 meeting was designed to engage the recreational fishing community on current issues through a facilitated discussion outside of the regulatory arena.

Sixty-five people (including speakers) pre-registered for the event and 43 individuals made their way to Raleigh that Saturday. Topics discussed ranged from protected species issues, to the status of marine debris along the central coast. But, most of the discussion was directed at the topic of recreational data collection in North Carolina. The forum hosted nine presenters representing NC State, the N.C. Division of Marine Fisheries (NCDMF), the Mid-Atlantic Fishery Management Council, and the National Oceanic and Atmospheric Administration. North Carolina House Representative Tom Murry (District 41) summarized the outcomes of the N.C. General Assembly's Marine Fisheries Study Committee.

The exit survey revealed that 95 percent of attendees were either "very satisfied" or "satisfied" with the information available at the event. When the individual talks were rated for usefulness, three presentations tied with the highest score: "N.C. Coastal Angling Journal" by Chris Wilson; and "Outlook for Marine Recreational Fishing" and "Protected Species in N.C. Waters," both by Louis Daniel. Both speakers are with NCDMF. When asked if the forum provided new viewpoints and insights on the topics discussed, 87 percent responded "to a great degree" or "to a moderate degree." One hundred percent of respondents that answered the question indicated that their expectations of the forum were met.

We also received numerous comments and suggestions from attendees on how to improve the next fishing forum. Later this summer, a committee of stakeholders will be established to assist in the planning of the next fishing forum, which is targeted for winter 2013.

Welcome and Objectives

Steve Rebach, associate director of North Carolina Sea Grant (NCSG), welcomed forum attendees and explained the important role the organization plays in facilitating cooperative research — administering the N.C. Fishery Resource Grant (FRG) Program, the Blue Crab and Shellfish Research Program (BCSRP), and the Bycatch Reduction of Marine Mammals in Mid-Atlantic Fisheries Research Program (MMRP). In addition, nearly 50 percent of North Carolina Sea Grant’s core monies go back out the door biennially to fund academic research within the state.

Rebach explained that an additional program goal is to transfer these new technologies and information to users through extension specialists’ outreach and education activities. This event is a perfect example. The N.C. Marine Recreational Fishing Forum, primarily organized by NCSG and held annually from 1992 to 1997, was considered by many stakeholders to be an excellent mechanism to engage the recreational fishing community on pressing issues through a facilitated discussion outside of the regulatory arena. It is NCSG’s hope that reinstatement of the forum will support outreach and information activities for recreational fisheries data collection programs, but even more, will provide an additional venue for communicating new marine fisheries research information and for gathering feedback and input from the marine recreational fishing community.

Louis Daniel, director of the N.C. Division of Marine Fisheries (NCDMF), also welcomed attendees and acknowledged the success of the previous Marine Recreational Fishing Forums. He also cited NCSG’s scientific data contributions, via funding of university-industry cooperative research, to NCDMF fishery management plan development. Daniel declared that NCDMF has excellent marine fisheries data collection programs compared to other states, and his staff members are excited to share that information with attendees. He also acknowledged many future management challenges, particularly Endangered Species Act (ESA) issues, on which he would speak about in-depth later in the program.

Scott Baker, fisheries specialist with NCSG, provided background on the motivations behind reinstating the forum and his hopes for what forum participants will gain from attending. In 2011, the National Oceanic and Atmospheric Administration (NOAA) released a new saltwater recreational fishing action plan in an effort to update and improve recreational catch data requirements, collection and analyses, and to improve anglers’ understanding of survey types (e.g., probabilistic versus non- probabilistic), statistical analyses and impacts of protected and invasive species on recreational fishing opportunities. Despite improvements to NOAA’s Marine Recreational Information Program (MRIP) over the last few years and the fact that NCDMF has some of the best fisheries data available on the U.S. East Coast, many anglers remain dissatisfied with the use of surveys to estimate catch and effort in recreational fisheries.

Baker delineated his expectations for the learning and tasks workshop participants would accomplish before the day’s end: (1) gain a better understanding of how marine recreational angler data is collected at state and federal levels; (2) learn about the results of the Mid-Atlantic Fishery Management Council’s (MAFMC) recent volunteer angler data workshop; (3) improve their understanding of protected species issues; and (4) identify best possible approaches to educate/inform the largest number of anglers on emerging issues.

Invited Speakers

Making Anglers' Catch Count

Preston Pate, current chair of the Operations Team of the national MRIP and an at-large appointment to the MAFMC, kicked off forum presentations by outlining MRIP, the new way NOAA Fisheries is counting and reporting marine recreational catch and effort, and one of a series of improvements over the current Marine Recreational Fisheries Statistics Survey (MRFSS). He explained how the improved methodology fixes a fundamental design issue of MRFSS, which has been in place since the 1970s. MRIP has invested resources in future improvements — such as enhanced angler intercept surveys, improved precision and more frequent reporting — to better meet customer and stakeholder needs. Between 2012 and 2013, there will be testing, then implementation, of (1) improved effort survey design, (2) new dockside survey protocols, (3) enhanced timeliness and geographic-level reporting, and (4) for-hire and Highly Migratory Species (HMS) improvements. Pate emphasized that the estimation method is a beginning, not an end. For more information on MRIP, please visit: www.countmyfish.noaa.gov.

Specific presentation highlights were:

- From a management standpoint, fish are counted in order to provide more reliable information for stock assessments, for determining Allowable Catch Limits (ACLs), and for monitoring quota that may be assigned to a particular species.
- A large number of anglers spread out over a vast geographic region makes it impractical to conduct a census of the entire recreational angler population; therefore, surveys are used to sample a part of the population of anglers.
- The single estimated values (point estimates) that are obtained through surveys all have a measure of imprecision, or percent standard error (PSE). The higher the PSE, the more variability there is in the point estimate and the less it can be relied on for making estimates. The PSE can be reduced by increasing the sample size. The goal is to get enough samples so that the PSE falls within a statistically acceptable range.
- In 2006, the Natural Research Council reviewed the MRFSS and determined that it needed to be overhauled due to a high level of survey imprecision. Congress, through the 2007 reauthorizing of the Magnuson-Stevens Act (MSA, 2007), also called for improvements to the way the nation manages saltwater fish and understands recreational fishing. The legislation specifically called for creating an angler registry, essentially a phonebook of saltwater fishermen, and for upgrading the existing recreational fisheries surveys. In response, NOAA developed the MRIP, which once complete, will replace the MRFSS.
- To date, MRIP has funded 60 research projects on new procedures designed to improve MRFSS surveys and improve data quality. All of the procedures outlined in these studies will be peer reviewed. North Carolina has played a big part in pilot testing new components of the new MRIP survey, running 16 of these 60 projects.
- In 2013, North Carolina will pilot test a new catch survey coastwide. New angler intercept methods will eliminate the potential for sampling bias. In addition to public access points, the survey will intercept anglers at some private access points and will include a longitudinal panel component. A longitudinal study is a correlational research study that involves repeated observations of the same variables over long periods of time. Thus, contacted anglers will be asked to submit monthly reports consistently on key catch and effort information.

- In 2014, a new trip survey design will be implemented nationwide. It will be a single-framed, stratified sampling design, which will replace the coastal household telephone survey. In statistics, a sampling frame is the source material from which a sample is drawn. In social sciences, it frequently is a list of all those within a population who can be sampled, and may include individuals, households or institutions. In a stratified sample, the sampling frame (in this case the population of Coastal Recreational Fishing License, or CRFL, holders with appropriate contact information) is divided into non-overlapping groups or strata based on criteria like geographical area of residency, age groups and gender. A sample is taken from each stratum. Further, the number of home phones has decreased dramatically since MRFSS implemented its survey in the 1970s, and pilot test results indicate that a mail survey requesting similar information will produce more responses, and as such, improved data precision.
- Perhaps the biggest change was the creation of the National Saltwater Angler Registry, wherein states were required to provide to NOAA a listing of all marine recreational anglers.
- Data from 2004 to present recently was converted to an approved format based on new and improved MRIP estimation procedures. The next challenge will be how to standardize data that was collected prior to 2004.

