Comparison of Key Research Findings Between Bonney 2024 & Sweeney Tookes et al. 2024

Council Citizen Science (CitSci) staff put together a brief summary of the Bonney 2024 and Sweeney Tookes et al. 2024 reports below as a way to compare their findings and help with interpretation of results. Information was summarized and pulled from the final reports by staff. Interested parties should review the researchers' full reports for detailed findings.

Comparison of overall findings

Table 1. Comparison of key findings between Bonney 2024 and Sweeney Tookes et al. 2024. Compiled by Council staff.

	Bonney 2024	**Sweeney Tookes et al. 2024**
Study population	Scientists and managers who work in the South Atlantic	Snapper grouper and mackerel commercial, for-hire and recreational fishermen; focused on 4 geographic segments in South Atlantic region important to snapper grouper and mackerel fisheries
Method	Online survey via Qualtrics platform; respondents could complete survey in ~10-12 minutes	Interviews conducted in person or via video or phone call based on fisherman preference; interviews could last ~30 – 90+ minutes
Respondents	Majority identified as fisheries scientists; majority federal and state agency representatives, limited academics; included representatives working in all South Atlantic states; sample size = 79; 53% response rate	Three sectors represented relatively evenly across geographic area except for limited recreational representation in the Carolinas and GA/Northern FL regions; significant overlap between participants in each fishery; sample size = 41
Familiarity with SAFMC / federal fisheries management / data sources used for management	Majority of respondents had worked in fisheries for >10 years; large majority were familiar and have been heavily involved in Council; most familiar with SEDAR and sources of fisheries data used by Council; majority felt that more data would be helpful to many species	Differing levels of familiarity with fisheries management; confusion about federal fisheries management players and roles; varying levels of engagement among participants/sectors – but overall low levels of engagement; many felt participation / engagement in process fruitless
Trust with management and science; trust among stakeholders	Most felt managers use data to make decisions; that fishermen should have a voice and have a responsibility to participate in management, that managers consider needs of fishermen when making management recommendations; generally agreed that the science used by managers to make recommendations could be trusted; most felt that fishermen do not trust scientists to collect data representative of their fisheries and do not trust managers to make sensible regulations	Overall distrust of management process and people involved in fisheries management; experience dissonance between their own experience and scientific data; concerns about accidental or intentional manipulation of data or use of questionable science; concern regulations may be influenced by personal biases; feel voices not listened to or heard when engage in process
Knowledge of & familiarity with citizen science	Majority either very or somewhat familiar with citizen science; majority had participated or used citizen science data; most felt citizen science data could be useful to varying degrees	Varying levels of experience and interest in citizen science; many had engaged in collaborative research (i.e., tagging); most were not familiar with term citizen science but thought it could potentially be useful
Challenges / concerns with citizen science	Data not collected according to protocol; data not collected randomly/lack of statistical design; insufficient data collected over time / attrition & low participation; fishermen may not be	Differing perspectives on voluntary vs. obligate engagement in data collection; question how useful scientists would find the data; financial / temporal limits may constrain engagement;

	truthful about data; lack of QA/QC; concern with projects not designed/monitoring by scientists; scientists/managers won't use data	operationalization of projects key to success or failure; concern with bias and reliability of data
Opportunities for citizen science	Citizen science seen as a potential source for useful data but some scientists and managers remain to be convinced of its efficacy; seems to be support for citizen science to provide supplemental data / fill data gaps; need to be able to demonstrate projects are being scientifically designed with input from data end users	Even with large trust issues there appears to be some support for citizen science; need to be transparent about project goals and potential use of data; have honest and transparent communication; project selection important; some sectors / individuals likely to participate without compensation; others may not have time without monetary incentive

Comparisons of trust issues

The tables below highlight some of the trust issues identified and described between stakeholder groups in Bonney 2024 and Sweeney Tookes et al. 2024.

Table 2. Summary of scientists and managers agreement/disagreement of statements with issues surrounding fisheries management. Responses ranged between 1-5 with one being strong agreement and 5 being strong disagreement. Source: Bonney 2024.

