

APALACHICOLA BAY SYSTEM INITIATIVE
COMMUNITY ADVISORY BOARD
MEETING XIV—18 AUGUST 2021 SUMMARY REPORT
(APPROVED UNANIMOUSLY 19 OCTOBER 2021)

VIRTUAL MEETING VIA WEBINAR AND TELECONFERENCE



CONSENSUS CENTER



MEETINGS FACILITATED AND SUMMARIZED BY JEFF A. BLAIR

APALACHICOLA BAY SYSTEM INITIATIVE COMMUNITY ADVISORY BOARD
18 AUGUST 2021 FACILITATOR'S MEETING SUMMARY REPORT

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**APALACHICOLA BAY SYSTEM INITIATIVE COMMUNITY ADVISORY BOARD
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OVERVIEW OF APALACHICOLA BAY SYSTEM INITIATIVE COMMUNITY ADVISORY BOARD'S KEY ACTIONS

WEDNESDAY, AUGUST 18, 2021

I. MEETING SUMMARY AND OVERVIEW

At the August 18, 2021 virtual meeting the Apalachicola Bay System Initiative (ABSI), Community Advisory Board (CAB): conducted a social science survey administered by the University of Florida; received an overview of the updated Project Workplan and schedule; received presentations on ABSI science and data collection, FWC Restoration Project, and an update on FDACS Water Quality Sampling and Closure Areas; received reports and updates from the Restoration Funding Working Group, Community Outreach Subcommittee, CAB Successor Group Subcommittee, and a summary of the July 14, 2021 Oystermen's Workshop; and, discussed management alternatives and issues. In addition, the CAB received a presentation and discussed TNC's Oyster Fisheries Habitat and Management Plan for the Pensacola Bay System. Specific actions included: reviewing and agreeing to proposed revisions to strategies and actions in the Draft Apalachicola Bay System Ecosystem-Based Adaptive Management and Restoration Plan Framework (Goals, Vision Themes, Outcomes, Objectives, Overarching Approaches, Strategies, and Actions).

II. WELCOME AND INTRODUCTIONS

Jeff Blair, ABSI CAB Facilitator, opened the meeting at 8:30 AM and welcomed all participants.

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.

III. ABSI CAB MEETING PARTICIPATION

The following CAB members participated in the Wednesday, August 18, 2021 meeting conducted in Eastpoint, Florida and virtually via webinar and teleconference:

Frank Gidus, Anita Grove, Chad Hanson, Jenna Harper, Shannon Hartsfield, BJ Jamison, Steve Rash, Portia Sapp, Chad Taylor, Paul Thurman, and TJ Ward.

(11 of the 23 member participated—48%).

Absent CAB Members:

Georgia Ackerman, Bert Boldt, Lee Edmiston, Chip Bailey, Tom Frazer, Erik Lovestrand, Chuck Marks, Roger Mathis, Mike O'Connell, Alex Reed, Denita Sassor, and John Solomon.

PROJECT TEAM MEMBERS PARTICIPATING

Jeff Blair, Sandra Brooke, Ross Ellington, Madelein Mahood, and Joel Trexler.

(Attachment 1—Meeting Participation)

MEETING FACILITATION

Meetings are facilitated, and meeting reports drafted by Jeff Blair from the FCRC Consensus Center at Florida State University. Information at: <http://consensus.fsu.edu/>



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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 August 18, 2021 meeting as presented. Following are the key agenda items approved for consideration:

- ✓ To Approve Regular Procedural Topics (Meeting Agenda and, Summary Report)
- ✓ To Receive Project Briefings and Community Advisory Board Requested Presentations
- ✓ To Receive Updates from RFWG, Community Outreach, and CAB Successor Group
- ✓ To Review and Approve Proposed Revisions to Draft Management and Restoration Plan Framework
- ✓ To Receive Summary of Oyster Fisheries and Habitat Management Plan for the Pensacola Bay System
- ✓ To Conduct Strategies Prioritization Exercise*
- ✓ To Identify Needed Next Steps, Information and Presentations, and Agenda Items for Next Meeting

**The Prioritization exercise was deferred to the October 19, 2021 CAB meeting.*

Amendments to the Posted Agenda:

None

(Attachment 2—August 18, 2021 ABSI CAB Agenda)

V. APPROVAL OF THE JUNE 14, 2021 OYSTERMEN’S WORKSHOP AND JUNE 16, 2021 CAB MEETING FACILITATOR’S SUMMARY REPORTS

The ABSI CAB voted unanimously to approve the June 14, 2021 Oystermen’s Workshop and June 16, 2021 CAB Meeting Facilitator Summary Report 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. Jeff noted that the ABSI Project Team has conducted 3 oystermen’s workshops during 2021, and noted a public workshop is planned for October of 2021. Jeff reported that the next CAB meeting is scheduled for October 19, 2021, and the final meeting for 2021 will be on November 16, 2021.

- Jeff reminded the CAB that the ABSI process calls for the CAB to deliver their consensus recommendations for the Apalachicola Bay System Ecosystem-Based Adaptive Management and Restoration Plan (Plan) in the form of Goals, Objectives, Strategies, and Actions on November 16, 2021 and for this to complete Phase III of the project. The next phase (Phase IV) of the project will be initiated in early 2022 and during this Phase the CAB will use project decision support tools including modeling to evaluate the CAB’s recommendations relative to specific performance measures and expected outcomes for enhancing the health of the Apalachicola Bay System. In addition, the CAB will focus on transitioning to a Successor Group whose role will be to organize a group of key stakeholders committed to working collaboratively for the long-term, and 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. In addition during Phase IV, FSU will

convene a small Restoration Funding Working Group to seek resources and political and governmental support for the CAB's priority recommendations.

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

Public Workshop Discussion

The Facilitator asked that given the current COVID situation and potential travel restrictions how should the CAB proceed regarding conducting a Public Workshop in October or early November? Following are the CAB's comments:

- We really need to do something in October.
- At a minimum we should do a virtual workshop, but the preference is to do an in-person workshop perhaps outside.
- The Community Outreach Subcommittee continues efforts to communicate about ABSI with the local commissions.
- Where outside could we do it?
- Millender Park (might be best)/Vroom Park/ANERR (open house).
- ABSI plans on having a booth during seafood festival at Battery Park,
- Convene Community Outreach Subcommittee and devise a plan with contingencies for the date, location, and format for the workshop. The Subcommittee will meet in the next week or two, and report their recommendations to the ABSI Project Team who will share the plan with the CAB.
- FSUCML has a budget and can provide food for the Workshop.
- A PA system will be required if the Workshop is outdoors.
- Feed them and they will come.

The consensus of the group was that a public workshop should be conducted in October, with a preference for conducting it outside at Millender Park using a PA system, and food should be provided for the participants. The Community Outreach Subcommittee will meet and develop a proposed plan with contingencies for the Public Workshop. The ABSI Project Team will evaluate the plan and communicate with the CAB regarding the date and time, venue, logistics, and format for the Public Workshop.

(Attachment 5—Workplan, Schedule, and Project Flowchart)

VII. PROJECT BRIEFINGS AND REQUESTED PRESENTATIONS

ABSI SCIENCE AND DATA COLLECTION UPDATE

Sandra Brooke, FSUCML Faculty and ABSI Principal Investigator, provided the CAB with a meeting update on ABSI science and data collection. A science and data update is provided at all CAB meetings.

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

Summary and Overview of Presentation

- The August 18, 2021 update was focused on mapping oyster habitat in Apalachicola Bay, including the ABSI restoration experiment, FWC cultching and other areas of potential oyster habitat in the Bay.

Mapping

- Conducted by the National Oceans and Applications Research Center (NOARC)
- 1600 acres mapped at low resolution using an autonomous survey vehicle that takes simultaneous sonar and depth data with overlapping swaths.
- 400 acres remain to be mapped at high resolution (5cm) in August/early September
- Mapped sites are shown for the west and east sides of the Bay. Yellow polygons are ABSI mapping targets, which include ABSI and FWC restoration areas. Blue areas are the NRDA funded restoration experiment, which was planted in 2015 and pink areas are the Restore funded sites planted in 2017.
- Slides below the maps show sonar panels corresponding to some of the target areas in the maps, with more focus on the ABSI and FWC restoration areas.

