SCAN
Southeast Ocean and Coastal Acidification Network

GCAN
GULF OF MEXICO
COASTAL ACIDIFICATION
NETWORK

NOAA

OAP
NOAA OCEAN ACIDIFICATION PROGRAM

GULF OF MEXICO
SOUTHEAST
COASTAL ACIDIFICATION NETWORKS'
STAKEHOLDER FEEDBACK PROJECT

COASTAL & HEARTLAND
NATIONAL ESTUARY PARTNERSHIP

SECOORA
Southeast Coastal Ocean Observing Regional Association

Coastal Acidification Network Stakeholder Feedback Project

Emily R. Hall, Ph.D., Janet J. Reimer, Ph.D., Jennifer Vreeland

GCOOS
GULF OF MEXICO
COASTAL OCEAN
OBSERVING SYSTEM

IOOS
Integrated Ocean Observing System

The Southeast and Gulf of Mexico Coastal Acidification Networks Collaboration

Project Motivation

Support the IWG-OA Coastal Communities Vulnerabilities Assessment and Monitoring Priorities report (in progress)

Project Goal

Understand what our stakeholders know about acidification, how they are impacted, and what they believe our monitoring priorities should be and where gaps are currently

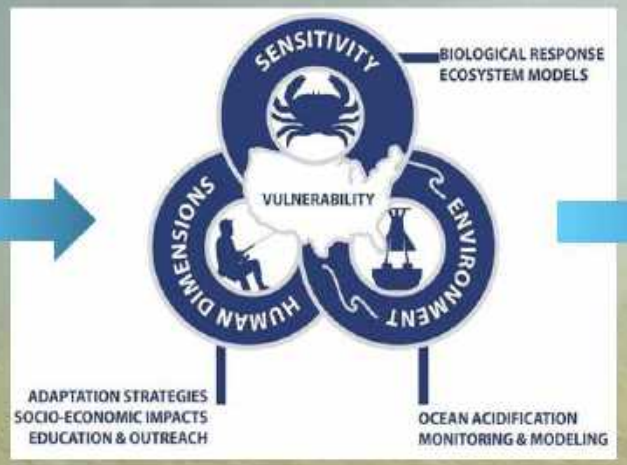
IOOS Integrated Ocean Observing System

Survey Benefits on a Broader Scope:

- Help form strategic regional activities
- Aid in national research:
  - IWG-OA Coastal Communities Vulnerabilities Assessment and Monitoring Priorities report that will go to Congress.
  - NOAA's OAP National OA Survey

Stakeholder Survey
Methodology

IWGOA
INTERAGENCY WORKING GROUP ON OCEAN ACIDIFICATION
(US Federal Agencies)



GULF OF MEXICO
SOUTHEAST
COASTAL ACIDIFICATION NETWORKS' STAKEHOLDER FEEDBACK PROJECT

Using survey methodology modeled after *CHNEP CCMP Climate Change Vulnerability Assessment,* and input from CHNEP staff and committees.

COASTAL & HEARTLAND NATIONAL ESTUARY PARTNERSHIP

Photo by Cameron McPhail/Mote Marine Laboratory

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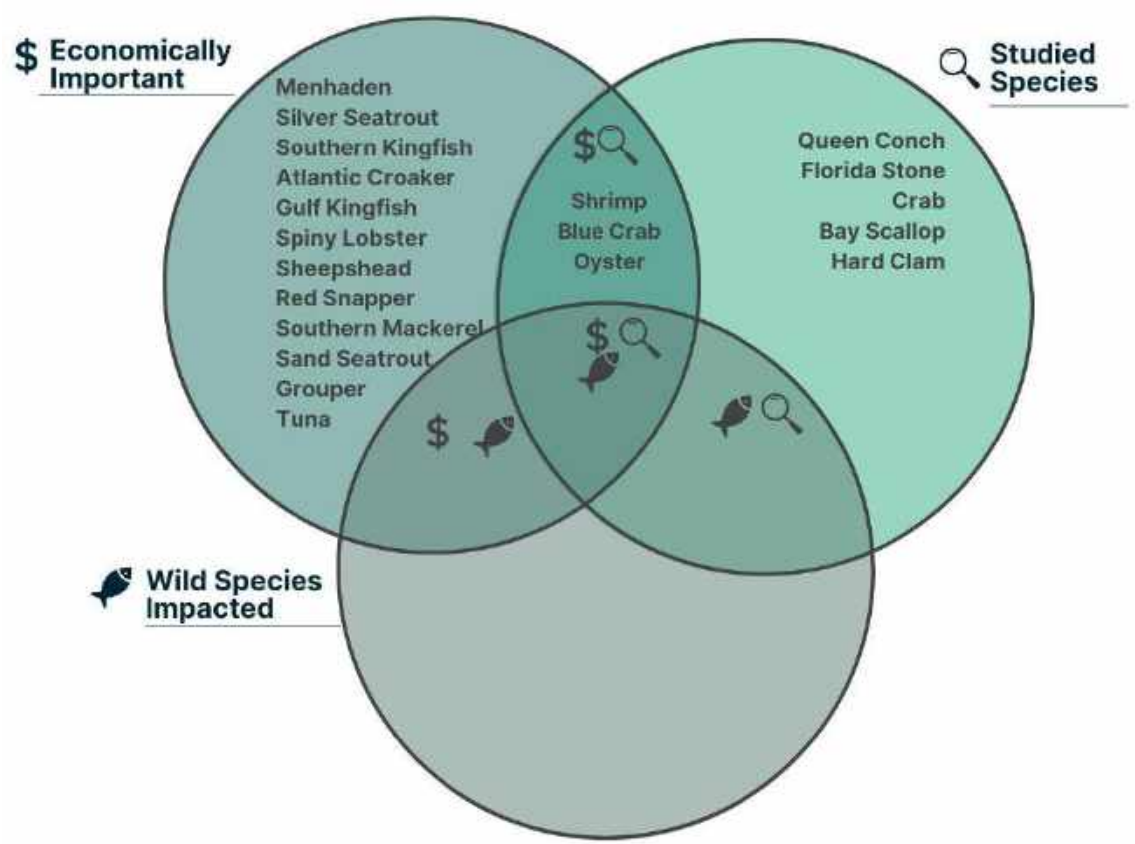
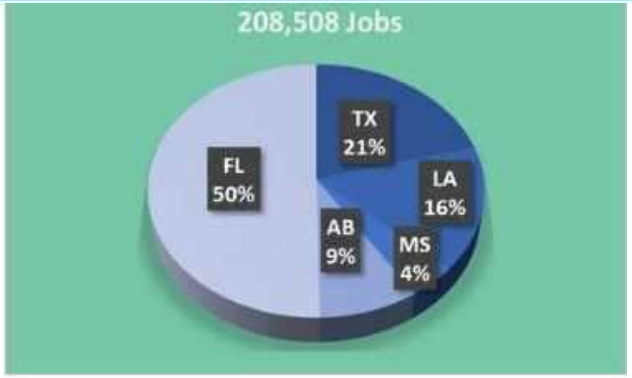
What we know: Gulf of Mexico