Statements most respondents strongly or somewhat agree	Mean	SD
Fisheries managers use data to make mgmt. recommendations	1.43	0.64
Fishermen should have voice in mgmt. decisions	1.54	0.71
Fishermen have a responsibility to participate mgmt.	1.58	0.79
Fisheries managers consider needs of fishermen when make mgmt. recommendations	1.63	0.59
Statements most respondents generally agree not as strongly		
Fishing regs help to preserve fishing industry	1.69	0.91
Management make informed decisions about mgmt.	1.87	0.77
Science used by managers to make recs can be trusted	1.92	0.78
Statements where somewhat agree or neither agree/disagree		
Opinions of fishermen are taken seriously	2.18	0.89
Statements where respondents neither agree/disagree or somewhat disagree		
Scientists trust managers to use data to make mgmt. recommendations	2.51	1.08
Fishing industry associations have best interests of fishermen at heart	2.81	0.94
Statements where respondents strongly disagree		
SA fisheries are generally healthy	3.33	1.04
Fishermen trust scientists to collect data representative of their fisheries	3.88	0.87
Fishermen trust managers to make sensible fishing regulations	3.94	0.68

Table 3. Significant qualitative themes identified via fishermen interviews in regard to trust and participation / engagement in fisheries management process. Source: Sweeney Tookes et al. 2024.

Qualitative theme: Fishermen non-engagement • Feel participation and engagement fruitless • Financial & temporal commitment needed to attend meeting often several hours from home • Confusion on role of different agencies – federal fisheries management is a black box
Qualitative theme: Distrust management process & people involve in fisheries management • Fishermen believe their sector is not receiving their fair share of catch quota • Question qualifications of regulators to make decisions • Concern about accidental or intentional manipulation of data or use of questionable science • Regulations may be influenced by personal bias of individuals involved in management
Qualitative theme: Fishermen experience dissonance between their own experience and scientific information • Their environmental observations that don't mesh with scientific information used by management • Scientific sampling techniques conflict with fishermen's sampling strategies • Offers to share their techniques or local knowledge not accepted • Regulations on single species and other environmental impacts affect ecosystems in broad ways that are not acknowledged

Comparisons of citizen science research priorities / topics

Fishermen interviewees were asked to provide their willingness to participate in various citizen science activities. Scientists and managers were asked (via a survey question) to rank the top five topics they thought would provide the most useful data to the Citizen Science Program. The list of topics provided to the interviewees and survey respondents were both based on the Citizen Science Research Priorities. Due to the timing of the interviews and surveys – the lists between research methods were slightly different due to the SAFMC's research priorities being updated in December 2023. The tables below summarize results from these questions. *The topics are color coded – so that the same topics are highlighted in the same color among the tables.*

Table 4. **A)** Topics scientists and managers thought would provide the most useful data to the SAFMC Citizen Science Program. The lower the mean value the higher the rank and more useful the data (e.g., 1 = most useful, 5 = least useful). Source: Bonney et al. 2024.; **B)** Fishermen's willingness to participate in citizen science activities by sector. Only activities where over 50% of interviewees responded positively are included in the table. *, ^, - within a column on the table indicate identical numbers/percentages in willingness to participate. **C)** Fishermen's willingness to participate in citizen science activities by geographic region. Only activities where over 50% of interviewees responded positively are included in the table. *, ^, - within a column on the table indicate identical numbers/percentages in willingness to participate.

A) Science and Managers (Bonney 2024)

Topic	Mean	SD
Record discard info	2.18	1.49
Age sampling	2.63	1.41
Genetic sampling	2.85	1.65
Shark and mammal depredation	2.93	1.49
Shifting species / rare event observations	3.2	1.51
Movement & migration	3.26	1.55
Environ info	3.42	1.35
Historic photos	3.44	1.93
Fishing infrastructure	3.45	2.11
Observations in management areas	3.71	2.45
Fishing oral histories	3.83	2.1
Habitat characterization	3.85	2.1
Spiny lobster data	4.64	3.37

B) Fishermen by Sector (Sweeney-Tookes et al. 2024)

