APALACHICOLA BAY SYSTEM INITIATIVE

COMMUNITY ADVISORY BOARD

PHASE IV MEETING 6 — 30 NOVEMBER 2022

FACILITATOR'S SUMMARY REPORT

APPROVED UNANIMOUSLY 1 FEBRUARY 2023

APALACHICOLA NATIONAL ESTUARINE RESEARCH RESERVE
EASTPOINT, FLORIDA

FACILITATED SOLUTIONS

PROCESS DESIGN, MEETING FACILITATION, AND REPORTING BY JEFF A. BLAIR

APALACHICOLA BAY SYSTEM INITIATIVE COMMUNITY ADVISORY BOARD
30 NOVEMBER 2022 FACILITATOR'S MEETING SUMMARY REPORT

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APALACHICOLA BAY SYSTEM INITIATIVE COMMUNITY ADVISORY BOARD
30 NOVEMBER 2022 FACILITATOR'S MEETING SUMMARY REPORT

Oyster Boats – Eastpoint, Florida

OVERVIEW OF THE APALACHICOLA BAY SYSTEM INITIATIVE COMMUNITY ADVISORY BOARD'S WEDNESDAY, NOVEMBER 30, 2022 ACTIONS

I. MEETING SUMMARY AND OVERVIEW

At the 30 November 2022 meeting conducted at the Apalachicola National Estuarine Research Reserve (ANERR) in Eastpoint, Florida the Apalachicola Bay System Initiative (ABSI) Community Advisory Board (CAB): received an overview of the updated Project Workplan and Schedule including the Phase V (2023) Workplan and Schedule; received presentations on *Tonging Survey's and Oyster Abundance Across the Bay*, *Parasitism and Disease Research*, and *Oysters, Sediment Biogeochemistry, and Apalachicola Bay Health*; received reports and updates from the CAB Successor Group Subcommittee, Restoration Funding Working Group, and Community Outreach Subcommittee. Specific activities included: reviewing and discussing feedback received during the 18 October 2022 Oystermen's Workshop and the 19 October 2022 Community Workshop; reviewing and discussing Fisheries Model simulation results; and agreeing on the next suite of scenarios, including new scenarios and combinations of management and restoration scenarios for simulation by the Fisheries (Socioecological) Model. Of note, the CAB is scheduled to adopt their final recommendations for the *Apalachicola Bay System Ecosystem-Based Adaptive Management and Restoration Plan* at the 29 November 2023 meeting. In addition, the CAB Successor Group is scheduled to formally convene in early 2024 with the task of ensuring that the Plan is implemented, monitored, and adaptively managed over time and has the support of the Community.

(Attachment 8 — Glossary of ABSI Project Terms and Definitions)

II. Welcome and Introductions

Jeff Blair, ABSI CAB Facilitator, opened the meeting at 8:30 AM and welcomed all participants. Jeff welcomed Ottice Amison to the CAB as the new appointed representative for the Franklin County Commission.

Social Science Survey

The ABSI CAB members are participating in a Social Science Survey that is conducted at the beginning of each meeting to gauge participants' perspectives and attitudes regarding science and data, and stakeholder relationships throughout the ABSI CAB process. Ed Camp, University of Florida, is conducting the Survey that was first administered during the October 2020 meeting and will be continued throughout the duration of the ABSI CAB process. There was not a Social Science Survey administered for the 30 November 2022 CAB meeting.

III. ABSI CAB Meeting Participation

The following CAB members participated in the Wednesday, November 30, 2022 meeting conducted in-person at the Apalachicola National Estuarine Research Reserve in Eastpoint, Florida:

Georgia Ackerman, Ottice Amison, *Mike Allen*, *Frank Gidus*, Anita Grove, Chad Hanson, Jenna Harper, Shannon Hartsfield, *Becca Hatchell*, *Katie Konchar*, *Chuck Marks*, Mike O'Connell, Portia Sapp, *Chad Taylor*, and *Paul Thurman*.

** Members who participated virtually are italicized.*

(15 of 22 members participated — 68%).

Absent CAB Members:

David Barber, Gayle Johnson, Erik Lovestrand, Steve Rash, Alex Reed, Devin Resko, and TJ Ward.

Project Team Members Participating

Jeff Blair, Ross Ellington, Jared Fuqua, *Madelein Mahood*, and Joel Trexler.

(Attachment 2 — Meeting Participation)

Meeting Facilitation

Meetings are facilitated and meeting reports prepared by Jeff Blair of Facilitated Solutions, LLC. Information at: http://facilitatedsolutions.org.

Project Webpage

Information on the Apalachicola Bay System Initiative project and the Community Advisory Board, including agenda packets, meeting reports, draft Plan frameworks, and related documents may be found at the ABSI CAB Webpage. Located at the following URL:
https://marinelab.fsu.edu/the-apalachicola-bay-system-initiative/

IV. AGENDA REVIEW AND APPROVAL

The ABSI CAB voted unanimously to approve the agenda for the 30 November 2022 meeting as amended. Following are the key agenda items approved for consideration:

- ✓ To Approve Regular Procedural Topics (Meeting Agenda and Summary Report)
- ✓ To Review Updated Workplan and Meeting Schedule
- ✓ To Receive ABSI Relevant Research Project Updates
- ✓ To Receive Reports from RFWG, Community Outreach, and CAB Successor Group
- ✓ To Review and Discuss Oystermen's Workshop and Community Workshop Input
- ✓ To Review Fisheries Model Scenario Simulation Results and Acceptability Rate Scenarios as Needed
- ✓ To Identify and Agree on the Next Suite of Scenarios, New Scenarios, and Combinations for Modeling
- ✓ To Identify Next Steps: Information, Presentations, Assignments, Agenda Items for Next Meeting

Amendments to the Posted Agenda:

~~ABSI Science and Data Collection Update~~
~~FWC (NFWF Phase 2) Restoration Project Update~~
ABSI Relevant Research Project Updates

(Attachment 3 — 30 November 2022 ABSI CAB Agenda)

V. APPROVAL OF THE 18 OCTOBER 2022 CAB MEETING, 18 OCTOBER 2022 OYSTERMEN'S WORKSHOP, AND 19 OCTOBER 2022 COMMUNITY WORKSHOP FACILITATOR'S SUMMARY REPORTS

The ABSI CAB voted unanimously to approve the 18 October 2022 CAB Meeting, 18 October 2022 Oystermen's Workshop, and 19 October 2022 Community Workshop Facilitator Summary Reports as presented.

Amendments: None

VI. REVIEW OF UPDATED PROJECT WORKPLAN AND SCHEDULE

Jeff Blair provided the CAB with a review of the updated Project Workplan and Schedule and answered members' questions. The 30 November 2022 meeting represented the CAB's sixth and final meeting of Phase IV, which focused on the evaluation of the Draft Adaptive Management and Restoration Plan Framework's prioritized restoration and management strategies, restoration projects selection and implementation, and funding planning.

The CAB will initiate Phase V in January of 2023, and will work with available and emerging research and data, which will be incorporated into and evaluated by decision support tools including predictive models. These tools will be used to evaluate the CAB's recommendations relative to specific performance measures and expected outcomes by forecasting the effects of policy actions on the likelihood of achieving oyster management and restoration objectives with the goal of implementing the best combination of management and restoration approaches, and priority restoration projects for achieving the Apalachicola Bay System Initiative's overarching goal of restoring the health of the Apalachicola Bay System. The CAB

process will conclude with the 29 November 2023 meeting, when the CAB will adopt their final package of recommendations proposed for inclusion in the Apalachicola Bay System Ecosystem-Based Adaptive Management and Restoration Plan.

In addition, Phase V includes a significant public engagement initiative. The next CAB meeting is scheduled for 1 February 2023. Jeff reported as follows:

- At the November 2022 meeting the CAB evaluated a range of scenarios (strategies) towards the goal of determining the best combination to achieve restoration and management objectives for the Bay using decision support tools including predictive models generally, and the Fisheries (Socioecological) Model specifically, coupled with available and emerging data and research. The CAB will vet their draft recommendations with restoration and management agencies, evaluate the priority and efficacy of strategies and actions, and identify specific recommended restoration projects and management approaches.
- The CAB's Community Outreach Subcommittee has initiated a community feedback initiative by soliciting and reviewing community input on the Plan Framework. The Community Outreach Committee will continue to communicate and meet with community stakeholders providing them with information and updates regarding the purpose and progress of the Apalachicola Bay System Initiative. The CAB's prioritized strategies are being vetted with the larger ABS community through multiple formats, including a questionnaire administered through a variety of methods such as Facebook, online via the ABSI website, and direct mailings. In addition, public workshops are being scheduled and will be held in-person.
- The CAB is conducting planning for transitioning to a Successor Group whose role will be to organize a group of key stakeholders committed to working collaboratively for the long-term once the CAB process is complete to ensure that the Plan is implemented, monitored, and adaptively managed over time with the support of the Community. The CAB is scheduled to finalize their recommendations for the Apalachicola Bay System Ecosystem-Based Adaptive Management and Restoration Plan at the 29 November 2023 meeting, and the CAB Successor Group is anticipated to formally convene in early 2024.
- In addition, the FSU ABSI Project Team continues to work with the Restoration Funding Working Group to seek resources and political, governmental, and organizational support for the CAB's priority recommendations.

Jeff reported that Phase V (2023) will consist of six meetings and conclude with the final CAB meeting on 29 November 2023 when the CAB will adopt their final package of recommendations for inclusion in the Apalachicola Bay System Ecosystem-Based Adaptive Management and Restoration Plan. The CAB Successor Group is expected to initiate in early 2024 to ensure that the Plan is implemented, monitored, and adaptively managed over time with the support of the Community.

Jeff noted that the Project Team would keep the CAB updated and share additional information as it becomes available.

**The Draft Plan Framework is available at the following URL: https://marinelab.fsu.edu/absi/cab/*

(Attachment 4 — Workplan, Schedule, and Project Flowchart)

VII. ABSI Relevant Research Projects Presentations

Tonging Surveys and Oyster Abundance Across the Bay

Andy Shantz, FSUCML Faculty, provided the CAB with a presentation titled: *Tonging Surveys and Oyster Abundance Across the Bay*.

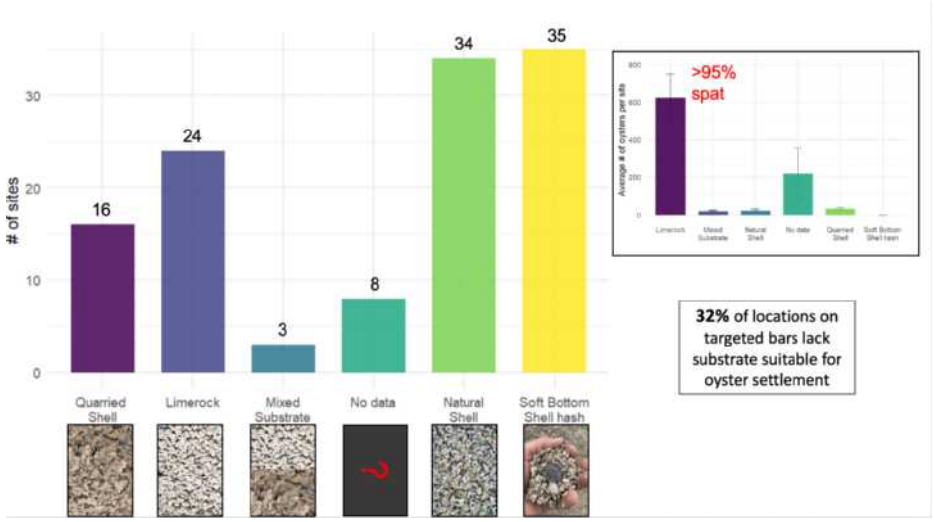
Presentations are available on the project webpage: https://marinelab.fsu.edu/absi/cab/.

Summary and Overview of Presentation:
The presentation was focused on using tonging to rapidly assess population status to identify areas of the Bay that are doing well and/or poorly to target potential restoration locations, and to determine factors promoting and/or inhibiting recovery. Following is a summary of the presentation:

Results of Tonging Samples

- Tonging surveys of oyster abundance data by location and size class shown.
- Conducted annually at 120 sites to target potential restoration sites and determine factors promoting/inhibiting restoration.
- There are still many sites with no oysters.
- 32% of sites have soft bottom and contain NO oysters.
- Fossil shell and regular shell show limited spat recruitment.
- Lime rock sites- show good spat recruitment.
- FWC lime rock reefs- longitudinal data show good progression of oyster growth (winter 2021 to spring 2022).
- West side of the Bay has a higher number of soft bottom sites, and very few market-sized oysters.
- 12 sites w/ market-sized oysters in west
  - 75% have <6 MS oysters
  - >60% no oysters of any size
- East side much better than west, and had more sites sampled, and more market-sized oysters.
- 18 sites w/ market-sized oysters in east
  - 28% have <6 MS oysters
  - 37% no oysters of any size

Number of Sites, Cultch Material, and Oysters per Site Data



PARASITISM AND DISEASE RESEARCH

Tara Stewart Merrill, FSUCML Faculty, provided the CAB with a presentation titled: *Parasitism and Disease Research*.

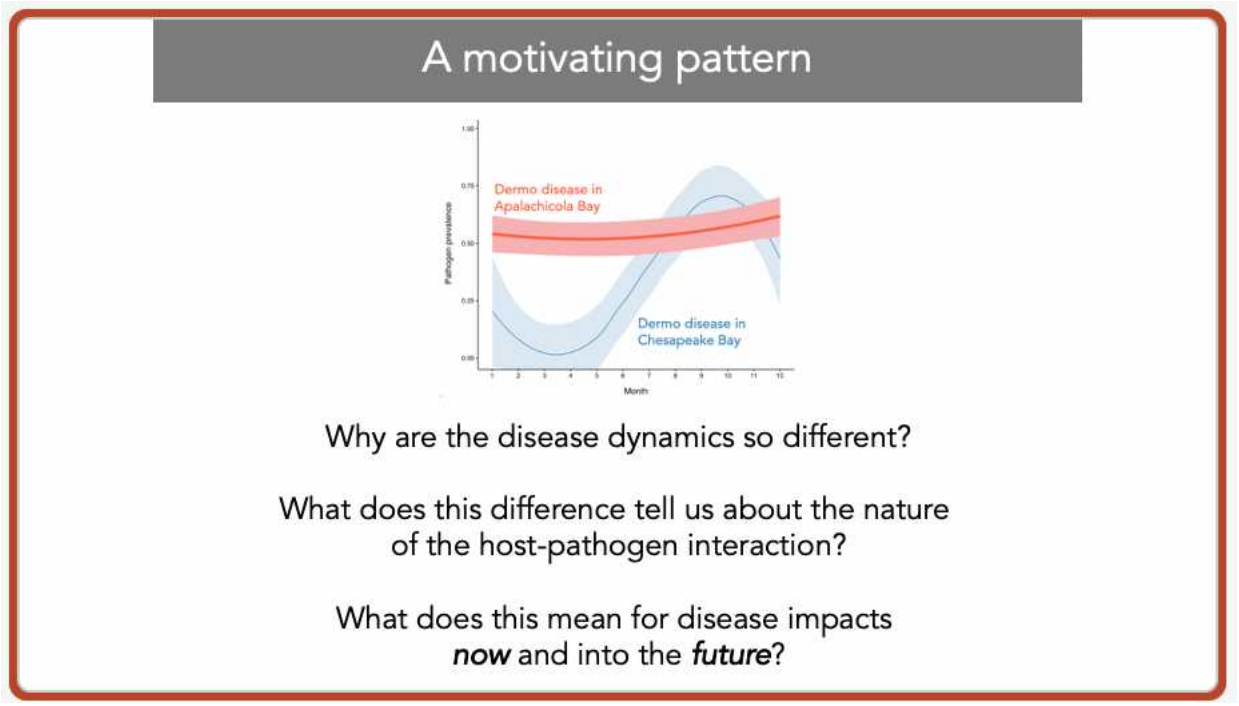
Presentations are available on the project webpage: https://marinelab.fsu.edu/absi/cab/.