2019 U.S. jobs and economic revenue from the recreational and commercial fishing industry in the Gulf of Mexico.





https://www.fisheries.noaa.gov/resource/document/fisheries-economics-united-states-2019-report

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NOAA Fisheries. https://www.fisheries.noaa.gov/data-tools/fisheries-economics-united-states-interactive-tool#.

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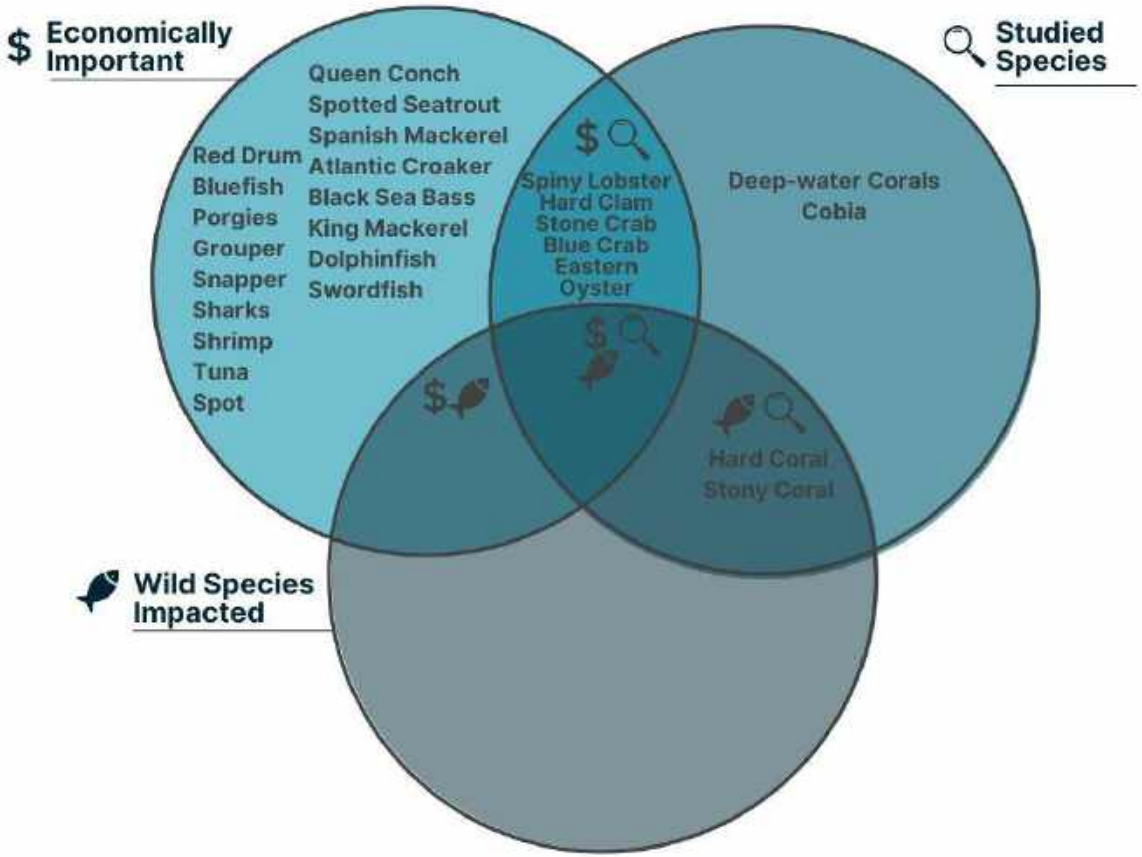
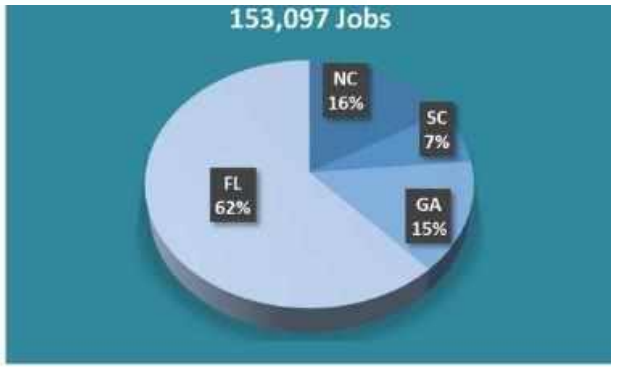
What we know: Southeast