Commercial	For-Hire	Recreational
Shark depredation	Shark Depredation*	Shark Depredation*
Data limited species / rare event*	Data limited species / rare event*	Data limited species / rare event*
GIS infrastructure*	Collect fin clips*	Collect fin clips*
Record environ info	Record discard info	Record catch info*
Record discard info	GIS infrastructure^	Record environ info
Record catch info	Record environ info^	Record discard info^
Save gonads	Save gonads	Save gonads^
	Record catch info	Save otoliths^
	Save otoliths	GIS infrastructure

C) Fishermen by Geographic Region (Sweeney-Tookes et al. 2024)

Carolinas	GA/FL	Space Coast	Keys
Shark depredation	Shark depredation	Shark depredation*	Shark depredation*
Data limited species/Rare event*	GIS infrastructure*	Record discard info*	Collect fin clips*
Record Catch info*	Data limited species/Rare event*	Record catch info^	Data limited species/Rare event*
GIS infrastructure*	Record discard info^	Record environ info^	Collect environ info
Record environ info*	Record environ info^	Data limited species/Rare event^	Save gonads
Collect fin clips	Collect fin clips-	Collect fin clips-	Record discard info^
Save gonads^	Save gonads-	Save gonads-	Record catch info^
Save otoliths^	Save otoliths	GIS infrastructure	Save otoliths^
	Record catch info	Save otoliths	GIS infrastructure

Key Findings & Relevant Citizen Science Program Efforts & Recommendations

The Citizen Science Operations Committee met in October 2024 to review the researchers' findings and develop recommendations on how the Citizen Science Program can adapt based on these research efforts. During their December 2024 meeting, the Council reviewed the researchers' findings and the CitSci Operations Committee recommendations. Overall recommendations are summarized below. More specific recommendations on how the Program can be refined based on the researchers' key findings are summarized in Tables 5, 6, and 7.

Overall Recommendations

- Generally supportive of Sweeney Tookes et al. and Bonney's recommendations; noted the Program is already doing many activities that overlap with these recommendations and suggested additional efforts for the Program and the broader Council to consider (see Table 5 and Table 6)
- Findings have helped quantify concerns heard from stakeholders and articulate some of the challenges for citsci projects in marine fisheries while also highlighting opportunities for the Program
- Working to address trust issues cannot be done through the Citizen Science Program alone; this is a large issue that will require work on a much broader scale from the Council and wider fisheries community; important to be aware of and acknowledge this dynamic and citsci work (if carefully designed) could help address this problem and encourage participation in projects and broader Council process
- Recommend continuing the CitSci Program's overall approach and its goals and objectives; current activities are already helping address issues identified; should use Bonney and Sweeney Tookes et al. findings to further refine and focus Program's efforts
- Guidance to prioritize future activities that help address the following researcher findings: 'federal fisheries management is a black box', 'fishermen deeply distrust management', and 'fishermen do not feel valued or heard'; noted the importance of continued investment for outreach initiatives in fishing communities; additionally Council recognized that the CitSci Program has limited resources so suggested staff strategize and consult with advisors on how best to approach recommended activities within current capacity
- Supported CitSci Program conducting similar research effort in the future after data from projects have been considered for use in assessment and management

Table 5. Sweeney Tookes et al. 2024 key findings and CURRENT Citizen Science Program efforts.

Sweeney Tookes et al. Key Findings Legend

Fishermen do not feel valued or heard	Voices at public hearings often don't represent the fishery	Fishermen deeply distrust management	Fishermen skeptical of science used by management	Federal fisheries management is a black box	Power dynamics means this is NOT traditional citsci	'Pro Bono' services for commercial & for-hire / recreational fishermen as partners for citsci	Recommendations for well-designed projects
							