Summary and Overview of Presentation

The presentation was focused on parasitism and disease research and defining the impact of Dermo disease on oyster populations in Apalachicola Bay. Following is a summary of the presentation:

Research Questions and Preliminary Results

- Mass mortality events have been observed in Eastern oysters of the Eastern seaboard from Dermo disease.
- What are the Dermo dynamics like in Apalachicola Bay?
- Data presented showing pathogen prevalence by month for Chesapeake Bay and Apalachicola Bay.
- There is no seasonal change in dermo dynamics in Apalachicola Bay in contrast to what is seen in the Chesapeake.



- Experiments will be conducted on the impact of Dermo disease on Apalachicola Bay oysters.
- Review of FWC data showed that oyster conditions declined with increased parasite pressure; reflects impact of all parasites.
- There seem to be differences in intertidal vs. subtidal oyster populations.
- Male oysters collected from the Bay in 2022 were parasitized by protozoan Bucephalus (parasitic castrator).
- Bucephalus sp. lives in the oyster gonad and castrates the oyster creating a spawning problem.
- FWC data from 2016 to the present shows that Bucephalus sp. is widespread in Apalachicola Bay, and about 10% of oysters collected were affected.

OYSTERS, SEDIMENT BIOGEOCHEMISTRY, AND APALACHICOLA BAY HEALTH

Josh Breithaupt, FSUCML Faculty, provided the CAB with a presentation titled: *Oysters, Sediment Biogeochemistry, and Apalachicola Bay Health.*

Presentations are available on the project webpage: https://marinelab.fsu.edu/absi/cab/.

Summary and Overview of Presentation

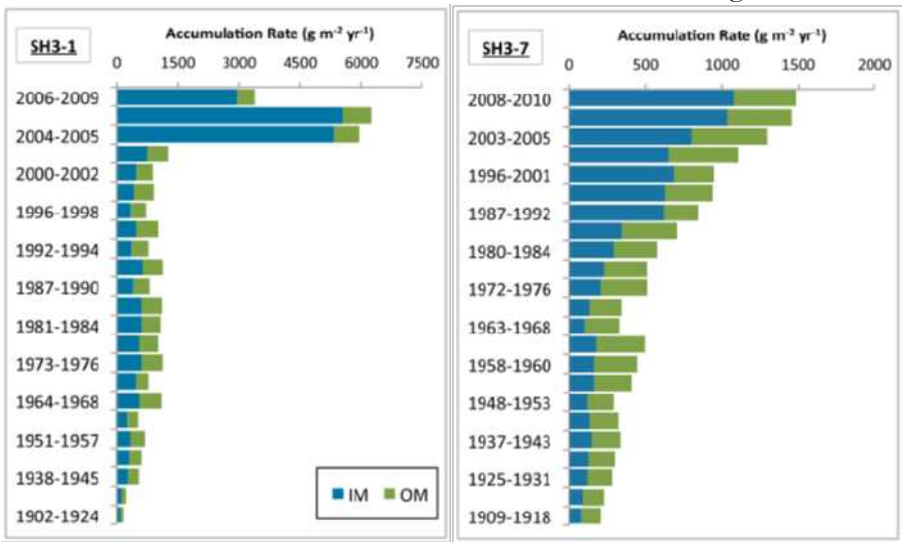
The presentation was focused on research questions regarding oysters filtering organic matter from the water and concentrating it in sediment organic matter (SOM). Following is a summary of the presentation:

Research Questions and Preliminary Results

- Q1: What is the history of SOM sequestration on reefs?
- Q2: What happens to SOM in the Bay when the oysters are gone?
- Q3: Can we use SOM as a proxy for a reef health?
- How has the collapse of the oyster pop impacted Apalachicola Bay health?
- Healthy oyster reefs have been shown to increase sediment organic matter (SOM).
- Evaluating the impacts of oyster abundance on SOM by looking at sediment cores (primarily in intertidal reefs). This research will be conducted throughout Bay.
- Cores provide data on shell content, SOM, and organic C/total N ratio.
- SOM has been enriched in the Bay in apparent conjunction with the decline in oyster populations.
- Intertidal reef health varies substantially within the Region.
- Pilot Cove on the west side of the Bay was compared with East Cove on the east side of the Bay.
- East Cove had larger Intertidal oysters.
- **Q1: how does oyster abundance affect reef sediment organic matter characteristics?**
  - Organic matter quantification & characterization
  - Grain size & shell abundance analysis
  - Pb-210 dating
  - Comparisons with ABSI oyster cluster density maps
  - Can SOM be used as a non-destructive sampling proxy for live oyster abundance?
- **Q2.1: how has collapse of the oyster population affected the health of the Bay?**

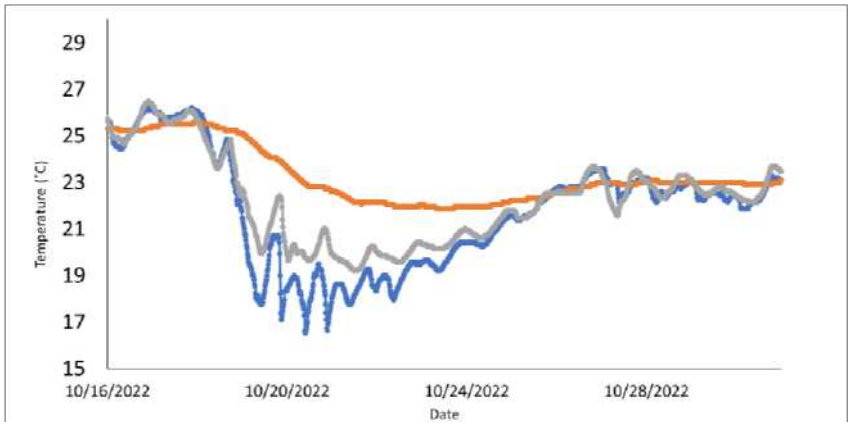
	TOC (mg g^{-1})		
	≤10	10–35	>35
Mean $E(S_{10})$	5.3 (171)	4.2 (68)	2.4 (50)
Percent samples with degraded benthos (B-IBI score 3; sensu Van Dolah et al. 1999)	7.6% (170)	54% (67)	78% (50)
Percent samples with high chemical contamination of sediments (mean ERM quotient > 0.058, sensu Hyland et al. 1999)	3.5% (171)	31% (68)	90% (50)
Percent samples with low DO in near-bottom water (DO < 2 mg l^{-1}, sensu Diaz & Rosenberg 1995)	0.6% (170)	4.5% (67)	24% (50)

- **Q2.2: what is the timing and source of this organic enrichment of the Bay?**
- Showed example data from studies in other estuaries to illustrate data being collected from AB.

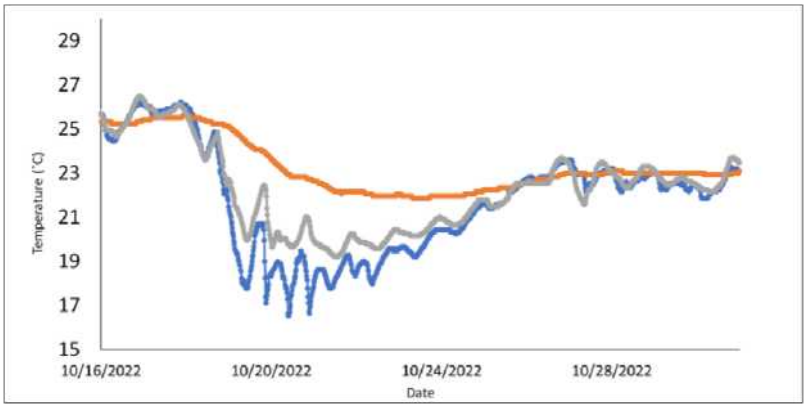


- **Q3: What factors contribute to the "greening" of intertidal reefs by marshes and mangroves?**

Impacts of Temperature



- The encroachment of marsh plants on intertidal oyster populations may be related to small-scale variation in minimum temperature.
- The graph below illustrates temporal variation at three field locations in East Cove and proximity to the open water of the Bay. Orange is closest to open water and blue is farthest with the gray station located in between.



Summary of Questions, Responses, and Comments from the 3 Presentations:
(Note initials are only used to identify ABSI Team members, presenters, and state agency representatives)

- Recommend taking the Dermo disease data to the SAB for their evaluation.
- Q: Is there dermo in Apalachicola Bay?
- TSM: Yes, surveys have shown about 50% of oysters are infected.
- Q: Is there a relationship between parasitism and water temperature?
- TSM: Yes, Chesapeake research shows that increased temperature and salinity promote Dermo infection. This is my working hypothesis for Apalachicola Bay.
- Q: Do other Gulf Coast populations show similar patterns?
- TSM: The literature is mixed and requires further study/research.
- Does the FWC oyster density data show promise?
- AS: No, the data do look encouraging. New tonging data may confirm the answer.
- What is the spatial extent of areas with high abundance of oysters?
- AS: Not sure of the areas (size) of FWC sites sampled.
- What is the size of the circles in the tonging data shown?
- AS: The circles correspond to abundance in all size classes. Teasing out market sized would show a similar pattern.
- Are there other areas in Gulf showing Bucephalus?
- TSM: Yes, it is present but there are limited reports on impact to oysters. There are many unknowns about *Bucephalus* biology.
- BH: To add to the conversation about Dermo presence in the Gulf, FWC recently completed testing on our Phase III reefs in West Bay and St. Andrew Bay. We found ~55% of all samples collected contained some level of Dermo. None of ours had heavy (Stage 5) level infections but 20% showed moderate to moderately heavy (Stage 3-4) infections.
- Q: Has dermo been studied in Apalachicola Bay?
- TSM: Yes, but not in detail with respect to impacts.
- Q: Has the infection rate vs. age been studied?
- TSM: Not in detail but this will be investigated with ongoing research.
- There has been a pronounced increase in sediments throughout the By.
- JB: I agree, the source is unclear but could be related to some extent from dredging activity.
- Q: Can others attend SAB meeting?
- JT: Generally no, not at this point. The SAB is advising the ABSI project team, but we will consider individual requests to observe.

VIII. WORKING GROUP AND SUBCOMMITTEE UPDATES AND REPORTS

A. CAB SUCCESSOR GROUP SUBCOMMITTEE

Shannon Hartsfield and Anita Grove reported that to date the Subcommittee has discussed the type of members needed (stakeholder representation) and the structure, format, and key issues for the Subcommittee. In addition, the Subcommittee is collecting ideas and information for use once they are convened at the conclusion of the ABSI CAB process.

In addition, the Subcommittee met with the FSU Leadership Team on September 2, 2022 to discuss timing and logistics for initiating the CAB Successor Group.

The CAB Successor Group will be ready to convene when the CAB completes their work on the Apalachicola Bay System Ecosystem-Based Adaptive Management and Restoration Plan. The Successor Group's role will be to organize a group of key stakeholders committed to working collaboratively for the long-term, once the CAB process is complete, and to ensure that the Plan is implemented, monitored, and adaptively managed over time and has the support of the Community. Of note, the CAB Successor Group is anticipated to formally convene in early 2024 subsequent to the CAB's adoption of their recommendations in November 2023.

Anita reported as follows for the 30 November 2022 CAB meeting update on the ABSI CAB Successor Group:

- The Group has a meeting scheduled for 8 December 2022 at 1 PM.
- They will go over Committee membership, tasks, assignments, and next steps.

Summary of Questions, Responses, and Comments:
(Note initials are only used to identify ABSI Team members, presenters, and state agency representatives)

- None were offered.

(Attachment 10 — Stakeholder Resources in Support of ABSI)
(Attachment 11 — Proposed Leads, Partners, and Resources for Strategies)

B. RESTORATION FUNDING WORKING GROUP

Overview. The ABSI proposal contemplates a 15-year commitment from FSU, 10 years beyond the 5 years of funding provided by the TRIUMPH Board. The Restoration Funding Working Group (RFWG) will be a team of local, state, private, and NGO stakeholders focused on developing plans for long-term funding of the broader effort; the goal at the end of the 5-year ABSI period is to have a funding pipeline for restoration secured. Joel Trexler, RFWG Lead, previously reported that the RFWG has met several times, has broad representation, has identified the specific strategies and related actions that would require funding, agreed to a charge, are mapping actions with potential funding sources and approximate funding amounts needed, and understand that it is critical to identify gaps in funding and work to fill the gaps before the Plan is final. In addition, there are potential funding sources for some CAB recommended actions.

Joel reported as follows for the 30 November 2022 CAB meeting update on the RFWG:

- They plan to identify sources and drafting proposals for funding the Successor Group.
- The RFWG met recently and identified a funding opportunity from NOAA that could potentially support successor group for its 1st year.
- A Letter of Intent for the funding proposal is due 12/12/22.

Summary of Questions, Responses, and Comments:
(Note initials are only used to identify ABSI Team members, presenters, and state agency representatives)

- None were offered.

C. COMMUNITY OUTREACH SUBCOMMITTEE

Subcommittee Charge:

- To work with ABSI leadership to inform the public of who we are and what we are doing.

- To create outreach and community engagement strategies that attract stakeholders and the public to actively inform the public about the Apalachicola Bay System Initiative's goals and actions.
- To measure effectiveness of these strategies through direct participation in achieving actions (as well as web analytics and media stories).

Chad Hanson reported that the Community Outreach Subcommittee (COC) has been active and they are working on a variety of initiatives. Chad reported as follows for the 30 November 2022 CAB meeting update on community outreach initiatives:

The COC attended and/or participated in the following events:

- Oystermen's Workshop on 18 October 2022.
- Community Workshop on 19 October 2022.
- Franklin County Commission on 1 November 2022.
- Florida Seafood Festival on 4-5 November 2022
- Sopchoppy Oyster and Mullet Festival on 12 November 2022.

Communications:

- The Newsletter went out mid-November, 2022.
- FAQs are online and the Committee is rolling out FB posts for the FAQs every Monday.

Public Presentations Update:

- The Committee will meet with Franklin County Commissioners as needed.
- Planning to make a presentation to the Apalachicola City Commission in January 2023.

Items Under Development:

- Updated Op-Ed for early 2023 from CAB and/or FWC.
- Short summary of Draft Plan (Chad and Anita) – A condensed version of the ABSI Plan so it is easy to communicate to the Community and stakeholders.
- Short mini-video series (FSU outreach team) – setting up meeting with FSU Film Department.

Summary of Questions, Responses, and Comments:
(Note initials are only used to identify ABSI Team members and partners, presenters, and state agency representatives)

- None were offered.

