



# **Decoding the Motivations of Fishers Considering Participation in Citizen Science Projects: Final Report**

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# The project: assess the opportunities and barriers to fishers participating in citizen science



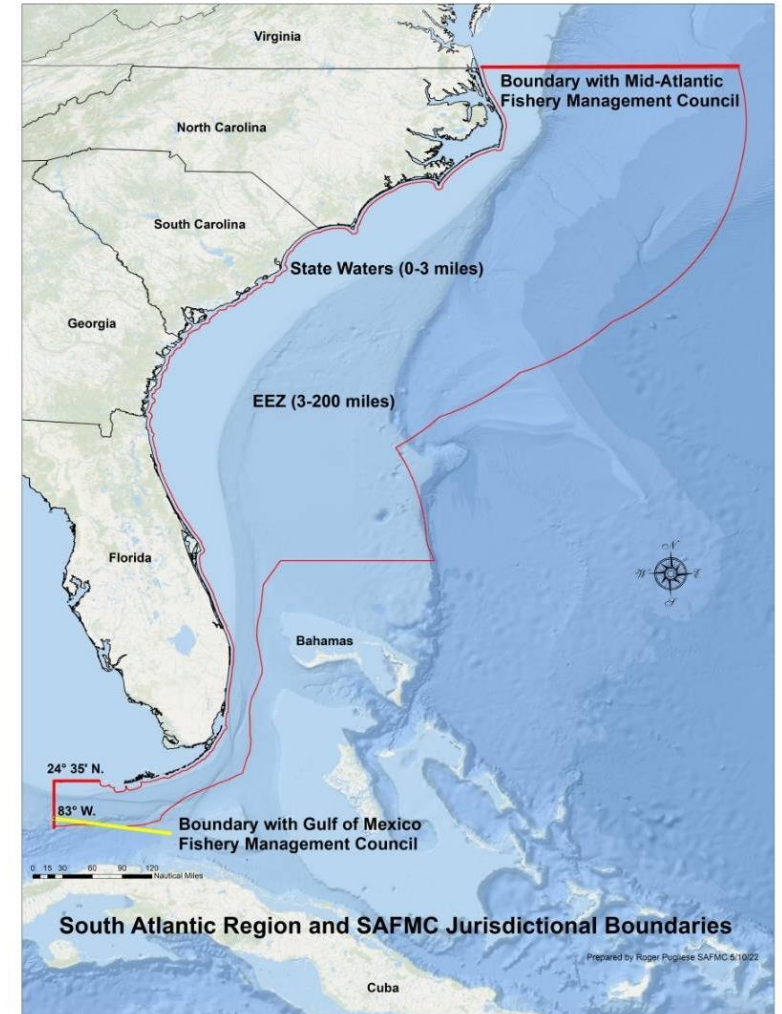
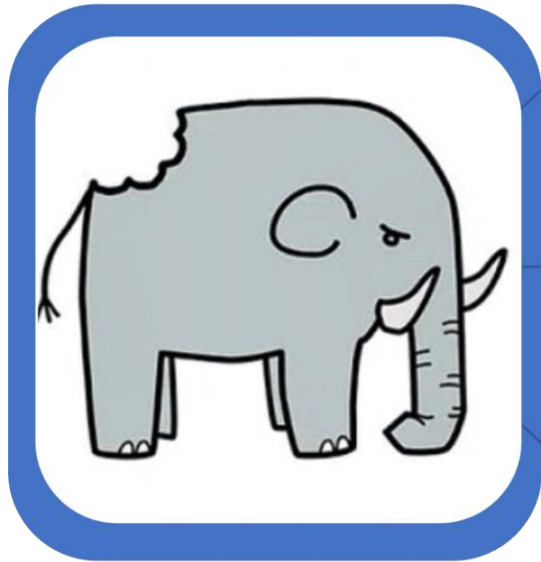
Recreational  
(untracked)



For-hire  
(NOAA permit database)



Commercial  
(NOAA permit database)