2019 U.S. jobs and economic revenue from the recreational and commercial fishing industry in the Southeast..





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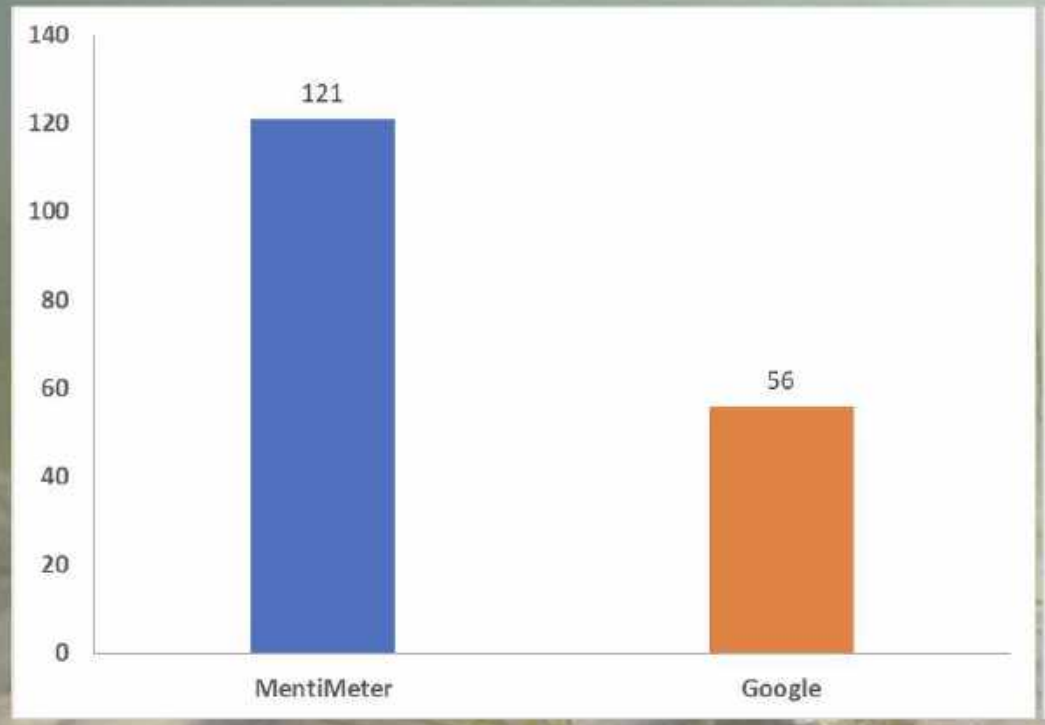
NOAA Fisheries. https://www.fisheries.noaa.gov/data-tools/fisheries-economics-united-states-interactive-tool#.

Stakeholder Survey Results!

Surveys were presented in two manners (20 Questions Total)

1. Live MentiMeter questions at in person meetings (e.g. at NEP TAC and CAC meetings)
2. Online Google Form questions (via email and posted on the SOCAN and GCAN websites)



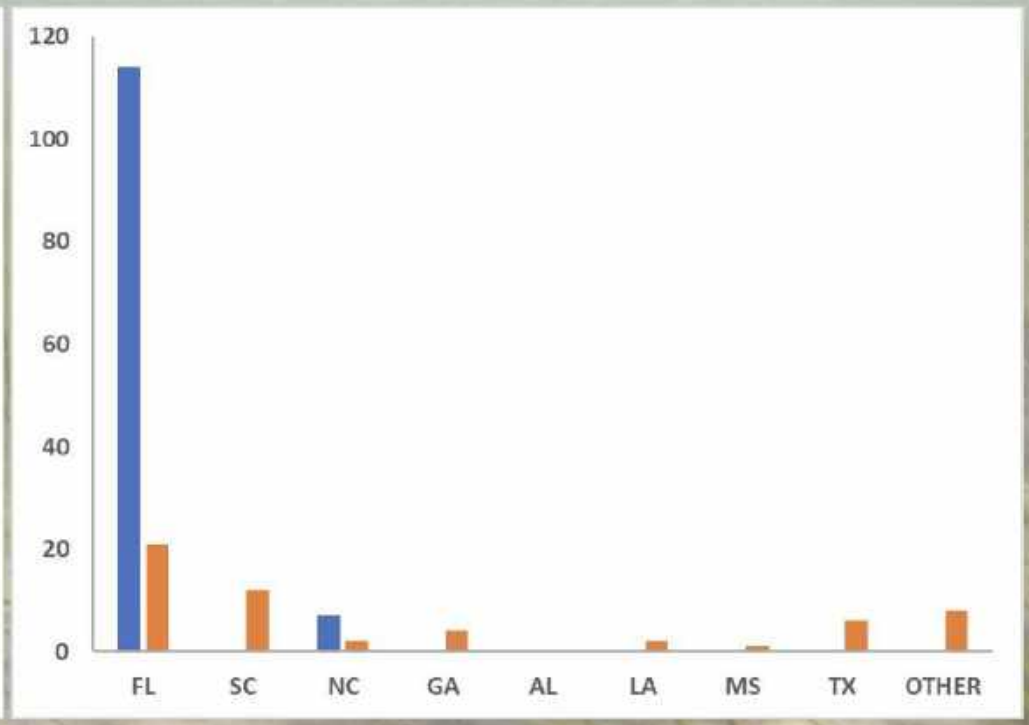


Photo by Cameron McPhail/Mote Marine Laboratory

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Survey Categories

1. General Knowledge of OA and the Ecological/Anthropogenic Processes
2. Level of Concern About OA Impacts- Direct or Indirect
3. Recreational Activities and Resources in Marine Environments
4. Ranking OA Priorities

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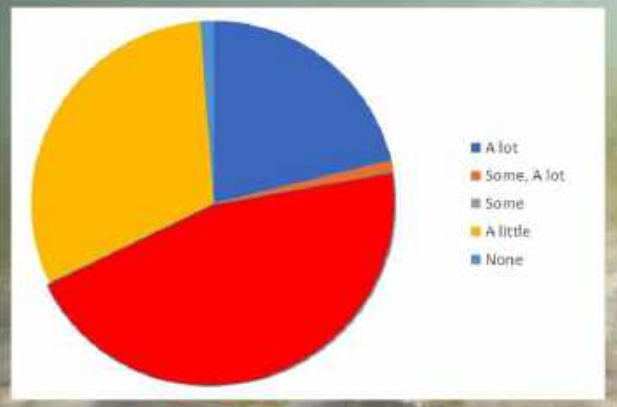
Category 1- General Knowledge of OA and the Ecological/Anthropogenic Processes