(Attachment 12 — ABSI Overarching Message Initial Ideas)

IX. COMMUNITY WORKSHOPS INPUT REVIEW AND DISCUSSION

Jeff Blair reviewed the input received during the 18 October 2022 Oystermen's Workshop and the 19 October 2022 Community Workshop and noted that there was an overlap of participants from the 2 workshops and that most were oystermen and/or participants in the seafood industry. A summary of the feedback reviewed by Jeff is included as Attachment 13 of this Report.

(Attachment 13 — Community Workshops Feedback)

Summary of Questions, Responses, and Comments:
(Note initials are only used to identify ABSI Team members and partners, presenters, and state agency representatives)

- Breaking up the bottom with dredging appears to promote growth. This only works on healthy reefs.

- Some terminology can have negative connotations. We should be careful with terms. Using the term "continuous restoration" as opposed to "put-and-take" is an example.
- Q: Will FWC will be putting in 12" rock?
- JT: Based on stakeholder feedback FWC is reconsidering size.
- Part of the CAB's job is to shift the mindset regarding how things used to be done and what needs to be done given the current health and status of the Bay.
- Q: Do Florida oystermen go to Alabama to harvest?
- A: Florida oystermen cannot get Alabama licenses to harvest.
- It would be a good idea to invite back Jason Herrmann from the Alabama Department of Conservation and Natural Resources (DCNR) to provide an update on how Alabama's Active Oyster Management and Restoration Approach is working. Jason should have an Alabama oystermen participate with him and discuss the pros and cons of Alabama's system. They could participate virtually.
- In Florida, restrictive licensing between counties is not possible.
- Q: How many oystermen would go back to oystering if the Bay was opened?
- A: Probably a lot if there were a lot of oysters, including those who are guides, shrimpers, etc.
- Can the CAB do something to address the skepticism about data gathering methods?
- JT: A number of people have been taken out on sampling excursions by ABSI and FWC. ABSI's outreach program has tried to improve the message of inclusion and transparency of data acquisition including FAQs and videos.
- Q: I heard a rumor that Louisiana dealers want their shell back but there is no shell.
- A: This appears to be true but will need to confirm this by talking with local dealers.
- In Louisiana you either deploy shell or pay the state to do this. Florida does not have the capability.
- JB: There has to be a major political and financial commitment implement an ongoing program to continuously place cultch back into the Bay. This would also require a general desire to retain the sociocultural heritage of Franklin County as a seafood industry community.
- Every state is dealing with shelling and restoration differently. In Florida there is a need to obtain recurring State funding.
- At the end of the day public pressure will generate the political support needed. The CAB Successor Group will play a role in soliciting community and political support to sustain the oyster fishery.
- Modeling the of cost of shell replacement in terms of economic impact (cost-benefit analysis) may resonate more with political leaders.
- ABSI should get help from an economist to do this type of economic analysis modeling.
- EC: Parameters such as market activity and economic value (benefits, consumer services) would need to be evaluated.
- JB: Integrated modeling including economic consideration similar to what was done in the Chesapeake for the OysterFutures project could help provide the cost-benefit analysis needed to secure funding for restoration and ongoing shelling to maintain a wild oyster harvest fishery. Jeff reiterated that for the OysterFutures project modeling revealed that:
    - Strong positive benefits were not realized for 10 years;
    - Combining options led to the best overall performance;
    - After 20 years, harvest revenue could be twice that of annual public investments; and
    - After 20 years, there could be more than an 8-fold return on public investment for pollution reduction.

X. REVIEW AND DISCUSSION OF MODELED SCENARIOS

Based on Ed Camp's recommendations regarding what is currently feasible to model, at the 27 July 2022 meeting the CAB agreed to the following initial scenarios for simulation by the Fisheries (Socioecological) Model:

- An Active harvest management scenario similar to the Alabama approach using monitoring and an oyster abundance minimum density threshold.
- Different management strategies under a range of different assumptions to see what works best.

Scenarios Modeled for the 18 October 2022 Meeting:

- Depensation (decreasing population growth capacity as oyster density decreases because each generation fails to generate enough shell to sustain recruitment of the next generation), Collapse, Restoration.
- Restoration and Sustainable Fishing.
- Alternative Fisheries Management Approaches.

Scenarios Modeled for the 30 November 2022 Meeting:

- Incorporating a summer oyster fishery closure of June-August for modeled scenarios.
- Ongoing shelling and restoration (Oyster Repletion Program) of specific oyster reefs for harvesting.
- A combination of management strategies including but not limited to: active management, an open fishery, and limited entry.

Ongoing Model Development Improvement Goals

- A Sensitivity Analysis was run changing the slope of the Depensation Curve (Standard Deviation) to compare impacts (shell dynamics oyster simulations - relationships) and determine thresholds for restoration and management decision making.
- Work on improving model scaling.
- Work on making the model spatially explicit.
- Stochasticity—adding randomness (events) to the model to simulate unpredictable events such as the weather.

Key Assumptions Used in Modeling Scenarios

- The simulation model is scaled to a portion of an oyster bar (in this case a portion of Cat Point).
- Habitat is the key driver and depensation exists; fewer oysters are getting large because habitat has declined below a critical minimum level.
- Biggest uncertainty with modeling assumptions is if the decline is from some factor unrelated to habitat (e.g., predators, parasites, diseases, etc.).
- Effort is capped at 1500 trips/month.
- Simulations include a 3-month closure from June – August, with no stochasticity (randomness).
- Fishing effort can be controlled effectively, but this will be highly dependent on enforcement and public cooperation.

Facilitator's Summary of Key Modeling Issues, Assumptions, and Take-Home Points from the 30 November 2022 Modeling Presentation and Discussion

- Adding stochasticity (randomness, random events) to the model would be interesting, but likely will provide marginal additional useful information as the model is currently able to provide enough information to make relative comparisons between scenarios/strategies sufficient to select the best approaches for management and restoration decisions.
- The Fisheries Model does not have the detail (spatial resolution and scaling) to provide specifics as to the exact locations, size, spatial configuration, and locations for oyster reef restoration or the specific details for proposed management strategies.
- The Model will assist the CAB to evaluate proposed strategies and scenarios (combinations of strategies) at the level of how they perform **relative to each other** (e.g., x strategy performs better than y strategy, and a combination of x and y perform better than z).
- Preliminary Model results suggest that extensive initial restoration to a threshold level, plus ongoing restoration including oyster repletion, fishing on locations based on a specific oyster abundance level.
- Significant funding will be required to achieve sufficient and sustainable habitat restoration, and FWC management and enforcement will be required to ensure a viable wild oyster fishery.
- An initial oyster-reef restoration sufficient to achieve the predicted threshold for sustainability (a successful restoration) using cultch that has been demonstrated to remain in place and not degrade in the near-term would be required, and then an ongoing oyster shell repletion regime ranging from yearly to every 3 years.
- Ongoing restoration (annual – triennial) would be required.
- Preliminary model results predict a minimum threshold level for initial restoration of oyster reefs would be approximately 33% - 35% of the pre-collapse level of oyster reefs. This is the predicted level required to jump start oyster growth.
- Restored oyster reefs require some time to establish themselves before harvesting to provide oysters with the time they need to reach market size.
- All options will need to have a cost-benefit analysis conducted including evaluating the ecological, ecosystem, socio-cultural, socio-economic, and political considerations.
- Recuring funding will be required to support ongoing shelling and restoration (Oyster Repletion Program) of specific oyster reefs using shell as the cultch applied on top of restored reefs intended for sustainable harvesting.
- Enforcement will be critical to successful restoration and the establishment and maintenance of a sustainable wild oyster fishery.

For the 30 November 2022 meeting Ed Camp reported as follows:

Summary and Overview of Presentation

The presentation is available on the project webpage: https://marinelab.fsu.edu/absi/cab/.

Key Points from Simulation Results

- Model shows that over time with increased effort the fishery will collapse.
- Even with effort reduction following a collapse oysters will not return sufficiently to harvest without intervention.
- The model shows that with effort reduction, a 5-year closure, and with 25% restoration to pre-collapse levels there would be no recovery, but recovery would occur with a with 33% restoration level.

- At 10% of pre-collapse effort and with one year closure after restoration (of 35%) the system recovers but not when restoration is 33%.
- Annual restoration would buffer against uncertainty in implementation of strategies due to the harvesting of oysters.
- Successful restoration and the reestablishment of a wild harvest oyster fishery will require a controlled level of fishing (intensity) and effective enforcement and community support.
- Annual restoration (minimum of 10%) with limited open access would not lead to collapse, assuming there is an initial significant restoration effort (minimum of 33%-35% of pre-collapse levels).
- Annual restoration at very high levels would support higher intensity harvest, which would eventually still result in long-term decline. This could be mitigated with annual restoration at 20%-100% of pre-collapse levels.
- The best results are achieved after an initial restoration of at least 35% of pre-collapse levels, a closure of 2-3 years after restoration, annual restoration of 10%, and fishing effort reduced to 10% of pre-collapse efforts.
- With 20% of pre-collapse fishing effort there would be no recovery of the system.
- If at least 10% annual restoration is not done, spat-on-shell additions would be required for restoration providing for some amount of a wild oyster fishery.
- If enough initial restoration (above the threshold level) is not implemented, a lot of money would be spent and there would still not be a recovery.

Topics Discussed

- Disclaimer/disambiguation
- Simulation results: Review and updated harvest months
- Simulation results: Uncertainty in closures
- Simulation results: Uncertainty in shell dynamics
- Simulation results: Annual restoration
- Options for future modeling (not done yet)
  - Better scaling
  - Spatially explicit (multiple reefs)

Disclaimer Regarding Models

- Model results are draft—they will change.
- Models shown today are more useful for comparing (across assumptions and strategies) than for predicting absolute values.
- There is massive uncertainty in what I'm showing. There is some evidence for depensation, but we don't know what drives it. These results assume it is driven by habitat. If that is incorrect, most of these results (with reference to restoration) will not be useful.

Disambiguation Regarding Models
Multiple Different Types of Modeling

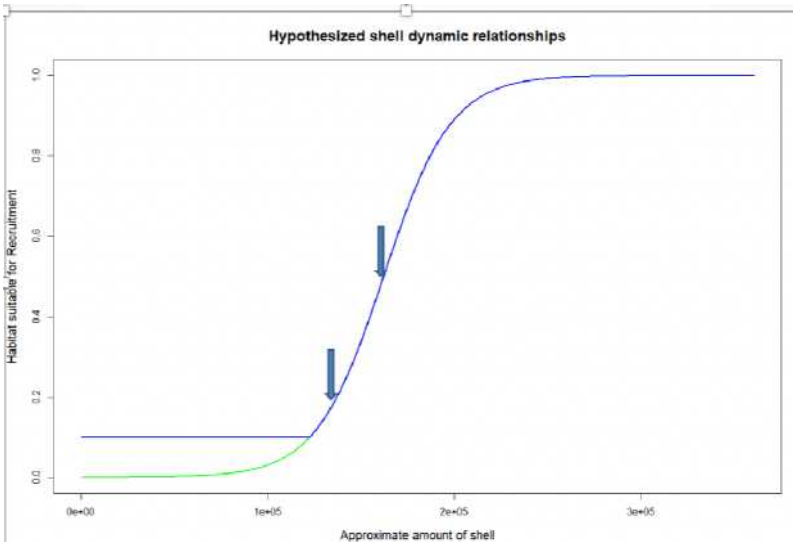
- Stock assessment models—estimating parameters.
  - Initially traditional fisheries (i.e., no shell dynamics explicit, subsumed with recruitment anomalies).
  - Extended to (try to) estimate shell dynamics (2-stage estimation, not ideal but necessary).
- Simulation models— "what if" analysis.
  - Detailed shell dynamics, but how to inform?
  - Best guesses (literature, data).

    - Inform from newer assessment models.
    - *Today you will see simulation models that have been informed by stock assessment models. More formally statistically fit models in future.*
- Other projects too, not talking about them today.

Simulation Results: Reviewed and Updated Harvest Months

Note the numbers in the section below indicate slides with specific simulation results from Ed's presentation. URL for Presentation: https://marinelab.fsu.edu/absi/cab/documents/.

- Last time Ed showed figures assuming harvest in every month except August and September, based on landings.
- Changed to harvest every month except June, July, and August.
- Some affect on model—basically harvesting one less month means it would take more effort to collapse population.
- Also updated assumption of effort post collapse, pre-restoration. It was 0, I now assume 0.1.
- Both of these are small changes.
- Ed noted that the main point is the project is working to support revised cooperative oyster management at estuarine scales that considers both ecological and socioeconomic needs.
- This is purposefully designed to mesh well with the emerging Comprehensive Oyster Management Plan that TNC is leading
- 2.1 Plots for no fishing, restoration, and closure for 5 years.
- 2.2 Plots for fishing (effort) but no collapse.
- 2.3 Plots for more fishing and collapse.
- 2.4 Plots for more effort, collapse, and effort reduction.
    - Cut effort to 10% following collapse.
    - Very hard to see a change. Note there was a slight population increase.
    - NOTE, this is nearly exactly what Pine et al. (2015) said would happen.
- 2.4 Plots with effort reduction, 5-year closure, major restoration (25% initial shell), and post-restoration effort 10% of original.
    - In this scenario two things were done. One is that we did a major restoration. Restored basically 25% of initial shell biomass, or 900k units, but we restored with rock. How does the model know it's rock? I changed the substrate loss amount for just the restored material so that it lasts much longer (shell=20% loss/month, rock=2%).
- 2.5 Plots with effort reduction, 5-year closure, major restoration (33% shell initially), post-restoration effort 10% of original.
    - With this scenario it comes roaring back. Why? How can there be such a dramatic increase over barely less restoration? How? How could this little change in restoration lead to such a massive change in results?
- Shell dynamic oyster simulations.



- It comes back to the figure above: you have habitat on the Y axis, and the amount of substrate or shell on the x.
- The non-linearity of the system is treacherous and hopeful at the same time. If you do a lot of restoration, but not quite enough, you get almost nothing. If you do a little more, you can bounce right back.
- Once you create enough habitat so that oysters start successfully making a lot more, the system can rebound very rapidly, within the 5-year post-restoration closures.

Caveats on the Above

- That relationship between shell and habitat suitable for recruitment is critical, and very uncertain"
  - Hard to estimate (statistically tricky).
  - No near-unfished data.
  - No measurements quantifying habitat change, only anecdotal.
- Relationship uncertain in 2 ways:
  - How "sharp" it is (affecting suddenness of success/failure).
  - Where inflection point is (here probably too conservative, why I did that).
- A much greater uncertainty looms—is it even habitat that matters?
  - Other things besides habitat can drive low survival (predators, disease, environmental).
  - Sometimes one thing changes a system and another sustains that change (e.g., cod fishery in New England).
  - Habitat is almost certainly *a* driver, doesn't mean it's the only one.
  - Note, habitat and predators can be linked, that is expected.

Affects of Small Change

- If we assume there was/will be no fishing in 3 months (what you just saw) instead of 2 (what you saw last time), it will take more effort to collapse.
- And if we assume that the post-collapse, pre-restore effort was 10% of original, instead of 0%, we must restore a tad more (33% initial shell instead of 32%).
- Basically, I'm just balancing things to show a collapse (because we think we saw one) and a potential recovery (because we'd like to believe that's possible).
- Patterns don't change with change in closed months.