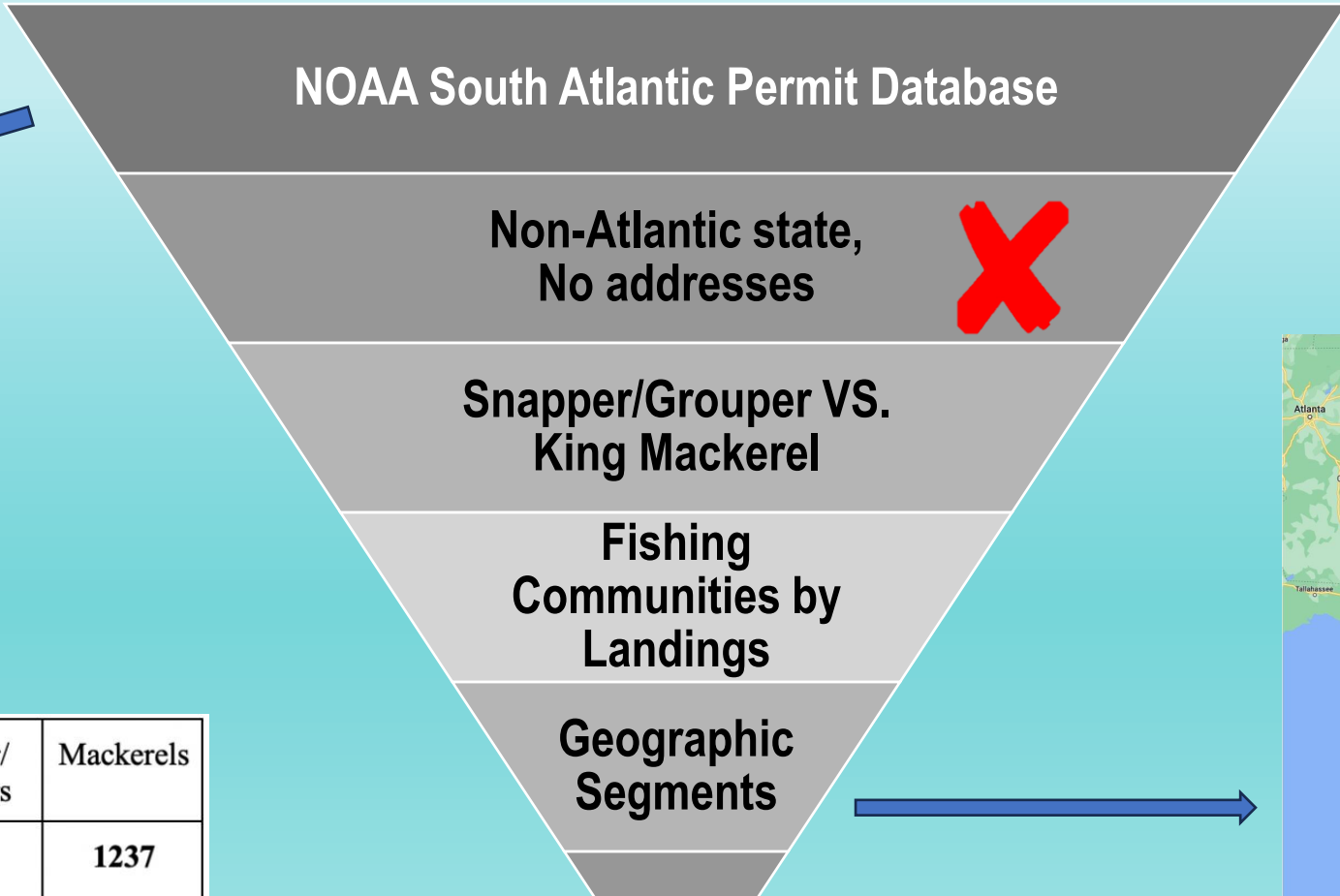


# Methods

# Commercial and for-hire sampling



**19K**



	Snapper/ Groupers	Mackerels
Commercial Fishers	536	1237
For-Hire Fishers	1664	1635

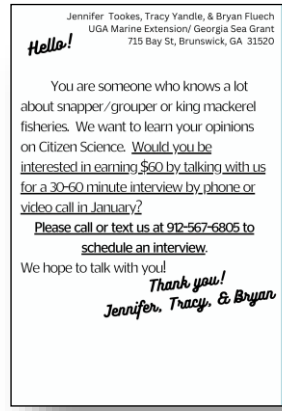
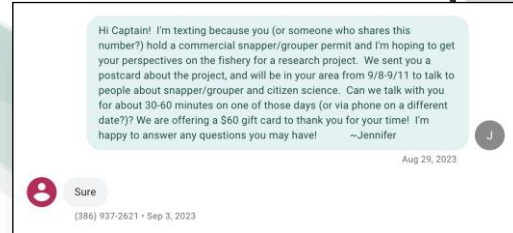
Target Study Population



Random Sample



# Targeted Recruitment



<i>Geographic Segment &amp; Fishery Sector</i>	<b>Commercial</b>	<b>Charter</b>	<b>Angler</b>
<i>Segment 1</i>	3-5	3-5	3-5
<i>Segment 2</i>	3-5	3-5	3-5
<i>Segment 3</i>	3-5	3-5	3-5
<i>Segment 4</i>	3-5	3-5	3-5
<b>Target Study Sample</b>	12-20	12-20	12-20

## COMMERCIAL & FOR-HIRE

- Mailed postcards
- Phone number searches
- No response after 1-2 postcards plus 2 texts= removal, move to next name

## RECREATIONAL ANGLERS

- Focus on resident anglers with “demonstrated sustained interest”
- Member of an organization focused on recreational fishing (e.g. saltwater angler clubs)
- Emails/messages to fishing organizations & online groups

# Field methods

- Specialized research instruments
- Semi-structured interviews
  - Phone / Zoom
  - In-Person visits
- All 3 sectors across 4 states
- Interviews between July 2023 and February 2024 (N=40)

	Segment 1 (Keys)	Segment 2 (Space Coast)	Segment 3 (N. Florida & Georgia)	Segment 4 (Carolinas)	Total
<b>Commercial</b>	1	3	5	4	13
<b>For Hire</b>	3	4	5	3	25
<b>Recreational</b>	5	4	1	2	12
<b>Totals</b>	9	11	11	9	<b>40</b>