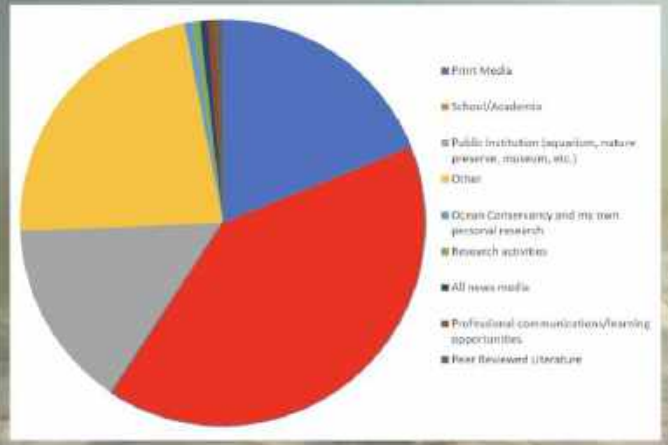
1. Do you have any knowledge on this topic prior to today? If so, how would you classify your level of knowledge on ocean acidification?



1. **Some**
2. A Little
3. A Lot

Photo by Cameron McPhail/Mote Marine Laboratory

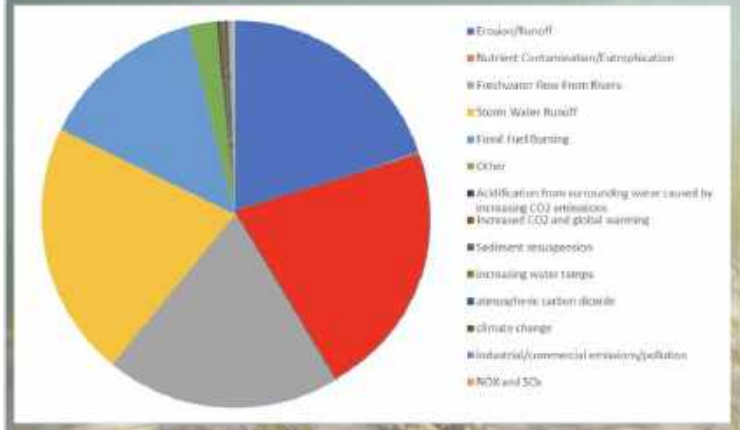
2. How would you describe your main source for information about acidification?



1. **School/Academia**
2. Other
3. Print Media
4. Professional Communications/Learning Opportunities.
5. Ocean Conservancy and my own personal research
6. Research activities
7. All news media
8. Peer Reviewed Literature

Photo by Cameron McPhail/Mote Marine Laboratory

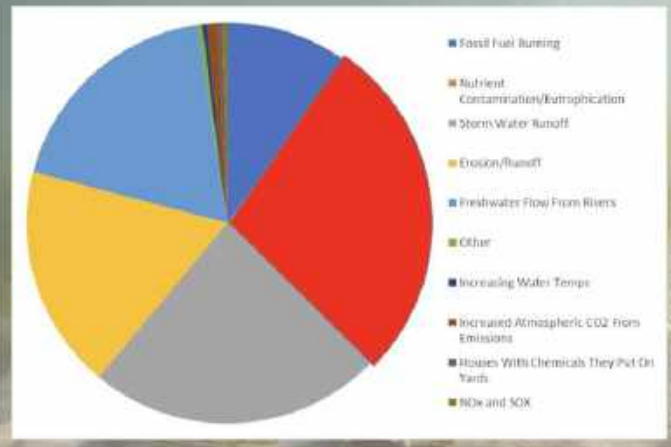
3. Which of the following processes are you familiar with?



1. **Nutrient Contamination/Eutrophication**
2. Storm Water Runoff
3. Erosion/Runoff
4. Freshwater Flow from Rivers
5. Fossil Fuel Burning
6. Other

Photo by Cameron McPhail/Mote Marine Laboratory

4. Which of the following processes do you think could lead to or worsen acidification?



1. **Nutrient Contamination/Eutrophication**
2. Storm Water Runoff
3. Freshwater Flow from Rivers
4. Erosion/Runoff
5. Fossil Fuel Burning
6. Increased Atmospheric CO2 from Emissions
7. Other

Photo by Cameron McPhail/Mote Marine Laboratory

Category 2- Level of Concern About OA Impacts- Direct or Indirect

5. Are you concerned about the effect acidification will have on the environment?

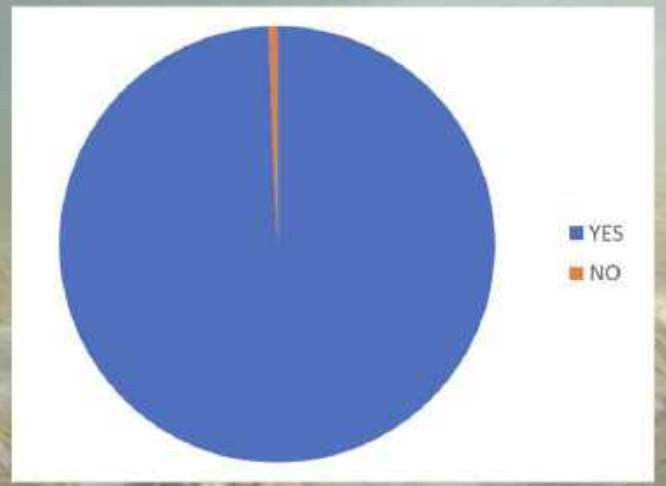
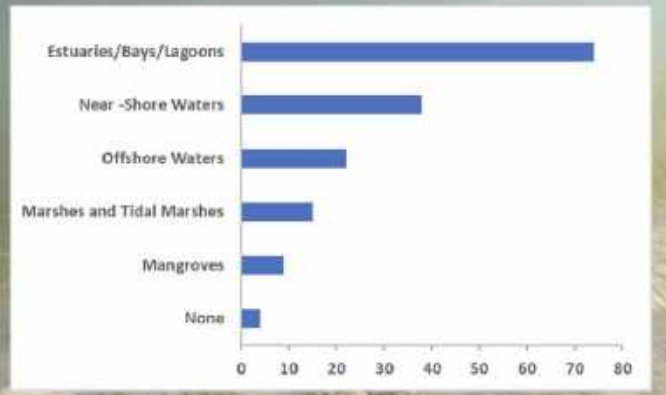


Photo by Cameron McPhail/Mote Marine Laboratory

6. If you are concerned about the effects of acidification on the environment, please rank the ecosystems on concern to you.