Environmental data

- Location of the ABSI YSI environmental dataloggers were shown on a map (Indian Pass, River Mouth, Sikes Cut, St George, St Vincent, West Pass) and the following slide showed salinity data for those instruments. Some data were missing because of technical problems, and the St Vincent instrument was destroyed by a shrimp trawler in May 2021. There were some clear trends, however, West Pass and St George are generally high salinity sites (> 20 ppt) and River mouth is always < 5ppt. The other sites are intermediate and vary with river flow. These data will be integrated with the ANERR instrument data to provide a more bay-wide perspective and will be used for hydrodynamic and predictive models.

Intertidal oysters

- Condition index (CI) data collected from intertidal sites indicate that Carrabelle River and Alligator Harbor have higher CI values. This indicates meat weight is higher per unit of shell weight for these sites, particularly during the spring and fall periods when oysters are spawning. These data need to be standardized to shell height to see how many of these samples were adults vs. juveniles.
- Shell height/weight LOESS (locally estimated scatterplot smoothing) plots showed differences among sites with Indian Lagoon showing the heaviest shells per unit length, and East Cove showing the opposite. Whether these morphological differences reflect of 'health' or not is unclear, but there is clearly variation among the intertidal habitats.

Questions, Responses, and Comments:

- Q: Regarding the cultching work, how stable is it? Do shells dissolve, wash away, or become buried – what is the stability of cultch over time? Degradation rate of 25-35% per year requires replenishing every 3-5 years from dissolution, sedimentation, and burial. A shell management project is needed to maintain biology (habitat and fishery).
A: don't know yet, but this is an objective of the mapping project; we are applying a thin layer of cultch over large area. The shell deployment from 2017 does not have much cultch left. Building higher in relief does not seem to be working. Issue is how do you build it so oysters can maintain themselves. Need to work out a budget for clutching that balances stability and maintenance (money decisions).
- Q: Is the Science Advisory Board meeting yet?
A: There was an initial meeting in late 2019 in-person, and no follow up with them in 2020. We are planning an in-person science workshop in early October if possible, but may have to do virtually. The plan is to do an in-depth discussion with the SAB and the ABSI science team.
- Q: Are CAB members allowed to listen in to the SAB meetings?

A: yes, absolutely. They will be provided with meeting logistics once the meeting is scheduled.

- Q: Clarify the last 2 graphs – index and morphology.

A: Index is meat to shell. Should be higher when younger relative to meat to size weight; morphology: all data collected over the past year, but it is not divided up or analyzed and needs to have a time series.

FWC RESTORATION PROJECT UPDATE

Matt Davis, FWC, provided the CAB with an update on the FWC restoration project in Apalachicola Bay.

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

Summary and Overview of Presentation

- The restoration project was funded by the National Fish and Wildlife Foundation (NFWF), with leftover funds from FWC's original NFWF project conducted between 2015 and 2019.
- FWC didn't spend all the money in their original grant. They had the choice of returning that money to NFWF or using it to construct oyster reefs to benefit the fishery. They chose to spend the \$500,000 on restoration.
- The material FWC put out is Kentucky Blue Limestone #4.
- This is identical material as what was put out during the 2017 RESTORE project.
- This material has the benefits that it's proven to be able to allow oyster settlement, it is durable (stays around for many years), is tongable, and is available.
- FWC put out 9,000 cubic yards in six parcels on three reefs (two parcels per reef). Each parcel is 75 feet x 333 feet, an area of 0.6 acres, giving us a total area of just under 3.5 acres.
- The resulting cultch density is a little over 2,600 yds./acre. This is about 10 times the density of previous efforts. The hope is that the higher relief will provide more varied structure for the oysters.
- Each of the reefs will be monitored with FWC's shell budget model protocols on a quarterly basis. They will collect 15 quadrats from each of the six sites, and return them to the lab.
- The Shell Budget Model Surveys will collect data on:
 - Sample weight
 - Number and size of live oysters
 - Number of recently dead oysters
 - Number of oyster drills
 - Weight of substrate components
- Live Oyster Shell, Dead Oyster Shell, Planted Shell Material, Shell Hash and Subsurface Substrate will be evaluated.

Shell Budget Model Surveys



Collect data on:

- Sample weight
- Number and size of live oysters
- Number of recently dead oysters
- Number of oyster drills
- **Weight of substrate components**

Live Oyster
Shell

Dead Oyster
Shell

Planted
Material

Shell
Hash

Subsurface
Substrate

- Each of these components acts differently in the amount and quality of space they provide for new recruits, as well as the rate at which they degrade.
- This information will be used by the model to estimate the amount of change in the amount of substrate, or shell budget, between quarters. Using these predictions FWC hopes to make shell planting and oyster harvest regulations more adaptive to the conditions as they happen.
- FWC is currently seeking spending authority from NFWF for July of 2022, planning to contract, and will work with partners FSU and UF.

Questions, Responses, and Comments:

- Q: How much material will be counted, just the surface or deeper?
- A: FWC: Surface counted, below not available for recruitment (black substrate). We will collect to the smooth surface (black). It will be a challenge, but we will monitor and evaluate in the water.
- Concerns were expressed that Cat Point is shallow, and there was concern about how much reef will be destroyed during future clutching efforts by barges going over the shallow areas and damaging them. Need to stay in deeper channel and not damage existing reef structure. FWC was supposed to get locals help to navigate while placing cultch to avoid issues. We tried to tell them they needed to use the deeper channel, but the contractor went and did the work without consulting with local watermen. The contractor went over a very shallow part of Bay needlessly, need to use local expertise.
- FWC: Good point, future larger scale efforts will have a stakeholder effort component. With larger scale efforts we will outline areas to avoid when cultching to avoid damage. Areas to avoid will be part of the planning. There needs to be a compressive approach to restoration.
- Hard to find out what is going on with NFWF funded projects. Q: What monitoring is being done and how coordinated with other efforts (ANERR). Need to provide feedback on monitoring reports and get the information to the public.

- A: FWC: Collected data can be provided to CAB and ABSI Team.
- Distribution of materials did not deploy as planned (depth/configuration); this was clearly shown by the ABSI sonar mapping. Instead of two discrete reefs per site, a larger more dispersed area of unknown depth was produced. ABSI can provide footprint of sites with our mapping efforts to help understand the actual depth of material.
- FWC: We will share data and reports - stay tuned.
- Q: There needed to be open communication with the CAB – need to get all of the data out. Transparency is important, in what form will data be released – raw or interpolated?
- A: FWC: Putting database up with data from all of our projects, including Apalachicola Bay.
- We would like a summary of what is learned, not the raw data.
- We should learn from the SCOTUS case regarding how data was interpreted, and learn from what happened and what can be done better in the future. The provide guidance information from the lessons learned.

FDACS WATER QUALITY SAMPLING AND CLOSURE AREAS UPDATE

Carrie Jones, FDACS, provided the CAB with an update on water quality sampling and closure areas in Apalachicola Bay.

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

Summary and Overview of Presentation

National Shellfish Sanitation Program

- Establishes minimum requirements to regulate interstate commerce of shellfish – NSSP Model Ordinance.
- Protects public health by ensuring the harvest of shellfish are from properly classified waters and shellfish are handled properly at all levels from harvest to final sale to the consumer.
- US Food and Drug Administration oversees and ensures compliance of the NSSP by all member states through annual audits.

FDACS' Role

- FDACS conducts routine surveys and water sampling in shellfish harvesting areas for lease areas and wild resources.
- Water Quality data management- open/closure of shellfish harvesting areas.
- Sample strategically placed water quality monitoring stations.
- All water samples sent to the Apalachicola Shellfish Lab for analysis.

Goals of Classifying and Managing Shellfish Harvesting Areas in Florida

- To maximize the acreage allowed for the harvest of shellfish.
- To minimize the number of days closed.
- While - Protecting the health of consumers from shellfish born illnesses.



FDACS Water Sampling Zones and Locations

Water Sample Collection

Pollution Source Survey

- Identifies all potential direct and indirect pollution sources within the drainage basin surrounding the harvest area.
- Examples include marinas, wastewater treatment plants, septic tanks, stormwater runoff, livestock, wildlife.
- Achieved by infield and Google Earth observations and by working with other state and local agencies to identify local pollution sources.

Fecal Coliform Bacteria: Indicator Species

- Fecal coliform bacteria are a group of bacteria excreted in feces by warm blooded animals, including humans, domestic animals, and wildlife.
- When fecal coliform bacteria are present, human pathogens may also be present.