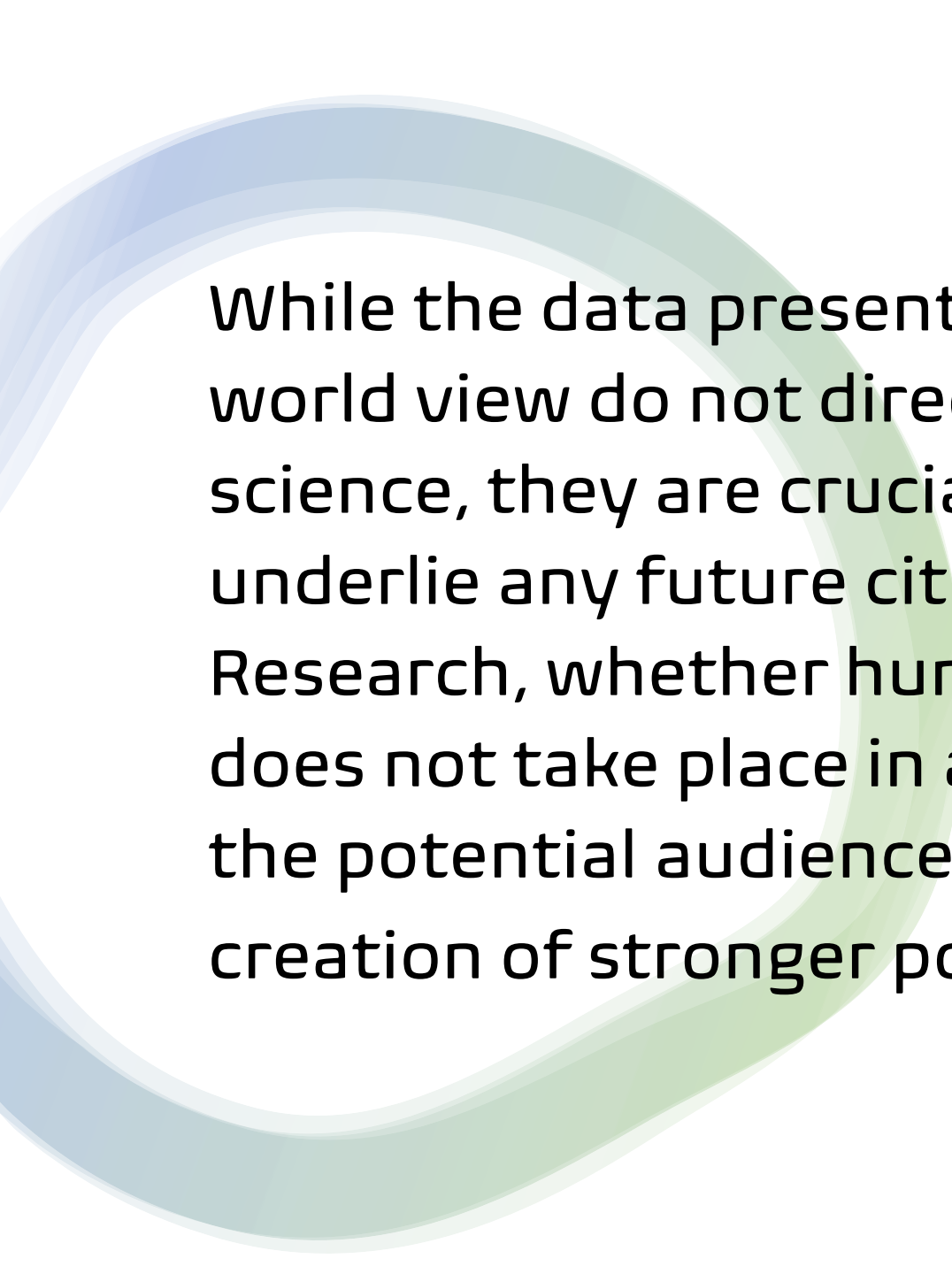


<b>Quantitative</b>	<b>Qualitative</b>
<p>The “What” &amp; “How much”</p>	<p>The “Why” &amp; “How”</p>
<ul style="list-style-type: none"> <li>• Uses numerical data to allow us to count and summarize reported thoughts and actions</li> <li>• Captures what we have already decided to ask about</li> <li>• Fits neatly into conventional science paradigms</li> <li>• Clean &amp; comparable interpretations</li> <li>• Provides conventionally understood neutrality</li> <li>• Responses are standardized</li> </ul>	<ul style="list-style-type: none"> <li>• Uses reported human experiences to illustrate motivations and reasoning</li> <li>• Allows participants to volunteer unexpected information</li> <li>• Does not conform to predetermined parameters</li> <li>• Requires more complex interpretation</li> <li>• Produces more complete information that is harder to compare</li> <li>• Captures human complexity</li> <li>• Allows humans to challenge assumptions</li> </ul>
<p><b>Both</b></p>	
<p>Clear methodological processes  Rigorous scientific norms &amp; methods of interpretation  Equally valid &amp; rigorous = makes them complementary</p>	



