Citizen Science

THE SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

Updating Citizen Science Research Priorities

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Process to update citizen science research priorities

CitSci Research Priorities: Timeline

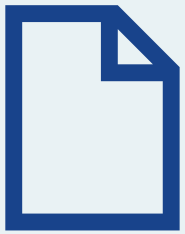
Oct 27: CitSci Operations & Projects Advisory Meeting

Nov 1: DRAFT Updated CitSci Research Priorities sent out for review

Nov 9: Edits to research priorities due to Julia

Nov 14: DRAFT Updated CitSci Research Priorities finalized for SAFMC review

CitSci CURRENT Research Priorities



Current research priorities are summarized on the following slides

Research priorities are listed with a respective example and the feedback provided in 2021

Orange text highlights potential additions / deletions based on updated Council research and monitoring needs

Questions for consideration

- For each priority
  - Is this type of data feasible for fishermen or other volunteers to collect? If not, what type of data may be reasonable to collect?
  - Is this type of data collection more appropriate for a smaller, more targeted project and group of participants or a larger, broader project and group of participants?
- Do you think projects that require learning new skills (e.g. otolith removal) are of interest to volunteers? Would volunteers be more interested in participating in projects using existing skill sets and minimal training?
- Are there any priorities that should be removed or added to this list?
- Are there any additions/deletions to the species under the applicable priorities?
- Which of the priorities may help address the most immediate needs for science and management?

Questions for consideration

- For brainstorming new research and data needs
  - What information could be collected or observed through typical fishing activities that would be helpful for scientists or managers to know?
  - Are there changes in your fishery that would be helpful for scientists or managers to know? Would you and others be willing to help collect data on these issues?
  - Are there any issues that citizen science research projects could help address?
  - If you have specific citizen science project ideas, do they fit under the current research priorities? If not, what priority could be added to capture your project idea?

CitSci Research Priority: *Age Sampling**

- Target volunteers: Recreational
- Data needed: otolith collection
- Target species: Cobia, Greater AJ, Almaco Jack, Scamp, Snowy, Gag, Black Grouper, Knobbed Porgy, Porgy Complex, Dolphin, Wahoo, Lane Snapper, Hogfish (both stocks), Red Grouper, Vermilion Snapper, Blueline Tilefish, Black Seabass (private rec)
- Anticipated outcome: characterize age of catch
- Example project:
  - Fishermen trained to remove otoliths
  - Otoliths removed, placed into envelope, and additional data collected
  - Otoliths & data sent to partner ageing lab for analysis
- 2021 feedback:
  - More age data from recreational sector high priority
  - Additional non-assessed species added due to Council R & M Plan
  - Sampling design critical
  - Training challenging for some species (e.g., jacks, hogfish)

CitSci Research Priority: *Maturity Data**

- Target volunteers: recreational, commercial, tournaments
- Data needed: gonad collection (biological samples or pictures)
- Target species: Cobia, Red Porgy, Snowy, Spiny Lobster, Gag, Red Grouper, Black Grouper, Scamp, Black Seabass, Greater AJ, Wahoo, Mutton Snapper, Hogfish
- Anticipated outcome: improved reproductive information
- Example project:
  - Fishermen trained to remove & store gonads for analysis
  - Gonads sampled, stored, and additional data collected
  - Gonad sample on ice for short period; otherwise more complicated storage needed
  - Gonad sample & data sent to partner reproductive lab for analysis
- 2021 feedback:
  - Storage likely more challenging than sample itself
  - Additional species added due to Council R & M Plan
  - Helpful for species that spawn outside of SERFS sampling (Nov – Apr)
  - Sampling design not as critical as ages; want samples from whole spawning season
  - Photos more useful for non-hermaphroditic species
  - Divers may be able to provide spawning information/photos

CitSci Research Priority: *Discard Info*

- Target volunteers: recreational and commercial
- Data needed: fish length, depth caught, number of fish, reason for discard, use of barotrauma reduction techniques
- Target species: all SAFMC managed species especially, Scamp, Red Snapper, deepwater groupers, Red Porgy, Greater AJ, Cobia, King Mackerel, Gray Triggerfish
- Anticipated outcome: improved discard removal estimates, ability to characterize the size of discards, could help monitor recruitment for some species (e.g., Gag)
- Example project:
  - Fishermen collect data on released fish using mobile app
  - Data collected could include: date, species, length, depth, photo, release condition and treatment, location
  - Data uploaded to database for analysis
- 2021 feedback:
  - Better info on released fish a high priority
  - Helpful to develop tools for fishermen to make data collection easier
  - Could explore incorporating info into commercial and for-hire logbooks for ease of participants