Sweeney Tookes et al. Key Findings Addressed	**CURRENT CitSci Program Efforts & Thoughts**
	Increased outreach initiatives that work to build relationships with key stakeholders and organizations within fishing communities; trying to go into fishing communities (e.g., tackle shop visits, seminars partnering with leaders in fishing communities, fishing expos); partnership with Best Fishing Practices team leverages resources, extends reach, and increases outreach opportunities; starting to see benefits from increased outreach efforts but important to acknowledge relationship building is a long term process
	Some CitSci project participants have engaged in other Council related activities
	Broader Council outreach efforts – Stakeholder Engagement Meetings (SEM), BFP MVP workshops, SAFMC overview presentation, Stakeholder Engagement Workshops, etc.
	CitSci Program participant communication emphasizes that we are listening to their perspectives and appreciate their participation and knowledge
	Opportunities for those outside of Council network to share ideas with Program (e.g., Citizen Science Project Idea Portal)
	CitSci Program's projects try to clearly communicate about project goals, how data can or cannot be used, potential impacts; try to keep expectation management front of mind
	Focus on projects filling data gaps that meet specified research priorities
	CitSci Program messaging for projects and volunteer recruitment – highlight opportunity for fishermen to share on the water knowledge and expertise

Table 5 (continued). Sweeney Tookes et al. 2024 key findings and CURRENT Citizen Science Program efforts.

Sweeney Tookes et al. Key Findings Legend

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Sweeney Tookes et al. Key Findings Addressed	**CURRENT CitSci Program Efforts & Thoughts**
	CitSci Program communicates regularly with project participants addressing questions and encourage opportunities to share public comment
	Aware of the power dynamic in marine fisheries citizen science (i.e., fishermen providing info/data that could affect their fishing activities); challenging trying to figure out how best to address; influences motivations and increases barriers for participation
	Current projects focus on different audiences (fishermen, recreational divers, broader public)
	CitSci Program Approach: support projects that meet identified South Atlantic research priorities and help fill data gaps; complement / supplement existing data sources and partners; intentional project design – direct application to assessment and management; encourage scientist and fishermen collaboration
	CitSci research priorities updated every two years to keep relevant; informed by SAFMC, SAFMC APs, Project Idea Portal
	Encourage continued use of project Design Teams – diverse stakeholder work groups to design and develop projects; include scientists & fishermen in all phases
	Use tools / resources to decide if project idea/research question would work well with a citizen science approach (e.g., simple protocol, motivation of participants, resources available)
	Challenging to select projects with no risk for fishermen; trying to fill data gaps and want data to be used in decision making; often don't know what outcome/impact could be

Table 6. Sweeney Tookes et al. 2024 key findings and FUTURE Citizen Science Program efforts for consideration.

Sweeney Tookes et al. Key Findings Legend

Fishermen do not feel valued or heard	Voices at public hearings often don't represent the fishery	Fishermen deeply distrust management	Fishermen skeptical of science used by management	Federal fisheries management is a black box	Power dynamics means this is NOT traditional citsci	'Pro Bono' services for commercial & for-hire / recreational fishermen as partners for citsci	Recommendations for well-designed projects
							

Sweeney Tookes et al. Key Findings Addressed	**FUTURE CitSci Program Efforts for Consideration**
	Important to make formal acknowledgement of trust issues between stakeholders (e.g., fishermen and scientists/managers); scientists and managers recognize this distrust and recognize fishermen do not feel heard
	Important to acknowledge experience and knowledge of fishermen; think about how citsci can help turn their knowledge (e.g., often referred to as simply "anecdotal info") into data streams
	When sharing info on the CitSci Program – important to demonstrate what the Program has done, and potential data uses; also important to personalize the Program's 'story' providing background on how the projects came to fruition; important to not only share results but also tie the Program back to stakeholders
	View projects / project ideas through the lens of this research (e.g., how do projects amplify fishermen being heard?)
	Critically important to continue investment in outreach initiatives in fishing communities (e.g., CitSci, BFP, SEM)
	Important to acknowledge fishermen viewpoints in Council communication platforms (e.g., when describing rationale for management action in newsletter, etc.)
	Council process offers many opportunities for stakeholder engagement; could be helpful to quantify the opportunities for engagement, summarize annual engagement (# people engaged per sector, per state, per engagement type (online vs in-person), etc.), and share this info
	Many stakeholders may not know the limitations of what actions the Council can take (e.g., MSA); may be helpful to develop messaging and outreach products addressing this
	Managing expectations is critical – Council often uses 'older' data for management decisions which may not match what fishermen are currently seeing on the water; develop communications / messaging explaining these limitations

Table 6 (continued). Sweeney Tookes et al. 2024 key findings and FUTURE Citizen Science Program efforts for consideration.