Water Quality Testing

- Division of Aquaculture, Shellfish Laboratory in Apalachicola.
- Water samples shipped overnight via UPS or same-day delivery if samples are local.
- Samples must be maintained between 0°C and 10°C.
- mTEC is method used – filter water onto filters, incubate 24 hours and then count the number of yellow/green colonies.
- Results are emailed back to regional offices ~48 hours later.

Water Quality Data Analysis

- Data taken at each station is entered into a database and analyzed to assess trends in fecal coliform bacteria.
- Statistical Analysis Software (SAS) is used to identify correlations between rainfall/river levels and bacteria levels at all stations.

Water Quality Data Management

- The correlations found in the data allow personnel to create management plans.
- Rainfall and/or river levels are collected daily at specific gauges and entered in the database.

- Use statistical analysis to assess:
 - Correlations between FC and rainfall/river levels.
 - Trends over time (*i.e.*, is water quality improving or degrading).
 - Determines the most significant model (station) that sets the management plan closure criteria.
 - SHA classification map.

Management Plans

- A management plan sets forth certain closure criteria using rainfall and river levels.
- Management plans are verified each year with annual and triennial reports.
- Comprehensive Surveys are done every twelve years per NSSP or sooner if warranted.

NSSP Shellfish Harvesting Area Classification Types

- Five different classification types – determine harvest restrictions.
- Classification types are based on:
 - FC water quality.
 - Proximity to pollution sources.
- Classification areas are:
 - Approved Areas (only 20% of areas state-wide meet this designation and are rarely closed);
 - Conditionally Approved Areas (55% of areas state-wide meet this designation);
 - Restricted/Conditionally Restricted (5% of areas statewide - does not meet approved or conditionally approved area designations);
 - Prohibited Areas; and,
 - Unclassified Areas.

Management of Shellfish Harvest Areas Temporary Closures

- Management plan exceedance – rainfall or river levels.
 - Most common type of closure.
- Emergency conditions – untreated sewage spills, tropical storms/hurricanes.
- Harmful Algal Blooms.
 - *Karenia brevis* (Red Tide) – Neurotoxic shellfish poisoning
 - *Pseudo Nitzschia* spp. – Amnesic shellfish poisoning
 - *Pyrodinium bahamense* – Paralytic shellfish poisoning

How FDACS' Determines Whether Management Plans are Working

- NSSP requires each area to be sampled at least 5 times per year under Adverse Pollution Conditions (APC) when in the open status:
 - Sample following a rainfall event or when river levels are elevated.
 - Determines if the area is in compliance with NSSP water quality standards under the current management plan.
 - Updated each year with an annual report and pollution sources are re-evaluated every three years in triennial reports.
 - Comprehensive shellfish harvesting area survey to be done at minimum every 12 years.

Summary- End Result of Analysis

- When harvest areas are in the open status, water quality is suitable for the harvest of shellfish.
- Shellfish at the store or in a restaurant have been harvested from an open area.

Questions, Responses, and Comments:

- FDACS: The approved areas were not near areas with water quality issues.
- Surprised at how bad the data are.
- FDACS: Collected these data in response to the oystermen wanting all areas open at the same time.
- FDACS: With the current data, it is not feasible to be open all at once. For several months, all areas would be closed.
- Question: Is there any way to open the areas to the south in winter?
- FDACS: The clean areas are not big enough to harvest. The data do not support this option.
- There are few bars south of channel as productive as Plants, in past there was hard bottom there, but not now.
- FDACS: Hard to carve out polygons and small areas, difficult to create a management plan for Apalachicola Bay based on this.
- FDACS: If areas can't meet the classification, we can't produce a harvest management plan. As of now the Summer bars are not open from April through October. Is it worthwhile to be open for 2 weeks?
- Concern was expressed that with the results there will be a loss of winter harvest areas.
- The data indicate that the winter sites are not clean in winter, and the summer sites are not clean in the summer.
- The data indicate that summertime harvest is a bad idea.
- FDACS: Most sites don't meet NSSP standards, and there is not good water quality in the winter months. Not likely to be open in Summer based on the data.
- Question: what about the temporal changes associated with rainfall, how are they accounted for in making decisions about closures?
- DACS: the trends show water quality is degrading.
- Question: Is Rattlesnake open?
- DACS: yes.
- Question: Will sampling continue?
- DACS: yes. It's important to capture and evaluate the trends. Based on the results is likely there will be several months that all areas will be closed.
- Question: Can the areas that are clean (approved) be harvested?
- DACS: The areas are small and not realistic for harvesting.
- DACS: We are interested in ideas on options for new areas (polygons) and different times of year to sample.
- Question: would there be windows of opportunity for harvesting when there are low flows?
- Consider looking for windows of opportunities to open for harvesting in the Winter for couple of weeks or months when there are low flow regimes.
- DACS: The sampling strategy makes it difficult to do this, but it might be possible with more data.
- The flow has been high in recent years. Historically there were larger bars approved in the winter "areas."
- Question: Will FDACS revise the classifications based on this data or continue to collect more data?
- FDACS: We will continue to collect before deciding, and further evaluate the trends, and management strategies.

VIII. SUBCOMMITTEE UPDATES AND REPORTS

A. RESTORATION FUNDING WORKING GROUP

Joel Trexler reported that progress since last meeting has been slow because people have been on vacation, and that appointments have been made to meet with agency people regarding participation on the Working Group starting next week.

The ABSI proposal contemplates a 15-year commitment from FSU, 10 years beyond the 5 years of funding provided by the TRIUMPH Board. Joel noted that the Restoration Funding Working Group (RPWG) 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.

B. CAB SUCCESSOR GROUP SUBCOMMITTEE

Anita Grove and Shannon Hartsfield reported that the Subcommittee is in a holding pattern, but they have discussed the type of members needed (stakeholder representation) and the structure and format for the Subcommittee. In addition, the Subcommittee is collecting ideas for use once they are convened at the conclusion of the ABSI CAB process.

C. COMMUNITY OUTREACH SUBCOMMITTEE

Chad Hanson reported that the subcommittee has been active and they are working on a variety of initiatives. The Outreach initiatives include:

- The ABSI Op-ed (editorial) was published in the Wakulla News on Thursday, August 19th.
- ABSI Op-eds were submitted to other papers by Anita and Maddie.
- There was a virtual lesson on oysters with middle schoolers from the STEMtastic Camp on July 29th. This will be a model for future educational events.
- ABSI will be making a presentation to the Apalachicola City Commission on October 5th.
- There was an article in the St. George Island Civic Club's June newsletter.
- The FSUCML Open House has been cancelled and will be moved to early 2022.
- There will be a SciCafé ABSI presentation at the Eastpoint Brewery on September 22nd at 5 pm.
- Sandra's planned presentation to the County Commission is pending.
- The rack cards reported on during the last CAB meeting have been distributed with success. There have been approximately 230 - 250 distributed to date at locations such as the brewery and visitor centers.
- The Subcommittee is planning on ordering another stack of rack cards for distribution.
- The Subcommittee will meet on September 2, 2021 at 1:00 pm to develop a plan for the ABSI CAB Public Workshop and provide a plan with contingencies to the CAB.

Summary of Questions and Comments

- Is the editorial language still current and good for distribution? A: Yes.
- RSC representatives will be going to the various county commissions seeking their annual funding, and would be willing to hand out the editorial to commissioners, and/or the rack card.
- Response: good idea, but the rack card would be better for distribution.
- Jessica Holley noted that she would share the ABSI information with Representative Jason Shoaf.

D. OYSTERMEN’S WORKSHOP SUMMARY AND OVERVIEW

Jeff Blair reported that at the July 14, 2021 Oystermen’s Workshop the Apalachicola Bay System Initiative (ABSI) Community Advisory Board (CAB) conducted the third in a series of Oystermen’s Workshops for the purpose of seeking their feedback on a variety of possible management approaches as well as ultimately on the draft Apalachicola Bay System Ecosystem-Based Adaptive Management and Restoration Plan. The Workshop was conducted at the Apalachicola National Estuarine Research Reserve for invited oystermen, and virtually for all other participants.

During the Workshop the oystermen were provided an overview of the Project Workplan and Schedule, received an update and provided feedback on ABSI restoration experiments, provided feedback and input on a suite of possible management approaches, and discussed possible enforcement approaches with FWC Law Enforcement officers.

Jeff noted that the Oystermen’s feedback was incorporated into the updated Draft Plan Framework Worksheet and identified accordingly.