Audience questions included:

- *Are there other ways for anglers to report data that would be considered scientifically sound?* Baker, moderator for the Forum, interjected that Jason Didden would be addressing this issue in-depth later in the morning during his presentation of opt-in angler survey panels.
- *When will the results from the Gulf of Mexico for-hire electronic logbook pilot project be available to the public?* Pate responded that the project results currently were being peer-reviewed. The final report will be available on the MRIP website:
<https://www.st.nmfs.noaa.gov/mdms/public/public.jsp>.
- *Will MRIP begin to use North Carolina's license frame to conduct future surveys?* Pate replied that is very likely, particularly in testing data gathered for MRIP via a mail-based survey versus a household telephone survey.
- *Will MRIP continue to use home phone (landline) numbers to contact anglers? And in follow-up, why not use cell phone numbers, as these are collected as part of the CRFL in North Carolina?* Pate responded that state and/or federal statutes may limit NOAA's and NCDMF's ability to use cell phone numbers for surveys. But, he emphasized that the response rate to the household telephone survey was low for a variety of reasons and only in part was due to the decrease in landline phone numbers. With phones, particularly cell, anglers easily can screen calls, for example. Thus, NOAA is pushing to evaluate a mail-based survey to collect effort information.
- *Can the public get a copy of the scripts used by the survey pollers?* Pate responded that the scripts should be available on the NOAA website. However, he indicated that with the introduction of the new MRIP sampling protocol scheduled to begin in 2013, new scripts will be used.
- *Has there been any traction in getting e-mails from anglers in order to conduct surveys via this method? And in follow-up, what about the possibility of developing a logbook or smartphone app so that anglers could report catches?* Baker again offered that those points and more also would be addressed by Didden, when he discusses the MRIP Volunteer/Self-Reported Angler Data Workshop.

(Editor's Note: One forum attendee asked why the black sea bass season was closed, unrelated to the specific talk at hand. Pate answered the question, explaining that the federal Fishery Management Councils have to manage the fishery around the ACL. MAFMC chose options of an early and late season,

which resulted in a closure during the summer. However, Pate described black sea bass management actions taken by the MAMFC to address the Mid-Atlantic black sea bass stock. The question was directed toward the closure of the South Atlantic black sea bass fishery. Another forum attendee followed suit in discussing black sea bass, stating he believed the South Atlantic stock was not overfished, but rather, he suggested the early closure was because some charter boat captains are not reporting their catches on time. This attendee further commented that this small amount of unreported catch surely would not cause the fishery to close that early. Baker replied that Daniel would address black sea bass management in his talk.)

Recreational Fishing Research in Australia and the United States

Ken Pollock, professor of Biology, Biomathematics and Statistics at North Carolina State University (NC State), began by relaying that for two years, starting in October 2009, he was on leave from NC State working at the Fisheries Center of Murdoch University in Perth, Western Australia. He specifically was researching an improved recreational angler survey methodology for Australia. However, while the focus of his presentation would be on Western Australia, the survey design challenges he would describe are worldwide and relevant to U.S. recreational fisheries management. Pollock closed with a listing of some of his own thoughts and questions: What about biological sampling of fishes? How do we capture size of fish released? What is the angler compliance rate with the license requirement? For more information on Pollock's research, please visit: www4.ncsu.edu/~pollock.

Specific presentation highlights were:

- Western Australia has a small population, but more than 30 percent of the population (480,000 persons and 100,000 licensed boats) recreationally fishes, so licensing and similar management and data collection efforts can be challenging. For many species, the recreational catch far exceeds the commercial harvest, but the recreational catch is hard to sample.
- Because there typically are a small number of commercial operators, it is most appropriate to use a census approach to track harvest within this sector. The very large number of recreational anglers dictates the most appropriate approach to use is a probability-based survey to sample the recreational angler population.
- As Pate had explained in his presentation, it is crucially important to be accurate on the total catch estimate. This is difficult. Although we can account for harvest, we also need the number of fish released, and even more, the percentage of fish that are released dead or die after release.
- Surveys are designed with tradeoffs in mind, trying to balance obtaining a large enough sample to ensure precision in the estimates with the feasibility of implementation and cost of the survey. Ultimately, fishery managers must determine the best data that can be obtained for a reasonable cost and effort.
- A variety of angler-contact methods are available to choose from when conducting surveys. Australia currently is using aerial surveys in tandem with onsite interviews and camera counts to ground-truth estimates. This method even can show nighttime fishing. In addition, Australia uses telephone diary surveys, which are different than telephone-access surveys (e.g., MRFSS). This method uses phone interviews of randomly chosen anglers whom have volunteered to keep a diary to record details of their fishing activities so as to provide catch information. This survey is more costly but manifests improved accuracy in catch estimates. Overall, it is a better approach for this demographic as the frame is the boat license. Large spatial scales will need telephone surveys as a major component.

- In order to have effective surveying of anglers when using any contact method, it is of the utmost importance to have a good license file with minimal incompleteness due to exemptions, as well as to have compliance in obtaining the required license(s).
- In Australia, Pollock and his collaborators designed a survey for compliance officers to determine license compliance, but officers did not want to conduct the survey.

Audience questions included:

- *Were incentives used to fetch the 90 percent compliance rate observed in the Western Australia longitudinal survey?* Pollock replied that most anglers in Australia simply wanted to take part in the telephone survey. He indicated that no incentives were used to increase participation. Pollock then elaborated on how he felt that this cultural difference mainly is the reason for a high response rate when compared to the U.S., but also, noted that the Australians used a very good consulting company to conduct the surveys. This in itself could have made a big difference.

A forum attendee commented that bait-and-tackle manufacturers and dealers should do more to promote barbless hooks. He also thought that the government did not seem to do good job of collecting data on this issue. Pollock responded that it is a difficult task to determine which are the significant factors associated with catch-and-release mortality, and therefore, to what data to collect.

Marine Recreational Fishing Data Collection Programs in North Carolina

Chris Wilson, a biologist in the Coastal Angling Program (CAP) within NCDMF, opened what would be a three-part presentation by NCDMF staff on the state's CAP, implemented comprehensively in 2009 with the new availability of CRFL monies to supplement recreational catch data collection programs. CAP also allowed for sample coordination with the N.C. Wildlife Resources Commission (NCWRC). Both agencies are using the same type of survey, whereby staff can calculate similar catch and effort based on intercepts and sampling probabilities. CAP includes the state-level component of MRIP, a Central Southern Management Area (CSMA) survey, a for-hire survey, a HMS catch card, census of pier effort, and mail surveys related to flounder gigging, shellfishing, crabbing, cast netting and seining. MRIP uses regional data for management, but North Carolina has many more state-level data needs for fishery management plan development; thus, the reason for the broad spectrum of sampling methods. To learn more about the components of the CAP, please visit: www.ncrecfish.com.

Specific presentation highlights were:

- NCDMF collected 7,500 dockside interviews in 1997 but has ramped up to near 22,000 interviews following CAP implementation in 2009. Statisticians have determined that 20,000 samples collected annually is the threshold to get adequate data precision. The increase in sampling was prompted by the Fisheries Reform Act (FRA), which mandated development of Fishery Management Plans (FMP) and a five-year schedule for reevaluation.
- Management moved faster than NCDMF biologists and statisticians could generate necessary data, which resulted in merely "filling in the gaps" in data collection when it was required. This is how NCDMF's recreational data collection program became fragmented. The CRFL initiation in 2007 provided funding to create CAP, which is an umbrella program to coordinate efforts and improve the rigor of the sampling and data analysis components.

- Since 2009 in North Carolina, the CRFL list has served as the MRIP saltwater angler registry. This does not include charter boat (for-hire) effort, so that is why NCDMF staff created a separate effort survey for this sector.
- Before CAP, only three, full-time port agents conducted dockside surveys. Now, there are nine. With part-time, seasonal help, the number fluctuates between 18 to 20 total surveyors.
- Building on the sampling protocol in Roanoke and Albemarle sounds, the CSMA survey uses six port agents to conduct intercept surveys to estimate catch-and-effort data in the Neuse/Trent, Tar/Pamlico and Pungo rivers. Pollock designed the CSMA survey — a probability-based survey based on use at the access site. NCDMF will reach comprehensive coverage in 2013.
- The for-hire component is the most challenging sector to survey, because effort estimates cannot be obtained from the random-digit dialing. Ten percent of registered for-hire permit owners (roughly 70 to 80 captains) are called weekly, and then, this data is extrapolated up for the whole fleet. Data is validated via self-reporting and port agent dockside sampling. A problem is that a large percentage of for-hire permit holders operate trailerable “guide” boats out of many docks and marinas, thereby making it difficult to predict where they are going to be in order to intercept them dockside. Traditional charters and head boats come and leave from the same port allowing for NCDMF staff to validate their effort responses.
- To census “rare event” species, such as HMS like tuna, anglers must use a combination of catch cards and carcass tags. Before a fish can be unloaded from the vessel, anglers must get a catch card, fill it out and exchange it for a tag at an official weigh station.
- For fishing piers, NCDMF has instituted a pier census. The pier operator maintains a logbook, each day recording how many anglers fished. This is submitted once a month through the mail or electronically.