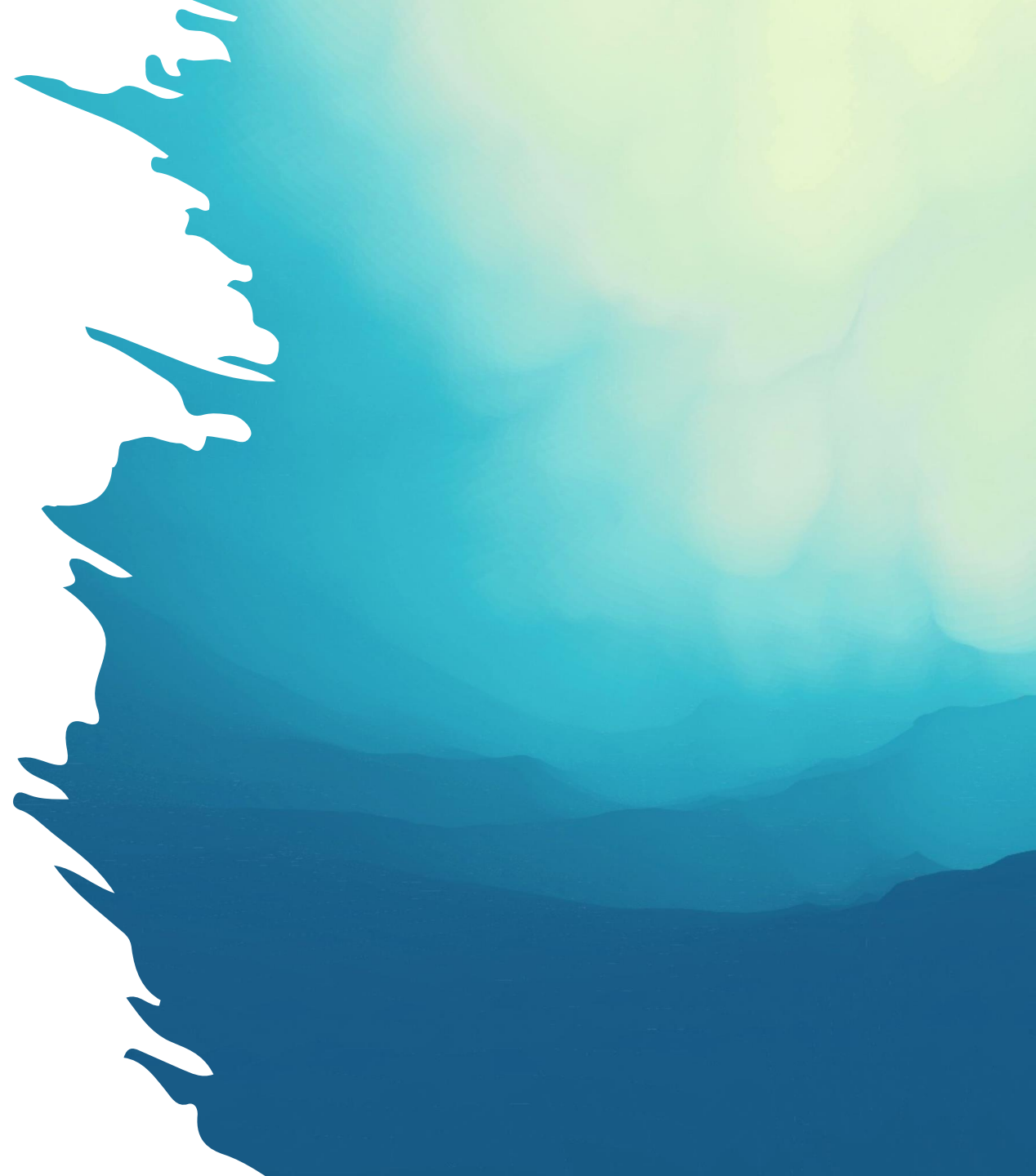
# Results





While the data presented in this section on trust and world view do not directly address the topic of citizen science, they are crucial background issues that will underlie any future citizen science efforts in the region. Research, whether human subjects or fishery focused, does not take place in a vacuum, and understanding of the potential audience for collaboration will support the creation of stronger potential projects. (p.36)

# **Results: Management**



# Management Activities

	Commercial	For Hire	Recreational
<b>Informally discuss fishing with peers</b>			
Never do this	0.00%	0.00%	0.00%
Sometimes do this	30.77%	33.33%	16.67%
Usually do this	69.23%	66.67%	83.33%
<b>Read Federal materials</b>			
Never do this	0.00%	6.67%	8.33%
Sometimes do this	30.77%	33.33%	83.33%
Usually do this	69.23%	60.00%	8.33%
<b>Attend government meetings</b>			
Never do this	30.77%	66.67%	50.00%
Sometimes do this	53.85%	13.33%	33.33%
Usually do this	15.38%	20.00%	16.67%
<b>Attend meetings held by other groups</b>			
Never do this	30.77%	33.33%	8.33%
Sometimes do this	15.38%	46.67%	50.00%
Usually do this	38.46%	20.00%	41.67%
<b>Attend federal meetings</b>			
Never do this	53.85%	60.00%	58.33%
Sometimes do this	38.46%	33.33%	41.67%
Usually do this	7.69%	6.67%	0.00%
<b>Speak at Federal meetings</b>			
Never do this	46.15%	80.00%	83.33%
Sometimes do this	15.38%	20.00%	8.33%
Usually do this	38.46%	0.00%	8.33%

## Significant Qualitative Themes

Reasons for fisher non-engagement include:

- Feeling that engagement and participation is fruitless
- Financial and temporal commitment needed to attend a meeting that is often several hours from their home
- Confusion about what agencies perform which roles in the management process—the “black box” of fisheries regulations

# Fisher Trust

	Commercial	For Hire	Recreational
<b>People in general (generalized trust)</b>			
Can be TRUSTED	30.77%	33.33%	50.00%
Can't be too CAREFUL	46.15%	66.67%	50.00%
Refuse	15.38%	0.00%	0.00%
<b>Other people in your sector</b>			
Can be TRUSTED	38.46%	33.33%	41.67%
Can't be too CAREFUL	53.85%	60.00%	50.00%
Refuse	7.69%	0.00%	8.33%
<b>State regulators</b>			
Can be TRUSTED	46.15%	20.00%	50.00%
Can't be too CAREFUL	46.15%	73.33%	50.00%
<b>Federal regulators</b>			
Can be TRUSTED	38.46%	0.00%	41.67%
Can't be too CAREFUL	61.54%	93.33%	58.33%