Summary of Questions and Comments

- Better attendance would be helpful for the workshops.
- There have been challenges working with the oysterman on strategies for restoring the Bay, and there are very divergent opinions within the Community.
- Some oystermen complain but have not been willing to step-up and attend meetings and participate.
- There have be incorrect and negative messages by a workshop participant that irritate the locals and create chaos. This is frustrating, but we need to work through it.
- There is a small but vocal group that is creating the dissention and negative responses to ABSI efforts.
- Need to get the message out that there are good things happening in the Bay.
- Could we get oystermen involved in the restoration work such as placing the cultch, to motivate them and increase their participation in the ABSI process?
- The ABSI Team and oystermen CAB members have reached out and invited them, but some oystermen won’t show up meetings to discuss restoration work.
- A number of oystermen participated in the restoration experiments.
- The results of the oystermen workshops have been incorporated into the ABSI management and enforcement options.

IX. REVIEW AND APPROVAL OF REVISED STRATEGIES AND ACTIONS

Jeff Blair led the CAB through a review of the proposed revisions to the Framework for the Draft Apalachicola Bay System Ecosystem-Based Adaptive Management and Restoration Plan (Goals, Objectives, Strategies, Actions, and Performance Measures). The revisions are highlighted in the Strategies Evaluation Worksheet posted to the project webpage and distributed to CAB members prior to each meeting. After reviewing the proposed changes the CAB agreed with and approved the proposed package with several additional changes made during the meeting. In addition, the CAB reviewed, provided comments, and approved the proposed revisions to the Performance Measures and Estuarine Metrics.

Homework Assignment for October 19, 2021 Meeting

Jeff noted that the CAB is being requested to do homework prior to the next meeting and to provide feedback on the results during the October 19, 2021 CAB meeting. The assignment is as follows:

1.) Resources Available for Supporting the ABSI Plan. What type of commitment do you feel your organization and their constituent stakeholders would be willing to make toward working on implementing the high priority strategies? What specific resources (financial, experience, staffing, connections, etc.) would your organization be willing to bring to assist in implementing the high priority strategies?

October Discussion: A.) After consulting with your organization please report to the CAB the type of resources your organization is willing to offer to help implement the high priority strategies and actions, e.g. staff to help lead a strategy/action, communication expertise, other resources.

2.) Stakeholder Collaboration. Would you be willing to assess and discuss possible collaboration and partnerships among each other and with other stakeholder organization partners? Would you be willing to initiate some preliminary discussions and report back in time for our October 19, 2021 CAB Meeting?

October Discussion: B.) Please report to the CAB the results of any initial discussions you have had with partner and stakeholder organizations for potential collaboration on implementing the high priority strategies.

3.) ABSI Overarching Message. Develop ideas for a message that would resonate with the ABS Community and solicit action toward implementation of the Plan.

Identify “Aspirational Goal(s)” that could rally the Community and private investors (e.g., utilities, agriculture, FDOT, Restaurants, etc.).

Think about key priorities and related metrics for implementation of the Plan

- “Restoring the Oyster Fishery” (metrics: Harvest x pounds a day).
- “Bringing Back Apalachicola’s Oysters” (metrics: restore X# acres of fishery and X# acres of ecosystem services, \$ value of fishery).
- “See our local oysters served in restaurants, sold in markets, and be available to the public.”

October Discussion: C.) Please report to the CAB your 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.

Examples: more oysters=cleaner water=more seagrass=more habitat=more fish=better fishing, tap into the emotional sense of place, Crystal Emerald Waters and Tasty Oysters, Healthy Oysters-Healthy Apalachicola, Bring Back Apalachicola’s Oysters, Restore Apalachicola’s Oysters.

Consider creating a goal(s) such as Restoring X# of acres for the fishery and water quality (quantitative goal), and/or see our local oysters served in restaurants, sold in markets, and be available to the public (qualitative goal).

The ABSI Plan Framework as revised and approved by the CAB is included as *Attachment 6* of this Report.

(Attachment 4—Meeting Chat Summary)

(Attachment 6—Revised ABSI Plan Framework)

X. OYSTER FISHERIES AND HABITAT MANAGEMENT PLAN FOR THE PENSACOLA BAY SYSTEM OVERVIEW AND DISCUSSION

Anne Birch and Laura Geselbracht from TNC provided the CAB with an overview of the Oyster Fisheries and Habitat Management Plan for the Pensacola Bay System developed by the Pensacola Bay System Stakeholders Working Group developed from 2019 – 2021. The complete presentation is available on the ABSI CAB project webpage: <https://marinelab.fsu.edu/absi/cab/>.

Project Overview

Why the Pensacola Bay System

The Pensacola Bay System (PBS) was selected as a project site to model a holistic approach to oyster recovery for several reasons. The bay is a large important estuarine system in Florida surrounded by vibrant communities that benefit greatly from its presence. Oysters are a fishery as well as a key ecosystem component. Oysters were once nearly ubiquitous throughout the bay, providing services such as water clarification and nutrient removal, habitat for recreationally and commercially important sportfish and shellfish, and substrate stabilization. But the PBS has experienced a substantial decline in the oyster fishery and habitat over the last several decades. The loss of oyster habitat and production has impacted the community of fishermen reliant on this resource for a substantial part of their income (personal communication with oyster watermen). The absence of oysters, a key habitat component in the bay, contributes to the decline of others such as seagrass meadows and the associated diversity and biomass of fish and invertebrate species. These components that make up an ecosystem work synergistically to sustain a healthy, productive bay system and nurture a healthy productive human community. In addition, the services oysters provide are critical to the economy, such as tourism which is an important economic driver that depends on the health and vitality of the bay. The PBS community understands the need for investing in oysters for recovery of the fishery and habitat.

Statement of Purpose

The Plan provides the PBS community with a roadmap for long-term and sustainable restoration and management of oysters in the PBS. The Plan can also serve as a model for management of oyster resources throughout Florida's estuarine systems, the Gulf of Mexico, and beyond. Actions needed to achieve the Plan's goals will also benefit other bay habitats (e.g., seagrass and salt marsh) and the community's economic and social well-being. The health of the oyster fishery and habitat are at the core of the PPBEP's Comprehensive Conservation & Management Plan (CCMP) as metrics for measuring the health of the PBS. The intent is for the Plan to be developed, owned, and implemented by the community and the State, and the PPBEP has agreed to integrate the plan as an essential element of the CCMP.

Consensus Building Process

Applying a consensus building, collaborative process was the central tenet of the Plan's development. Consensus is a participatory process whereby, on matters of substance, the members strive for agreements which all the members can accept, support, live with or agree not to oppose. The Stakeholder Working Group's (SWG) recommendations were developed using this process. Working group members evaluated all components of the Plan using the best available science, data, and decision-support tools for management and restoration of the PBS and achieved 100% consensus on the final Plan.

Role of the Stakeholder Working Group

The SWG members were selected from the assessment interviews conducted prior to convening the SWG to represent the community's diverse constituency. They included oyster harvesters and oyster aquaculture farmers, state and local government agencies, businesses, universities, community members and the PPBEP. A list of the members and their alternates, volunteering their time either individually or through their respective affiliations they represented are in Appendix C. The SWG was convened by TNC to define multiple objectives to address the management and restoration actions needed to recover the wild oyster harvest, sustain oyster aquaculture, and restore lost ecosystem services provided by oyster habitat (e.g., clean water, more crabs and fish, nitrogen removal). Members evaluated oyster fishery practices and management options and restoration policies and developed the Plan's outcomes, strategies, and actions.

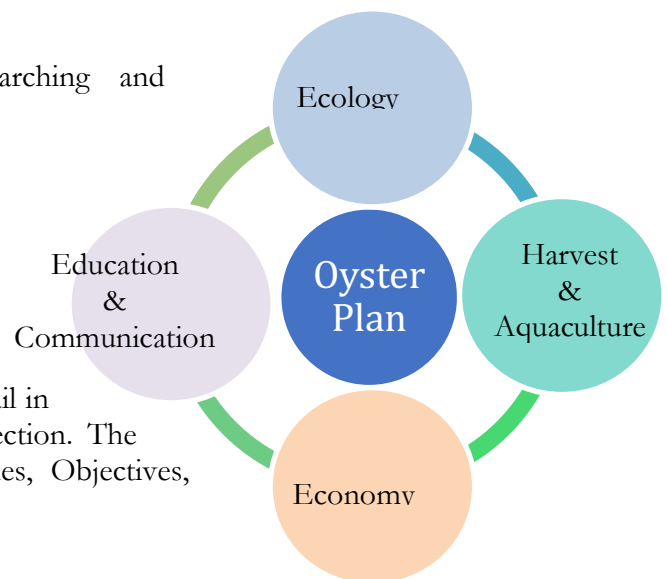
The SWG met during 12 daytime meetings held from October 2019 to March 2021. An additional two workshops were held in the evening to receive input from the watermen. The first three SWG meetings were held in-person (October and November 2019 and January 2020). Starting with the fourth meeting in April 2020 the meetings were held virtually to meet health safety precautions due to the Covid-19 pandemic. All agenda packages and meeting summaries for the 12 regular SWG meetings and two watermen workshops can be viewed at the PPBEP web site <https://www.ppbec.org/the-plan/oyster-plan>.