Next, **Kerry Anderson**, a statistician with NCDMF’s CAP, described in more detail mail surveys of marine recreational activities not traditionally included in telephone and intercept surveys. NCDMF specifically is using mail surveys to capture effort, not catch information, for gears other than hook-and-line, including cast nets, seines, shellfishing, crabbing (chicken neck, recreational crab pot) and flounder gigging. NCDMF data supports Pate’s comments that response to household phone surveys, which comprises the effort component of MRIP, has dropped to approximately 15 percent. So, mail surveys may be the likely way to get the best survey data precision.

Specific presentation highlights were:

- The CRFL application asks whether the license holder engages in fishing other than hook-and-line, but CRFL purchasers are not asked questions about fishing activities outside of hook-and-line by staff at big-box stores, such as Wal-Mart. Also, information on other fishing activities is not available for NCWRC lifetime license holders who purchased their licenses long ago. These people automatically became lifetime holders of a CRFL, as well, and never had to fill out the new CRFL application with these questions. So, the sample frame used for these mail surveys is a little smaller than that used for the MRFSS/MRIP household survey.
- For the gigging survey, 650 recreational anglers are surveyed per month. Through December 2011, NCDMF has sent surveys to 13,000 anglers; 6,000 anglers have responded representing a 45 percent response rate. The issue with the gigging survey is saliency — anglers do not think it pertains to them. NCDMF needs to explain to anglers the need to know when anglers are not gigging, as well as when they are.

- Of survey responses received, 71 percent were received in paper form and 29 percent were provided through the Web site. The goal is to increase the online responses. In Phase I, the first week of the month anglers receive pre-notice that ask them to complete the survey via the Web. Phase 2 begins 10 to 14 days later, wherein a paper survey is mailed to those having yet to respond. NCDMF is experimenting with a Phase 3 to assess if reminders really do increase response rate. Half of those that have yet to respond receive a thank you/reminder postcard 7 to 10 days after the paper survey.
- NCDMF staff are finding the information obtained from the mail surveys very useful. For example, staff determined from responses that one-third of all flounder gigged is reported as discards. Assuming that this gear has a 100 percent mortality rate on discards, this equates to about one dead discard for every flounder gig trip made.
- The combined survey for shellfishing and crabbing began in December 2010. Response has been similar to the gigging survey through December 2011: 48 percent response rate, with 68 percent via paper and 32 percent online.
- The data from the cast net/seine survey just started in November 2011 and is not yet available for analysis.

Following both presentations, audience questions included:

- *Did NCDMF research the reason why some anglers responded only after the reminder was sent?* Anderson replied that no, the reason for the difference in response time was not examined. It is assumed to a certain degree the reason was forgetfulness given it followed after the reminder card. She elaborated that NCDMF is considering removing completely from the license frame those who do not participate to improve efficiency of the frame. Anderson also noted she continually updates the NCWRC license database with new information on angler's recreational gear use beyond hook-and-line.
- *Would NCDMF consider use of incentives as a way to combat the non-response in the survey?* Anderson replied that using incentives is against standard NCDMF policy. Even if it were allowable, CAP does not have enough funding to provide incentives. She also explained that the CRFL law stipulates that the license holder is subject to requests for data, and the general mentality of saltwater anglers seems to be to comply as it is the "right thing to do."

Doug Mumford, biologist with NCDMF's CAP, closed the three-part CAP presentation describing what was on the horizon for North Carolina recreational data collection, specifically noting changes related to for-hire fisheries. Mumford reemphasized there has never been a greater demand for reliable recreational fishing data. Two main projects on the forefront of CAP activities is institution of a completely new access site survey to reduce bias, as well as continued work on for-hire license reform.

Specific presentation highlights were:

- The NCDMF has been working with the national MRIP to pilot test some of the new dockside intercept modifications. Previously, port agents were able to go to a suite of alternate sites to conduct intercept surveys if fishing was slow in one area. Now site clusters, anywhere from one to three sites, have been established prior to sampling. The port agent must survey within the site cluster. This allows the statisticians to calculate the probability that an angler would be surveyed. In addition, there will be nighttime coverage. The new methodology will use four, six-hour sampling periods; therefore, sampling will occur 24 hours a day, seven days a week.

- Bias reduction also prompted NOAA to re-estimate on a regional scale catch data from 2004 to 2009. In essence, NOAA took catch counts collected in the dockside surveys during that time period and re-estimated effort based on new survey protocols. The result for most species in North Carolina was that the old MRFSS estimates were similar to the new MRIP estimates. This is largely because North Carolina already is collecting a considerable number of dockside interviews each year (approximately 20,000), so the sample precision is high. When a NCDMF stock assessment scientist looked at the few species (e.g., red drum) that had some differences between the MRFSS and the MRIP estimates, she indicated that when using the re-estimated catch-and-effort data, the differences were too small to change the outcome of the previous stock assessments.
- As mentioned earlier in the group presentation, guide boats have no established port, and operators often utilize multiple boats at different times of the month, such as one for nearshore fishing, one for inshore fishing and so forth. This is part of the reason NCDMF is interested in pursuing reform of the for-hire license in North Carolina. Staff members are very interested in the pilot study examining logbook use in the Gulf of Mexico.

Audience questions included:

- *Would it be more appropriate to license the guide as opposed to licensing the guide boat(s)?* Mumford replied that this option will be considered during the reform of the N.C. for-hire license.
- *Would it be more appropriate to call all the guides all the time (as opposed to sampling 10 percent each week)?* Mumford explained that option is impractical given there are 700 to 800 for-hire vessels, of which guide boats are part. The real challenge is not getting up with guide boat vessel owners via phone but to validate data dockside by port agent sampling. This is why NCDMF is exploring logbooks as a component of the for-hire license.
- *Are catch estimates influenced by weather?* Mumford replied that environmental conditions are taken into account but probably not to the extent that most anglers would like to see.

Overview of the MRIP Volunteer Angler Data Workshop

Jason Didden, a fishery management specialist with the MAFMC, offered highlights from a recent workshop he coordinated on volunteer and self-reported angler data. The workshop was held February 2, 2012, in Baltimore, Md. Anglers have told fishery managers at state and federal levels that one way to increase overall trust in recreational catch numbers is to take advantage of their enthusiasm through hands-on participation in data collection. Within the last five years or so, several U.S. East Coast states, including North Carolina, have responded to this chorus and have implemented voluntary, self-reported angler data-collection programs, particularly Web portals for anglers to report catch-and-effort information. But, which data needs are best filled by volunteer angler data given the limitations and inherent bias of the data? How can managers use this data (statistically), so that they are not wasting people's time? This directly affects their ability to establish and sustain angler enthusiasm and support. This workshop, co-sponsored by MAFMC and MRIP, brought together people who manage these state programs and other volunteer data collection programs in order to examine these questions and more. For more information on the workshop, please visit: www.mafmc.org/events/volunteerdata.htm.

Specific presentation highlights were:

- To begin, Didden clarified that all data collection on the recreational front is voluntarily reported. So, a better title for the workshop he will discuss is "opt-in" angler surveys, as this is where anglers

self-select themselves to participate after having seen an announcement or a notice requesting anglers to participate.

- It is difficult for some people to understand how surveys work, and how only a small fraction of the population needs to be questioned in order to retrieve statistically valid responses. Most people are familiar with U.S. presidential polls, so Didden referenced the Web site “RealClearPolitics.com.” This site actually takes a poll of presidential polls. Unlike marine recreational fisheries where managers will never know the true total number of fish caught, in a presidential election the total number of votes are counted. Statistically sound polls (similar to what MRIP is trying to do) can produce very close estimates to the actual number. Pollsters in different parts of the country randomly select folks to participate in the same survey, following the same methods, and as such, obtain very similar results.
- Didden speculated that if people were not approached by pollsters, instead volunteering to sign up for a poll, pollsters would get only polarized responses that were not reflective of the consensus population. This is the danger with opt-in style surveys. There is a desire by everyone involved to figure out ways that we can correctly utilize this data.
- Recreational fisheries surveys (unlike presidential election polls) are trying to estimate landings for a large number of species. When few anglers are encountered, the variability around the point estimate can be high, as explained in Pate’s presentation. Using black sea bass MRIP data as an example, the point estimate is 95,004 fish caught, but the PSE equals 24.7. This really means that there is a 95 percent chance that the real answer is between 48,000 and 142,000 fish. Is that information really useful for a manager? How do we fix this?
- Also as explained by Pate, the easiest way to decrease the PSE is to perform more sampling, but as Pollock noted, this is costly, and managers have to balance tradeoffs. Maybe there is a role here for specialized opt-in angler survey programs?
- Certain parameters in fisheries data collection activities are much less susceptible to bias than others. Good parameters for anglers to provide information on are: (1) size-at-age studies, (2) sizes of released fish, and (3) site locations. In contrast, the overall catch (rate) is biased, likely influenced by interest level (effort) and skill of an angler to catch fish. The saying goes that 10 percent of the fishermen catch 90 percent of the fish.
- One of the suggestions from the workshop was to consider randomly selecting anglers from a license holder list to serve on an “opt-in” panel. With enough anglers involved, you would have a representative sample (cross-section of angler population).