## Significant Qualitative Themes

Fishers express distrust with the management process and people involved in fishing and management in these ways:

- Fishers in each sector believe their sector (or their portion of the sector) is not receiving a fair share of the catch quota
- They question the qualifications of regulators to make decisions
- There is concern about accidental or intentional data manipulation or the use of questionable science
- Some believe regulations may be influenced by the personal biases of individuals involved in management

	Commercial	For Hire	Recreational
<b>I trust Federal regulators to make the right decision</b>			
Agree	15.38%	6.67%	25.00%
Disagree	84.62%	93.33%	75.00%
<b>I trust the science that Federal regulators use in their decision making</b>			
Agree	30.77%	20.00%	41.67%
Disagree	69.23%	80.00%	58.33%



# World View

	Commercial	For Hire	Recreational
<b>Fishers have a voice</b>			
Agree	38.46%	33.33%	16.67%
Disagree	61.54%	66.67%	75.00%
<b>I feel welcome at meetings</b>			
Agree	84.62%	86.67%	75.00%
Disagree	15.38%	13.33%	25.00%
<b>I believe information presented by fisheries managers</b>			
Agree	30.77%	33.33%	58.33%
Disagree	69.23%	60.00%	41.67%
Refuse	0.00%	6.67%	0.00%
<b>The people in charge of fisheries management are fair to everyone</b>			
Agree	30.77%	20.00%	25.00%
Disagree	69.23%	80.00%	66.67%
<b>The opinion of ___ fishermen are taken seriously</b>			
Agree	30.77%	40.00%	33.33%
Disagree	69.23%	60.00%	66.67%
<b>Fishers have a responsibility to participate in fisheries management</b>			
Agree	92.31%	100.00%	83.33%
Disagree	7.69%	0.00%	16.67%
<b>Fisheries regulation help preserve my fishery</b>			
Agree	61.54%	73.33%	91.67%
Disagree	38.46%	26.67%	8.33%
<b>Fishing regulation threatens my livelihood/cherished hobby</b>			
Agree	69.23%	60.00%	41.67%
Disagree	30.77%	40.00%	58.33%

## Significant Qualitative Themes

Fishers are experiencing dissonance between their own experiences and scientific information:

- Fishers engage in frequent environmental observations that often do not mesh with the scientific information used by management
- Scientific sampling techniques conflict with fisher's fishing strategies
- Offers to share their techniques or local knowledge with scientists are not accepted
- Regulations on single species and other environmental impacts affect the ecosystem in broad ways that are not acknowledged

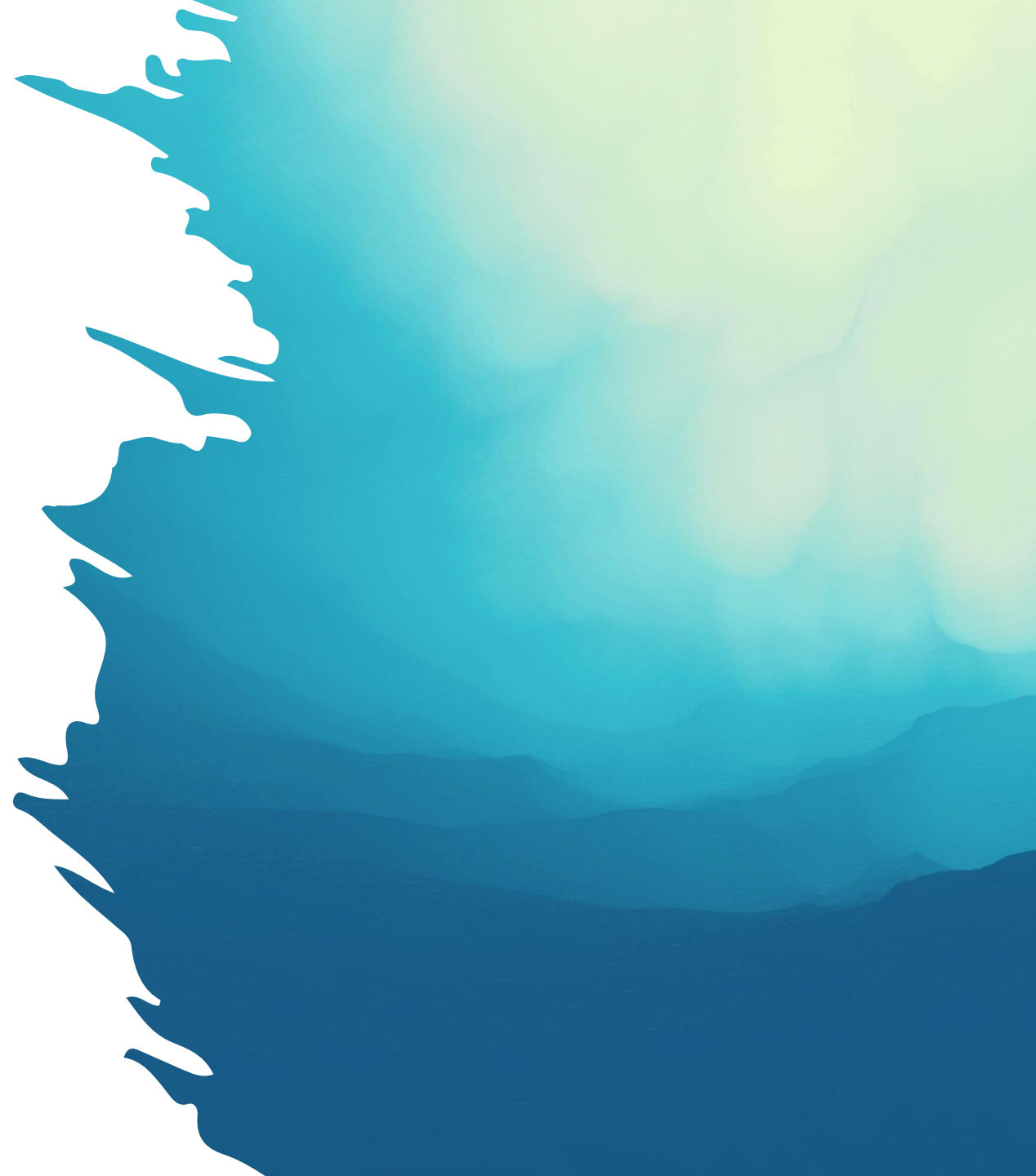
# Fishers feel unheard and are reluctant to participate in management.