CitSci Research Priority: *Genetic Sampling**

- Target volunteers: recreational and commercial; bait & tackle shops; tournaments
- Data needed: fin clips
- Target species: Cobia, Hogfish (both stocks), Red Grouper, White Grunt, Spanish Mackerel, Dolphin, Wahoo, Black Grouper
- Anticipated outcome: stock identification, ageing?
- Example project:
  - Fishermen trained to collect fin clips
  - Fin clips taken, placed in vial, and additional data collected
  - Fin clips & data sent to partner genetics lab for analysis
- 2021 feedback:
  - Sampling and storage less complex than many other biological samples
  - Additional species added due to Council R & M plan
  - Genetics are an evolving and increasingly powerful tool

CitSci Research Priority: *Fishing Infrastructure*

- Target volunteers: recreational and commercial; community members
- Data needed: GPS location of existing and previously existing fishing infrastructure
- Anticipated outcome: baseline for fishing-related infrastructure to help document potential impacts from regulations; socio-economic analysis for amendments
- Example project:
  - Participants collect GPS location, date, photo, description over set time period via app
  - Data uploaded to database for analysis
- 2021 feedback:
  - Increasingly important in commercial and for-hire sectors
  - Included in Council R & M plan
  - Helpful to see what data already exist

CitSci Research Priority: *Historic Fishing Photos*

- Target volunteers: recreational (especially for-hire)
- Data needed: digitized images
- Target species: commonly caught South Atlantic charter and headboat species
- Anticipated outcome: length compositions for certain species; improved historical information; potential for index development
- Example project:
  - Fishermen help compile, scan, and archive historic photos
  - Volunteers trained to identify and measure species on project interface online taken, placed in vial, and additional data collected
  - Fishermen and scientists help validate species ID made by volunteers
  - Validated data available for analysis
- 2021 feedback:
  - Fishermen, scientists, and members of public shown interest through FISHstory
  - Capturing info on fish availability over time could be helpful as climate change becomes bigger issue
  - Documenting historic fisheries can help us better understand health of current fisheries

CitSci Research Priority: *Fishery Oral Histories*

- Target volunteers: for-hire and commercial captains
- Data needed: interviews with fishermen to learn about the history and current state of fishery; possibly pair with photos
- Anticipated outcome: documentation of how fisheries operated over time & other observational data
- Example project:
  - Fishermen interviewed to share knowledge on fisheries
  - Fishermen trained to help interview other fishermen
  - Interviews transcribed for analysis
- 2021 feedback:
  - Capturing info on fish availability and oceanographic conditions over time could be helpful as climate change becomes bigger issue
  - Info to inform fishery trends over time could be helpful supplemental data for assessment and management

CitSci Research Priority: *Oceanographic, Environmental, Weather Conditions*

- Target volunteers: recreational & commercial
- Data needed: bottom temperature; weather impacts to fishing; P/A sargassum and size of area; movement of forage fish and shifts in patterns of fishery
- Anticipated outcome: building database on climate and conditions; distribution of sargassum; how forage fish impacts pattern in fishery
- Example project:
  - Fishermen collect environmental data via data logger deployed from boat during fishing activities at set stations
  - Fishermen trained on use of data logger
  - Data downloaded and submitted electronically for analysis
- 2021 feedback:
  - Data increasingly important with climate change
  - Would be feasible to collect during normal fishing activities, especially if data logger placed on fishing gear and passively collects data

CitSci Research Priority: *Rare or Data Limited Species Observations*

- Target volunteers: recreational & commercial
- Data needed: point observations of data limited or unusually encountered species; length information on data limited species
- Target species: shifting species – Dolphin, King & Spanish Mackerel, Shrimp, Wahoo, Black Seabass, Tilefish?; data limited – hogfish, grouper species
- Anticipated outcome: baseline (or early warning?) for species shift; increase info for data limited species
- Example project:
  - Fishermen report rare species observations via website or mobile app
  - Data collected could include: date, photo, species, location, etc.
  - Fishermen help validate species ID by participants
  - Validated data available for analysis
- 2021 feedback:
  - Could be valuable to capture info on shifting species which is a Council topic of interest