Audience questions included:

- *Is there available a list of variables determined as amenable to self-observed data collection?*
Didden replied that a workshop report was being developed that will include a list. The report will be made available on: www.mafmc.org/events/volunteerdata.htm.

Pollock reflected that these all are examples of “citizen science” related to fisheries reporting. Research should be devoted to figuring out how these programs can be combined with randomly sampled data. Pollock conjectured that the citizen science concept is not going away, because the desire for self-participation is increasing and financial resources are decreasing. Didden added his agreement and pointed out that a good example of a volunteer program is Virginia’s “rack” program, where chest freezers are positioned in certain dockside locations and participating anglers complete catch cards describing the fish and catch location and leave the carcass for scientists to pick up at a convenient time.

North Carolina Coastal Angling Journal

In his earlier presentation on marine recreational fishing data collection programs in North Carolina, **Chris Wilson** mentioned a new way North Carolinians can self-report marine recreational catch — an electronic reporting system with an online angling journal. This is the opt-in program to which Didden referred. Currently, the Coastal Angling Journal (CAJ) is a tool that individual anglers can use to record individual fishing trips and to monitor their fishing success, similar to the new International Game Fish Association smartphone app. Anglers can print out this logbook for their personal use. The eventual goal is that information from the CAJ will enable NCDMF to better characterize and assess marine recreational fisheries, but the information currently is not used in statistical analysis and not intended to for such a purpose. To access the journal, please visit: www.ncrecfish.com.

Specific presentation highlights were:

- NCDMF had high hopes that people would want to participate in CAJ, but so far participation has been modest with only 435 account owners. Many of these anglers registered right after a press release was issued in July 2010. Since then, the average is no more than two dozen new registrants per month. During the same time period that CAJ has been active, NCDMF staff members have interviewed (through MRIP) 42,450 anglers.
- If CAJ had greater and regular participation by successful and unsuccessful anglers, NCDMF would be able to analyze the data collected for its utility, particularly with regard to discard lengths. CAJ really is the only place that NCDMF collects anything on length of discards, and this represents an opportunity to supplement traditional data.
- Most CAJ account holders are private boat owners who are focused on targeting specific species.
- For both MRIP and CAJ, data indicates that nearly one-third of anglers use private accesses, which cannot be sampled by a port agent. Thus as noted earlier, the new NCDMF angler intercept methods include interviewing anglers at some private access points, not just traditional public accesses.

Audience questions included:

- *Are additional factors like water depth recorded for offshore species in CAJ?* Wilson replied that the CAJ database does include a list of commonly fished locations, such as artificial reefs, as well as environmental variables, such as water depth.
- *How does NCDMF plan to make the data useful?* Pollock took liberty to comment that CAJ reports do seem biased towards successful trips, so the next phase of research should be how NCDMF can combine the CAJ data with traditional unbiased survey data. He urged NCDMF not to simply ignore the data because it's biased.

Morning Wrap-up and Discussion

Scott Baker facilitated a round-robin, general audience response to the morning presentations. The discussion ensued as follows:

In regards to angler participation in recreational opt-in surveys, one attendee expressed concern over a possibility that contributed data could be used against anglers.

Another attendee suggested a \$500 per month incentive be offered for a group of license holders to log-in to the Web site with their CRFL number, click on the map to indicate where they fished, and provide detail about the fish caught.

Someone felt CAJ was too long and complicated for most people. Baker responded, stating managers, particularly stock assessment scientists, always have wanted more data than fishermen would rather provide. He cited potential for a compromise between the two extremes — maybe the CAJ form could be shortened with an option for anglers to provide more detailed information. Wilson indicated that this already was the case to some extent with CAJ.

With continued state budget losses, one attendee cited the potential for CRFL monies to be used to fill gaps for operational state monies. He indicated that he would like to see all CRFL expenditures helping to foster recreational fishing opportunities. An example of a poorly chosen expenditure of monies would be a summer flounder hatchery, because under the current regulations most of the benefit of this effort would go to the commercial harvest. In response to CRFL monies underwriting lost state monies, another attendee stated that he was a member of the CRFL Advisory Committee and was concerned this possibility very well could happen. He noted that the CRFL Advisory Committee recently only was allowed to review “people” proposals and could not review any of the NCDMF “habitat” or “fish” proposals. This made him very frustrated.

A forum attendee asked if any of the fishery managers in attendance saw a relationship between increased gas prices and regulations coinciding with an observed decrease in fishing effort. He felt this was indeed happening and may bias fishery-dependent sampling efforts. To this, another forum attendee commented that while the focus of the forum was on fishery-dependent data collection practices, there also was a need for more fisheries-independent data.

One forum attendee noted that during all of the morning’s discussion the effect of the port agents’ data collections on observed fishing activity was never mentioned and should have been. He felt that an angler being interviewed purposely could bias the data to get the regulations they are looking for.

To close out the discussion, someone asked if managers were using the catch data to determine the carrying capacity of the fisheries. He believed this process was not rigorous enough to use in development of regulations.

Invited Speakers (*continued after lunch*)

North Carolina General Assembly’s Marine Fisheries Study Committee

Greg Hurt, president of the Coastal Conservation Association North Carolina (CCA-NC), introduced **North Carolina Representative Tom Murry** (District 41), a new member to the N.C. House of Representatives. Murry described himself as a husband, father, pharmacist and attorney. He received his pharmacy degree from the University of Arkansas and law degree from Campbell University. Hurt then explained that on September 1, 2011, N.C. President Pro Tempore, Senator Philip Berger, and N.C. House Speaker, Representative Thom Tillis, requested the Legislative Research Commission (LRC) form a subcommittee to study issues related to marine fisheries. The LRC Committee on Marine Fisheries was co-chaired by State Senator Harry Brown and State Representative Darrell McCormick. The subcommittee itself was

composed of 15 members that met a total of four times. Murry was among appointees by the Speaker of the House of Representatives. On April 5, 2012, the subcommittee delivered its report to the LRC. To access the report, please visit: www.ncleg.net/gascritps/DocumentSites/browseDocSite.asp?nID=175. Then, click on "Meetings," followed by "4-5-2012," then "Handouts and Presentations" to open the PDF.

- Murry began by noting that while his campaign did not run on fishing issues, it did run on jobs, and that is largely what this study of marine fisheries issues is about — maintaining a viable and competitive recreational fishing industry.
- What resulted from the committee on marine fisheries is a 40-page document that contains four recommendations, none of which are novel. The basic recommendations are: (1) study the reorganization of fish and wildlife management, with possible consolidation of NCDMF powers and duties to another state resource agency; (2) study payment amount, and use, of coastal fishing and boating license fees, both for recouping license management expenses from fee revenue and for possible additional uses like funding dredging and maintenance of the state's coastal inlets; (3) prohibit certain harvest of menhaden; and (4) provide legislative oversight of fish and wildlife management in combination.
- Murry emphasized that the committee's findings are just a start. It is just as much a budget issue as a resource issue.
- Murry noted the potential modification of the Fisheries Reform Act (FRA) of 1997 down the road. As a new member, he is digging into the FRA development. He acknowledged plenty of discussion went into its development, but because it is more than a decade old, it warrants reexamination, cleaning up and revamping.
- Murry underscored a greater role for science in giving the state what is needed. How do we get from here to there from a science-based approach? This would happen in the N.C. General Assembly's 2013 long session.
- Murry explained how all of this could be couched as an economic development argument. For example, Down East schools are training people on how to build boats, but why would they do that if there is no industry? Louisiana is using NC State technology for aquaculture production. Why are we not using this homegrown technology in North Carolina?
- Murry said this was not a "you lose, I win issue." Comparing commercial fishing to recreational fishing is like comparing manufacturing jobs to retail jobs. North Carolina no longer makes (a lot of) furniture, but within the state we sell a lot of furniture. So, how do we interface that discussion with commercial (manufacturing) versus recreational (retail)? The dockside value of fish is not where the economic multiplier effect stops for commercial fisheries. We need to understand better what the value of that fish is for the commercial fishing industry in contrast to all of the economic research using multipliers for calculating the value of the recreational industry.

Audience questions included:

- *Why do you think aquaculture has not progressed in this state? And in follow-up, might it be that aquaculture development threatens N.C. commercial interests?* A forum attendee commented that it was illegal to harvest red drum in Louisiana, but it is commonly found in stores and restaurants. He heard that the red drum were from the N.C. commercial fishery. Another attendee commented that many current marine aquaculture operations require an enormous amount of fish meal (e.g., anchovy species) to feed the reared fish. To him, this in itself was a good reason to pause on aquaculture development until more vegetable-based (e.g., soy) fish feeds can be tested and proven.