Finding	Management Recommendations
<p><b>Fishers do not feel valued or heard</b> Public comment is seen as legalistic &amp; performative, not reflective of genuine listening</p>	<ul style="list-style-type: none"><li>• Analyse where and how fishers can meaningfully provide information.</li><li>• Carefully consider how to listen and incorporate feedback.</li></ul>
<p><b>Voices at public comment do not represent the fishery</b> “Silent majority” do not participate. Engagement is a privilege (self-funded time away from livelihoods)</p>	<ul style="list-style-type: none"><li>• A more aggressive and systematic approach to engagement that meets fishers where they is needed.</li><li>• A well-designed citizen science program could be part of this approach.</li></ul>

# SAFMC is facing a trust crisis

Finding	Management Recommendations
<p><b>Fishers deeply distrust management</b> less than 7% of the for-hire sector and 15% of the commercial sector trusting regulators to “make the right decision”.</p>	<ul style="list-style-type: none"><li>• The lack of trust expressed by fishers should be deeply concerning as it is very difficult to maintain legitimacy with low trust.</li><li>• Consider long-term strategies for re-building trust with stakeholders.</li></ul>
<p><b>Fishers are sceptical of the science used by management</b> Only 20% of for-hire 31% of commercial, and 41% of recreational “trust the science that regulators use.”</p>	<ul style="list-style-type: none"><li>• Lack of trust in science partially explains low trust in management.</li><li>• Carefully designed science communications outreach could help rebuild trust in science and management in the long-term.</li></ul>
<p><b>Federal fisheries management is a “black box.”</b> Management is difficult to navigate. Many are frustrated but do not know who SAFMC is.</p>	<ul style="list-style-type: none"><li>• More tailored outreach designed for the fishing community is needed.</li><li>• Instead of emails and written postings to websites/ social media, focus on:<ul style="list-style-type: none"><li>○ Printed or electronic infographics</li><li>○ Short (1-2 min) videos</li><li>○ Brief, informative material mailed to permit holders</li><li>○ Work with partners (e.g., tackle shops, clubs, Sea Grant, state agencies)</li></ul></li></ul>

**Results:  
Citizen Science**





# Citizen Science: Experience & Willingness to Engage

## Significant Qualitative Themes

Fishers expressed varying levels of experience and interest in citizen science

- Many fishers had engaged with collaborative research, particularly fish tagging
- Most were not initially familiar with the term “citizen science” but thought it could be potentially useful
- Suggestions centered around:
  - transparency of project goals and potential use of data;
  - bias and reliability of the data

- “The fishermen are the true scientists. They [managers] did not want to believe this for so long.”
- “Probably 75% are not going to be willing would be my rough guess. 75%... But in my opinion, if they would take part in it and they could get better numbers, we'd probably get to keep more fish.”
- “I think that the more information you give back to us, the more that people would be interested in participating if they see the results being displayed to everybody.”
- “if properly conducted, I mean, I wouldn't want a bunch of citizens who have their own agenda to get together and submit a bunch of bogus data to show ‘Oh, my gosh, the fisheries are in great shape. Let me get 8000 redfish!’”

# Citizen Science: Concerns & Obstacles

## Significant Qualitative Themes

Common concerns and obstacles arose across interviews

- Differing perspectives on voluntary vs. obligate engagement in data collection
- How useful would scientists find the data to be?
- Operationalization of the projects are key to success or failure
- Financial and temporal limits may constrain engagement

- “it might be that they would meet with a greater acceptance if they were voluntary. Seems to be like the commercial fishermen don't like scientific stuff crammed down their throats”
- “What they [could] do wouldn't be trusted by the science community who thinks they [report] false information.”
- ““I don't even know how to get those things out of a fish. No, I would not be collecting them. And they shouldn't be asking us to do that.”
- “Whenever I'm cleaning fish, that's an eight hour day for me. I'm cleaning boats, cleaning fish, cleaning rods, getting everything packaged up. My first thought in my mind is not ‘Let's get these otoliths over 30 minutes away to the DNR station.’”