1. **Estuaries/Bays/Lagoons**
2. Near-Shore Waters
3. Offshore Waters
4. Marshes and Tidal Marshes
5. Mangroves
6. None

Photo by Cameron McPhail/Mote Marine Laboratory

7. Are you aware of the potential effects of coastal or ocean acidification on marine animals?

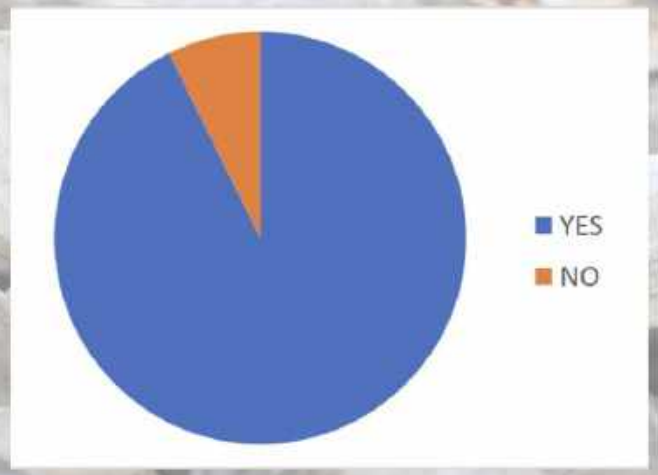
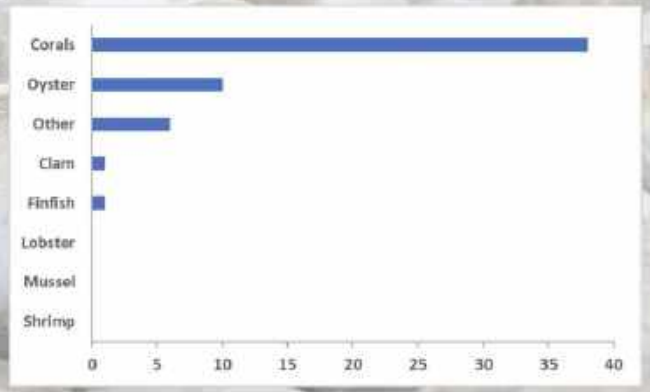


Photo by Madi O'Neill/Mote Marine Laboratory

8. Of the marine animals that may be affected, which are you most concerned about?



1. **Corals**
2. Oysters
3. Other
4. Clams
5. Finfish
6. Lobster
7. Mussels
8. Other (crabs, everything else, all species, coccolithophores, pteropods, phytoplankton, shorebirds)

Photo by Cameron McPhail/Mote Marine Laboratory

14. Are you concerned that acidification may affect your employment in the future?

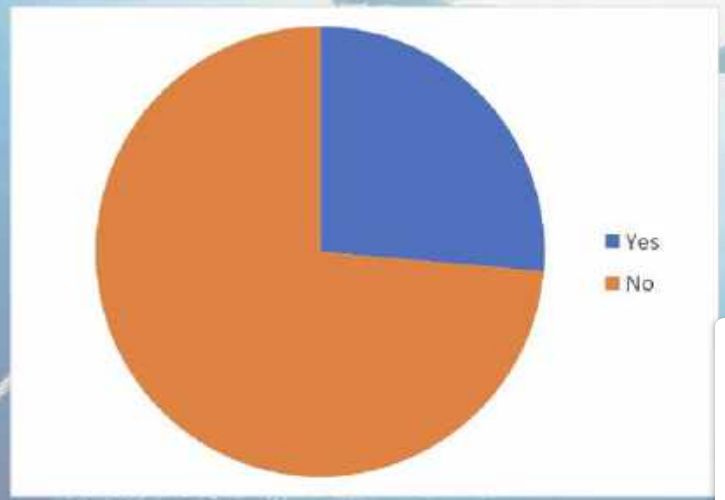
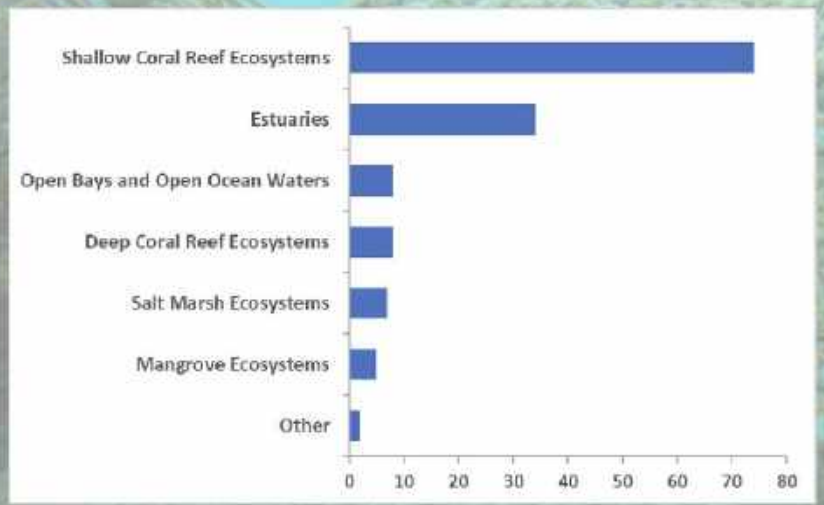


