



# *South Atlantic Fishery Management Council* **Citizen Science Research Priorities**

**CitSci Operations & Projects Advisory Committees Meeting**



**November 2021**



# Citizen Science Research Priorities

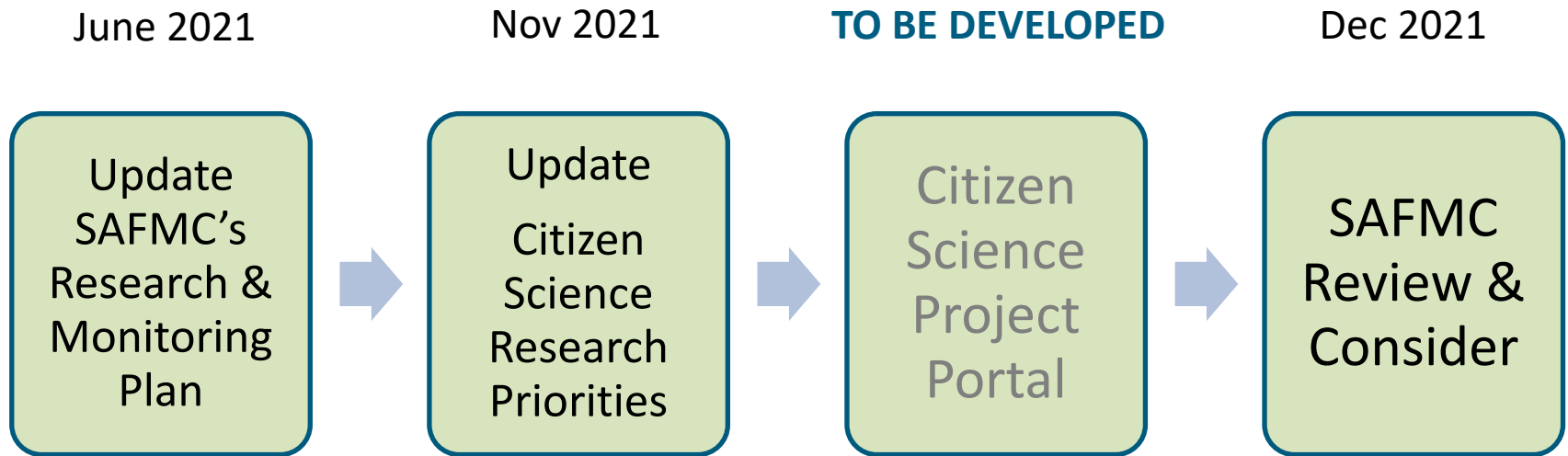
Updated every  
two years

Helps guide  
projects the  
Program pursues

SAFMC Citizen Science Research Needs		
TOPIC	DATA NEEDED:	POTENTIAL OUTCOME:
Age Sampling	Otolith collection	Age of catches
Maturity Data	Gonad collection	Improved reproductive information
Discard information	Length, depth, # of fish, reason, devices used	Improved discard removal estimates, size comps of discards
Genetic Sampling	Fin clips	Stock I.D.
Fishing Infrastructure	Location and type of infrastructure	Document social/economic impacts of regulations over time
Historical Fishing Photos	Images (electronic)	Length comps; improved historical information
Fishing Oral Histories	Fishermen Interview	Improved understanding of the changes in the fishery over time
Oceanographic/ Environmental Conditions	Bottom temperature; weather	Build database on climate and changing conditions
Rare or data limited species observations	Point observations	Baseline for species shift; increased information on data limited species
Diet Samples	Stomach collection	Improved diet information
Personal Fishing Logbooks/Diaries	Logbook data (electronic)	Develop relative indices of abundance



# Citizen Science Research Prioritization Process



Informed by SSC,  
AP's, SEDARs, SAFMC

Cit Sci Projects  
Advisory Team &  
Operations  
Committee



# CitSci Research Priorities: Timeline

- **Nov 1:** CitSci Operations & Projects Advisory Meeting
- **Nov 4:** DRAFT Updated CitSci Research Priorities sent out for review
- **Nov 12:** Edits on research priorities due to Julia
- **Nov 15:** DRAFT Updated Cit Sci 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 2019
- Red text highlights potential additions based on updated Council research and monitoring needs



# CitSci Research Priority: *Age Sampling*

- **Target volunteers:** Recreational
- **Data needed:** otolith collection
- **Target species:** cobia, greater AJ, scamp, snowy grouper, gag, knobbed porgy, porgy complex, **Almaco jack, Atlantic spadefish, Dolphin, Wahoo, Hogfish (GA-NC Stock), Lane Snapper**
- **Anticipated outcome:** characterize the age of catches
- **Potential cost:** \$\$
- **Example project:**
  - Fishermen trained to remove otoliths
  - Otoliths would need to be removed, placed into envelope, and additional data collected (date, species, size, general location, etc.)
  - Otoliths & data sent to partner ageing lab for analysis
- **2019 feedback:**
  - May be easier for for-hire & private recreational sectors with fishing activities
  - Could develop CitSci volunteer port sampler team & coordinate with NOAA/states
  - Carcass collection could be logistically easier than on site removal
  - Age data critical to assessment but can be influential – sampling design and protocol important