Suggested Take-Home Points

- If you believe the assumptions, very possible to do a lot of restoration and not enough to bring the System back, even with carefully controlled/managed effort.
- Asymmetrical risk—much better to restore too much than too little.
- Likely critical amount or types of restoration, but we are not sure what they are.

Simulation Results: Uncertainty in Closures

- A number of different "knobs" involved here:
  - How much of a decrease in effort happens after collapse and before restoration.
  - Is there a closure after restoration, and if so for how long.
- 3.1 Plots with uncertainty in closures—baseline—10% post-collapse effort, 0 effort for 5 years following restoration (33%).
  - Focus on the 10% post-restoration effort. That looks like a lot of harvestable oysters out there. Could we increase the effort after the 5-yr closure AFTER restoration?
- 3.2 Plots with uncertainty in closures—20% post-collapse effort, 0 effort for 5 years following restoration (33%).
  - This shows that if there was more effort pre-restoration, but the same amount restored, that that amount of restoration would not be sufficient for a recovery.
- 3.3 Plots with uncertainty in closures—20% post-collapse effort, 0 effort for 5 years following restoration (34%).
  - But, if the restoration was greater, we could have gotten away with a little more fishing effort post-collapse and pre-restoration.
  - What this means is that fishing more before restoration will require more material restored for success, but at least according to these assumptions, not a lot more. This is almost certainly because of the assumption of "threshold safe" habitat function, where there is always some habitat suitable for recruitment—meaning habitat can't ever go to zero. This assumption may be wrong, especially if reefs can be covered over in sand/mud a buried.
- 3.4 Plots with uncertainty in closures—10% post-collapse effort, 10% effort for 5 years following restoration (33%).
  - This is reverting back to the baseline—10% effort following collapse, and restoring 33% of unfished shell, BUT now we say what if we actually kept fishing at 10% during the restoration—no closure). Also note though, there is no increase in effort after the restoration.
- 3.5 Plots with uncertainty in closures—10% post-collapse effort, 10% effort for 5 years following restoration (35%).
  - So again, recovery is possible, if we restore more (up to 35% initial shell now), even if you fish through restoration. Again, this is probably mostly driven by that threshsafe assumption.
  - This is why it is critical to know how much restoration is needed. My models cannot tell us this, they just tell us that if it's not enough, we've wasted our time and money.
  - This is one of the reasons we've heard folks say that these simulation models are not useful, because they can't tell us what we most need to know, which is what makes a successful restoration.
  - But what this does tell us is that if you want to fish more, you need to restore more.
- 3.6 Plots with the same as previous scenario but without "threshSafe," defined as scenarios in which the habitat can't get down to zero, which would cause local extirpation.
  - Just to check Ed's assessment, here's the same scenario but showing "Thresh" instead of "ThreshSafe"—it basically says oysters went extinct and you can add more habitat but they're not coming back.

- 3.7 Plots with uncertainty in closures—25% post-collapse effort, 25% effort for 5 years following restoration (40%).
  - But just back to this important point again—here we show even more fishing 25% effort following collapse, during restoration, and after, and still the fishery comes back if you can restore more (40% shell initially).
  - This is why it's so critical to know what that threshold is. And we don't know it.
- 3.8 Plots with uncertainty in closures—25% post-collapse effort, 25% effort for 5 years following restoration (35%).
  - But what if we get it wrong, and we don't restore enough but we allow fishing? This level of restoration (35%) was fine so long as we didn't allow fishing for 5 years after the restoration, but it's insufficient for a recovery if that fishing effort stays out there.
- 3.9 Plots with only a 2-year closure.
  - OK, now finally what someone wanted was me to look at what would happen if the closure was shorter. This shows the same conditions as before, in terms of 10% effort post-collapse, but only a 2-year closure after restoration (33% shell initially), but critically, only 10% original effort after that. It shows a recovery.
- 3.10 Plots with only a 2-year closure, but increase effort after recovery.

Caveats and Notes for the Above Scenarios

- All this assumes it's habitat that's the issue—same as before, if this is wrong, these results won't hold.
- We are assuming a "threshSafe" scenario in which that habitat can't get down to zero, which would cause local extirpation. That may be too optimistic an assumption.
- We are assuming we *can control fishing effort* even when populations come back strong. If we can't (either enforcement is lacking or public/political support isn't sufficient), these results will not hold.

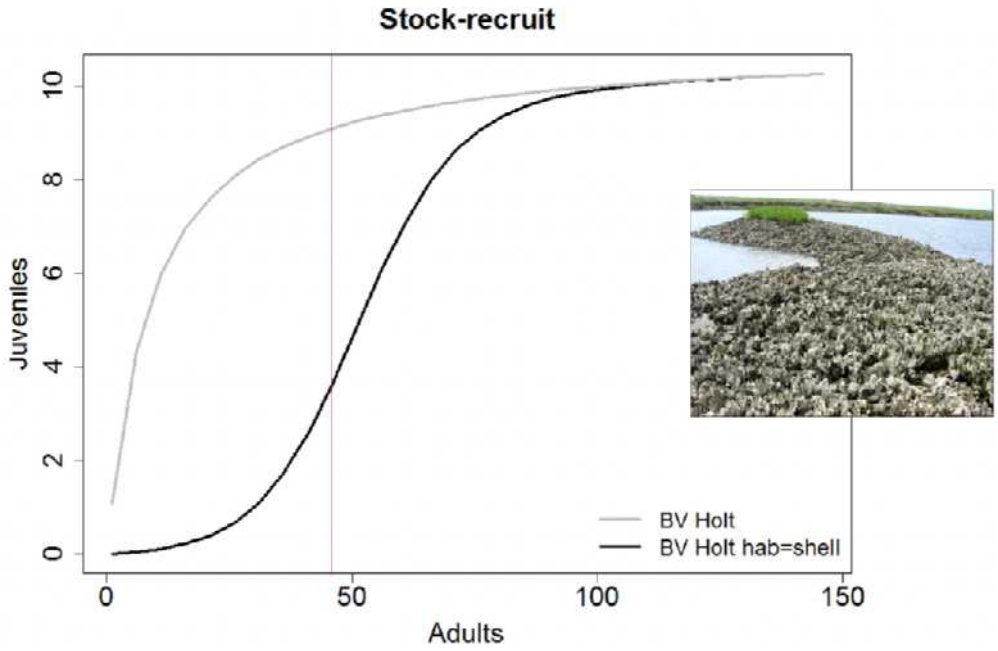
Take-Home Points On Uncertainty In Closures

- Sure, it is possible to fish after collapse, during restoration and have the fishery come back *according to our assumptions* but you'll need to restore more.
- If we get the amount of restoration wrong, fishing could result is failure to recovery the fishery
- We don't know really anything about the ratio of fishing-to-restoration, nor about the thresholds of how much restoration is needed.
- This is why people have said simulations models can't tell us what we most need to know—they can't tell us the level of restoration we need. We can probably only learn that from actual large scale experimentation.

Simulation Results: Uncertainty in Closures

- Take a look at different assumptions about habitat-suitable-for-recruitment as a function of shell (+ restoration).
- Focus on the inflection point.
- Changes get faster and then get slower.

Inflection Point



- 4.1 Pots with uncertainty in shell dynamics—baseline recovery, shell-height threshold is 45%
  - OK, now finally what someone wanted was me to look at what would happen if the closure was shorter. This shows the same conditions as before, in terms of 10% effort post-collapse, but only a 2-year closure after restoration (33% shell initially), but critically, only 10% original effort after that. It shows a recovery.
- 4.2 Plots with uncertainty in shell dynamics—shell-height threshold is changed to 46%.
  - But if the threshold is just a hair higher, than the recovery doesn't happen, and also the collapse happened much sooner.
- 4.3 Plots with uncertainty in shell dynamics—shell-height threshold is changed to 44%.
  - But on the other hand, if we say the threshold was a little lower (needed more depletion of habitat to trigger decline) than the collapse never happened.
- 4.4 Plots with uncertainty in shell dynamics—shell-height steepness is changed from 0.05 to 0.04 (barely steeper).
  - Similarly, if we say that the sigmoidal curve was a little steeper (meaning more of a cliff than a hill), than the collapse never happened.
- 4.5 Plots with uncertainty in shell dynamics—shell-height steepness is changed from 0.05 to 0.06 (barely shallower).
  - Interestingly, if we say that the sigmoidal curve was a little shallower than the collapse happened much sooner, but also the recovery is still possible.

Caveats With the Above Scenarios (Simulation Results)

- I have low confidence that these "shell dynamic" parameters are "right"—as in both precise and accurate. Not even sure this relationship between habitat and shell can be described so simply.
- Particularly, I doubt the threshold value (0.45) is so high—this is just balancing with effort and scale—i.e. we could develop a similar system with more effort (depletion) and a lower threshold value.
- But the values we're using seem to be useful for what we are trying to represent: a fishery that collapsed somewhat recently after appearing stable for quite a while.

Take-Home Points: Uncertainty in Shell Dynamics

- If there is a threshold, we've probably crossed it. But we don't know what level it's at. And we can't tell with our simulation models.

Simulation Results: Continual Restoration

- Look at how continued restoration (annual small amounts).
- I've assumed if major restoration (one time deal) is taking about 33% initial shell to bring back, then annual shelling will be more like 5% (even this is optimistic).
- 5.1 Plots with Baseline, restoring only 30% initial shell (insufficient), no annual restoration.
  - Back to baseline, with a large pulse restoration event that we think will be insufficient to recover the population (30% initial shell). Here we don't assume any annual restoration.
- 5.2 Plots with Baseline, restoring only 30% (insufficient), 5% annual restoration
  - Then we can assume say, 5% annual restoration. Note that this is quite a bit—1/6 of original. You see some signal in the recruits and the shell (habitat) is remaining at a higher level, but the system hasn't really recovered.
- 5.3 Plots with Baseline, restoring only 30% (insufficient), 10% annual restoration.
  - If we jump it up to 10%, we see this shaky recover take place. Again, this is quite a bit, its 1/3 of the original restoration!
  - Note that this is assuming the 5-year effort closure.
- 5.4 Plots with Baseline, restoring only 30% (insufficient), 10% annual restoration, no closure, 25% effort 5 years post-restoration.
  - More robust. If we're willing to keep restoring each year, and quite a bit, we undershoot the initial restoration and fish through the recovery and a bit more after.
- 5.5 Plots with the same as previous, but increasing shell-height threshold to 0.47 (from 0.45).
  - Again, that isn't super realistic, because it meant the population collapse happened earlier, but that's not really the point. The point is that if you're able to restore quite a bit every single year, you can overcome other issues that otherwise would "sink" the restoration—like fishing through restoration, and being wrong about the threshold.
  - But this is going to be expensive—1/3 the cost every single year!
- 5.6 Plots with annual restoration with increasing effort post-recovery—limited entry for 20-100% pre-collapse effort.
  - This is saying that if you're going to be putting in that much habitat every year, you can hammer the fishery.
- What about bioeconomic entry (no limited entry)?
  - This is what we saw last time—no limited entry will collapse the fishery shortly after restoration.
- 5.7 Plots with Annual restoration with open access (mostly) effort.
  - once again, if you're able to have that restoration annually, it will work.

Caveats and Notes for the Above Scenarios:

- I think the cost of annual restoration at the levels I showed would be pretty high, and may not be feasible, especially at larger scales.
- Currently the model doesn't allow for the possibility of additional material added to *hurt* oysters, such as by burying it. The models adds the material without covering up any live oysters, which is probably not possible in real life.
- Obvious idea is to expand area but not cover oysters, but that would actually be something different than what we've simulated—it would be augmenting other, non-recovered areas with a small amount of habitat, and it probably wouldn't work.

Take-Home Points: Continual Restoration

- If there is a way to do this that is (a) affordable and (b) doesn't hurt oysters, it would offer some buffer against other uncertainty, including harvest.
- I don't think this is or should be surprising us.
- I do think the financial costs and logistical concerns are greater with this strategy than with others considered (but all have issues, see enforcement).

Options for Future Modeling (Things to Work On)

- Scaling and fit of simulations—larger reefs, fit to historical effort.
  - Increase confidence in "levels."
  - Cannot overcome issues of uncertainty with respect to depensation.
- Stochasticity—adding random "noise" in.
  - Process, e.g., recruitment.
  - Fishing (maybe with open access?).
  - How management "sees" fishery (active harvest management).
- Spatially explicit structure (multiple bars at once).
  - Can be done, will take some time.

Summary of Questions, Responses, and Comments

(Note initials are only used to identify ABSI Team members and partners, presenters, and state agency representatives)

- What are the units used for shell?
- EC: Volume. Tricky because shells collapse.
- Does the model speak to the 3-D structure of the shell?
- EC: The model speaks to the height of the habitat.
- Does the simulation tell us the absolute volume of shell required?
- EC: No, the model is not spatially explicit.
- It is important when talking to stakeholders to clarify shell is being measured in absolute volumes.
- EC: The model cannot be used to tell us how much and what kind of material we need to use.
- If we adopted an adaptive management approach would this work?
- EC: In principle, yes.
- Is it only effort that is driving the loss of shell?
- EC: Shell really means shell + habitat. Some shell will degrade or sink whereas rock will remain much longer.
- One way to control effort is to limit it to small areas. How would your model deal with this approach?
- EC: The model is dealing with a small area of Cat Point. Ideally it would be good to expand the model into a grid of small reefs. The desired result would be to NOT restrict effort to some percent of an entire reef but rather effort to a portion of a reef.
- We need to know where the larvae are coming from so transport and hydrodynamic information is critical.
- EC: We also need to have this information for future simulations, including larval dispersal models.
- EC: As you add parameters, you add assumptions and uncertainties.
- Trying to regulate/enforce a grid system would be impractical.
- EC: We don't know the minimum size of grid that would need to be used.
- JB: In the Chesapeake, they addressed these issues using feedback from oystermen regarding what locations should be fished and/or closed so that it was functional on-the-water.

- Summer closure creates an entire bar that is not fished.
- EC: Prefers to have portions of a single bar open and other portions closed.
- Enforcement would be extremely difficult with this approach.
- EC: In other countries there are examples of fishers being paid to watch/monitor beds in the off-seasons.
- JT: If the assumptions are correct, we could be in a situation that the historic understanding of the Bay does not apply to the current situation. Stakeholder community has to be convinced that the Bay has fundamentally changed, and it is in their interest that new management strategies will have to be implemented.
- Enforcement will have to be ramped up to protect closed areas and ensure restoration is successful.
- 75% of enforcement is better than 0% enforcement. The elimination of check stations impacted the fishery. We need to bring check stations back into use.
- After the storms of the 80s the oysters came back, but why are they not coming back now? Is something different now?
- EC: Harvest in the 80s after the storms was low, but not as low as the current situation (depensation threshold?). Data looks worse now than in the 80s.
- Regarding the shell dynamics data - why such a big impact with 1% change?
- EC: Sensitivity is inherent in the model.
- Is the shell height threshold actually shell volume?
- EC: Yes, more or less.
- The market-size oyster market is very high and will not likely come down. This puts the $80,000/year income goal in reach.
- Making a living could be a good trade-off for a limited entry system. It allows a limited number of people to make good incomes.
- Is one of the parameters of effort the area of available reef?
- EC: No, there is a cap on effort.
- EC: Simulations are scaled to a size of about 10% of Cat Point.
- Economic considerations are important to oyster harvesters.
- Simulations could be worked backwards from desired harvest levels.
- EC: We did that last time.
- It appears that you will either have to do a limited entry or a quota system.
- Limited entry or a quota will be required.
- EC: For some fisheries they do both. Quotas flood the dealers with large numbers of fish and price falls.
- Summer closure creates permanent area for closure. With this approach we can keep whole bars open.