# Citizen Science: Motivating Engagement

## Significant Qualitative Themes

Fishers discussed potential routes to motivate engagement across sectors:

- Discuss potential for the data to inform regulatory shifts that would benefit fishers
- Clear, honest, respectful communication of transparent project goals
- Some fishers are likely to participate without compensation, while others would not have the time to do so without monetary incentive

- “manage the expectation...this isn't going to be an overnight process.”
- “...having a meeting of the collective fishermen in an area and saying, ‘Look, this is what we want to do. It’s not going to be an overnight process. But we feel very strongly that if we can do it in this fashion, maybe two years from now, maybe three years from now...’”
- “How you present has everything to do with the reception. I present ...every single day. And if I present in a fashion that is derogatory immediately, the reception ...is going to be ‘I don't want to hear what you have to say.’ But if I present it in a manner of ‘Hey, let's talk about this. There's things that are gonna be good and there's things that may not be so good but we're gonna find a way to have a happy meeting spot!’ Same thing with the council. Same thing with NOAA.”
- “Everybody's out there to make a dollar. That's all they want—I mean, that's literally *all* they want. They would **have** to be paid.”

# Fishers ≠ Volunteers

Finding	Management Recommendations
<p><b>Power dynamics mean this is <u>not</u> traditional citizen science.</b> Fishers are not “volunteers.” The organization that regulates them is asking for data that will affect their lives.</p>	<ul style="list-style-type: none"><li>• Consider potential negative consequence if data gathered through Cit Sci is “used against” fishers. This could further undermine trust..</li><li>• Select project that have no risk of harm and be transparent.</li></ul>
<p><b>“Pro-bono” services from commercial and for-hire fishers</b> These are experienced professionals in their chosen career.</p>	<ul style="list-style-type: none"><li>• Recognise commercial and for hire fishers as professionals with expert knowledge.</li><li>• Incorporating fisher perspectives and respect for their knowledge could improve both best scientific information available and trust in management.</li></ul>
<p><b>Recreational fishers as partners for citizen science</b> Recreational fishers have highest levels of trust and are most interested.</p>	<ul style="list-style-type: none"><li>• Recreational fishers are a logical choice for a first Cit Sci project as there is a relative lack of data on the sector</li><li>• A well-designed Cit Sci program could supplement MRIP data.</li></ul>



