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Summary of Interviews of Key Stakeholders for the SAFMC Citizen Science Program

Prepared by Rick Bonney, Director Emeritus, Public Engagement in Science, Cornell Lab of Ornithology

This report summarizes findings from interviews with members of the South Atlantic fishing community to establish baseline levels of knowledge about, confidence in, and trust in the citizen science process of collecting data to inform fisheries resource management. I Interviewed a total of 18 individuals: six fisheries scientists, six fisheries resource managers, and six commercial/recreational fishermen. These individuals were selected from among a group of names suggested by members of the SAFMC Citizen Science Operations Committee, Council members, and Council staff. In general we chose individuals who had been suggested by multiple committee members. The final selection of interviewees was made by Rick Bonney, Julia Byrd, and Nick Smillie with the assistance of committee member Scott Baker. The project was submitted to the Institutional Review Boards (IRBs) of Cornell University and the College of Charleston and received exemptions from full review by both institutions. Note that per the research design and IRB approvals, all interviewees are anonymous, and only Rick Bonney, Nick Smillie, and Julia Byrd have access to the interview recordings.

All of the interviewees were highly experienced, and nearly all were very familiar with the SAFMC, the stock assessment process, and how data are used to inform management decisions.

Summaries of the interviews follow.

Scientists:

I interviewed six scientists, all mid- to late-career, and all very experienced. Four of them are associated with NOAA's Southeast Fisheries Science Center, and two are university faculty. Five of the scientists are men and one is a woman.

All of them are very to extremely familiar with the stock assessment process and how data are used to inform management decisions. Most of them have participated in it directly.

Opinions on the health of the southeastern US fishery varied. Most of the scientists pointed out that the question needs to be answered by species and location, with some fisheries doing well but many very poorly. Two stated that reef fishes in particular are overfished and suffering serious population losses. One stated that many populations are dropping off for unknown reasons, and another stated that reduction of discards is critical to rebuilding some stocks.

Scientists tended to feel that sufficient data are available to support fisheries management decisions, especially for species that receive stock assessments. Two individuals clearly felt that

sufficient data are available. A third said that while currently available data are probably sufficient, more data would likely lead to better decisions. Another individual stated that answering the question is challenging but that data issues are not the biggest challenge for management, while another said we may not have all the data we need, particularly with regard to discards. Only one scientist strongly felt that more data are needed.

All scientists were familiar with citizen science, but they were not particularly engaged with the practice. One scientist had worked with REEF data and another had worked with fishermen to monitor red tide, but the other four had not engaged with citizen science projects or their data.

All scientists were at least passingly familiar with the SAFMC Citizen Science Program. Three of them knew about its goals and objectives; two of these had advised on current projects. None of the scientists, however, were familiar with the list of research priorities that the SAFMC believes could be addressed by citizen science data.

All six of the scientists were generally supportive of citizen science, with significant caveats/conditions. Four of them discussed the critical need for sound project design to ensure its utility. Most also were worried about sampling bias, which may or may not be related to project design. One stated that "logbook data have concerning trends compared with data from observers." Two scientists stated that citizen science may work better with recreational fishermen than with commercial fishermen, one stating that "the job of fishermen is to catch fish, not to report data." One of these suggested validating citizen science data through covert observers, while another said that while carefully collected citizen science data should be used, having observers on boats would be a better data-collection method. One scientist stated that expectations for citizen science data should not be set very high, and only one seemed to have no major concerns about citizen science data.

Managers:

I interviewed six managers, all mid- to late career, and all very experienced. Three of them are associated with state agencies, and one is associated with NOAA. The other two have spent many years in varied capacities with SAFMC. Four of the managers are men and two are women.

All of them are very to extremely familiar with the stock assessment process and how data are used to inform management decisions. Most of them have participated in it directly.

Opinions on the health of the southeastern US fishery varied. Like scientists, most of the managers noted that the question needs to be answered by species and by location, with some fisheries doing well and some very poorly. However, managers tended to feel that fish stocks are doing better than scientists feel they are, especially species that are most actively managed. One stated that overall fisheries are doing well, one said that some species are more abundant than they ever have been, and one said that while managed species are doing well, we really

don't know about the rest. Two managers said that some species are likely overfished but that many populations are probably suffering for other reasons, including poor recruitment and climate change. One stated that recreational fishermen are having an outsized impact on the fishery with sophisticated gear making it easy to catch fish, and that the recreational side needs more accountability.

Two managers brought up the topic of accountability for recreational fishermen, stating that more data are needed about what recreational fishermen are catching.

Managers were unequivocal that more data are needed to support fisheries management decisions. Four of them stated flatly that much more data is needed for nearly all species, with one elaborating that managing fisheries on existing data is like "trying to run a Porsche on a lawnmower engine." A fifth wasn't sure, but mentioned that "scientists say we don't have enough." Only one manager said that we have enough data for some species.