XI. IDENTIFICATION OF NEXT SUITE OF SCENARIOS FOR MODEL SIMULATIONS

Next Suite of Scenarios for Simulation With the Fisheries (Socioecological) Model:

Based on Ed Camp's recommendations regarding what is currently feasible to model and the CAB's discussions, the CAB agreed to recommend the following scenarios for simulation with the Fisheries (Socioecological) Model for evaluation during the 1 February 2023 CAB meeting:

- A combination of management strategies including but not limited to active management, an open fishery, and a limited entry fishery. All of the scenarios would include summer closure.
- An open access fishery with shorter harvesting seasons.
- Stochasticity—adding randomness (events) to the model to compare the results with the previous simulation runs for the above scenarios.
- A change in mortality for different management scenarios (i.e., active management, an open fishery, and a limited entry fishery).
- Ongoing shelling and restoration (Oyster Repletion Program) of specific oyster reefs using shell as the cultch applied on top of existing restored reefs intended for sustainable harvesting.
- An initial oyster reef restoration sufficient to achieve the predicted threshold for sustainability (a successful restoration) using cultch that has been demonstrated to remain in place and not degrade in the near term, and then model various ongoing oyster shell repletion regimes ranging from yearly to every 3 years.

Future Scenarios to Simulate:

- Restoration approaches using data from the restoration projects and the restoration experiments and pilot projects (specific locations, size, height/spatial configurations, type of cultch material, density of cultch, etc.).
- Adaptive Management Scenario: Expand the model spatially to provide for grided areas to model simulations with some areas fished and other areas protected, and evaluate the impacts on habitat and oyster abundance for fished and protected areas. [*Note:* Ed would require FWC support to simulate this approach]

When the Model Can Be Extended to a Spatially Explicit Platform, Evaluate:

- Opening and closing specific oyster bars and potentially even parts of specific oyster bars based on the metrics for sustainability of the resource (e.g., oyster density).
- Different scenarios with the Bay wide-open and various areas of the Bay closed.
- Develop and maintain one area of the Bay (e.g., Cat Point) for high intensity commercial oyster harvesting, and the rest of the Bay will be set aside as protected areas (MPA/Sanctuaries) to provide ecosystem services such as water filtration and marine species habitat, and also to provide brood stock/spat source for the system.
- Adaptive Management approach where updated periodic oyster population evaluations are being conducted and used as the metric for how much and when harvesting is allowed.
- Total Allowable Catch (TAC) as a component of a limited entry and/or minimum density active managed scenarios.
- Seasonal closures.
- Consider the size, spatial configuration, and amount and location for oyster reef habitat restoration initiatives.

Much of the above will require adding some larval transport and dispersal assumptions to spatially explicit modeling.

Scenarios Approved by the CAB for Modeling and Evaluation:

- Limited Entry Fishery - Number of entrants would vary with harvest level and process developed in consultation with stakeholders.
- Bay-wide summer harvest closure (June-August).
- All legal and FDACS approved harvest areas would be open during harvest season.
- Monday-Friday harvest week with daily bag limits.
- Recreational harvest limit with same season and gear as commercial harvest.
- Establish/enforce 5% undersize oyster limit for harvesters and dealers.
- Implement stock-based temporary harvest closures, informed by regular stock assessments.
- Implement annual stock assessment in collaboration with fishers to establish sustainable level of harvest for the season.
- Establish permanent closed areas (broodstock reefs).
- Evaluate cost-effectiveness of an ongoing shelling and restoration (Oyster Repletion Program) of specific oyster reefs for harvesting.
- Work with FWC Law Enforcement to develop strategies and penalties for violation of regulations.

CAB Action: The Facilitator tested whether the CAB supported and agreed with the assumptions and parameters used in Ed Camp's Ecological Model. The CAB unanimously indicated their support for the same.

CAB Action: The Facilitator tested whether the CAB supported the next suite of scenarios proposed for model simulations using Ed Camp's Ecological Model. The CAB unanimously indicated their support for the same.

(Attachment 7 — Glossary of Modeling Terms)
(Attachment 9 — Prioritized Restoration and Management Strategies)

Summary of Questions, Responses, and Comments

(Note initials are only used to identify ABSI Team members and partners, presenters, and state agency representatives)

- EC: I am not high on continuous restoration. It is expensive and not needed if an appropriate management strategy is adopted.
- How do we make management decisions if conditions change?
- JB: This is a rationale for an adaptive management approach.
- We need to know what the minimum size is, from an ecological and fishery perspective, what size the restored reefs should be.
- There is a history of continuous restoration of the Bay (shell replenishment) and oystermen should be involved.
- JB: Involving oystermen in restoration and monitoring is explicit in the ABSI CAB's approach and recommendations.
- Charleston SC declared a city-wide shell recycling initiative. We need to know the details of what we mean by effort and other parameters used in the simulations.
- Can we model stepwise changes the extent needed for restoration?

- EC: It would not be very effective and costly. It makes more sense to do it in one shot. Do one area in threshold range so that it is successful.
- JB: We know that additional long-term funding will be required. We should use the current funding to make sure we understand what needs to be done and can demonstrate to funders and managers we can do a successful restoration.
- EC: The resources available will drive the size of the area to be restored to threshold.
- EC: A major problem with continuous restoration is the impact to live oysters. This is not controlled in the current model. Using shell for the continual restoration should minimize these impacts to live oyster reefs.

XII. PUBLIC COMMENT

The facilitator invited members of the public to provide comments.

Public Comments:

- *There were no public comments offered.*

XIII. NEXT MEETING OVERVIEW AND ISSUES

The 1 February 2023 meeting will initiate Phase V and focus on ABSI science and data collection and decision support tools updates, FWC NFWF Stage 2 restoration update, sub-committee reports, the review and discussion of model simulation results for priority Fisheries Management (Goal B) scenarios (combinations of strategies/options), and agreement on the next suite of scenarios for model simulations.

NEXT STEPS AND AGENDA ITEMS

- Review of updated Workplan and Meeting Schedule.
- Science and data collection, and restoration project updates.
- Subcommittees and Working Group updates.
- Review and discussion of Fisheries (Socioecological) model simulation results for draft priority Fisheries Management (Goal B) and Restoration (Goal A) strategies.
- Agreement on next suite of scenarios for Fisheries Model simulations.
- Public Comment.

MEETING CHAT COMMENTS

Meeting participants were able to provide comments during the meeting through the on-line Chat function. The results are compiled and included as *Attachment 5* of this Summary Report.

(Attachment 5 — Meeting Zoom Chat Summary)

MEETING EVALUATION AND ONLINE SURVEY RESULTS

The CAB members were requested to complete a meeting evaluation. The results are compiled and included as *Attachment 6* of this Summary Report.

(Attachment 6 — Meeting Zoom Poll and Written Evaluation Results)

ADJOURNMENT

The Facilitator thanked CAB members, ABSI Project Team members, and the public for their participation, and adjourned the meeting at 2:30 PM on Wednesday, November 30, 2022.

ATTACHMENT 1
KEY TO COMMON PROJECT ABBREVIATIONS

ABBREVIATION	DEFINITION
ABS	Apalachicola Bay System
ABSI	Apalachicola Bay System Initiative
ACFS	Apalachicola-Chattahoochee-Flint Stakeholders
ANERR	Apalachicola National Estuarine Research Reserve
CAB	Community Advisory Board (ABSI)
County	Franklin County
DACS or FDACS	Florida Department of Agriculture and Consumer Services
DEP or FDEP	Florida Department of Environmental Protection
DOH or FDOH	Florida Department of Health
EPA	U.S. Environmental Protection Agency
FDOT	Florida Department of Transportation
FSU	Florida State University
FSUCML	Florida State University Coastal and Marine Laboratory
FWC	Florida Fish and Wildlife Conservation Commission
FWRI	FWC Fish and Wildlife Research Institute
NGO	Non-Governmental Organization
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resource Conservation Service
NWFWMD	Northwest Florida Water Management District
Plan	Apalachicola Bay System Ecosystem-Based Adaptive Management and Restoration Plan
RESTORE	Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast Act of 2012
RCSG	Riparian County Stakeholder Coalition
RPC	Regional Planning Council
SAB	Science Advisory Board (ABSI)
SAV	Submerged Aquatic Vegetation
TNC	The Nature Conservancy
TRIUMPH	Triumph Gulf Coast, Inc.
UF	University of Florida
UWF	University of West Florida

ATTACHMENT 2
MEETING PARTICIPATION LIST

MEMBER	AFFILIATION
AGRICULTURE/ACF STAKEHOLDERS/RIPARIAN COUNTIES	
1. ***Chad Taylor**	Riparian County Stakeholder Coalition/ACF Stakeholders/Agriculture
BUSINESS/REAL ESTATE/ECONOMIC DEVELOPMENT/TOURISM	
2. **Chuck Marks**	Business (Insurance Industry)
3. **Mike O'Connell**	SGI Civic Club/SGI 2025 Vision
ENVIRONMENTAL/CITIZEN GROUPS	
4. **Georgia Ackerman**	Apalachicola Riverkeeper
5. **Chad Hanson**	The Pew Charitable Trusts
6. **Katie Konchar**	The Nature Conservancy (TNC)
LOCAL GOVERNMENT	
7. **Ottice Amison**	Franklin County Commissioner
8. **Anita Grove**	Apalachicola City Commissioner
RECREATIONAL FISHING	
9. **Frank Gidus**	CCA Florida
SEAFOOD INDUSTRY	
10. David Barber	Barber's Seafood
11. **Shannon Hartsfield**	Seafood Management Assistance, Resource Recovery Team and Oysterman
12. Gayle Johnson	Apalachicola Oyster Company
13. Steve Rash	Water Street Seafood
14. TJ Ward	Buddy Ward & Sons Seafood
STATE GOVERNMENT	
15. **Jenna Harper#**	ANERR/DEP
16. **Becca Hatchell**	FWC Division of Habitat and Species Conservation
17. Alex Reed	FDEP Office of Resilience & Coastal Protection
18. Devin Resko	FWC Division of Marine Fisheries Management
19. **Portia Sapp**	FDACS Division of Aquaculture
20. **Paul Thurman**	NWFWMD
UNIVERSITY/RESEARCHERS/SCIENTISTS	
21. **Mike Allen**	Scientist: Director of UF/IFAS Nature Coast Biological Station (NCBS)
22. Erik Lovestrand	UF/IFAS/Florida Sea Grant/Franklin County Extension

The names of CAB members attending the meeting are indicated in bold font.

***CAB members who participated virtually are indicated in red font.**

** Members whose designated alternates participated for them.*

PROJECT TEAM AND CAB FACILITATOR	
FLORIDA STATE UNIVERSITY	
Sandra Brooke	Marine Biologist
Ross Ellington	Professor Emeritus of Biological Science
Madelein Mahood	Outreach and Education
Joel Trexler	FSUCML Director
FACILITATED SOLUTIONS, LLC	
Jeff Blair	Community Advisory Board Facilitator
The names of Project Team members participating in the meeting are indicated in bold font.	
**Team members who participated virtually are indicated in red font.*	

ALTERNATES FOR CAB MEMBERS	
Alternate	**CAB Member**
Ken Jones	Chad Taylor
The names of CAB member's alternates participating in the meeting are indicated in bold font.	

MEMBERS OF THE PUBLIC	
1. *Anne Birch*	TNC
2. Josh Breithaupt	Florida State University Coastal and Marine Lab (FSU)
3. Fabio Caltabellota	Florida State University Coastal and Marine Lab (FSU)
4. Ed Camp	University of Florida (UF)
5. Will Casola	UF
6. Jared Fuqua	FSU ABSI Outreach and Education
7. *Laura Geselbracht*	TNC
8. Kennedy Hanson	ANERR
9. Steve Leitman	FSU
10. Betsy Mansfield	Florida State University Coastal and Marine Lab (FSU)
11. Daniel Paasch	Representing U.S. Senator Marco Rubio's Office
12. *Andy Shantz*	Florida State University Coastal and Marine Lab (FSU)
13. *Tara Stewart Merrill*	Florida State University Coastal and Marine Lab (FSU)
**The names of members of the public attending virtually are italicized.*	

ATTACHMENT 3
30 NOVEMBER 2022 MEETING AGENDA

ABSI COMMUNITY ADVISORY BOARD MEETING OBJECTIVES

- ✓ To Approve Regular Procedural Topics (Meeting Agenda and Summary Report)
- ✓ To Review Updated Workplan and Meeting Schedule
- ✓ To Receive ABSI Relevant Research Projects Updates
- ✓ To Receive Reports from RFWG, Community Outreach, and CAB Successor Group
- ✓ To Discuss Oystermen's Workshop and Community Workshop Input.
- ✓ To Review Fisheries Model Scenario Simulation Results and Acceptability Rate Scenarios as Needed
- ✓ To Identify and Agree on the Next Suite of Scenarios, New Scenarios, and Combinations for Modeling
- ✓ To Identify Next Steps: Information, Presentations, Assignments, Agenda Items for Next Meeting

ABSI COMMUNITY ADVISORY BOARD AGENDA

All Agenda Times—Including Public Comment and Adjournment—Are Approximate and Subject to Change

1)	**8:30am**	**WELCOME AND ROLL CALL**
2)	**8:35**	**SOCIAL SCIENCE SURVEY**
3)	**8:40**	**AGENDA REVIEW AND MEETING OBJECTIVES**
4)	**8:45**	**APPROVAL OF FACILITATOR'S CAB (October 18, 2022), OYSTERMEN'S WORKSHOP (October 18, 2022), AND COMMUNITY WORKSHOP (October 19, 2022) SUMMARY REPORTS**
5)	**8:50**	**REVIEW OF UPDATED PROJECT MEETING SCHEDULE AND WORKPLAN, AND PHASE V (2023) SCHEDULE AND WORKPLAN *(Attachment 3)***
6)	**9:00**	**SCIENCE AND DATA COLLECTION, AND RESTORATION UPDATES** • *ABSI Relevant Research Projects Updates*
7)	**9:35**	**WORKING GROUP AND SUBCOMMITTEE UPDATES** • *Successor Group Subcommittee Update.* Anita Grove and Shannon Hartsfield (Pending) • *Restoration Funding Working Group Update.* Joel Trexler (5) • *Community Outreach Subcommittee Update.* Chad Hanson (10)
8)	**9:50**	**DISCUSSION OF OYSTERMEN'S WORKSHOP AND COMMUNITY WORKSHOP INPUT** • Review and Discuss Feedback from Workshops *(Attachment 4)*
~10:10am		***BREAK***
9)	**10:30**	**OVERVIEW, DISCUSSION, AND ACCEPTABILITY RATING OF THE RESULTS OF SCENARIOS (STRATEGIES) SIMULATED (MODELED) WITH THE FISHERIES MODEL**
~12:00pm		***LUNCH — ON CAMPUS***
9)	**12:30**	**OVERVIEW, DISCUSSION, AND ACCEPTABILITY RATING OF THE RESULTS OF SCENARIOS SIMULATED WITH THE FISHERIES MODEL — CONTINUED**
10)	**1:10**	**IDENTIFICATION OF SCENARIOS FOR NEXT ROUND OF MODELING INCLUDING: COMBINATIONS OF SCENARIOS, NEW SCENARIOS, AND ANY SCENARIOS TO BE REMOVED FROM FURTHER EVALUATION *(Attachment 4)***
11)	**~2:10pm**	**PUBLIC COMMENT — THREE MINUTES PER PERSON**
12)	**~2:25**	**ACTION ITEMS AND AGENDA ITEMS FOR NEXT MEETING (Feb. 1, 2023)** • Review of Action Items and Assignments from Meeting • Identify Agenda Items, Presentations, and Information Needs for Next Meeting • Complete Meeting Evaluation
~2:30pm		***ADJOURN***