# Citizen Science: Possibilities

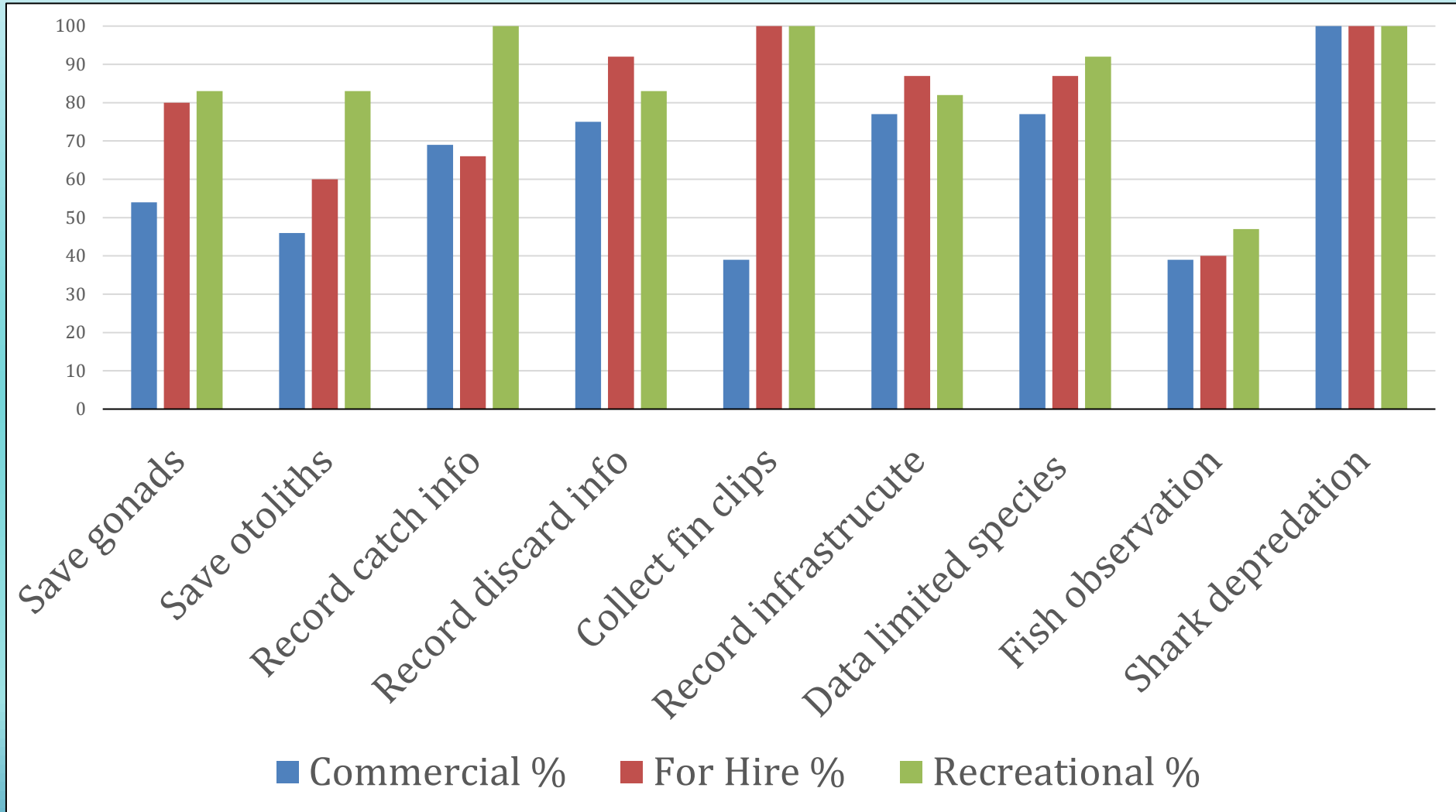
## Significant Qualitative Themes

Fishers proposed a myriad of projects for citizen science collaborations, centered around these topics

- Recording size and quantity of fish caught, via a logbook, punch card, or photos
- Focusing photography efforts on charter boats because of existing emphasizing on recording catch pictures
- Documenting water conditions, particularly pollution or clarity
- Typical fish tagging projects, or satellite tagging programs
- Potential for engaging charter clientele in some projects

- “Every fish, just take picture. We’re already taking a picture of every fish we catch. It didn’t count if you didn’t have a picture!”
- “Use the head boats, the big party boats and [train a camera] on their fish box....you would get a decent sampling because there's usually 40-50 people on the boat...
- “satellite tagging program...In our day and age, I think we can come up with a satellite tag that doesn't cost that much, that we don't need to recover. As soon as it releases off the fish, it floats to the surface and satellite picks it up, takes all the data, sends it to where it needs to go.”
- “depending on the clients, like if they're like my repeat clients that I've formed a relationship with over the last few years, yeah 100% they would want to do that...they would be more than happy to take information and do that.”

# Citizen Science: Willingness to Engage



# Citizen Science: Proposals-SHARKS



- Significant, overwhelming issue across the region, Impacting all three sectors
- “I think sharks are becoming a major challenge...I was 48 miles offshore yesterday and we caught two sharks and had a king fish eaten by sharks... it's becoming more and more frustrating because you can't get away from them at times. When they show up you're done.”
- “When you go bottom fishing the sharks will show up ...You'll see a shark, he'll get behind the boat and you're pulling as fast as you can to get that handline in, and he's just fired up on the surface. Just coming— I've had him hit the boat!”
- “That would actually give me pleasure. I would love to tell you how many times I said f\*\*\* you to sharks in a day!”





# Conclusions



# Citizen Science is potentially valuable

A co-developed and transparent Cit Sci program for fishers could be a valuable tool and change agent

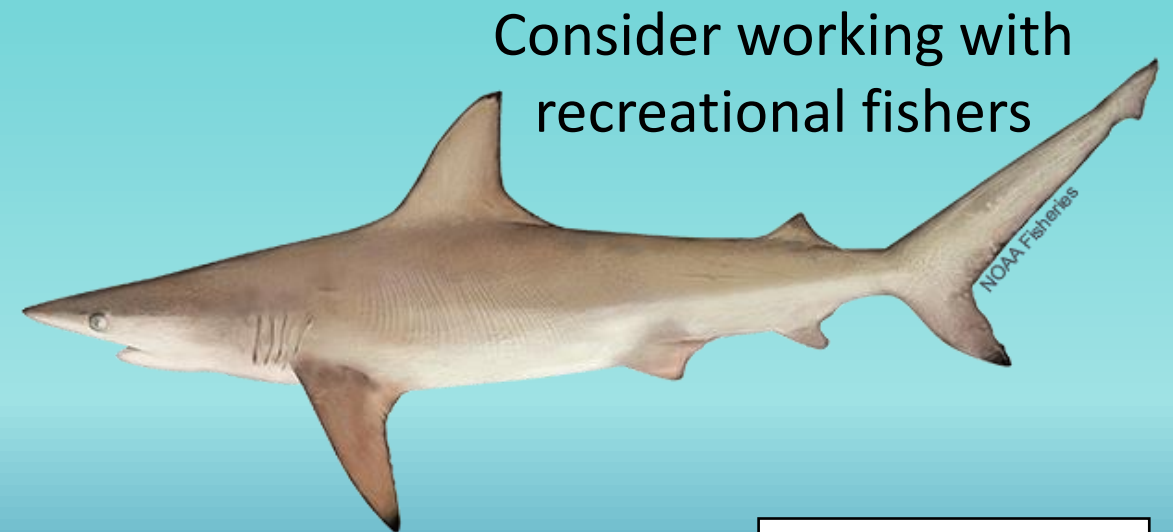
- Short-term: Fill data gaps (e.g., provide supplementary MRIP data)
- Long-term: By providing opportunities for collaborative working relationships, a fisher Cit Sci program could:
  - Open the “black box” of Federal fisheries management
  - Rebuild trust in management
  - Build understanding of fisheries science



# What a well-designed citizen science project would look like

A citizen science program with fishers could work. It would need to minimize risk of harm to fishers, and be:

1. Genuinely collaborative and transparent in design
2. Relevant
3. Simple
4. Non-duplicative
5. Culturally appropriate
6. Carefully selected



**Questions &  
Comments?**

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Commercial, for-hire, & recreational fishers across the entire South Atlantic region