Photo by Kristin Paterakis

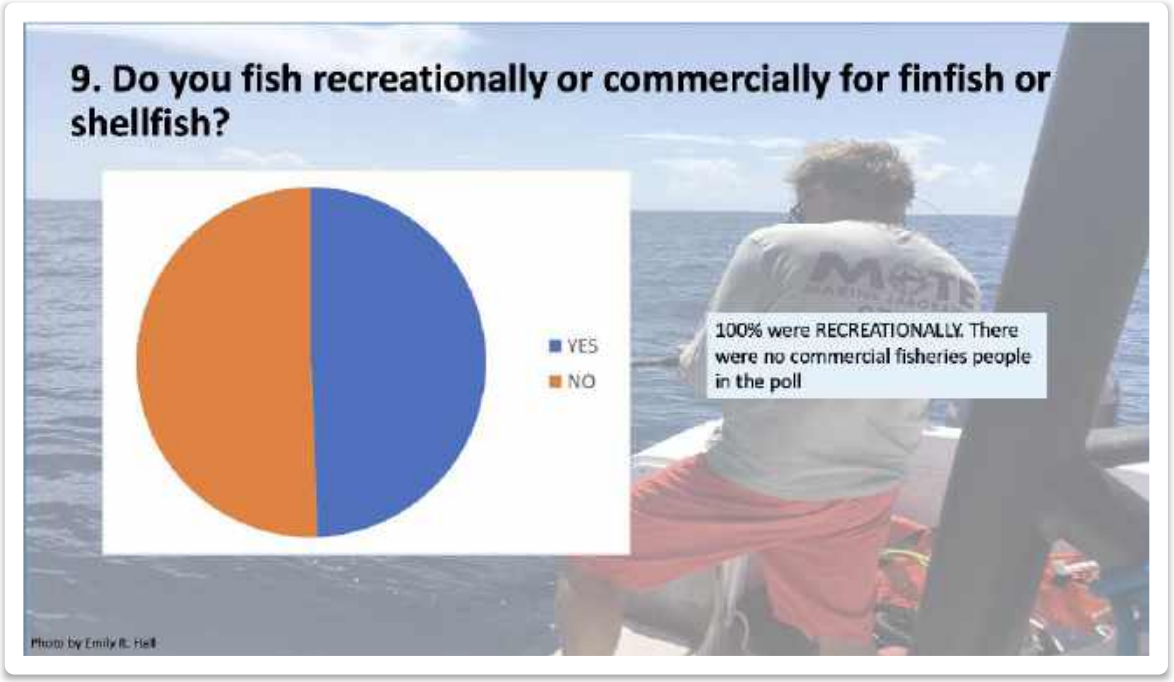
15. The following locations could be affected by acidification. Rank your concern about the potential effects of acidification?