ATTACHMENT 4
WORKPLAN, SCHEDULE, AND PROJECT FLOWCHART AND MAP

UPDATED AS OF THE 30 NOVEMBER 2022 CAB MEETING

PHASE I (2019) — STANDING UP AND ORGANIZATION OF THE ABSI CAB — *Status Complete*

May 2019 – December 2019 (Assessment Process, Questionnaire, and 2 CAB Meetings)

PHASE II (2020) — SCOPING OF ISSUES, IDENTIFICATION OF PERFORMANCE MEASURES & STRATEGIES — *Status Complete*

Jan. 2020 – Dec. 2020 (7 CAB Meeting & 1 Oystermen's Workshop)

PHASE III (2021) — BUILDING CONSENSUS ON CAB RECOMMENDATIONS FOR THE ABS ECOSYSTEM-BASED ADAPTIVE MANAGEMENT AND RESTORATION PLAN

Adoption of Final Draft Management and Restoration Plan Framework for Phase IV Evaluation — *Status Complete*

Jan. 2021 – Nov. 2021 (7 CAB Meeting & 2 Oystermen's Workshops)

PHASE IV (2022) — EVALUATION OF DRAFT ADAPTIVE MANAGEMENT AND RESTORATION PLAN FRAMEWORK'S RESTORATION AND MANAGEMENT STRATEGIES, RESTORATION PROJECTS SELECTION AND IMPLEMENTATION, AND FUNDING PLANNING — *Status Initiated*

Dec. 2021 – Dec. 2022 (6 CAB Meetings, 1 Oystermen's Workshops, and 1 Community Workshop)

PHASE V (2023) — EVALUATION AND FINALIZATION OF RECOMMENDATIONS FOR INCLUSION IN THE *ABS ECOSYSTEM-BASED ADAPTIVE MANAGEMENT AND RESTORATION PLAN*, RESTORATION PROJECTS SELECTION AND IMPLEMENTATION, AND FUNDING PLANNING — *Status Pending*

Jan. 2023 – Dec. 2023 (6 CAB Meetings, 3 Community Workshops)

COMMUNITY ADVISORY BOARD (CAB). The CAB initiated Phase IV in December of 2021 and is currently evaluating the best combination of strategies (scenarios) predicted to achieve restoration and management objectives for the Bay using decision support tools including predictive socio-economic and ecological models coupled with available and emerging data and research. The scenarios are being evaluated with the overarching goal of restoring oyster reef habitat to a level that can sustainably provide needed ecosystem services for the System, and concurrently provide for a sustainable and economically viable level of commercial oyster harvesting. During the course of the project the CAB will vet their recommendations with restoration and management agencies to gauge support and feasibility for implementation. The CAB will evaluate the priority and efficacy of scenarios and associated actions and identify specific recommended restoration projects and management approaches for inclusion in the Apalachicola Bay System Ecosystem-Based Adaptive Management and Restoration Plan (Plan). The CAB will vote to approve their package of consensus recommendations during their November 2023 meeting. ***Status Initiated***

1. **COMMUNITY OUTREACH SUBCOMMITTEE - PUBLIC ENGAGEMENT.** The CAB working through the Community Outreach Subcommittee initiated a community feedback initiative by providing information and seeking community input on the Plan Framework. The CAB will vet the results of their prioritized strategies with the larger ABS community through multiple forums including questionnaires administered through a variety of methods including Facebook, online via the ABSI website, and direct mailings. In addition, community workshops will be conducted at appropriate times to provide the Community with information on ABSI and solicit community input. ***Status Initiated***
2. **RESTORATION FUNDING WORKING GROUP (RFWG).** Initiated in late 2021 the Restoration Funding Working Group's role is to seek resources and political, governmental, and organizational support for the

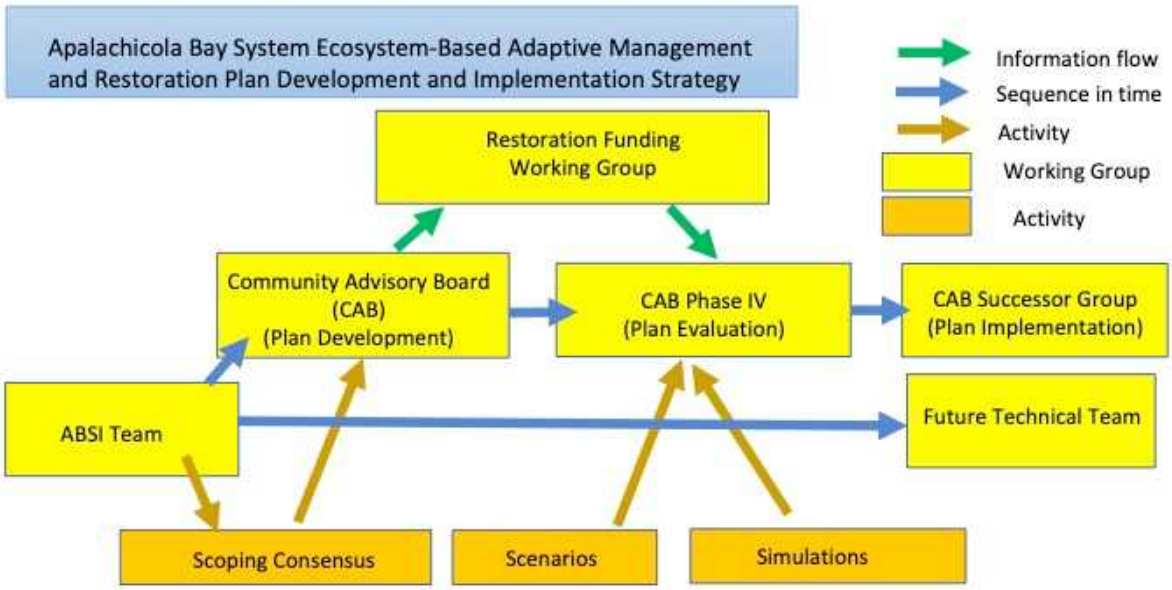
CAB's priority recommendations. ***Status Initiated***

3. **CAB SUCCESSOR GROUP.** The CAB Successor Group will be ready to convene when the CAB completes their work on the Apalachicola Bay System Ecosystem-Based Adaptive Management and Restoration Plan. The Successor Group's role will be to organize a group of key stakeholders committed to working collaboratively for the long-term, once the CAB process is complete and to ensure that the Plan is implemented, monitored, and adaptively managed over time and has the support of the Community. The CAB Successor Group process will formally initiate January 2024. ***Status Organizing. Formal Convening Pending CAB Approval of Recommendations for Plan on 29 November 2023.***

Meeting 5. ANERR	**October 18, 2022** • Fisheries Model Simulation Results & Scenarios Refinements	ABSI science and data collection and restoration project updates. Sub-committee reports and public engagement initiative update. Review and discussion of Fisheries Model simulation results for revised priority Habitat Restoration (Goal A) and Fisheries Management (Goal B) scenarios. Agreement on next suite of scenarios for model simulations. Public comment.
Oystermen's Community Workshop 1	**October 18, 2022** ANERR	Oystermen's Feedback on ABSI Restoration Experiments, FWC Restoration Project, and Potential Management Scenarios for Modeling.
Community Workshop 2	**October 19, 2022** Eastpoint Firehouse	Community Feedback on ABSI Restoration Experiments, FWC Restoration Project, and Potential Management Scenarios for Modeling.
Meeting 6. ANERR	**Nov. 30, 2022** • Fisheries Model Simulation Results & Scenarios Refinements	ABSI science and data collection and restoration project updates. Sub-committee reports and public engagement initiative update. Review and discussion of Community Workshops input. Review and discussion of Fisheries Model simulation results for revised priority Habitat Restoration (Goal A) and Fisheries Management (Goal B) scenarios. Agreement on next suite of scenarios for model simulations. Public comment.
PHASE V CAB MEETINGS — 2023		
Meeting 1. ANERR	**Feb. 1, 2023** • Fisheries Model Simulation Results & Scenarios Refinements	Initiation of Phase V of ABSI. ABSI science and data collection and restoration project updates. Sub-committee reports and public engagement initiative update. Review and discussion of Fisheries Model simulation results for revised priority Habitat Restoration (Goal A) and Fisheries Management (Goal B) scenarios. Agreement on next suite of scenarios for model simulations. Public comment.
Meeting 2. ANERR	**April 12, 2023** • Fisheries Model Simulation Results & Scenarios Refinements	ABSI science and data collection and restoration project updates. Sub-committee reports and public engagement initiative update. Review and discussion of Fisheries Model simulation results for revised priority Habitat Restoration (Goal A) and Fisheries Management (Goal B) scenarios. Agreement on next suite of scenarios for model simulations. Public comment.
Community Workshop 1	**April 12, 2023** ANERR 6:00pm – 8:00pm	Community Input on ABSI Restoration Experiments, FWC Restoration Project, and Proposed Management Scenarios for Modeling.
Meeting 3. ANERR	**May 31, 2023** • Fisheries Model Simulation Results & Scenarios Refinements	ABSI science and data collection and restoration project updates. Sub-committee reports and public engagement initiative update. Review and discussion of Community Workshop input. Review and discussion of Fisheries Model simulation results for revised

		priority Habitat Restoration (Goal A) and Fisheries Management (Goal B) scenarios. Agreement on next suite of scenarios for model simulations. Public comment.
Meeting 4. ANERR	**July 26, 2023** • Fisheries model simulation results & scenarios refinements	ABSI science and data collection and restoration project updates. Sub-committee reports and public engagement initiative update. Review and discussion of Fisheries Model simulation results for revised priority Habitat Restoration (Goal A) and Fisheries Management (Goal B) scenarios. Agreement on next suite of scenarios for model simulations. Public comment.
Community Workshop 2	**July 26, 2023** ANERR 6:00pm – 8:00pm	Community Input on the CAB's recommendations for the Apalachicola Bay System Ecosystem-Based Adaptive Management and Restoration Plan.
Meeting 5. ANERR	**Sept. 27, 2023** • Fisheries Model Simulation Results & Scenarios Refinements	ABSI science and data collection and restoration project updates. Sub-committee reports and public engagement initiative update. Review and discussion of Community Workshop input. Review and discussion of Fisheries Model simulation results for revised priority Habitat Restoration (Goal A) and Fisheries Management (Goal B) scenarios. Agreement on next suite of scenarios for model simulations. Public comment.
Community Workshop 3	**October 24, 2023** ANERR 6:00pm – 8:00pm	Community Input on the CAB's recommendations for the Apalachicola Bay System Ecosystem-Based Adaptive Management and Restoration Plan.
Meeting 6. ANERR	**Nov. 29, 2023** • **Adopt Final CAB Recommendations for ABS Plan**	ABSI science and data collection and restoration project updates. Sub-committee reports and public engagement initiative update. Review and discussion of Community Workshop input. Finalize and adopt recommendations for strategies and actions (components) for inclusion in the Apalachicola Bay System Ecosystem-Based Adaptive Management and Restoration Plan (Plan) and submit to FSUCML. Public comment.

ABSI CAB Process Flowchart and Project Area Map



Notes
1. Yellow boxes are groups of people. Blue arrows connecting yellow boxes indicate some or all of the people in one group may comprise the next group in time sequence

ABSI Project Area Map

ATTACHMENT 5
MEETING CHAT SUMMARY (ZOOM)

MEETING CHAT – 30 NOVEMBER 2022

- 08:46:18 **Georgia Ackerman:** Good Morning all!
- 08:46:51 **Tara Stewart Merrill (she/her/hers)**: Good morning!
- 08:46:59 **Katie Konchar, TNC**: Good morning!
- 08:51:12 **Chadwick Taylor:** Good morning, squall line coming through Marianna now.
- 08:54:01 **Maddie Mahood:** Hi Everyone! The 2023 Dates are as follows: February 1st, April 12th, May 31st, July 26th, Sept. 27th and Nov. 28th
- 08:54:15 **Maddie Mahood:** Oops, Nov. 29th. ☺
- 08:55:10 **Michael Allen:** I request that the meeting dates for 2023 be sent out in email after this meeting just to get them on the calendar….
- 08:56:01 **Maddie Mahood**: Oh definitely!! I will be doing that. ☺
- 09:25:31 **Chadwick Taylor:** Let's ask folks who are speaking to ID themselves, please
- 09:27:20 **Chadwick Taylor:** What size was the limerock?
- 09:29:26 **Maddie Mahood:** Great idea, Chad. The last person that was asking questions in the ANERR room was new Franklin County Commissioner Ottice Amison.
- 09:31:39 **Becca Hatchell, FWC:** Hi Everyone, To add to the conversation about Dermo presence in the Gulf, FWC recently completed testing on our Phase III reefs in West Bay, St. Andrew Bay. We found ~55% of all samples collected contained some level of Dermo. None of ours had heavy (stage 5) level infections but 20% showed moderate to moderately heavy (stage 3-4) infections.
- 09:32:26 **Katie Konchar, TNC:** Maddie - Can you reiterate who will be participating in the science advisory board please?
- 09:33:17 **Chadwick Taylor:** Are/will the science board meets be open to the CAB?
- 09:34:54 **Maddie Mahood:** Yes - Elizabeth North, University of Maryland Center for Environmental Science. Megan La Peyre - USGS and LSU Agricultural Center. Laura Geselbracht - TNC. Roger Mann - VIMS (Virginia Institute of Marine Science)
- 09:35:12 **Katie Konchar**: Great, thanks!
- 09:35:56 **Tara Stewart Merrill (she/her/hers):** Becca - if you'd like to meet and chat Dermo at any point I would be happy to!
- 09:36:**17** **Becca Hatchell, FWC:** Hi Tara, sounds great! What is your email?
- 09:36:49 **Tara Stewart Merrill (she/her/hers):** tstewartmerrill@fsu.edu
- 09:38:02 **Becca Hatchell, FWC:** Thank you!
- 09:38:30 **Tara Stewart Merrill (she/her/hers):** Of course! ☺
- 09:43:10 **Katie Konchar, TNC:** Great to have Andrew, Tara and Josh's presentations today. Thank you, all!
- 09:51:17 **Maddie Mahood:** See y'all at 10!
- 10:18:57 **Andrew Shantz:** We are also planning to bring out more oysterman in our next round of bay wide tonging surveys starting this weekend
- 10:19:18 **Andrew Shantz:** sorry not this weekend – this winter*
- 10:20:21 **Katie Konchar, FWC:** Very nice, Andrew. TY!