Plan Structure

The Plan was developed based on four overarching and interdependent themes:

- A. Ecological;
- B. Wild Harvest and Aquaculture;
- C. Economy; and,
- D. Public Education and Communication.

Each Theme has a stated Vision, Goal, and Outcome, and corresponding Objectives, Metrics, Strategies and Actions. Each Theme is described in detail in the Plan, and each Theme is described in its own section. The sections include the Theme's Vision, Goal, Outcomes, Objectives, Metrics, and Strategies and Actions.



Recommendations for Implementation

The Plan is designed to be an adaptable living document that is regularly assessed and modified as needed as work is completed and conditions change (environmental, economic, social or political). Stakeholder Work Group (SWG) members and community stakeholders will continue to meet as an advisory sub-committee (described below) to implement the Plan.

The stakeholders in the Pensacola Bay System (PBS) are leaders in shaping a new path for management and restoration of oysters. The Plan is an experiment of how an oyster fishery and habitat can be both managed and restored using a community-based collaborative approach. The intent is for oyster fishermen, regulatory agencies, and other interested stakeholders to be at the table with equal voices in the decision-making process. Results and lessons learned as the Plan is implemented need to be shared with partners within the PBS and beyond so that oyster fishery, habitat restoration, and regulatory stakeholders continue to improve management using a collaborative adaptive ecosystem-based approach.

Role of the Pensacola and Perdido Bays Estuary Program (PBEP) and the State of Florida

The PPBEP, FWC, and FDACS will continue to explore and transform their respective roles in implementing oyster restoration and management according to the Plan's guidance. They are committed to continuing to advance and guide this type of oyster planning effort beyond the Pensacola Bay System.

The FWC and FDACS have agreed to serve as members of the Plan's Oyster Advisory Committee along with TNC and members of the SWG to aid with the Plan's implementation. The committee will serve as a standing sub-committee under the PPBEP's Technical Advisory Committee, as approved by the PPBEP's Policy Board on March 31, 2021, to help guide implementation of the Plan.

The PPBEP has agreed to two important steps:

1. Adoption of the Plan as a key element that guides the direction of the Comprehensive Conservation and Management Plan (CCMP); and
2. Convening the Plan's Oyster Advisory Committee, which was identified by the SWG as a Priority 1 strategy for the PPBEP.

These are important commitments that ensure the Plan is put into action and that the CCMP's actions throughout the watershed are guided with the intent of restoring, managing and conserving a healthy bay system that can support a healthy oyster industry and habitat.

Questions, Responses, and Comments:

- How useful/important is the Filtration Model?
- It is a very useful tool. However, it was completed after Working Group process and used in conjunction with the Habitat Suitability Model.
- There could be a perception that each project is competing for limited resources.
- There should be a coordinated effort to have open communication, sharing of data, and to leverage resources and create synergy for the various research and restoration projects in the Panhandle, and for the entire state of Florida.
- We really need communication and collaboration Gulf-wide to be successful with restoration efforts.
- There is opportunity and necessity to work together.
- Need the private sector involved in addition to state government and NGOs.
- A comprehensive approach is needed for restoration.
- PEW is willing to help with the effort to coordinate and communicate between restoration and data collection initiatives.

XI. PUBLIC COMMENT

The facilitator invited members of the public to provide comments.

Public Comments:

- None were offered.

XII. NEXT MEETING OVERVIEW AND ISSUES

The October 19, 2021 CAB meeting will focus on discussing restoration and management options, on revisions to the ABS Plan Framework (Goals, Objectives, Strategies, Actions, and Metrics), and on prioritization of strategies for each of the Plan's Goal areas (A – E). The October meeting will be conducted as a virtual meeting.

Proposed Agenda Items for the Next Meeting:

- Review of updated Workplan and Meeting Schedule.
- Subcommittees and Work Group reports.
- Planning for Public Workshop.
- FWC-FWRI Mapping Project presentation.
- Approval of updated Draft Plan including any approved revisions.
- Approval of Performance Measures and Estuarine Metrics including any approved revisions.
- Discuss resources available and collaboration for Plan implementation homework results.
- Conduct Strategies Prioritization Exercise.

ADJOURNMENT

The Facilitator thanked CAB members, ABSI Project Team members, and the public for their participation, and adjourned the meeting at 12:30 PM on Wednesday, August 18, 2021.

**ATTACHMENT 1
MEETING PARTICIPATION LIST**

MEMBER*	AFFILIATION
Agriculture/ACF Stakeholders/Riparian Counties	
1. Chad Taylor	Riparian Counties Stakeholder Group/ACFS/Agriculture
Business/Real Estate/Economic Development/Tourism	
2. Chuck Marks	Acentria Insurance
3. Mike O'Connell	SGI Civic Club/SGI 2025 Vision
4. John Solomon	Apalachicola Chamber of Commerce
Environmental/Citizen	
5. Georgia Ackerman	Apalachicola Riverkeeper
6. Lee Edmiston	Retired DEP/ANERR
7. Chad Hanson	Pew Charitable Trusts
Local Government	
8. Bert Boldt	Franklin County Commissioner
9. Anita Grove	Apalachicola City Commissioner
Recreational Fishing	
10. Chip Bailey	Peregrine Charters
11. Frank Gidus	CCA Florida
Seafood Industry	
12. Shannon Hartsfield	Franklin County Seafood Workers Association and Oysterman
13. Roger Mathis	Oysterman and R.D.'s Seafood
14. Steve Rash	Water Street Seafood
15. Denita Sassor	Outlaw Oyster Company, Aquaculture
16. TJ Ward	Buddy Ward & Sons Seafood
State Government	
17. Jenna Harper	ANERR/DEP
18. BJ Jamison	FWC Division of Marine Fisheries Management
19. Alex Reed	FDEP Office of Resilience & Coastal Protection
20. Portia Sapp	FDACS Division of Aquaculture
21. Paul Thurman	NFWFMD
University/Researchers	
22. Tom Frazer	UF/DEP Governor's Science Advisor
23. Erik Lovstrand	UF/IFAS/Florida Sea Grant Franklin County
<i>*The names of CAB members participating in the meeting are indicated in bold font.</i>	

PROJECT TEAM AND FACILITATORS	
FLORIDA STATE UNIVERSITY	
Sandra Brooke	Marine Biologist
Ross Ellington	Professor Emeritus of Biological Science
Madelein Mahood	Outreach and Education
Joel Trexler	FSUCML Director
FCRC CONSENSUS CENTER, FLORIDA STATE UNIVERSITY	
Jeff Blair	Community Advisory Board Facilitator
<i>The names of Project Team members participating in the meeting are indicated in bold font.</i>	

ALTERNATES FOR CAB MEMBERS	
None	
<i>The names of CAB member's alternates participating in the meeting are indicated in bold font.</i>	

MEMBERS OF THE PUBLIC	
1. Adam Alfasso	FSUCML, Graduate Student Working on ABSI
2. Anne Birch	TNC
3. Ansley Bradwell	U.S. Senator Marco Rubio's Office
4. Katie Davis	FDEP
5. Matt Davis	FWC
6. Daniel Ellinor	FWC
7. Jill Fleiger	FDACS
8. Josh Gabel	U.S. Senator Marco Rubio's Office
9. Ryan Gandy	FWC-FWRI
10. Laura Geselbracht	TNC, ABSI SAB
11. Elizabeth Hughes	Representative Jason Shoaf's Office - Florida House of Representatives
12. Jessica Holley	Representative Jason Shoaf's Office - Florida House of Representatives
13. Carrie Jones	FDACS
14. Ken Jones	Riparian Counties Stakeholders Coalition
15. Katie Konchar	FWC
16. Roger Mann	Virginia Institute of Marine Science, ABSI SAB
17. Emily Saladrigas	U.S. Senator Marco Rubio's Office
18. Preston Wilson	Representative Jason Shoaf's Office - Florida House of Representatives