# CitSci Research Priority: *Maturity Data*

- **Target volunteers:** Recreational & commercial, tournaments
- **Data needed:** gonad collection (actual biological sample or pictures)
- **Target species:** cobia, red porgy, snowy grouper, spiny lobster, gag?, red grouper?, Almaco jack, Atlantic spadefish, Dolphin, Wahoo, Hogfish (GA-NC Stock), Lane Snapper
- **Anticipated outcome:** improved reproductive information
- **Potential cost:** \$\$
- **Example project:**
  - Fishermen trained to remove and store gonad for analysis
  - Gonad sampled, stored, and additional data collected (date, species, size, general location, etc.)
  - Gonad sample on ice for short period otherwise more complicated storage likely needed
  - Gonad sample & data sent to partner reproductive lab for analysis
- **2019 Feedback:**
  - Sampling would likely require more training; storage could be challenging
  - May be more suitable for commercial or for-hire sectors?
  - Could develop CitSci volunteer port sampler team
  - Sampling design not as critical as ages; ideally would like samples from whole spawning season



# CitSci Research Priority: *Discard Info*

- **Target volunteers:** Recreational & commercial
- **Data needed:** length of fish, depth caught/released, number of fish, reason for discard, use of barotrauma reduction devices
- **Target species:** All SAFMC managed species in particular - scamp grouper, red snapper, deepwater groupers, red porgy, greater AJ, cobia, king mackerel (sub-legal releases), gray triggerfish
- **Anticipated outcome:** improved discard removal estimates, ability to characterize size composition of discards
- **Potential cost:** \$-\$\$
- **Example project:**
  - Fishermen collect info on released fish using mobile app
  - Data collected could include: date, trip type, species, length, depth, location, release condition & treatment, photo of released fish
  - Data uploaded to database for analysis
- **2019 Feedback:**
  - Commercial – difficult to do for every released fish; sub-sampling could make more feasible; may be a lot of ask in addition to logbook
  - Collecting photo of released fish could be challenging
  - May be easier to keep tally and enter in app post fishing
  - Very limited release data availability on all species, so could be valuable





# CitSci Research Priority: *Genetic Sampling*

- **Target volunteers:** Recreational & commercial; bait & tackle; tournaments
- **Data needed:** fin clips
- **Target species:** cobia, hogfish (both stocks), red grouper, white grunt, **Spanish mackerel?**
- **Anticipated outcome:** stock ID
- **Potential cost:** \$-\$\$
- **Example project:**
  - Fishermen trained to collect fin clips
  - Fin clips taken, placed in vial, and additional data collected (date, species, size, location, etc.)
  - Fin clips & data sent to partner genetics lab for analysis
- **2019 Feedback:**
  - May be easier to collect sample with 2 people (for released fish)
  - Coordination/submission of samples needs to be easy
  - Important to pilot with select volunteers to develop simple protocol; could look to state examples with cobia
  - Further refine target species list



# CitSci Research Priority: *Fishing Infrastructure*

- **Target volunteers:** Recreational, commercial community members/citizens
- **Data needed:** GPS location of existing and previously active fishing infrastructure
- **Anticipated outcome:** Baseline fishing-related infrastructure to help document potential impacts from regs
- **Potential cost:** \$
- **Example project:**
  - Participants collect GPS location, date, photo, location description over set time period using new or existing mobile app
  - Data uploaded to database for analysis
- **2019 Feedback:**
  - Especially important for commercial sector
  - Likely feasible if could collect over period of time with normal fishing activities
  - Helpful to see what data already exist from NOAA, states, Sea Grant



# CitSci Research Priority: *Historic Fishing Photos*

- **Target volunteers:** Recreational & for-hire
- **Data needed:** digitized images/photos
- **Target Species:** commonly caught charter & headboat species
- **Anticipated outcome:** estimated length comps for some species, improved historical info
- **Potential cost:** \$-\$\$
- **Example project:**
  - Fishermen help scan and archive historic photos
  - Participants are trained to help identify and measure species on project interface online
  - Fishermen help validate species ID made by participants
  - Validated data available for analysis
- **2019 Feedback:**
  - Fishermen likely have strong interest in topic; likely willing to provide photos and help validate species; may be better for small targeted group of volunteers
  - Many photos likely available throughout region; libraries may be good source as well as reaching out to fishermen



# 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
- **Potential cost:** \$
- **Example project:**
  - Fishermen interviewed to share knowledge on fisheries
  - Fishermen trained to help interview other fishermen
  - Interviews transcribed for analysis
- **2019 Feedback:**
  - Especially important for commercial sector
  - NOAA done similar work through 'Voices in the Fishery'
  - Could involve students in process