- 10:42:48 **Michael Allen:** I have to step out briefly but will be back…
- 10:43:40 **Maddie Mahood**: Thanks Michael!
- 11:10:11 **Michael Allen**: I'm back..
- 11:10:13 **Jeff Blair:** OK great, let me know if you have question during the presentation
- 11:43:01 **Maddie Mahood:** Hi everyone, I have to leave the meeting, but Jared Fuqua (Jared on here 🙂) will be taking over for me. If you have any questions, please let him or Jeff know and Jared will also run the poll at the end of the meeting. Thank you all and talk soon!
- 12:24:08 **Chadwick Taylor:** Well said Joel!!! I'm looking for good news and this is not it. The future will be very different!!! And many most won't accept this news.
- 13:02:01 **Michael Allen:** Turn volume back on"
- 13:02:20 **Michael Allen**: ?
- 13:03:04 **Jared:** Can everyone hear Ed?
- 13:03:53 **Georgia Ackerman**: Yes
- 13:04:13 **Michael Allen:** Yes, thank you!
- 13:04:40 **Georgia Ackerman:** Crank your volume on laptop
- 13:05:02 **Jeff Blair:** Done.
- 14:25:01 **Andrew Shantz:** Thanks everyone, I have to leave to jump into another meeting.

ATTACHMENT 6
MEETING EVALUATION RESULTS (ZOOM POLL AND WRITTEN POLL RESULTS)

CAB Members used a 5-point polling scale where a 1 meant "Strongly Disagree" and a 5 meant "Strongly Agree." The evaluation summary reflects average rating scores and comments from respondents participating virtually.

There were 7 hard copy end of meeting survey questions (Evaluations) completed, and 5 completed virtually.

1.) The meeting objectives were clearly communicated at the beginning

Average Rating of 5	*5. Strongly Agree*	*4. Agree*	*3. Neutral*	*2. Disagree*	*1. Strongly Disagree*
4.4	**6**	**5**	**1**	**0**	**0**

2.) The meeting objectives were met.

Average Rating of 5	*5. Strongly Agree*	*4. Agree*	*3. Neutral*	*2. Disagree*	*1. Strongly Disagree*
4.4	**6**	**5**	**1**	**0**	**0**

3.) The presentations were effective and informative.

Average Rating of 5	*5. Strongly Agree*	*4. Agree*	*3. Neutral*	*2. Disagree*	*1. Strongly Disagree*
4.8	**9**	**3**	**0**	**0**	**0**

4.) The facilitation of the meeting was effective for achieving the stated objectives

Average Rating of 5	*5. Strongly Agree*	*4. Agree*	*3. Neutral*	*2. Disagree*	*1. Strongly Disagree*
4.4	**8**	**3**	**1**	**0**	**0**

5.) Follow-up actions were clearly summarized at the end of the meeting

Average Rating of 5	*5. Strongly Agree*	*4. Agree*	*3. Neutral*	*2. Disagree*	*1. Strongly Disagree*
4.4	**5**	**7**	**0**	**0**	**0**

6.) The facilitator accurately documented CAB Member input

Average Rating of 5	*5. Strongly Agree*	*4. Agree*	*3. Neutral*	*2. Disagree*	*1. Strongly Disagree*
4.3	**7**	**4**	**1**	**0**	**0**

7.) The meeting was the appropriate length of time.

Average Rating of 5	*5. Strongly Agree*	*4. Agree*	*3. Neutral*	*2. Disagree*	*1. Strongly Disagree*
4.2	**5**	**6**	**1**	**0**	**0**

8.) CAB Members had the opportunity to participate and be heard.

Average Rating of 5	*5. Strongly Agree*	*4. Agree*	*3. Neutral*	*2. Disagree*	*1. Strongly Disagree*
4.4	**8**	**3**	**1**	**0**	**0**

Open Ended Survey Questions – Virtual Responses

- None were offered.

ATTACHMENT 7
GLOSSARY OF MODELING TERMS

Assumptions – A description of the world that is accepted as true and is based on common knowledge or theory but not on proof.

Baseline – Model output that is used as a starting point for comparison with other sets of model output.

Calibration – Process of adjusting model inputs or parameters to obtain optimal agreement between model output and observations (data).

Circulation/Hydrodynamic Model – A mathematical tool that calculates water currents and water properties (like salinity and temperature).

Data Gap – The lack of data or information necessary for a given scientific study.

Data Set – A collection of observations or measurements.

Deviation – The difference between a data point and a model prediction.

Fishery-Dependent Data – Data collected directly on a fish or fishery from commercial or sport fishermen and seafood dealers.

Fishery-Independent Data – Characteristic of information (e.g. stock abundance, index) or an activity (e.g. research vessel survey) obtained or undertaken independently of the activity of the fishing sector.

Hypothesis – An idea that can be tested.

Larval Transport – The movement of oyster larvae in the water.

Model – A series of mathematical equations that describes, with great simplification, how a part of the world works.

Model Output/Model Result – A solution or a set of solutions obtained from a model simulation.

Performance Measure/Metric – A number used to indicate the effectiveness of an option for achieving a desired outcome.

Population Dynamics – The growth, death, and reproduction of individuals over time that leads to increase, decrease, persistence or extinction of a population.

Simulations – Repeated runs of a model using different inputs (e.g., different options).

Uncertainty – A way to represent how likely model predictions are given the inherent variability in the environment and the difference between model output and observations.

Validation – Comparison of model output with a set of independent data to determine the degree of confidence in model results.

Water Quality – Describes the physical, chemical, biological, and aesthetic characteristics of water and is a measure used to determine the suitability of water for a specific purpose (e.g., drinking, fishing, swimming, etc.).

ATTACHMENT 8
GLOSSARY OF ABSI PROJECT TERMS AND DEFINITIONS

APALACHICOLA BAY SYSTEM: Consists of six bays: Apalachicola Bay, East Bay, St Vincent Sound, East and West St George Sound, and Alligator Harbor comprising a total of 155,374 acres (62,879 Ha). Confined to Franklin County and ending to the north at river mile zero (0). Important considerations include riverine and offshore inputs to the ABS as well as the reciprocal influences of outputs from the ABS to the Gulf of Mexico.

APALACHICOLA BAY SYSTEM, HEALTHY:
A healthy ecosystem is one in which material and energy flows are balanced through interacting biological, physical, and chemical processes (involving microorganisms, plants, animals, sunlight, air, water) that conserve diversity, support fully functional evolutionary and ecological processes, and sustain a range of ecological and ecosystem services.

ECOSYSTEM SERVICES: The direct and indirect contributions of ecosystems to human wellbeing. These services include **provisioning services** (food, raw materials, fresh water, medicinal resources), **regulating services** (climate, air quality, carbon sequestration & storage, moderation of extreme events, waste water treatment, erosion prevention & maintenance of soil fertility), **habitat or supporting services** (habitat for all species, maintenance of genetic diversity), and **cultural services** (recreation for mental & physical health; tourism; aesthetic appreciation and inspiration for culture, art & design; spiritual experience & sense of place).

ESTUARINE METRICS: These are variables that can be measured and used to assess the benefits or impacts of the different upstream management and climate scenarios that influence freshwater flow into the ABS.

GOAL: A goal is a statement of the project's purpose to move towards the vision expressed in fairly broad language.

GUIDING PRINCIPLES: The Community Advisory Board's Guiding Principles reflect the broad values and philosophy that guides the operation of the Community Advisory Board and the behavior of its members throughout its process and in all circumstances regardless of changes in its goals, strategies or membership.

OBJECTIVE: Objectives describe in concrete terms how to accomplish the goal to achieve the vision within a specific timeframe and with available resources. *(E.g., by 2023, the State of Florida will have approved a stakeholder developed Ecosystem-Based Adaptive Management and Restoration Plan for the Apalachicola Bay System.")*

OUTCOME: Outcomes describe the expected result at the end of the project period – what is hoped to be achieved when the goal is accomplished. (*E.g., an ecologically, and economically viable, healthy and sustainable Apalachicola Bay System oyster fishery and ecosystem*)

OYSTER RESOURCES: Sources of oysters that provide natural and cultural benefits to humans. These sources can come from the wild or from aquaculture (see ecosystem services). The responsible management of oyster resources for present-day needs and future generations requires integrated approaches that are place-based, embrace systems thinking, and incorporate the social, economic, and environmental considerations of sustainability.

PERFORMANCE MEASURES: The regular measurement of outcomes and results, which generates reliable data on the effectiveness, efficiency, and sustainability of programs and plans.

RESTORATION: The process of establishing or re-establishing a habitat that in time can come to closely resemble a natural condition in terms of structure and function.

STAKEHOLDERS: All interest groups whether public, private or non-governmental organizations who have an interest or concern in the success of a project and can affect or be affected by the outcome of any decision or activity of the project**.** For purposes of the Apalachicola Bay System Initiative, stakeholders include but are not limited to agriculture, silviculture, business, real estate, economic development, tourism, environmental, citizen groups, recreational fishing, commercial seafood industry, regional groups (i.e., ACF Stakeholders, and Riparian Counties), local government, state government, federal government, universities, and research interests.

STRATEGY: A method, action, plan of action, or policy that can be tested to determine whether it solves a problem and helps to achieve objectives and goals in the context of bringing about a desired future for the Apalachicola Bay System.

VISION: An idealized view of where or what the stakeholders would like the oyster resource and ecosystem to be in the future.

VISION THEMES: The related key topical issue area strategies that characterize the desirable future for the oyster resource and ecosystem. The Vision Themes establish a framework for goals and objectives. They are not ordered by priority.

ATTACHMENT 9
PRIORITY OF RESTORATION (GOAL A) AND MANAGEMENT STRATEGIES (GOAL B) A COMPONENT OF THE ABSI PLAN FRAMEWORK — ADOPTED 16 NOVEMBER 2021

PRIORITY OF STRATEGIES BY GOAL AREA

ALL STRATEGIES WITHIN EACH PRIORITY LEVEL (1 – 3) ARE OF EQUAL PRIORITY AND WILL BE IMPLEMENTED BASED ON A LOGICAL SEQUENCING

Priority 1 Strategies (Prioritization ranking from 10 to 8) = Important To Do Now

GOAL A (RESTORATION)	GOAL B (MANAGEMENT)
1.) Restore and create reef structures suitable for sustained oyster settlement that enhance ecosystem services in designated restoration areas. (#1 – 9.6) *(#1 overall rank for Goal A – 9.6 mean/average)*	1.) Evaluate a suite of management approaches that in combination achieve the goal of maintaining a sustainable wild oyster fishery as measured in relation to relevant performance metrics for determining success. (#1 – 9.3) *(#1 overall rank for Goal B – 9.3 mean/average)*
2.) Use experimental evidence and habitat suitability analyses to determine the most suitable substrate (e.g., limestone, granite, spat-on-shell, artificial structures) for restoring, enhancing, and/or developing new reef structures that will increase productivity in the Apalachicola Bay oyster ecosystem. (#2 - 8.7)	2.) Recommend specific criteria and/or conditions, with related performance measures for the reopening of Apalachicola Bay to limited wild oyster harvesting. (#2 – 9.0)
3.) Determine area (acres or km^2) of oyster reefs that currently support live oysters as well as the area needed to ensure sufficient spat production that will support sustainability of oyster reefs and sustainability of a wild oyster fishery throughout the ABS. (#3 - 8.6)	3.) Conduct an oyster stock assessment for the ABS with periodic updates. (#3 – 8.8)
4.)^ Develop criteria for restoring specific reefs or reef systems damaged by environmental conditions or natural disasters. (#4 – 8.2)	4.) Manage the commercial oyster industry and recreational oyster fishing to provide for sustainable spat production and the recovery of oyster populations. (#4 – 8.75)
5.)^ Identify monitoring needs for assessing the health of oyster populations (including disease), and detecting changes in environmental conditions and habitat quality (for oysters and other reef-associated species) over time. (#4 – 8.2)	5.) Work with FWC Law Enforcement to develop enforcement strategies and appropriate penalties sufficient to deter harvest or sale of undersized oysters as well as violations that harm wild or leased oyster reefs and other natural resources, and that will support restoration efforts in the ABS. (#5 – 8.6)
^*Priority #4 and #5 above received the same ranking.*	6.) Evaluate the development of a policy that would require setting sustainable harvest goals and placing limitations on or a complete closure to harvesting based on the results of data (e.g., stock assessment) collected and evaluated under a comprehensive monitoring program designed to sustainably manage the resource. (#6 – 8.5)
	7.) Restore and create reef structures suitable in size, location, and substrate type for healthy and sustainable oyster settlement and production, and harvesting. (#7 – 8.3)

Priority 2 Strategies (Prioritization ranking from 7 to 5) = Important But Less Time Sensitive	
GOAL A	**GOAL B**
6.) Develop ecosystem models that forecast future environmental conditions and oyster population status. (#6 – 7.2)	8.) Recommend policies and actions that retain and recycle shell for habitat replenishment in the ABS. (#8 – 7.7)
7.) Assess existing ecosystem services metrics used for other oyster studies and develop a list of ABSI specific metrics to assess change over time. (#7 – 6.7)	9.) Use decision-support tools to develop a system of potential closed areas that are well defined in terms of size, location, and longevity and include rotational and seasonal harvest areas, as well as long-term closed areas in strategic locations to provide habitat for year-round protection for brood stock and enhanced spawning opportunities. (#9 – 7.6)
	10.) Use ecological quantitative modeling and other decision support tools to evaluate strategies and actions, and define performance criteria for an oyster population that can sustain a pre-determined level of wild oyster harvest, with a stipulated number of harvesters (limited entry), and protocols to ensure sustainability. (#10 – 7.5)
	11.) Work with FDACS to ensure that oyster aquaculture practices and locations in the Bay are compatible with the goals and strategies for restoration and management of the ecosystem and are compatible with a wild fisheries and the important cultural role of a working waterfront and seafood industry. (#11 – 6.8)
	12.) Investigate oyster shell and oyster relay programs to move both cultch and live oysters to more favorable habitat (relay programs are recommended to only be used for restoration experiments). (#12 – 5.9)
Priority 3 Strategies (Prioritization ranking from 4 to 1) = As Time and Resources Allow	
GOAL A	**GOAL B**
8.) Seagrass and other SAV, and wetland and riparian habitat should be restored concurrently on appropriate substrate/bottom to work synergistically with oyster habitat restoration to enhance restoration of the ABS. (#8 – 4.73)	
Strategies Approved for Evaluation But Not Ranked	
GOAL A	**GOAL B**
	Assess the effectiveness of a shell repletion program (put-and-take) fishery for maintaining a sustainable wild oyster harvest in Apalachicola Bay. Specific areas would receive regular cultching and/or deployment of hatchery spat-on-shell and would be subject to the same fishery management regulations as non-supplemented areas.