ATTACHMENT 2
18 AUGUST 2021 MEETING AGENDA

ABSI COMMUNITY ADVISORY BOARD MEETING XIV OBJECTIVES

- ✓ To Approve Regular Procedural Topics (Meeting Agenda and, Summary Report)
- ✓ To Receive Project Briefings and Community Advisory Board Requested Presentations
- ✓ To Receive Updates from RFWG, Community Outreach, and CAB Successor Group
- ✓ To Review and Approve Proposed Revisions to Draft Management and Restoration Plan Framework
- ✓ To Conduct Strategies Prioritization Exercise
- ✓ To Receive Summary of Oyster Fisheries and Habitat Management Plan for the Pensacola Bay System
- ✓ To Identify Needed Next Steps, Information and Presentations, and Agenda Items for Next Meeting

ABSI COMMUNITY ADVISORY BOARD MEETING XIV AGENDA—AUGUST 18, 2021

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

1.)	8:30 AM	WELCOME, REVIEW OF VIRTUAL PARTICIPATION GUIDELINES, AND ROLL CALL
2.)	8:35	SOCIAL SCIENCE SURVEY
3.)	8:40	AGENDA REVIEW AND MEETING OBJECTIVES
4.)	8:45	APPROVAL OF FACILITATORS’ SUMMARY REPORTS (JULY 14, 2021 OYSTERMEN’S WORKSHOP AND JUNE 16, 2021 CAB MEETING)
5.)	8:50	REVIEW OF UPDATED PROJECT MEETING SCHEDULE AND WORK PLAN
6.)	8:55	PROJECT BRIEFINGS AND REQUESTED PRESENTATIONS <ul style="list-style-type: none"> • <i>ABSI Science and Data Collection Update.</i> Sandra Brooke, FSUCML (15) • <i>FWC Restoration Project Update.</i> BJ Jameson, FWC (15) • <i>FDACS Water Quality Sampling and Closure Areas Update.</i> Portia Sapp, FDACS (15)
7.)	9:40	SUBCOMMITTEE AND WORKING GROUP UPDATES AND REPORTS <ul style="list-style-type: none"> • Restoration Funding Working Group Update. Joel Trexler (5) • Community Outreach Subcommittee Update. Chad Hanson (5) • CAB Successor Group Subcommittee Update. Anita/Shannon (5) • Oystermen’s Workshop Report Summary. Jeff Blair, FSU (5)
~10:00		BREAK
8.)	10:10	DISCUSS AND APPROVE PROPOSED REVISIONS TO DRAFT MANAGEMENT AND RESTORATION PLAN FRAMEWORK
9.)	10:45	OYSTER FISHERIES AND HABITAT MANAGEMENT PLAN FOR THE PENSACOLA BAY SYSTEM OVERVIEW AND DISCUSSION <ul style="list-style-type: none"> • Anne Birch and Laura Geselbracht, TNC
10.)	11:45	PRIORITIZATION OF STRATEGIES BY GOAL AREAS (A – E)
11.)	~12:30 PM	PUBLIC COMMENT
12.)	~12:40	NEXT STEPS AND AGENDA ITEMS FOR THE NEXT MEETING <ul style="list-style-type: none"> • Review of action items and assignments • Identify agenda items and needed information and presentations for the October 19, 2021 CAB meeting (In-Person at ANERR) • Meeting evaluation
~12:45 PM		ADJOURN

ATTACHMENT 3
MEETING EVALUATION RESULTS (ZOOM POLL)

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 9 CAB members.

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

<i>Average Rating</i>	<i>5. Strongly Agree</i>	<i>4. Agree</i>	<i>3. Not Sure</i>	<i>2. Disagree</i>	<i>1. Strongly Disagree</i>
4.3 of 5	4	4	1	0	0

2.) The meeting objectives were met.

<i>Average Rating</i>	<i>5. Strongly Agree</i>	<i>4. Agree</i>	<i>3. Not Sure</i>	<i>2. Disagree</i>	<i>1. Strongly Disagree</i>
4.3 of 5	3	4	2	0	0

3.) The presentations were effective and informative.

<i>Average Rating</i>	<i>5. Strongly Agree</i>	<i>4. Agree</i>	<i>3. Not Sure</i>	<i>2. Disagree</i>	<i>1. Strongly Disagree</i>
4.9 of 5	8	1	0	0	0

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

<i>Average Rating</i>	<i>5. Strongly Agree</i>	<i>4. Agree</i>	<i>3. Not Sure</i>	<i>2. Disagree</i>	<i>1. Strongly Disagree</i>
4.8 of 5	7	2	0	0	0

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

<i>Average Rating</i>	<i>5. Strongly Agree</i>	<i>4. Agree</i>	<i>3. Not Sure</i>	<i>2. Disagree</i>	<i>1. Strongly Disagree</i>
4.4 of 5	5	3	1	0	0

6.) The facilitator accurately documented the Working Group Member input

<i>Average Rating</i>	<i>5. Strongly Agree</i>	<i>4. Agree</i>	<i>3. Not Sure</i>	<i>2. Disagree</i>	<i>1. Strongly Disagree</i>
of 5	8	1	0	0	0

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

<i>Average Rating</i>	<i>5. Strongly Agree</i>	<i>4. Agree</i>	<i>3. Not Sure</i>	<i>2. Disagree</i>	<i>1. Strongly Disagree</i>
4.9 of 5	3	6	0	0	0

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

<i>Average Rating</i>	<i>5. Strongly Agree</i>	<i>4. Agree</i>	<i>3. Not Sure</i>	<i>2. Disagree</i>	<i>1. Strongly Disagree</i>
of 5	7	2			

9.) What do you think worked well using the virtual Zoom platform for the meeting?

- Zoom is the best of the platforms!
- Zoom format may have allowed more participation and presentation were great!

ATTACHMENT 4

MEETING CHAT SUMMARY (ZOOM)

MEETING CHAT

- 08:33:03 **Steve Rash:** I have no audio or video.
- 08:33:20 **Maddie Mahood:** Good morning Steve!
- 08:36:00 **Steve Rash:** accept
- 08:40:43 **Maddie Mahood:** https://ufl.qualtrics.com/jfe/form/SV_bQHlo2ZuFw7rx30
- 09:30:40 **Jenna Harper:** I have RESTORE data to share today
- 09:37:21 **Paul Thurman:** I have to sign off for another meeting and will be back in 30 minutes or so.
- 09:56:02 **Steve Rash:** What is the classification of Rattlesnake Cove?
- 09:56:53 **Steve Rash:** Thanks - great presentation Carrie!!
- 010:00:38 **Jessica Holley (HD7 - Shoaf):** Please share that information with Rep Shoaf's office as well. Jessica.Holley@myfloridahouse.gov
- 10:01:25 **Jessica Holley (HD7 - Shoaf):** It would be much appreciated. Thank you for all your hard work!
- 10:12:54 **BJ Jamison:** have to step away for a few minutes
- 010:24:34 **BJ Jamison:** back
- 10:24:46 **Maddie Mahood:** Thanks BJ!

OPEN ENDED SURVEY QUESTION RESPONSES

- Open Ended Survey Question Responses Sent Directly to Maddie Mahood:
- 12:24:42 **Maddie Mahood:** 1. What do you think worked well using the Zoom platform for the meeting? 2. How could the virtual format be improved for future meetings?
- 12:31:02 **Jenna, Shannon, Anita:** Zoom is the best of the platforms!
- 12:31:40 **Portia Sapp:** Zoom format may have allowed more participation and presentation were great!