- *Are there any details on the proposed NCDMF and NCWRC merger?* Murry replied that the proposed legislation directs the NCWRC executive director, the NCDMF director, and where appropriate, the Commissioner of Agriculture to examine ways to provide for the efficient and effective transfer of all statutory authority, powers, duties and functions. The committee's recommendation in early April set a deadline for this assessment of October 1, 2012. But, Murry emphasized that there were lots of LRC subcommittees currently meeting, and the first step for all is to pass through the LRC Oversight Committee before it goes any further in the N.C. General Assembly.

(Editor's Note: The North Carolina General Assembly enacted this proposed legislation with a deadline for this assessment being as indicated above – October 1, 2012. View Session Law 2012-190 / Senate Bill 821 at: www.ncleg.net/Sessions/2011/Bills/Senate/PDF/S821v6.pdf.)

- *Why does North Carolina not have a joint law enforcement agreement with NOAA? And in follow-up, does not it make monetary sense?* Murry commented that federal money usually comes with lots of strings attached. In his estimation, only 85 percent of money that goes to Washington, D.C., comes back to the state. Another attendee suggested that North Carolina is the only state in the country that does not have the agreement. *(Editor's Note: These statements were not fact-checked for accuracy.)*
- *Should user fees be such that they cover the costs of NCDMF operations? And in follow-up example, shouldn't the Standard Commercial Fishing License fee cover the cost of using observers in the Pamlico Sound Gillnet Restricted Area fall fishery?* Murry affirmed that user-fee pricing should be investigated in all areas of government operations, citing the example of recently raised court costs in an effort to cover court operations in full. He was of the belief that NCDMF should implement fees that make financial sense. If the observer program was to cost \$1,000,000, and the commercial fishery produces only \$400,000 worth of product, it would be difficult to qualify this expenditure as a logical return on investment. Murry continued that this type of in-depth examination of spending was a natural course of action for the new N.C. House majority. Every department will be examined. Departments doing good work and being fiscally responsible should not be worried about the scrutiny. Even more, they stand to justify their cause. Another strategy is to increase sales, with certain portions of proceeds earmarked for related activity.
- *How does the state obtain more funding for fisheries-independent data collection?* A forum attendee made the comment that the whole morning was spent reflecting on fishery-dependent data collection programs, but fisheries-independent data collection, though not discussed, is vitally important for FMP development. Murry replied that the study committee did not even get to address a fraction of the issues within "its charge," and at the moment, he has no clear idea for money sources.
- *How will the proposed fish and wildlife oversight committee be different from the previous Joint Legislative Committee on Seafood and Aquaculture (JLCSA)?* Murry replied that he was not that familiar with the scope of oversight and membership composition of the former JLCSA, but from an operations perspective, there probably would be little difference. He offered the main difference would be different representation (e.g., no members from the general public) and with more geographic coverage. Pursuant to General Statute 113-182.1(e), NCDMF submitted to the JLCSA a report on FMPs by September 1st of each year. But, the reports were being presented to the Joint Legislative Commission on Governmental Operations because the JLCSA was eliminated in Session Law 2011-291. If passed into law, this function would be moved from Governmental Operations to the new fish and wildlife oversight committee.

What's on the Horizon for the Recreational Industry?

Louis Daniel returned to the podium to outline the challenges that NCDMF is facing in the coming months and years, particularly relating to protected and endangered species. The reauthorization of the MSA was the “kiss of death for a lot of fisheries,” he said. North Carolina’s marine recreational data collection program is the strongest in the country, and the availability of CRFL monies has been a huge benefit to provide funding to fill data gaps. Even with these additional resources, agencies still do not have enough money to do the science and management at the state and federal levels. All fishery management agencies often are forced to use the “best available science” knowing that is not sufficient to do the job. The MSA forced the new rules that state and federal fisheries management agencies must follow. For more information on the MSA, please visit: www.nmfs.noaa.gov/msa2007/index.html.

Specific presentation highlights were:

- Daniel began with speaking to the black sea bass (south of Hatteras) management question asked earlier. The new ACL and accountability measures translate into quotas set for each and every managed fish. The snapper-grouper complex is comprised of 73 species, many of which are considered “data poor.” In those instances, the fishery management councils arbitrarily set coast-wide quotas of 500 pounds. The state of North Carolina, along with the North Carolina Fisheries Association, challenged the regulatory decision (Amendment 13C to the South Atlantic Fishery Management Council Snapper-Grouper Fishery Management Plan) saying the data available (and thus used) was not representative of the N.C. fishery, but lost. Daniel said this quota will make for derby fishing conditions in the recreational fishery. Recreational anglers will start to experience what commercial fishermen have been experiencing for years. He pondered, “What happens when wahoo fishing closes in August and the ‘Wahoo Challenge’ is in October? Or, when the king mackerel fishery closes ahead of several king mackerel tournaments?”
- Because of limited available data, fights will be intense as regulators divvy quotas among states in the Atlantic States Marine Fisheries Commission (ASMFC), which manages fisheries for all 15 Atlantic Coast states, to jointly manage fish that cross between state waters. Further, the existing MRFSS data system was never set up for quota monitoring to this extent.
- Research dollars to attempt to fill these data gaps thus far have been disproportionately spent. For example, the grouper fishery is a higher dollar fishery when compared to the New England cod fishery, but that is where the research and development money is going.
- Another problem, as Daniel sees it, is that ethical angling is hard to enforce. Realistically, it is not really happening to the extent that is needed.
- In response to Murry regarding the rising costs of observer coverage in many state fisheries, Daniel warned that rising license fees could compromise fishery-dependent data collection. He suggests that if a “pay-to-play” scenario arises for all fishing in the state, there will be a downturn in effort. NCDMF observed a 35 percent reduction in 2007, before the economic crisis, mainly due to rising fuel costs. Since then, NCDMF has observed an additional 20 percent reduction in recreational trips. Daniel wanted to point out that this is a moot point. NCDMF needs approval from the General Assembly to create/increase user fees. NCDMF has requested a discussion of this matter in the 2012 General Assembly short session.
- In response to the proposed NCDMF/NCWRC merger, Daniel emphasized that it is critically important to distinguish management of wild fish versus aquaculture or farm-raised products.

Protected Species in North Carolina

Louis Daniel immediately segued into speaking about the effects of threatened (e.g., sea turtles) and endangered (e.g., Atlantic sturgeon) species protection on state fisheries. He explained the process of developing and submitting an ESA Incidental Take (also called Section 10) Permit. An incidental take permit is required when non-Federal activities will result in “take” of threatened or endangered wildlife. A habitat conservation plan must accompany an application for an incidental take permit. NCDMF has prepared permit applications for both sea turtles and Atlantic sturgeon. The permit applications cite a substantial economic loss caused by the ESA listing, resulting from the inability to fish in large expanses of N.C. waterways and over great periods of time. If the permit is approved, it will allow commercial fishing activities to proceed but with a certain number of “takes,” that once met, would trigger fisheries closures. It also will stipulate special gear restrictions and monitoring requirements. Observers would have to monitor a certain percentage (usually 10 percent) of fishing trips to make sure the take level is not exceeded. The Atlantic sturgeon listing went into effect Apr. 6, 2012. To read the final rule, go to: www.nero.noaa.gov/nero/regs/frdoc/12/12AtlSturgeonFR_SER.pdf.

Specific presentation highlights were:

- The challenge with sturgeon is that, unlike sea turtles where their “threatened” status requires only regulations focused on specific commercial fishing gear, their status of “endangered” will require regulation of non-fishing related activities that regularly occur in N.C. waters (e.g., power boating, inlet dredging). Many sturgeon are observed in N.C.
- The ESA prohibits the take of listed species. The term “take” includes harassing, harming, pursuing, wounding, killing, trapping, capturing or collecting the listed species. Fishermen should avoid any type of interactions with these fish at all costs.
- Daniel suggested the focus related to protected species in N.C. coastal waters needs to be on education. The NCDMF *Coastal Angler’s Guide* brings up hot-button issues such as these. For example, the latest edition focuses on what to do when encountering a sea turtle.