# CitSci Research Priority:

## *Oceanographic/Environmental/Weather Conditions*

- **Target volunteers:** recreational & commercial
- **Data needed:** bottom temperature, weather impacts to fishing; presence/absence of sargassum and size of area; movement of forage fish and shifts in patterns of a fishery
- **Anticipated outcome:** building database on climate and conditions; distribution of sargassum; how forage fish impacts patterns in a fishery
- **Potential cost:** \$-\$\$
- **Example project:**
  - Fishermen collect environmental data via data logger deployed from boat during fishing activities at set stations
  - Fisherman trained on use of data logger
  - Data would need to be downloaded and submitted electronically for analysis
- **2019 Feedback:**
  - Fishermen would likely be interested and would be feasible to collect during normal fishing activities



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

- **Target volunteers:** recreational & commercial
- **Data needed:** point observations of unusual or rarely encountered species
- **Anticipated outcome:** baseline for species shift; increase info for data limited species
- **Potential cost:** \$-\$\$
- **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
- **2019 Feedback:**
  - Of interest to fishermen; would need clear training, structure and outreach to put project into context
  - Could be valuable to capture shifting species; topic important to Council
  - May be helpful to pair with historic photos; could help determine if reported observations are rare occurrences vs just seeing more due to social media, etc.



# CitSci Research Priority: *Diet Samples*

- **Target volunteers:** recreational, for-hire & commercial
- **Data needed:** stomach collection
- **Target species:** TBD
- **Anticipated outcome:** improved diet information
- **Potential cost:** \$-\$\$
- **Example project:**
  - Fishermen trained to remove and store stomach for analysis
  - Stomach sampled, stored, and additional data collected (date, species, size, general location, etc.)
  - Stomach sample needs to be iced or may need more complicated storage
  - Stomach sample & data sent to partner lab for analysis
- **2019 Feedback:**
  - Added to research priorities in 2019
  - Sample collection challenges similar to reproduction samples



# CitSci Research Priority: *Personal Fishing Logbooks*

- **Target volunteers:** for-hire & commercial
- **Data needed:** translate fishermen logbooks into electronic data/database
- **Anticipated outcome:** develop relative indices of abundance?
- **Potential cost:** \$-\$\$
- **Example project:**
  - Fishermen could provide and/or digitize logbook data
  - Data provided to partner scientist for analysis
- **2019 Feedback:**
  - Crowdsourcing platform like Zooniverse has been used to translate documents into electronic data
  - Logbook data likely contains sensitive information – so crowdsourcing may not be best approach?





# CitSci Research Priorities: *Additional Ideas*

The following slide notes additional ideas for research priorities that were discussed during 2019 or have been brought up during 2020-2021. These include ideas from the original research priority list that were removed during the 2019 update, ideas that were discussed in 2019 but didn't make the final draft provided to the Council, or topics that have come up during meeting discussion.



# **CitSci Research Priorities:**

## ***Additional Ideas For Consideration***

- **Monitoring in Managed Areas**

- Was included in original research priorities; removed in 2019
- 2019 Feedback
  - Interest in topic by fishermen; many felt better suited for cooperative research than citizen science
  - Sampling would likely need to be more structured and could be challenging to coordinate; likely need Exempted Fishing Permit
  - Perception of fairness could potentially be issue

- **Bottom Habitat Mapping**

- Was included in original research priorities; removed in 2019
- 2019 Feedback
  - Many felt would be better for cooperative research than citizen science
  - NOAA has crowdsourced bathymetry project



# CitSci Research Priorities:

## *Additional Ideas For Consideration*

- **Fishing Effort**

- Briefly discussed during 2019 but not included in research priorities
- 2019 Feedback: Potentially provide higher spatial or temporal resolution and/or estimate differences between public and private access points for rec sector; some noted could be sensitive topic and challenging for citsci approach

- **Movement & Migration**

- Was not discussed in 2019; has come up in discussions in relation to Dolphin and Wahoo
- There are already successful tagging programs (Dolphinfish Tagging Program, many state programs); if pursue this idea would make sense to collaborate/partner/support existing programs

- **Shark Predation**

- Was not discussed in 2019; has come up in discussions at various APs and Council
- Collect some information via SAFMC Release project
- CRP funded citsci project in FL getting underway in 2021
- Does it make sense to include as separate research priority since SAFMC doesn't manage sharks?



# CitSci Research Priorities:

## *Additional Ideas For Consideration*

- **Discards – Gear Modifications to Help Reduce Discards**
  - Wasn't discussed in 2019; has come up at AP and Council meetings
  - Discards large issue in Snapper Grouper fishery; interest in exploring gear modifications (e.g. hook size, leader modification, natural bait prohibition) as way to reduce discards
  - Not sure how much information is available testing the impact these different techniques have on discard rates?
  - Is this something that could be explored with a citizen science approach?
- **Other Ideas?**