ATTACHMENT 5
WORKPLAN AND SCHEDULE

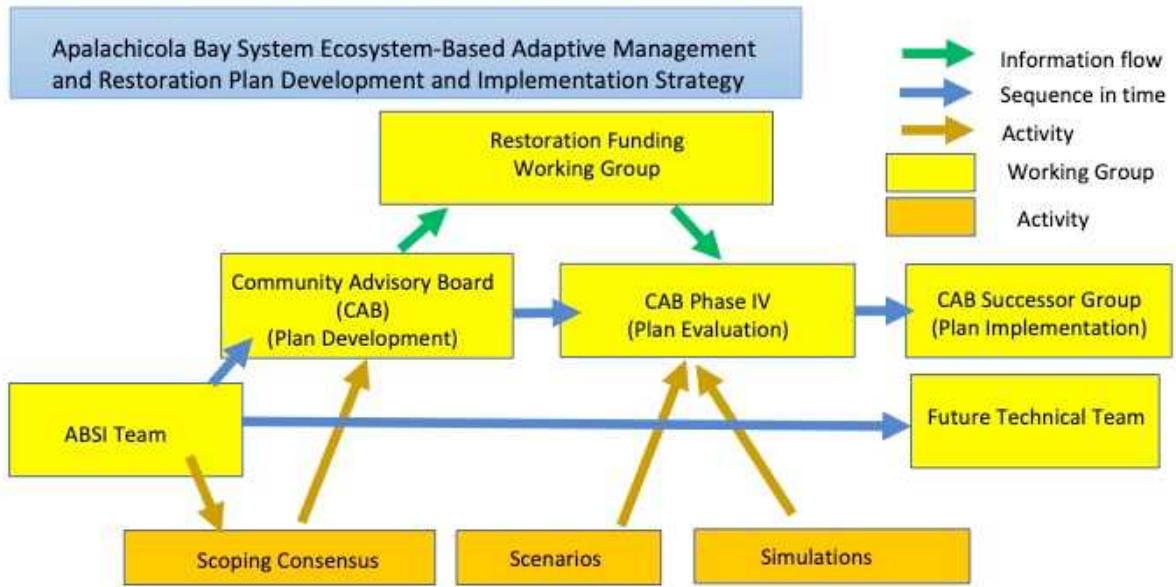
UPDATED AS OF THE OCTOBER 19, 2021 CAB MEETING

PHASE I—STANDING UP AND ORGANIZATION OF THE ABSI CAB

ABSI Assessment Process	May- Aug. 2019 Report Sept. 2019	Assessment report based on interviews of over 60 stakeholders and agency personnel (May – August 2019) summarized key challenges and issues that should be addressed in the Apalachicola Bay System Initiative (ABSI) and by its Community Advisory Board (CAB); facilitators recommend members for the CAB.
ABSI CAB Questionnaire	Sept. 2019	Questionnaire report on the CAB members’ views on successful short and long-term outcomes and on critical ABSI challenges and issues.
Meeting I. Eastpointe FL	Oct. 30, 2019	Scoping and organizational meeting, review and refinement of overall project purpose, vision and goal framework. Presentation on the ABSI project’s four main components: research, management, community engagement, and oyster reef and bay restoration. Public comment.
Meeting II. Eastpointe FL	Dec. 18, 2019	Member-requested presentations on Apalachicola River Slough Restoration project, Oyster Fishery and Harvest Statistics, ABSI Research Update, and FWC Apalachicola Bay Oyster Restoration, Phase II. Review and refinement of vision themes and goal framework, and identification of key topical issues to inform the drafting of objectives. Public comment
Meeting III. Eastpointe FL	Jan. 8, 2020	Member-requested presentations on Oyster Ecology, Hydrologic modeling and Oyster Population Models. Review, refinement and adoption of five vision themes, goals, outcomes and objectives, and initial review of draft performance measures. Public comment
PHASE II—SCOPING OF ABSI ISSUES, IDENTIFICATION OF PERFORMANCE MEASURES & STRATEGIES		
Meeting IV. Eastpointe FL	Mar. 11, 2020	Member-requested presentations on current status of Apalachicola Bay, FDACS Aquaculture Leasing Program, Oyster Reef Management in Apalachicola Bay, and the Chesapeake Bay Oyster Futures Consensus Process. Review of Apalachicola Bay System Ecosystem-Based Management and Restoration Plan goals, outcomes, and objectives. Identification of initial draft strategies and related performance measures. Public comment.
Meeting V. Virtual Meeting	May 22, 2020	Member-requested presentations on FWC Overview of Oyster Management, FWRI Oyster Monitoring and Restoration Effects in Apalachicola Bay, MK Ranch Hydrologic Restoration, and TNC Lake Wimico project. Identification and evaluation of preliminary strategies and performance measures to achieve each of the five goals and objectives. Public comment.
CAB Strategies	June 2020	CAB Worksheet to identify potential strategies for each of the five goals.
Meeting VI. Virtual Meeting	July 16, 2020	Member-requested presentations. Decision support tools update & demonstration. Review and evaluation of the preliminary strategies by CAB member for Plan Goal. Public Comment.
Meeting VII. Virtual Meeting	Sept. 9, 2020	Member-requested presentations. Identification, evaluation and refinement of objectives, strategies and performance measures for Goals A-E. Public Comment.
Meeting VIII. Virtual Meeting	Oct. 15, 2020	Member-requested presentations. Review of strategies and identification, and evaluation of actions steps to achieve strategies. Evaluation of Performance Measures and categories. Public Comment.
Meeting IX. Virtual Meeting	Nov. 12, 2020	Member-requested presentations. Agreement on Apalachicola Bay System Ecosystem-Based Adaptive Management and Restoration Plan (Plan) framework. Public engagement on the Plan strategy discussion. Discussion of strategies and action steps to achieve Goals. Discussion of ecological and management goals. Public comment.
Oystermen’s Workshop #1	Dec. 2, 2020	Overview of Project Scope, Purpose, and Status, and Oystermen’s input on restoration experiment, suitable habitat for restoration, and management and restoration alternatives.

PHASE III—BUILDING CONSENSUS ON CAB RECOMMENDATIONS FOR THE ABS ECOSYSTEM-BASED ADAPTIVE MANAGEMENT AND RESTORATION PLAN		
Meeting X. Virtual Meeting	Jan. 13, 2021	Member-requested presentations. Sub-committee reports. Discussion of estuarine metrics and restoration goals. Public comment.
Meeting XI. Virtual Meeting	Feb. 24, 2021	Member-requested presentations. Sub-committee reports. Review and approval of revised Draft Plan Framework. Discussion of management goals. Public comment.
Oystermen’s Workshop #2	April 15, 2021	Oystermen’s review and comments on draft Management approaches and Plan Framework (Strategies and Actions for Goals and Objectives)
Meeting XII. Virtual Meeting	April 21, 2021	Member-requested presentations. Sub-committee reports. Discussion of estuarine metrics. Discussion and approval of revised Plan Framework and Performance Measures. Discussion of management approaches. Public comment.
Meeting XIII. Virtual Meeting	June 16, 2021	Member-requested presentations. Sub-committee reports. Community Outreach Plan approval. Discussion and agreement on revised Draft Plan Framework and inclusion of management approaches. Law enforcement discussion. Public comment.
Oystermen’s Workshop #3	<i>July 14, 2021</i>	ABSI restoration experiment update and feedback. FWC restoration project update and feedback. Management and Restoration Plan feedback.
Meeting XIV. Virtual Meeting	Aug. 18, 2021	Continue review and consensus testing of Draft Plan and implementation strategies and actions, and agreement on Draft Plan. Sub-committee reports. Presentation on Oyster Fisheries and Habitat Management Plan for Pensacola Bay System. Prioritization of Strategies. Public comment.
Meeting XV. Virtual	Oct. 19, 2021	Sub-committee reports. Consensus testing of strategies and actions for Draft Plan. Review and approve package of draft recommendations for inclusion in the ABS Plan. Strategies prioritization exercise. Discussion of stakeholder resources and collaboration for implementation of ABS Plan. Public workshop planning. Public comment.
Public Workshop TBD	<i>October TBD</i>	Overview of ABSI and restoration experiments. Public review and comments on Draft ABS Ecosystem-Based Adaptive Management Plan.
Meeting XVI. TBD	Nov. 16, 2021	Complete Phase III of project. Review of public comments. Final CAB approval of draft Management and Restoration recommendations for the Plan. Briefing on Phase IV of the ABSI CAB. Public Comment.
PHASE IV—EVALUATION OF THE DRAFT ADAPTIVE MANAGEMENT AND RESTORATION PLAN STRATEGIES, RESTORATION PROJECTS SELECTION AND IMPLEMENTATION, AND FUNDING PLANNING		
Early 2022		<ol style="list-style-type: none"> 1. COMMUNITY ADVISORY BOARD (CAB). CAB initiates Phase IV adding additional members as needed, and works on evaluating the best combination of strategies that will achieve management and restoration objectives for the Bay using decision support tools and available data, and prioritization of strategies/actions and specific restoration projects. 2. RESTORATION FUNDING WORKING GROUP (RFGW). The Restoration Funding Working Group’s role is to seek funding to implement the CAB’s priority recommendations. The RFGW will be in place by early 2022. 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, and once the CAB process is complete (June 2024), to ensure that the Plan is implemented, monitored, and adaptively managed over time and has the support of the Community.