Audience questions included:

- *What is NCDMF’s reaction to the fact that a lot of commercial and recreational fishermen have expressed interest in modifying the MSA, as there are concerns about the science used in management decisions?* Daniel replied that there is a need to better define “best available science” and include some sort of standard that would go along with it. He felt the term “best available” currently was not well defined and should not simply mean that some data exists. He might better like to see the “Improvement of Science Act.”
- *Has anyone examined the financial impact of the sturgeon listing on North Carolina?* Daniel replied that there has been an economic impact on some fisheries. Sara Mirabilio, extension fisheries specialist with NCSG, noted that the MSA has a national standard to give regard to economic and social consequences when designing an allocation scheme, whereas the ESA does not consider financial hardship when making their species listing.
- *Given there is some habitat overlap with Atlantic and shortnose sturgeon, why has not shortnose sturgeon critical habitat been designated?* A forum attendee commented that the shortnose sturgeon has been protected since 1966, which is before the ESA went into effect in 1972. ESA requires that critical habitat be designated at the time of a species listing. Daniel replied that NCDMF started with that point to challenge the Atlantic sturgeon “endangered” classification. Further, recent data suggests recovering populations of sturgeon in N.C. waters under existing

management measures, another reason NCDMF, along with the N.C. Marine Fisheries Commission (NCMFC) and NCWRC, objected to the Atlantic sturgeon listing as unwarranted. Atlantic sturgeon was listed by NOAA Fisheries nonetheless. Daniel felt that freshwater and saltwater fishermen are being unfairly compromised by ESA. All N.C. waters are public, whereas endangered terrestrial animals on private property (which are the majority) are not governed by ESA rules.

In closing, Wilson Laney of the U.S. Fish and Wildlife Service explained that in 1998, the Atlantic sturgeon status review team, of which he was a member, did not recommend the designation of “endangered,” because the ASMFC already had taken drastic action and closed the fishery. In 2007 after a new status review was conducted, the team (which Laney again was part of) recommended the Atlantic sturgeon designation be changed to “threatened.” No team member knows why NOAA Fisheries saw fit recently to change the status to “endangered.” Laney also took the liberty to make attendees aware that there currently was an ESA petition to list river herring as an endangered species. He felt that this may happen, because the habitat loss and issues that were part of the sturgeon listing are the same for river herring.

Marine Debris in Coastal North Carolina Saltmarsh and Underwater Habitats

Jenny Vander Pluym, research technician and diver within the Applied Ecology and Restoration Research Branch of NOAA’s Center for Coastal Fisheries and Habitat Research (Beaufort, N.C.), explained how the NOAA Marine Debris Program is undertaking a national and international effort focusing on identifying, removing, reducing and preventing debris in the coastal and marine environment. Marine debris typically is defined as any man-made object discarded, disposed of, or abandoned that enters the coastal or marine environment. It may enter directly from a ship, or indirectly when washed out to sea via rivers, streams and storm drains. Because the general public does not readily see the garbage, many people think that there is no problem. Outreach is needed to educate the public about marine debris. To find out more about the program, please visit: www.marinedebris.noaa.gov.

Specific presentation highlights were:

- The first step for the project was to validate that marine debris really is out there, and then if so, whether it has a negative effect on habitat.
- Ocean Conservancy categories for beach clean-ups were used, so data could be compared across the multiple studies. The categories are: wood (man-made), textiles and rubber, plastics, glass, foam, metal, fishing (anchors, lures, hooks, buoys, netting), and other (batteries).
- Researchers sampled a total of 11 acres in the Beaufort, N.C., area on four different occasions. They found 2,850 kilograms or 14,747 pieces of garbage. By count, 45 percent was plastic and 32 percent was foam. Fishing-related debris comprised merely 1 percent. But by weight, fishing-related debris equaled 11 percent, second to wood (62 percent).
- Much of the fishing-related debris was clam spat net (from shellfish bottom beds), pound net poles, and materials from disintegrated duck blinds. The most common items researchers found were what most people deposit: plastic bottles and bags, caps and lids, cigarettes, food wrappers and similar.
- The timing of marine debris arrival on site, as well as the ratio of materials collected, was similar across sites and habitat types. The volume of marine debris increases the closer you get to population centers. Case in point: debris accumulation in Beaufort is steady despite clean-sweeps of the site. In contrast, sites outside the municipality remained cleaner for longer.

- Vander Pluym asked rhetorically, “So is land-based marine debris really a big deal?” and “Does not the marsh come back fine?” Researchers conducted an impact study using crab traps, tires and wood pallets left on the marsh for differing periods of time. They found that some debris does leave lasting affects. In particular, shoot density takes a long time to come back. In this case, tourism also should be listed as an impact.
- In addition to the coastal islands, researchers conducted some underwater surveys and clean-up at specific sites, piggybacking with lionfish research cruises. Overall, only a small amount of debris was evident, but researchers did observe two miles of monofilament. Researchers suggest that this is not a great threat to fish, but rather, to marine species, such as *Oculina* corals. The monofilament can wrap around and sometimes break and damage the coral outcrops.

Audience questions included:

- *Was there any redistribution of old debris to other monitored sites; or, was it mostly new debris at those sites?* Vander Pluym replied that although they did monitor environmental events and conditions, there was ultimately no way for them to prove this either way.

One attendee commented that, in regard to outreach campaigns, the best education campaign in the country is: “Don’t Mess with Texas!”

Mid-Atlantic Fishery Management Council Visioning Project

Jason Didden returned to the podium to overview a second project he has been assisting on, the MAFMC Visioning Project. From September 2011 through February 2012, MAFMC gathered input from constituents on what their vision was for Mid-Atlantic fisheries. The next step is to present the results to the MAFMC members and general public. Following this, MAFMC will use this input to begin forming a Vision Statement and to modify their Strategic Plan on operating and managing Mid-Atlantic fisheries in the future. To see the results of the Visioning Project, please visit: www.mafmc.org/vision/Final_Visioning_Report.pdf.

Afternoon Wrap-up and Discussion

Scott Baker facilitated a round-robin, general audience response to the afternoon presentations, as well as looked to the future for a next forum. Before adjourning, attendees were asked to complete an Exit Survey, where they could further elaborate on the present forum and those to come. The discussion ensued as follows:

Most attendees agreed that Raleigh likely is the best place to hold a gathering, especially if coming from Charlotte or points farther west. Most people also agreed that a meeting held earlier in the year (January or February) would be more convenient, as it would not interfere with fishing.

Many of the attendees liked the face-to-face interaction but also would like to see some level of online access to the meeting during or after it has occurred.

Didden shared his experiences providing online access to MAFMC meetings, as he has been the responsible person for that. In his experience, most people who regularly attend MAFMC meetings still attend in person. But online access, primarily through webinar or social media, has been useful in

attracting new people. For the advisory panel meetings that are broadcast online, there has been an opposite effect in some cases, with some regular attendees now participating solely remotely. He stated that MAFMC has observed that people who participate by remote access do not actively engage (e.g., ask questions) as much as those attending in person.

One attendee suggested that the forum organizers circulate the attendee list, including name, affiliation and e-mail. He also suggested that organizers e-mail all attendees when presentations and the forum report are posted to the NCSG website.

**2012 North Carolina Marine Recreational Fishing Forum
“Improving Engagement with the Recreational Fishing Community”**

**Agenda
Saturday, April 21, 2012
NC State McKimmon Center, Raleigh, NC**

Time	Topic	Speakers
8:30-9:00	Registration and coffee	
9:00-9:15	Welcome from North Carolina Sea Grant Welcome from NC Division of Marine Fisheries Forum details: Agenda, timeline, goals, etc.	Dr. Steve Rebach (NCSG) Dr. Louis Daniel (NCDMF) Scott Baker (NCSG)
9:15-9:45	Recreational data collection in the United States: Overview of the Marine Recreational Information Program (MRIP)	Preston Pate (NOAA)
9:45-10:00	Recreational fishing in Australia and the United States	Dr. Ken Pollock (NC State)
10:00-10:15	Recreational data collection in North Carolina	Chris Wilson (NCDMF)
10:15-10:30	Break	
10:30-10:45	Utilizing North Carolina’s CRFL database: A review of 2011 flounder gigging data	Kerry Anderson (NCDMF)
10:45-11:00	On the horizon for North Carolina recreational data collection: For-hire fisheries	Doug Mumford (NCDMF)
11:00-11:30	Overview of the MRIP volunteer angler data workshop (Feb. 2, 2012)	Jason Didden (MAFMC)
11:30-11:45	North Carolina “Coastal Angling Journal”	Chris Wilson (NCDMF)
11:45-12:00	Discussion: What new programs and methods would anglers support and DMF use data from? Would CRFL be source of funding? How to increase and maintain participation in new programs? Where to go from here?	Facilitators: Scott Baker (NCSG) and Sara Mirabilio (NCSG)
12:00-1:00	Lunch (boxed lunch provided)	
1:00-1:45	NC General Assembly marine fisheries committee results and recommended legislation Introduction by CCA-NC	NC Rep. Tom Murry (District 41) Greg Hurt (CCA-NC)
1:45-2:15	What’s on the horizon for the recreational industry?	Dr. Louis Daniel (NCDMF)
2:15-2:45	Protected species in NC coastal waters: Status update, what anglers need to know, and what can they do to minimize interactions	Dr. Louis Daniel (NCDMF)
2:45-3:00	Break	
3:00-3:30	Marine debris in coastal North Carolina saltmarsh and underwater habitats	Jenny Vander Pluym (NOAA)
3:30-3:45	Discussion: How do we educate industry about these other issues? How can industry be involved or proactive in providing information on other issues? How can partners work together on these issues?	Facilitators: Scott Baker (NCSG) and Sara Mirabilio (NCSG)
3:45-4:00	Exit survey completion; suggestions for new topics; support for continuation	Scott Baker (NCSG) and Sara Mirabilio (NCSG)
4:00	Adjourn	Scott Baker (NCSG)