CitSci Research Priority: *Historic Personal Fishing Logbooks / Diaries*

- Target volunteers: for-hire and commercial captains
- Data needed: Translate fishermen's historic logbooks into electronic data / database
- Anticipated outcome: develop relative indices of abundance
- Example project:
  - Fishermen logbooks are digitized and transcribed into electronic data
  - Data partner manages and analyzes data
- 2021 feedback:
  - Captain's logbooks could provide finer scale information or information or changes in habitat over time
  - Sensitive information; may be higher barrier for this research
  - Council refined to 'historic logbooks'

CitSci Research Priority: *Observations in Managed Areas**

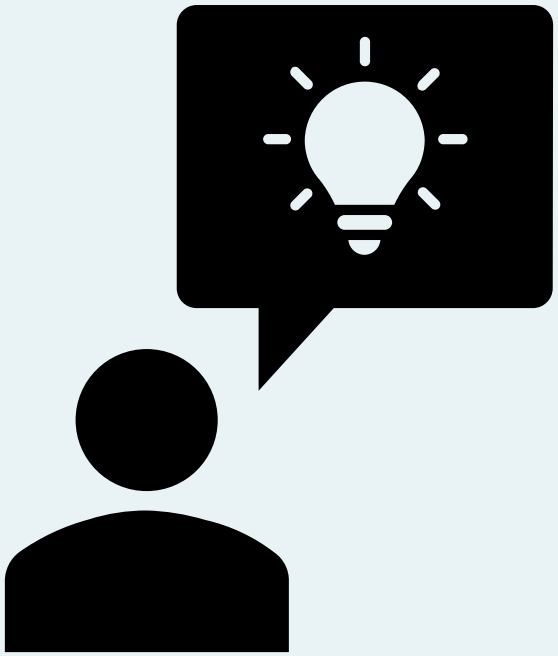
- Target volunteers: recreational & commercial; divers
- Data needed: species, length, depth, videos/photos
- Target species: snapper and grouper
- Anticipated outcome: species composition, changes in fish abundance over time, occurrence of spawning
- Example project:
  - Fishermen would sample/fish inside and outside managed area (EFP likely needed)
  - Sampling likely need to be more structured
  - Data collected could include species, length, photo/image, depth
  - Data sent to partner scientists for analysis
- 2021 feedback:
  - Added back into the citsci research priorities (was removed in 2019); Council changed ‘monitoring’ to ‘observations’
  - Interest by fishermen and managers (spawning SMZ’s sunset in 2027)
  - Many areas far offshore; may be good to get input from AP’s on whether compensation would be needed to sample

CitSci Research Priority: *Movement & Migration*

- Target volunteers: recreational & commercial; focus on supporting existing programs
- Data needed: species, location, length, tag details
- Target species: Dolphin, Wahoo
- Anticipated outcome: movement and migratory patterns
- Example project:
  - Fishermen trained to tag species; log information on tagged fish via website/app via existing programs
  - Fishermen report tagged fish that they catch via website/app via existing programs
  - Tag program managers analyze data
- 2021 feedback:
  - Added in 2021; emphasis on SUPPORTING already existing programs
  - Support for sharing Council target species with existing tagging programs

CitSci Research Priority: *Shark Depredation*

- Target volunteers: recreational & commercial
- Data needed: observations of shark depredation, location, species, photo
- Anticipated outcome: document shark depredation observations
- Example project:
  - Fishermen log observations of shark depredation via a website or app
  - Data uploaded to website
  - Likely need collaboration with HMS to help with analysis, data usage, etc.
- 2021 feedback:
  - Added in 2021; issue has been raised to Council by stakeholders a lot
  - Council doesn't manage sharks; not clear how data collected could by used in Council assessments and management
  - CRP / Citizen Science project started in FL in 2021



CitSci Research Priorities: *Additional Ideas*

The following slide notes additional ideas for research priorities that were discussed during 2021 or have been brought up during 2021-2023 meeting discussion.

CitSci Research Priority: *Additional Ideas*

- Diet Studies / Sampling
  - Was added to research priorities in 2019, removed in 2021
  - Could help with Ecopath/Ecosim;Scospace models?
  - Challenging to implement
- Red Grouper Spawning
  - Project idea raised at Snapper Grouper AP Spring 2023 meeting
- Recreational Wreckfish and/or Deepwater Complex Landings
  - Project idea raised at Snapper Grouper AP Spring 2023 meeting
- Others?