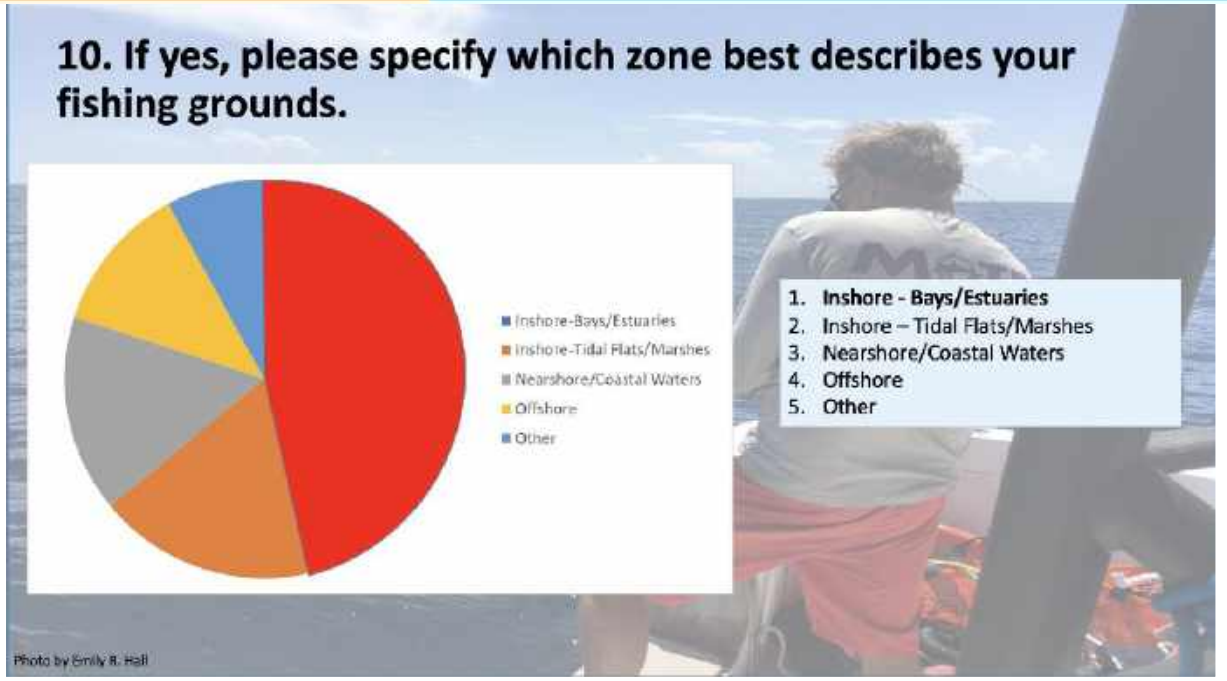


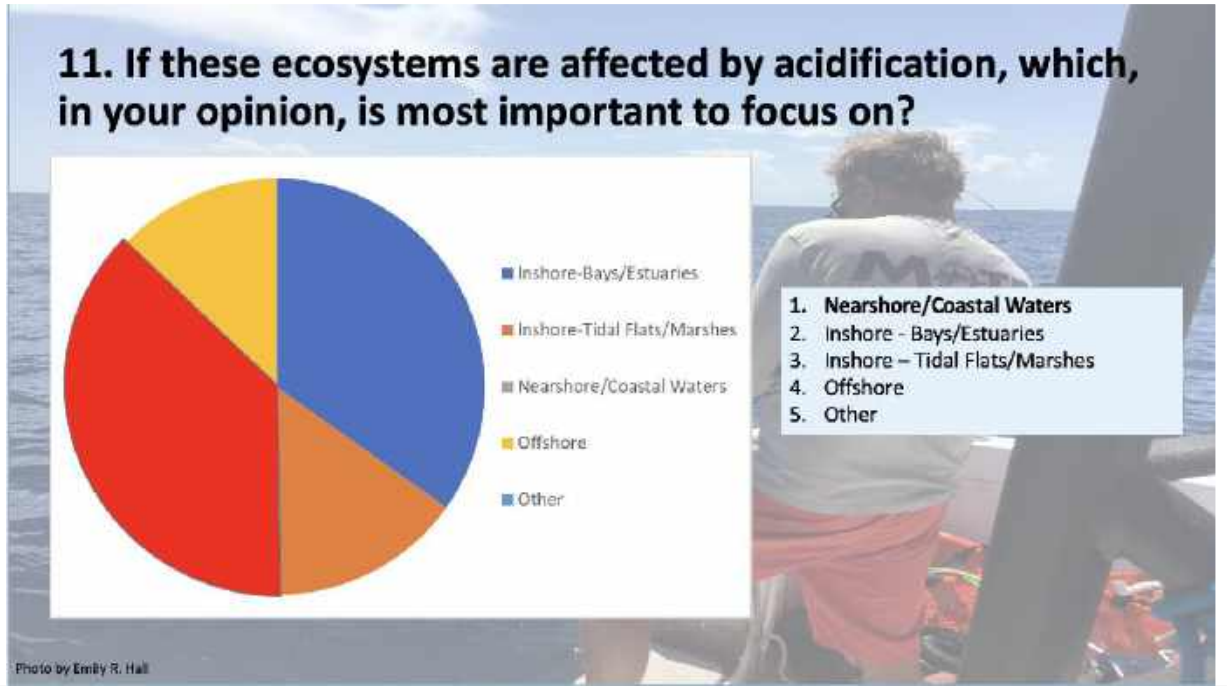
1. **Shallow Coral Reef Ecosystems**
2. Estuaries
3. Open Bays and Open Ocean Waters
4. Deep Coral
3. Salt Marsh Ecosystems
4. Mangrove Ecosystems
5. Other

Photo by Meoz Fine

Category 3- Recreational Activities and Resources in Marine Environments



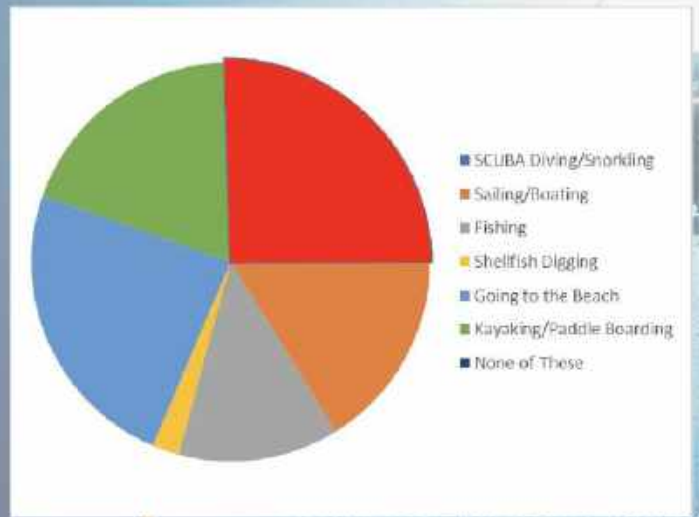




12. What describes the top 3 types of seafood you fish for or consume at home?

Photo by Emily R. Hall

13. What recreational marine activities do you take part in?

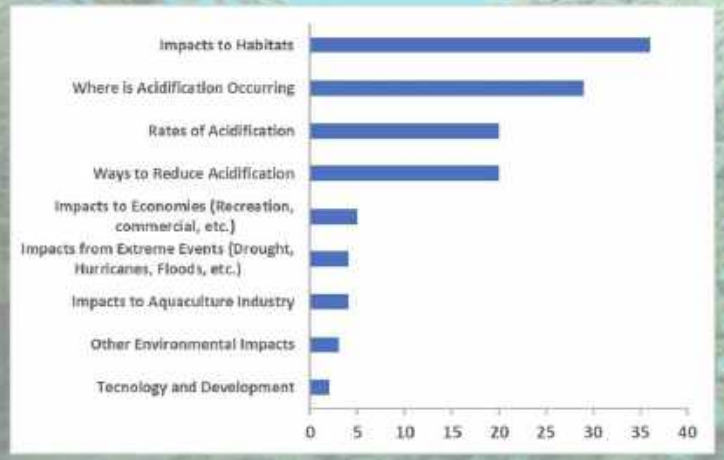


1. **SCUBA**
2. Going to the Beach
3. Kayaking/Paddle Boarding
4. Sailing/Boating
5. Fishing
6. Shellfish Digging
7. None of These

Photo by Kristin Paterakis

Category 4-Ranking OA Priorities

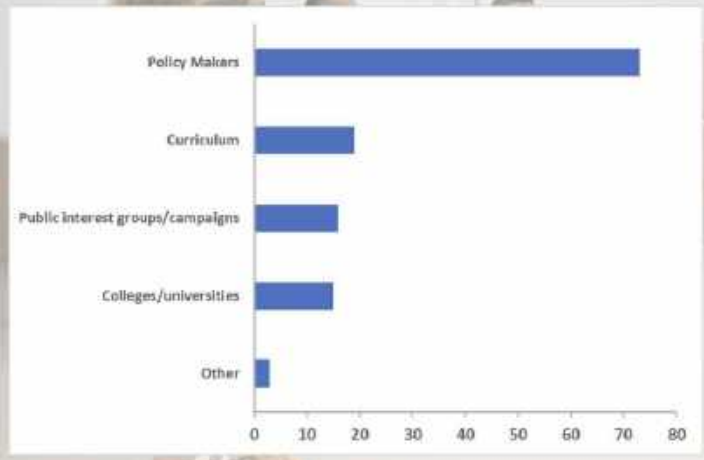
16. Rank aspects of acidification research that you think should be prioritized.