North Carolina Marine Recreational Fishing Forum

Saturday, April 21, 2012

NCSU McKimmon Center, Raleigh, NC

Speaker Biographies & Contact Information*In order of appearance*

Preston P. Pate, Jr. currently serves as the chair of the Operations Team of the national Marine Recreational Information Program (MRIP) and as an at-large appointment to the Mid-Atlantic Fishery Management Council (MAFMC). Pate retired in February 2007 with 36 years of service with the state of North Carolina. For the last 10 years of his career, he served as the director of the N.C. Division of Marine Fisheries (DMF), responsible for regulating the state's \$1 billion saltwater fishing industry. Over the course of this time, Pate served as chairman of the Atlantic States Marine Fisheries Commission, and served on both the Mid- and South Atlantic Fishery Management Councils. Pate started his resource management career in 1971 with the DMF studying herring in the Albemarle Sound area. His work changed in 1975 when he began evaluating coastal development permits for the DMF. In 1980, Pate's duties were shifted to the newly created N.C. Division of Coastal Management. A native North Carolinian, Pate was born in Snow Hill. He attended North Carolina State University, where he received an undergraduate degree in fishery biology and a Master of Science degree in zoology. Telephone: 252-726-4883; E-mail: ppate@ec.rr.com.

Dr. Kenneth H. Pollock is a professor of Biology, Biomathematics and Statistics at NC State in Raleigh. Dr. Pollock is one of the leading researchers on sampling fish and wildlife populations, having authored or co-authored five books and monographs, and more than 200 research papers in the area. Pollock has an active research program on the design and analysis of recreational angler surveys, and is the senior author on an important American Fisheries Society monograph on recreational angler survey methodology. He recently served on a National Academy of Science panel on improving marine recreational fishing surveys in the United States and has consulted with fisheries agencies around the world on recreational fishing survey designs. For two years starting in October 2009, Pollock was on leave from NC State working at the Fisheries Center of Murdoch University in Perth, Western Australia. He received a bachelor's degree in agriculture from the University of Sydney in New South Wales, Australia, and his master's and doctoral degrees in biological statistics from Cornell University in Ithaca, New York. Telephone: 919-906-3147; E-mail: pollock@ncsu.edu.

Chris Wilson is a biologist in the Coastal Angling Program within the N.C. Division of Marine Fisheries and is based in the Washington, N.C., Field Office. Telephone: 252-946-6481; E-mail: chris.wilson@ncdenr.gov.

Kerry Anderson is a statistician in the Coastal Angling Program within the N.C. Division of Marine Fisheries and is based in the Washington, N.C., Field Office. Telephone: 252-946-6481; E-mail: kerry.anderson@ncdenr.gov.

Appendix B:

Speaker Biographies with Contact Information

Doug Mumford is a biologist in the Coastal Angling Program within the N.C. Division of Marine Fisheries and is based in the Washington, N.C., Field Office. Telephone: 252-946-6481; E-mail: doug.mumford@ncdenr.gov.

Jason Didden is a fishery management specialist with the Mid-Atlantic Fishery Management Council (MAFMC) based in Dover, DE. His responsibilities include being the primary coordinator for the Atlantic mackerel, squid and butterfish Fishery Management Plan (FMP). Didden is the MAFMC contact to the Northeast Fishery Management Council on herring, and the contact to the South Atlantic Fishery Management Council for the dolphin/wahoo FMP. Most recently, he coordinated the MAFMC-hosted Volunteer/Self-Reported Angler Data Workshop held Feb. 2, 2012, in Baltimore, MD. Telephone: 302-526-5254; E-mail: jdidden@mafmc.org.

Greg Hurt is the president of the Coastal Conservation Association North Carolina (CCA-NC). In 2010 and 2011, Hurt chaired the Government Relations Committee for the CCA. Hurt is employed by Capitol Broadcasting Company as a vice president of sales and marketing. He is a graduate of Campbell University and resides in Smithfield, N.C. Telephone: 919-850-4500; E-mail: ghurt@microspace.com.

Honorable Representative Tom Murry is serving his first term representing North Carolina House District 41, which includes portions of Raleigh, Cary, Apex and the entire Town of Morrisville. Professionally, Murry is a pharmacist and attorney, but currently works as a pharmacist manager at an independently owned pharmacy in Raleigh. As a member of the Commerce and Job Development Committee, Murry is focusing on economic development and private-sector job growth. Additionally, Murry serves on the House Appropriations Subcommittee on Health and Human Services (HHS), as well as the HHS policy committee. He also is a member of the committees on Insurance, Transportation and House Select Committee on Tort Reform. Telephone: 919-733-5602; E-mail: Tom.Murry@ncleg.net.

Dr. Louis B. Daniel, III, replaced Preston Pate as director for the N.C. Division of Marine Fisheries (DMF) on Feb. 1, 2007. Daniel began working with the DMF as a biological supervisor in 1995. Before assuming the director's post, he served for nine years as an executive assistant to the DMF director, working extensively with the South Atlantic Fishery Management Council (SAFMC). Daniel served as the SAFMC chairman from 2004 to 2006. He also served on numerous management boards for the Atlantic States Marine Fisheries Commission, a compact of the 15 East Coast states that regulate near-shore migratory fisheries. Prior to working with the DMF, Daniel worked with the U.S. Fish and Wildlife Service for one year. A native North Carolinian, Daniel grew up in Pinehurst. He received his doctorate in marine science from the College of William and Mary, his master's degree in marine biology from the College of Charleston, and his bachelor's degree in biology from Wake Forest University. Telephone: 252-808-8013; E-mail: louis.daniel@ncdenr.gov.

Jenny Vander Pluym is a research technician and diver within the Applied Ecology and Restoration Research Branch of the National Oceanic and Atmospheric Administration's (NOAA) Center for Coastal Fisheries and Habitat Research, commonly referred to as the NOAA Beaufort

Appendix B:**Speaker Biographies with Contact Information**

Lab due to its location in Beaufort, N.C. Jenny does a little bit of everything! Some of their recent research focuses on habitat mapping, ecology and restoration, which means they assess different marine and coastal habitats by collecting data in the field using SCUBA, photographic and wading techniques. Once the data is collected, Vander Pluym enters, analyzes and summarizes the data to be included in reports and scientific publications detailing their research results. She also serves as dive master for many of their science missions. Telephone: 252-728-8777; Email: jenny.vanderpluym@noaa.gov.

Participant Information

In alphabetical order by last name, the 43 forum attendees were:

Last Name	First Name	City	State
Anderson	Kerry	Washington	NC
Baker	Scott	Wilmington	NC
Barrow	Mary Beth	Raleigh	NC
Blake	Everett	Angier	NC
Boreman	John	Durham	NC
Bryan	John	Lumberton	NC
Bryan	Marsha	Lumberton	NC
Buckel	Jeff	Morehead City	NC
Cooney	Patrick	Raleigh	NC
Daniel	Louis	Morehead City	NC
Dantzler	Lee	Havelock	NC
Dell'Apa	Andrea	Greenville	NC
Didden	Jason	Dover	DE
Ellis	Tim	Morehead City	NC
Frazier	Tiffany	Morehead City	NC
Gilliam	Jim	Raleigh	NC
Hardin	Jim	Greenville	NC
Harris	Fred	Fuquay Varina	NC
Hergenrader	Tim	New Bern	NC
Hesselman	Don	Morehead City	NC
Hurt	Greg	Smithfield	NC
Laney	Wilson	Raleigh	NC
Lorenz	Robert	Wilmington	NC
Madren	Dale	Raleigh	NC
McCants	Bernie	Raleigh	NC
Mcperson	Ron	Atlantic Beach	NC
Medlin	Capt Chris	Surf City	NC
Mirabilio	Sara	Manteo	NC
Moon	John	Mebane	NC
Mumford	Doug	Washington	NC
Murry	Tom	Raleigh	NC
Nowell	Bo	Apex	NC
Pate	Preston	Newport	NC
Patterson	Katie	Raleigh	NC
Pollock	Ken	Raleigh	NC
Rebach	Steve	Cary	NC
Smith	Ron	Eastover	NC
Szarek	John	Cary	NC
VanderPluym	Jenny	Beaufort	NC
Wachtler	Patrick	Fayetteville	NC
Waters	Christian	Raleigh	NC
Willis	Donald	New Bern	NC
Wilson	Chris	Washington	NC

North Carolina Marine Recreational Fishing Forum
 Saturday, April 21, 2012
 NCSU McKimmon Center, Raleigh, NC

Exit Survey Results

Twenty-eight of 43 total forum attendees submitted surveys and responded as following:

Section 1. Attendee Demographics

The following questions will help us understand more about forum attendees.