Sweeney Tookes et al. Key Findings Legend

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Sweeney Tookes et al. Key Findings Addressed	**FUTURE CitSci Program Efforts for Consideration**
	NOAA effort highlighting how citsci data have been used in assessment nationally; important to highlight these 'good' results in communication and messaging too
	Council meeting locations impact participation and engagement; need to be cognizant of this when selecting meeting locations
	Project selection important – try to support 'win-win' projects; this can be challenging to do in practice
	May be helpful to focus on the recreational sector within current projects and for future projects; rec sector has many data challenges and highest level of trust; but important to note this group is likely less avid
	Encourage use of program ambassadors
	Consider more neutral parties for partnership
	Helpful to develop and/or distribute fisheries management 101, Council 101, and MSA 101 outreach products; examples that are available: fisheries management 101 & Magnuson 101
	Encourage CitSci Program participants take part in the Marine Recreational Education Program (MREP)

Table 6 (continued). Sweeney Tookes et al. 2024 key findings and FUTURE Citizen Science Program efforts for consideration.

Sweeney Tookes et al. Key Findings Legend

Fishermen do not feel valued or heard	Voices at public hearings often don't represent the fishery	Fishermen deeply distrust management	Fishermen skeptical of science used by management	Federal fisheries management is a black box	Power dynamics means this is NOT traditional citsci	'Pro Bono' services for commercial & for-hire / recreational fishermen as partners for citsci	Recommendations for well-designed projects
							

Sweeney Tookes et al. Key Findings Addressed	**FUTURE CitSci Program Efforts for Consideration**
	Consider hosting mini-seminars (15min presentation, 15 min Q & A) and/or videos to share info on these topics
	Acknowledge this power dynamic; this can help demonstrate hearing stakeholders' views
	Need to think about this dynamic when selecting/deciding if a project is a good fit for CitSci Program
	Incorporating specific QA/QC and validation into projects could help address this issue
	Consider focusing commercial / for-hire projects on more passive data collection efforts
	Use these findings to inform project development and identify target audiences for projects
	Prioritize project ideas where fishermen and scientist interest overlaps
	Constant transparency and expectation management critical

Table 7. Bonney 2024 key findings and CURRENT (filled squares) and FUTURE (open squares) Citizen Science Program efforts for consideration.

Bonney Key Findings Legend

Increase involvement of scientists and managers in project design and development	Advertise that project design is accomplished through collaborations among scientists, managers, and fishermen	Engage with willing survey respondents in current and future projects / project design	Engage with willing survey respondents that were less supportive of citizen science to better understand, explore, and address their concerns	Work to support / develop citizen science projects where there was overlapping interest between scientists / managers and fishermen	Consider conducting similar survey with scientists and fishermen in future to compare with these survey results

Bonney Key Findings Addressed	**CURRENT CitSci Program Efforts & FUTURE Cit Program Efforts for Consideration**
■	Encourage continued use of project Design Teams – diverse stakeholder work groups to design and develop projects; include scientists & fishermen in all phases
■	Whenever staff present on the overall CitSci Program we try to include information on the Program's Approach and project selection and development which includes info on use of Design Teams
□ □	Work to increase involvement of scientists and managers and diversity of organizations/agencies involved in Design Teams; work to incorporate interested and willing survey respondents into project Design Teams
□	Highlight use of Design Teams in project development through CitSci Program communication efforts
□	Use scientists/managers currently involved in Program/Design Teams as ambassadors to communicate that scientists and managers are involved in project design for the CitSci Program projects
□ □	Ask CitSci Pool / Design Teams for suggestions of other scientists and managers who may be interested in getting involved in the Program; encourage willing survey respondents to apply for the CitSci pool
□	Consider holding an online meeting with relevant scientists and managers to better understand, explore, and address their concerns with CitSci; could approach this via American Fisheries Society or other similar organizations
□	Use the findings from these research efforts to inform the CitSci research priorities when they are updated in 2025
□	Prioritize project ideas where fishermen and scientist interest overlaps
□	Strive to conduct similar survey in the upcoming years