1. **Impacts to Habitats**
2. Where is Acidification Occurring
3. Rates of Acidification
4. Ways to Reduce Acidification
5. Impacts to Economies (Recreation, commercial, etc.)
6. Impacts from Extreme Events (Drought, Hurricanes, Floods, etc.)
7. Impacts to Aquaculture Industry
8. Other Environmental Impacts
9. Technology and Development

Photo by Maoz Fine

18. Rank the following educational opportunities that we should target for acidification.



1. **Policy Makers**
2. Curriculum
3. Public Interest Groups/Campaigns
4. Colleges/Universities
5. Other

Photo by Bekah Horsley/Mote Marine Laboratory

19. What type of communication would be helpful for conveying information about acidification?

17. Any research areas we left out?

1. Better understanding the relative role of global climate chance and atmospheric co2 levels versus nutrient inputs to
2. Acidification from air pollution, human health and plant impacts
3. Impacts on wildlife
4. Behavioral changes to reduce causes
5. Social surveys to understand what the public and decision makers know about this topic.
6. sediment/erosion
7. Buffering capacity of ecosystems/estuaries
8. Micro flagellates, food chain base
9. Larval recruitment
10. food web impacts
11. critical planktonic food webs
12. Trend analysis of acidification over time
13. chemical erosion of carbonate sediments
14. Acidification contributing factors in our area
15. Florida aquifer
16. where impacts come from most
17. How ocean acidification affects prevalence and toxicity of harmful algal blooms.
18. Compiling existing water quality data to help understand trends in areas across Florida
19. How to best educate the public and policy
20. Modeling of acidification for future impacts
21. Measurement tech improvements
22. Would like to see more studies done on the slowly rising alkalinity levels vs acidification
23. Impacts to subsistence fishing communities
24. Research promoting non-carbon fuels
25. Public education on what OA is and how people can be proactive to mitigate
26. impacts on cultural resources- overlap with habitat and economy

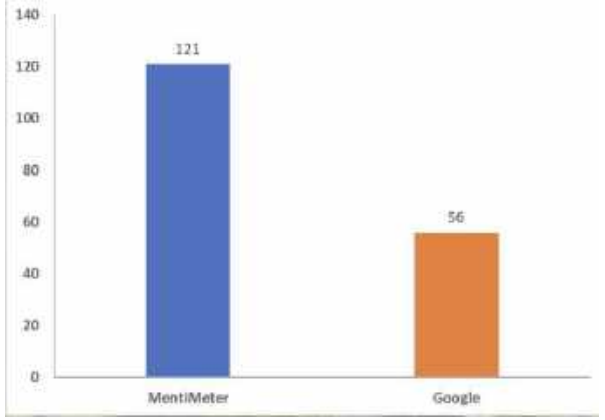
Photo by Maoz Fine

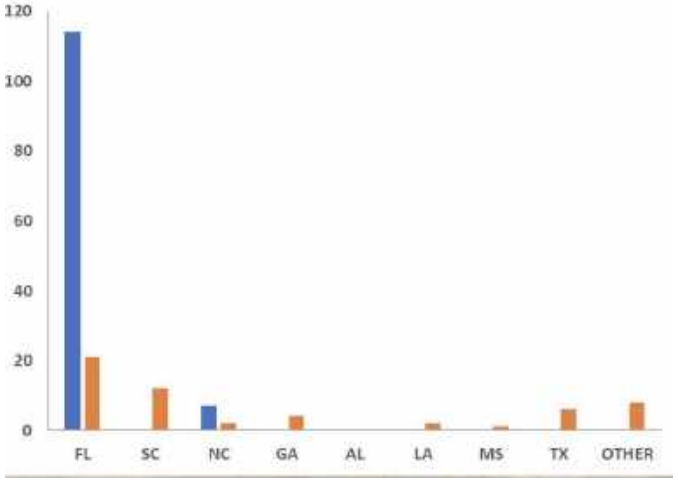
177 total responses

DATA SYNTHESIS – in the works!

Menti: FL 114, NC 7 (however we only did talks in those two states)
Google: FL 21, SC 12, NC 2, GA 4, AL 0, LA 2, MS 1, TX 6, Other (PA, Europe, Guam, etc.) 8

1. General knowledge of OA – SOME
2. Where did you learn about OA- SCHOOL/ACADEMIA
3. Familiar ecological/anthro processes- NUTRIENT/CONTAMINATION/EUTROPHICATION
4. Processes lead to worsen OA- NUTRIENT/CONTAMINATION/EUTROPHICATION
5. Concerned about effects on environment? YES
6. If concerned about effects, which ecosystem? ESTUARIES/BAYS/LAGOONS
7. Aware of effects on marine animals? YES
8. Which marine animals? CORALS
9. Do you fish recreationally, commercially for finfish or shellfish- 50% YES/50% NO
10. If you fish, which zone? INSHORE-BAYS/ESTUARIES
11. Most important ecosystem affected by OA- NEARSHORE/COASTAL WATERS
12. Top consumed seafood- SHRIMP
13. Recreational marine activities – SCUBA
14. Concerned OA will affect employment? NO
15. Rank ecological areas of concern- SHALLOW CORAL REEF ECOSYSTEMS
16. Research prioritization- IMPACTS TO HABITATS
17. Educational targets- POLICY MAKERS
18. Types of helpful communication – SOCIAL MEDIA





Lessons Learned

1. Technical issues with Google forms can get in the way (Mac users v Windows)
2. Need better methods for contacting stakeholders - get on NEP schedules sooner
3. Interpretation of questions can vary.
4. Keep presentations to 15 min or less to allow time for all the questions
5. Set up questions & answer options cohesive for data analysis.

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SUMMARY:

- First attempt at this type of survey for NOAA OAP/CANs
- Still sorting the data
- Will be reported and presented to NOAA OAP
- Will be a part of NOAA OAP nation-wide survey for decision making on prioritizing monitoring and assessment
- .....and ultimately a report to the White House

Photo by Cameron McPhail/Mote Marine Laboratory

THANK YOU!

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Special thanks to Dr. Kimberly Yates, USGS and Jennifer Heckler, CHNEP