1. Age?

Age	Responses	Percent
18-34	4	14%
35-49	6	21%
50-64	13	46%
65+	5	18%
Total	28	100%

2. Please tell us your county of residence.

County	Responses	Percent
Wake	7	25%
Carteret	5	18%
Beaufort	3	11%
Craven	2	7%
Pitt	2	7%
Robeson	2	7%
Alamance	1	4%
Brunswick	1	4%
Cumberland	1	4%
Johnston	1	4%
New Hanover	1	4%
Pamlico	1	4%
Pender	1	4%
Total	28	100%

Appendix D:

Exit Survey Results

3. Please tell us your fishing organization affiliation, if any. (*Multiple responses were allowed.*)

Organization	Responses
None	11
CCA-NC	5
DMF	4
NC State	2
ASA	1
NMMA	1
NCSG	1
WRC	1
Cape Fear River Watch	1
RSWSC	1
Outer Banks Preservation Assn	1
Saltwater Light Tackle Fishing Club	1
NC Beach Buggy Assn	1
Highlander Charters	1
East Coast Sports	1

Section 2. Forum Content

The following questions speak to usefulness of topics or information offered by the forum.

4. How satisfied were you with the information available overall at this forum?

How satisfied?	Responses	Percent
very satisfied	10	48%
satisfied	10	48%
neutral	1	5%
dissatisfied		
very dissatisfied		
Total	21	100%

Appendix D:

Exit Survey Results

5. Please rate the usefulness of each of the presentations, from "Very Useful" to "Of No Use."

Presentation	Results		Raw scores				
	Percent Very Useful or Useful	Percent Minimal Use or Of No Use	Very Useful	Useful	Some-what Useful	Minimal Use	Of No Use
MRIP Overview <i>Preston Pate</i>	68%	14%	10	9	5	4	
Recreational Data Collection: Australia and U.S. <i>Ken Pollock</i>	67%	15%	8	10	5	4	
NC Recreational Data Collection <i>Chris Wilson</i>	86%	0%	9	15	4		
2011 Flounder Gigging Data <i>Kerry Anderson</i>	81%	4%	9	13	4		1
New NC For-hire Data Collection <i>Doug Mumford</i>	88%	0%	8	14	3		
Volunteer Angler Data Workshop <i>Jason Didden</i>	82%	0%	16	7	5		
NC Coastal Angling Journal <i>Chris Wilson</i>	92%	0%	12	12	2		
NCGA Marine Fisheries Committee <i>NC Rep. Tom Murry</i>	73%	23%	10	9	1	4	2
Outlook for NC Marine Recreational Fishing <i>Louis Daniel</i>	92%	4%	20	4	1	1	
Protected Species in NC Coastal Waters <i>Louis Daniel</i>	92%	4%	17	7	1	1	
Marine Debris in NC Coastal Waters <i>Jenny Vander Pluym</i>	64%	9%	7	7	6	1	1

6. Has this forum given you new viewpoints and insights?

New Insights?	Response	Percent
To a great degree	8	33%
To a moderate degree	13	54%
To a minimal degree	3	13%
Hardly at all	0	0
Total	24	100%

Appendix D:

Exit Survey Results

Section 3. Forum Design

The following questions speak to effective design of the learning environment.

7. The percent allocation of time to the different topics was:

Allocation of time	Response	Percent
Too short	0	0
Just about right	21	88%
Too long	1	4%
Other	2	8%
Total	24	100%

If "Other," please explain:

- Not sure since workshop objectives were never really articulated
- Too long on marine debris; too short on fisheries issues

8. One of the purposes of the forum is to engage with a large number of attendees. If you were not able to attend a future meeting in person, would you consider either watching speakers' presentations remotely from your internet-connected computer (live) or downloading copies of the presentations after the event occurred?

Remote access to live content?	Response	Percent
Yes	20	83%
No	4	17%
Total	24	100%

Comments:

- Presentations should be on web (*Editor's Note: Three comments supporting this.*)
- Excellent idea – not as good as being there but so useful to save time and effort

If "yes," how important is it to you that you interact (ask questions) with the live speakers during the event? We ask this because there are different ways of delivering meeting content over the internet.

Importance of virtual interaction with speakers	Response	Percent
Very Important	3	14%
Important	14	67%
Neutral	3	14%
Unimportant	1	5%
Very Unimportant	0	0
Total	21	100%

Comments:

- Internet takes away from 1:1 communication and feedback

9. How did you hear about the forum? Please select all that apply.

Hear about Forum?	Response	Percent
E-mail	14	58%
Flyer at local business	1	4%
Online forum	0	0
Newspaper	1	4%
Other*	8	33%
Total	24	100%

Comments:

- Marina where I keep my boat notified all boat owners by email
- Phone call from a friend
- Our son sent us because we own the boat and pay for offshore fishing and our tax impact for the NC state economy

**Editor’s Note: “Other” also includes personal invitation to present at Forum.*

Section 4. Tell Us Your Thoughts!

10. Were expectations met?

Expectations met?	Response	Percent
Yes	8	100%
No	0	0
Total	8	100%

Please tell us what you hoped to take away from the forum.

- Information and updates
- Ideas on how to conduct a CRFL symposium
- Why is the black bass fishery closed? I have a better understanding now.
- Information
- A better awareness of DMF programs and data (WRC employee)
- Anglers knowledge of subjects (DMF employee)
- Good current updates and insights from Dr. Daniel and Rep. Murry; Great insights from Dr. Pollock; Good fundamental information
- To learn more about the Fishery
- Great information...learned a lot
- What to expect in the coming years and what is NC doing to enhance recreational fishing in NC
- Came in with an open mind. Came away with a really new understanding of “problem space.” Had previously been too simplistic.
- Current state of NC saltwater fishery
- I want to get the band lifted; We need to sell our boat since marine limits are not going away – but plan to be more active to promote ethical angling

11. What was the most beneficial part of the forum?

- Data collection and Louis Daniel
- Information packets and handouts

- Understanding our relationship with NOAA and Fed regulations that controls our fisheries
- All of it
- Chris Wilson's programs and Ken Pollock's program
- Louis Daniel's presentation on "What's on the horizon for marine recreational fisheries in NC"
- Hearing leg study committee rep
- 2007 Magnuson Stevens Act and its ramifications to catch limits and closures
- Networking with other fishermen and colleagues; New information on marine debris; New studies
- Great speakers
- Data collection. Directly beneficial
- Louis Daniel's presentations
- Hearing from Rep. Murry and Louis Daniel as to the realities of trying to do what needs to be done; Talking to my peers and getting their views and ideas
- Dr. Daniel's honesty; Rep. Murry's connection of the fishing / politics / economics
- Rep Murry and Dr. Daniel on current legislation and fisheries issues
- Meeting other fishermen and the programs of our states that impact us

12. In what ways would you improve these workshops for the future?

- A few less speakers and a little more time per speaker
- Session suggestion: education of/about the different agencies and commissions that set regulations that DMF enforces – who makes the decisions (NMFS, NCMFC, SAFMC, MAMFC, etc.)
- Location and web access
- Presentations on the SG website would be great for people who want to review material or for those who missed parts
- Have the meeting in Jan or Feb when it's cold
- A bit more time for discussion
- Legislator was ill-equipped to present on this issue. Not knowledgeable at all. Lightweight.
- Box lunch was as good as box lunches get.
- Coffee was cold
- Presentations on specific research projects, monitoring data, or management efforts would be useful especially if future workshops are held annually.
- Little
- Hold earlier in the year (Jan or Feb); Provide for electronic access for streaming like the Councils; Re-establish the planning committee
- It was great – thank you
- It was great; be closer to the coast.
- More time for Q&A; Have a steering committee to do the homework prep for next workshop – seemed a bit disorganized and unsure, this one; I'd be interested in talking with you about helping next workshop in the planning process (*Editor's Note: e-mail address removed for privacy*)
- Research > overlay price of gas to each graph; Conference > duel sponsorship with fishery education program; Require continuing education to keep license
- Free beer!
- Send out mass-emails to inform others to raise awareness

Appendix D:

Exit Survey Results

Editor's Note: The online-registration form required a response to the following:

1. Did you attend any of the previous Marine Recreational Fishing Forums held 1992-1997 in Raleigh?

Attend a previous forum?	Response	Percent
Yes	9	15%
No	51	85%
Total	60	100%



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