Managers were more involved in citizen science than were scientists. Three managers had participated in tagging programs, one was involved with FISHstory, one had contributed to the Scamp Release Project and also tested descending devices, and one said that they were involved in an unspecified way.

In contrast, except for the individual who had advised on FISHstory and the one who had contributed to Scamp Release, managers did not seem to know many specifics about the SAFMC Citizen Science Program. And like scientists, none of the managers were aware of the list of research priorities that the SAFMC believes could be addressed by citizen science data.

Managers seem to be somewhat more optimistic about a role for citizen science than are scientists. Four of them said that fishermen would be able to collect a great deal of useful data.

Concerns did arise, however. Two managers mentioned the need, also stated by some scientists, for having realistic expectations for data—for example, it might be hard to get consistent, non-biased landings data, but that information on parameters such as temperature, range extensions, and life history studies would be fairly easy. Another manager mentioned that getting information on age sampling could be difficult. One manager said that it will be hard to keep fishermen interested, particularly if it seems that the data are not being used. Several mentioned the issue of needing to come up with data collection that interferes as little as possible with fishing. One stated "it's easy to put carcasses in a freezer. It's a lot harder to stop your on-the-water activities to record something." Finally, one stated that he didn't think that scientists would use self-reported data.

Fishermen:

I interviewed six fishermen, all highly experienced, most of whom have been fishing essentially all their lives. Three are commercial fishermen, two are charter boat captains, and one is a recreational fishermen. All are men.

All but one of them are very to extremely familiar with the stock assessment process and how data are used to inform management decisions. Most of them have participated in it to some extent, as all have been involved in some way with the SAFMC, some for many years.

Opinions on the health of the South Atlantic Fishery were almost universally pessimistic--fishermen are gloomy about the state of the ocean and its fish populations. Only one, a charter boat captain, felt that overall fisheries are in good shape, and mentioned that while some species are struggling, many have better populations now than they have for 30 years. This person also noted, however, that technology now allows fishermen to essentially extirpate some species.

The remainder of the fishermen used terms like “depleted resources” and “depressing,” and one stated that he was doing less and less fishing because catching fish is getting harder and harder. Two of them mentioned that some species, such as Spanish Mackerel and Red Snapper, are coming back, but that groupers are doing very poorly. Two of them mentioned that assessments are not timely. One of them is very concerned about discards, especially from recreational fishermen. And one said that when he talks to fishermen his age he ends up crying.

Fishermen mostly do not feel that the data currently available are sufficient for making management decisions. Four said outright that far more data are needed, with one stating that scientists rely too much on modeling and another saying that scientists and managers need to obtain more data from fishermen, as they are the experts on the water.

The other two fishermen were more optimistic about the amount of currently available data, although both said that the data are sufficient because statisticians can do amazing things with the data they are given. While one said that he thought managers were using the best available science, the other said he wasn’t sure the data were very accurate, although they are better than they used to be.

Fishermen tended to be more engaged with citizen science than were scientists or managers, mostly with SAFMC projects. One has done some fish tagging. Two have contributed data to the Scamp Release project, and two have advised council staff on development of Scamp Release and FISHstory.

In general, fishermen did not seem optimistic about the utility or uptake of citizen science. One thinks that in general fishermen-collected citizen science data will be good enough to use, and does not see how fishermen would be able to “game the system”—they wouldn’t know what data to submit to do so. However, this individual is not certain that fisheries scientists will want

or use the data. Another agrees that scientists may not believe the data and that even if they do, the information won't be useable in the models that scientists use. This individual thinks that citizen science should be primarily for outreach, focusing on collecting information that scientists are not already getting. A third individual states that while he fully supports citizen science, he doesn't think that scientists will use the data because the information can't be validated.

Two fishermen feel that commercial fishermen mostly won't participate. Some will feel that they don't have the time, and will be worried that their data will lead to more regulations and closures. Others will not want to give out their locations or will be challenged to participate: "The majority barely know where to get their bait, let alone use an app."

Only one individual, the recreational fishermen, is familiar with the SAFMC citizen science research priorities. He says they are a bit broad, perhaps representing a "fairytale world." This same person also says that fishermen will think one of two ways: "Don't give [scientists] any data," or "Tell scientists there are fish everywhere." For this reason, this fisherman is concerned that citizen science won't really work.

Initial Conclusions/Take Aways:

*Scientists need to be convinced that projects have sound design and that their data are truly needed
*Managers need to be convinced that scientists will use the data
*Fishermen need to be convinced that scientists and managers will use the data, and the concept of citizen science needs to be considered in light of a general pessimism about the resource and whether anything can be done about it