ATTACHMENT 10
STAKEHOLDER RESOURCES IN SUPPORT OF ABSI

STAKEHOLDER RESOURCES AVAILABLE AND COLLABORATION INITIATIVES IN SUPPORT OF ABSI — UPDATED 16 NOVEMBER 2021

ORGANIZATION	RESOURCES AVAILABLE AND COLLABORATION INITIATIVES
Riparian County Stakeholder Coalition (RCSC)	• Staff assistance (Ken Jones, coordinator and engineer). • Request funds from the 6 RCSC counties for funding specific stipulated projects. • Established working stakeholder relationships including working with the Apalachicola-Chattahoochee-Flint Stakeholders (ACFS) group on a Sustainable Water Management Plan for the equitable distribution of water to the Basin. • Collaborating with the ABSI on water flow metrics development in the Basin. • Working with stakeholders including Tri-Rivers Commission on navigation issues for the tri-rivers region (ACF).
Florida Fish and Wildlife Conservation Commission (FWC)	• Implementing Bay oyster restoration project funded by NFWF. • Potential funding for future smaller restoration projects. • Restoration design and monitoring assistance. • Collaborating with the ABSI on water flow metrics development in the Basin. • Science, data, and research support.
City of Apalachicola	• Committed to serving on the ABSI CAB for at least 4 more years to help guide the development of the Bay Management Plan. • Help with convening the CAB Successor Group that will help oversee the implementation of the Bay Management Plan. • Agree to uphold current local regulations that help ensure Apalachicola Bay is free of pollution and allows commercial fishermen to use city boat ramps to access the water.
Apalachicola Riverkeeper	• Nimble and can move fast to take action as needed. • Assist with public outreach initiatives including meeting with and educating stakeholders on issues. • Provide field trips to take stakeholders and decision-makers to see locations and issues in the field. • Social media support and communications. • Assist with collaborative initiatives such as working and coordinating with existing partners including Apalachicola-Chattahoochee-Flint Stakeholders (ACFS) and the Riparian County Stakeholder Coalition (RCSC). • Working on watershed restoration initiatives including the current Apalachicola River Slough Restoration project that also includes collaborating with ANERR and other stakeholders. • Share science and data with stakeholders.
Florida Department of Agriculture and Consumer Services (FDACS)	• Assist with collaboration and communication between stakeholders. Staff assistance.

	• Field office and laboratory support. • Provide data and research including water quality sampling data and monitoring.
The Pew Charitable Trusts	• Working on various management plans across the Region. • Working with National Estuarine Research Reserves (NERR) across the Country • Resources including staffing, funding, research, and data. • Committed to funding the facilitation of ABSI for initial part of Phase IV. • Committed to the development of a broader state-wide oyster management plan. • Committed to staying involved in the development and implementation of the ABS Plan. • Staff to assist with communication, analysis of data and issues, social media and blogs. • Committed to working and communicating with other stakeholders including The Nature Conservancy (TNC). • Pew has an extensive network of stakeholder partners and a national presence. • Assist with funding for projects and in identifying other funding sources. • Funding of economic assistance initiatives such as purchasing farm-raised oysters for restoration projects.
Water Street Seafood	• Operational oyster processing house. • Water-side facilities and dock to assist with the project. • Can provide oyster shells at market price or donate on a limited basis. Have experienced staff that could assist.
Apalachicola National Estuarine Research Reserve (ANERR)	• Research and monitoring support. • Education, outreach, and training support. • Education to local schools. • Opportunities working with the Conservation Corps of the Forgotten Coast. • Aquaculture education grants. • Relationships and working with agencies. • Working with partner agencies to receive NOAA funding. • Mapping support from existing coastal mapping program, and that could be potentially developed into a single state-wide GIS layer.

ATTACHMENT 11
ABSI STRATEGIES — LEADS, PARTNERS, AND RESOURCES TABLE

STRATEGIES AND ACTIONS WITH PROPOSED LEADS, PARTNERS, AND RESOURCES

The following table is for illustrative purposes, and discussion and completion of this table is planned for Phase V of the CAB process.

GOAL A: ECOLOGICAL/RESTORATION PRIORITY 1 STRATEGIES/ACTIONS	LEAD/PARTNERS	RESOURCES
Strategy 1.) Restore and create reef structures suitable for sustained oyster settlement that enhance ecosystem services in designated restoration areas.	**Lead:** FWC/FWRI **Partners:** FSU, UF, local Gov., FDOT, NGOs, coastal property owners, CAB Successor Group	Student help from universities (FSU/UF)
Action 1-A.): Design and implement projects to achieve multiple ecosystem service targets (e.g., commercial and recreational fishing, shoreline protection).	Same as above and oystermen	Same as above
GOAL B: SUSTAINABLE MANAGEMENT PRIORITY 1 STRATEGIES/ACTIONS	**LEAD/PARTNERS**	**RESOURCES**
Strategy 1.) Evaluate a suite of management approaches that in combination achieve the goal of maintaining a sustainable wild oyster fishery as measured in relation to relevant performance metrics for determining success.	**Lead:** FSU/UF **Partners:** FWC, stakeholders	Student help from universities (FSU/UF)
GOAL C: MANAGEMENT & RESTORATION PLAN PRIORITY 1 STRATEGIES/ACTIONS	**LEAD/PARTNERS**	**RESOURCES**
Strategy 1.) The ABSI Team and the CAB will continue to have an open and transparent process for the development of the Plan with many opportunities for stakeholder engagement and input in a variety of forums (e.g., workshops, online, public/ government meetings) for generating awareness and support while incorporating any changes the CAB deems appropriate and necessary to fulfill the goals and objectives.	**Lead:** FSU **Partners:** CAB, CAB sub-committee, other stakeholders	Initiated
GOAL D: ENGAGED STAKEHOLDER COMMUNITY PRIORITY 1 STRATEGIES/ACTIONS	**LEAD/PARTNERS**	**RESOURCES**
Strategy 1.) Develop a Community Advisory Board (CAB) for the ABS Initiative that provides critical information and perspective to the ABSI leadership and whose members recognize the importance of their role as ambassadors for the initiative.	**Lead:** CAB Community Outreach Subcommittee **Partners:** FSU, CAB, CAB Successor Group, ABS stakeholders	Initiated
GOAL E: THRIVING ECONOMY PRIORITY 1 STRATEGIES/ACTIONS	**LEAD/PARTNERS**	**RESOURCES**
Strategy 1.) Engage commercial fishermen in the restoration of the bay and encourage future participation in restoration such as monitoring, shell recycling, shelling, and relaying.	**Lead:** CAB Successor Group **Partners:** Stakeholder groups, Chamber of Commerce, local government	TBD

ATTACHMENT 12
ABSI OVERARCHING MESSAGE INITIAL IDEAS

ABSI OVERARCHING MESSAGE INITIAL IDEAS

Initial ideas for an overarching message that would resonate with the ABS Community and solicit action toward implementation of the Plan.

At the 19 October 2021 meeting CAB was asked to report their ideas for crafting an overarching message with aspirational goals that would resonate with the ABS Community toward fostering support and action toward implementation of the Plan. A rallying call to energize people around implementation of the ABSI Plan. Following are the preliminary comments:

- Keep the message simple and clear: "restoring the Apalachicola Bay oyster fishery." Need to focus message on restoring the oyster fishery with all of the economic benefits and cultural components. Oysters are the lifeblood of Franklin County. "Restore the Bay." Franklin County is known for oysters.
- Money was given to restore the fishery, so it is important to emphasize the central feature of oyster restoration in the effort.
- "Bringing back Apalachicola Bay oysters."
- Broaden focus to include other species such as shrimp and reef fish. Highlight the connection of the abundance of seafood to the health of the Bay. Include the importance of the health of the Bay to recreational activities.
- Broaden the message to make it less oyster-centric. Need to take in (engage) people outside of the Bay.
- Message should resonate with all communities.
- "A healthy Bay = abundant oysters and a thriving community." Broaden the message out.
- "Take care of Bay and it will take care of us." The health of the Bay is good for all of use. Message should convey why it is important to restore the health of the Bay.
- Communicate the habitat and ecosystem services component of the role of oysters and the role in having thriving fisheries and economy.
- Oysters critical to the local Community; the message should not be "diluted" by inclusion of other species and elements.
- Need several messages for different audiences targeted to them.
- The local vs. outside target audiences issue complicates the discussion. Need more discussion.
- This issue needs additional discussion between stakeholders.

The overarching messaging discussion will continue during Phases IV and V of the ABSI project.

ATTACHMENT 13
SUMMARY OF FEEDBACK FROM THE OCTOBER 2022 COMMUNITY WORKSHOPS

ABSI Restoration Experiments Input – Oystermen's Workshop (October 18, 2022)

- Put #57 rock on Cat Point with poor results. SB: Small rocks compact while big rocks create gaps where small oysters are sheltered from predators.
- Big rocks can't wash away. There is little growth on fossilized rock.
- SB: Should we use concrete (using 4" – 6")? Answer: Yes you should try it.
- Evaluate whether something in the Bay is killing the oyster.
- Concrete is worth considering for the experiments.
- Should contact the railroad companies about reusing the granite use for the track bed.

ABSI Restoration Experiments Input – Community Workshop (October 19, 2022)

- Does not think lime rock should be used in the Bay. Rocks when thrown back in water after harvest damage reefs. Prefers concrete or other materials. Rocks are too heavy.
- Concrete should be tried.
- What about using spat on shell? SB: ABSI is experimenting with spat on shell and with seed and adults.
- Scatter different types of materials all over the place. There are areas where the natural bottom does not support oyster settlement.
- One tong lick sampling may not be representative of how many oysters there are ? SB: Some areas have dense shell hash. We also dive to verify results.
- We had oyster shell being deposited all the time in the past. When it stopped, oysters went down. JB: This is one of the management strategies recommended by the CAB, continuous restoration. JB: Funding will be needed to restart shelling.
- Have you considered spat and seed predators. SB: We don't see black drum but we do see oyster drills. FWC does look at drills and disease.
- Sampling. Questions about tonging deep enough to bring up the oysters. SB: Describes the tonging procedure so that the tong penetrates into the mud layer underlying the layer of oysters, shell, rocks.
- Black drum are feeding on oysters. They are not here now but they can migrate back. The black drum attack spat. SB: ABSI has tried caging experiments to counter predation.
- We would limit to eliminate the limits on black drum so they are reduced and cause less predation of the oysters.
- I like the experiments, but sediment is killing off the spat. If we were able to work the oyster reefs to break up the burrs this could lead to harvestable oysters. SB: Actually we like to see burrs, they protect the spat so they can grow.
- Small clam shells worked as substrate. SB: Shells do not last.
- What is the reason for the Bay closure? SB: There were insufficient oysters to sustain fisheries.
- The material deployed in the past should have been shells, we have to get the shell back.
- What about a shell buy-back program? SB: We cannot get enough shell to do restoration on the scale we are working on. We could put a foundation down (substrate) and then put shell on top of it.
- We could gradually stockpile shell.
- Will we be able to harvest the restoration sites? DR: This has not been determined, but it is unlikely reefs would be closed. FWC will listen to feedback before making any decisions.

FWC-NFWF Restoration Project Input – Oystermen's Workshop (October 18, 2022)

- Your sampling methods may be missing sites that have oysters. DR: We welcome your input on sites that may have been missed.
- Have the "Miles" been mapped? SB: the "miles" have not been mapped. DR: We will follow up on these sites.
- Do not put large rocks on natural reefs which already have good substrate (foundation).
- Possibly layer tongable rocks on top of the large rocks.
- DR: Where should we put the restoration. Off Cat Point, anywhere there are no oysters.
- Try to move beds closer to the River.
- Focus on Cat Point and Peanut Ridge.
- Take a look at Paradise, and over at the areas where the farms are located.
- There are a lot of oysters on Cat Point, we want to open up the Bay.
- SB: how do you know there are oysters? We'd like the ability to monitor the Bay. We know how to fix it and let us do it. We are willing to accept summer closures.
- The Bay needs to be worked like a garden and not left alone.
- JB: What do think about active management plans? Response: Seems hard to enforce. JB: such as the Alabama model. Response: The old system in the Bay works great, we don't want a grid system.
- JB: What about a put-and-take fishery? I don't think on-going restoration needs to be done.
- Poaching would take place on the sites.
- Historically shells were deployed on a regular basis but this practice ended, why?
- SB: How would you feel about people from out of county coming to harvest in AB? Limited entry would reduce this.
- We could have a low bag limit and work days adjusted to price/bag. This could provide a stable income.
- We would like to be able to monitor the Bay. DR: If you want to collect data, it is possible to obtain a special activity license.
- Some oystermen lack confidence in the data collectors.
- Would like to restrict people from outside the county from oystering in the Bay.
- We are losing are Restricted Species Licenses since we can't oyster and prove income and landings.
- DR: FWC is looking at individuals with restricted species licenses to see how they can keep their licenses with limited oyster landings.
- Restrictions on fishermen have limited options for making a living. We are forced to find other sources of income. Even hardcore fishermen are having trouble keeping their licenses.
- We know the bay is getting better, and we are going to monitor it ourselves.

FWC-NFWF Restoration Project Input – Community Workshop (October 19, 2022)

- For the $20M NFWF funding oystermen could put a lot of shell out into the Bay. DR: NFWF is driving the process. $3M went into obtaining important data needed for restoration success.
- I don't think any rocks should be put out in the Bay. There are plenty of shells out there. SB: We need enormous amounts of shell for restoration. One option is to put rock down and layer shell on top of it. DR: NFWF is asking for data and shell may emerge as a viable option. SB: We need material that will stay around for any long-term success.

- When there was barge traffic there were 4 spat sets per year, but now we have 1-2 sets per year. SB: Discussion of water flow has not been part of the current evaluation. DR: FWC is looking at spat settlement and funding is available to put instruments out.
- Thinks oysters only grow on the shell. Lime rock changes chemistry of Bay.
- I think all shells should be returned to the Bay. The shells should be put back.
- On the south side the bottom is solid so material when deployed will not sink in. DR: We will bring maps to next CAB for oystermen to mark locations.
- Have you checked out north of the bridge? East bay? This is the closest area to the river. SB: There is a little patch NE of bridge and there is a foundation there for oyster settlement. This might be a good site for restoration, north of the bridge.
- What are the timelines for the pilot project? DR: 12-18 months of collecting data. SB: We will conduct continuous monitoring to see what works best to get oysters to market size. The shells got scattered even though mound was 12" tall.
- Why not hire oystermen to help with restoration? SB: We hired oystermen to deploy restoration materials, and we will do so for the next restorations as well.
- Have you determined where to deploy materials? DR: We are working on it and would like input from oystermen before deciding. SB: Are the areas you mentioned part of summer bars? Yes, they get closed periodically due to high river levels.
- Out of a 12 month season we might fish 7-9 months, about 2 ½ weeks per month due to closure for water quality issues.

Management Options Input – Combined from Both Workshops (October 18 and October 19, 2022)
A) An Active harvest management scenario similar to the AL approach using monitoring and an oyster abundance minimum density threshold.

- Opinions were varied. Some supported this option and others were opposed to using grids to designate open areas and wanted the entire Bay open for all months except a summer closure of from June – August.

B) Different management strategies under a range of different assumptions to see what works best.

- There was general support for this approach.

C) A put-and-take sustainable wild oyster harvest fishery.

- There was generally support for this option.

D) Restoration approaches using data from the restoration projects and the restoration experiments and pilot projects (specific locations, size, height/spatial configurations, type of cultch material, density of cultch, etc.).

- There was generally support for this option.

E) Limited entry commercial oyster fishery.

- There was some support for this option; however, most were strongly opposed to this management approach.

F) A combination of limited entry and active management.

Most were not in support of this approach; however, some felt this was a good strategy depending on how limited entry would be implemented. All agreed that the requirements for any limited entry system would need to be developed by FWC working collaboratively with oystermen and the seafood industry, and any system should have the support of the Community.