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 6
REVISED APPROVED ABSI PLAN FRAMEWORK—AS OF 18 AUGUST 2021

SECTION I
COMMUNITY ADVISORY GROUP DRAFT ABSI STRATEGIES

OVERARCHING APPROACHES

1. Use the following ABSI-approved name for the developing management and restoration plan: the Apalachicola Bay System Ecosystem-Based Adaptive Management and Restoration Plan (Plan).
2. Include commercial fishermen in discussions of and to help work on restoration design and implementation (locations, size, total coverage, cultching, etc.), establishment of permanent closed areas, shell recycling, shelling, mentoring, and workforce entry development.
3. Incorporate scientifically-derived and coordinated long-term monitoring guidelines and metrics for assessing the overall health of the ABS system with a focus on oyster resources.
4. Use only the best available science (including information derived from scientists, agency personnel and stakeholders) for all components of ongoing research, modeling exercises, and development of the Plan, including relevant information on adaptation to climate change impacts.
5. Identify local partners to coordinate and collaborate with the lead entities on the implementation of strategies (stakeholders: e.g., watermen, citizen scientists, advocacy groups, NGOs, universities, counties and other local governments, etc.).

GOAL A
A HEALTHY AND PRODUCTIVE BAY ECOSYSTEM

VISION THEME A: The Apalachicola Bay System, including its oyster reef resources, is sustainably managed. Water resources and affected habitats are afforded adequate protection to ensure that essential ecosystem functions are maintained and a full suite of economic opportunities are realized.

GOAL A: The Apalachicola Bay System is a healthy and productive ecosystem that supports a vibrant and sustainable oyster fishery and other economically viable activities.

OUTCOME: By 2030, the Apalachicola Bay System is a healthy, productive and sustainably managed ecosystem that supports a viable oyster fishery while providing a broad suite of ecosystem services that, in turn, afford additional opportunities for sustainable economic development.

GOAL A OBJECTIVES

A1) To use observations, monitoring, experiments and modeling conducted through ABSI and related efforts to create decision support tools that can inform how a range of natural and human influenced factors will affect the ABS ecosystem.

A2) To help establish a comprehensive monitoring plan to evaluate the health of the ABS oyster resource and its measurable ecosystem services with clearly defined performance measures and strong coordination among the various entities conducting research in the region.

A3) To use existing and new research, and decision support tools to identify viable strategies for restoration and management of the ABS oyster resources and the function of the ABS ecosystem.

A4) To define measurable ecosystem services that can be used to determine the level of change in ecological health (e.g. oyster fishery harvest, habitat for other fishery species, abundance and condition indices for oyster reef and population health) and societal benefit derived from Apalachicola Bay System management and restoration efforts, with target and threshold levels identified.

GOAL A DRAFT STRATEGIES

- 1) Restore and create reef structures suitable for sustained oyster settlement that enhance ecosystem services in designated restoration areas.
 - Action 1-A.):* Design and implement projects to achieve multiple ecosystem service targets (e.g., commercial and recreational fishing, shoreline protection).
 - Action 1-B.):* Implement restoration projects simultaneously rather than sequentially.
 - Action 1-C.):* Relay live oysters to jump start restoration experiments by moving oysters within the same general location and applying them to form a shallow layer of oysters over existing healthy reefs (not recommended as a management approach).
 - Using seed is a better approach, moving has high mortality rate.

Lead: FWC	Partners: FSU, UF, local Gov., FDOT, NGOs, coastal property owners, CAB
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- 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.
 - *Action 2-A.):* Conduct restoration experiments to test efficacy of different materials.
 - *Action 2-B.):* Use knowledge gained from experiments to recommend best practices for broad scale restoration in the ABS.

Lead: FSU	Partners: UF, FWC, CAB
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- 3) Develop criteria for restoring specific reefs or reef systems damaged by environmental conditions or natural disasters.
 - *Action 3-A.):* Evaluate degree of damage and potential for recovery.
 - *Action 3-B.):* Develop an approach for mitigating damage (e.g., physical repair, spat supplements, or some combination of both).
 - *Action 3-C.):* Determine periodicity of hatchery-produced spat addition (e.g., annually or longer) with a specific timeline for continuing the approach. This approach is not intended to create a put-and-take fishery.

Lead: FSU	Partners: UF, FWC, CAB
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- 4) Determine area (acres or km²) 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.

Action 4-A.): Map existing oyster reefs using multibeam sonar and backscatter, and ground-truth for accuracy.

Action 4-B.): Apply model that uses reproductive output, recruitment, natural mortality rates and fishery harvest to assess oyster population dynamics.

Lead: FWC	Partners: FSU, UF
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- 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.

Action 5-A.): Continue monitoring intertidal and begin monitoring sub-tidal reefs monthly and bi-annually using same protocols as FWC sub-tidal monitoring. Adjust to add metrics as needed. Data will be shared between FWC and ABSI.

Action 5-B.): Continue monitoring intertidal and begin monitoring sub-tidal habitats using same protocols as FWC. Data will be shared between FWC and ABSI.

Action 5-C.): Conduct ‘spot-checks’ at a large number (TBD) of different locations in the Bay to supplement the more intensive monitoring data. Document volume of rock/shell/oysters, number of spat, medium and market sized live oysters and boxes together with environmental data.

Action 5-D.): Collect long term in situ environmental data using ABSI instruments and integrate ANERR environmental and nutrient data as correlates with oyster metrics.

Action 5-E.): Generate health indicators for ABSI using monitoring data, and other ecological factors (e.g. oyster-associated communities and structural complexity).

Lead: FSU	Partners: FWC, ANERR
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- 6) Develop ecosystem models that forecast future environmental conditions and oyster population status.

- *Action 6-A.):* Collect data needed by the models, and follow up with testing the models to refine accuracy of output.

- *Action 6-B.):* Coordinate with appropriate state and federal agencies, pertinent out of state user groups, and other initiatives working on both geographically-constrained and basin-wide water-flow alterations and management strategies that contribute positively to the health of the ABS.

Lead: UF	Partners: FWC, FSU
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- 7) Assess existing ecosystem services metrics used for other oyster studies, and develop a list of ABSI specific metrics to assess change over time.

- *Action 7-A.):* Conduct literature review and work with Florida Oyster Recovery Science (FORS) working group to identify measurable indicators of changes in ecosystem services

- *Action 7-B.):* Integrate ecosystem services metrics into monitoring program.

Lead: FSU	Partners: UF, FWC, universities, government agencies
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- 8) Seagrass and other SAV, and wetland and riparian habitat should be restored concurrently to work synergistically with oyster habitat restoration to enhance restoration of the ABS.

Lead: Franklin Co.	Partners: DEP
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GOAL B

SUSTAINABLE MANAGEMENT OF OYSTER RESOURCES

VISION THEME B: A restored Apalachicola Bay System has resulted in a sustainably managed and adequately enforced wild harvest oyster fishery while also providing opportunities for other economically viable and complementary industries, including tourism and aquaculture. This is accomplished by working collaboratively with stakeholders to create, monitor and fund a plan that ensures that protection of the habitat and the fishery it supports is supported by science, stakeholder input, and industry experience, and is implemented in a manner that provides both fair and equitable access to and protection for the resource.

GOAL B: productive, sustainably, and adaptively managed Apalachicola Bay System supports sustainable oyster resources.

OUTCOME: By 2030, an engaged and collaborative group of stakeholders will have contributed to and helped spearhead a fully funded science-driven plan to sustainably manage oyster resources in the Apalachicola Bay System.

GOAL B OBJECTIVES

B1) To develop through a transparent and inclusive process a science-based ABS oyster recovery and adaptive management plan for both commercial and recreational industries that includes: broad stakeholder and community support; a long-term, comprehensive monitoring plan that will be carried out by state agencies and their contractors; a regulatory framework that allows for rapid modifications when needed to address changing environmental conditions; and enforceable regulations that contain penalties sufficient to deter violations and harm to the resource. It is imperative that this Plan be constructed with the direct involvement of entities within the State of Florida (e.g., FWC, FDACS, State Legislature) in cooperation with other relevant agencies to enhance the likelihood of its implementation.

B2) To make recommendations to FDACS for oyster aquaculture best management practices that allow for the unimpeded recovery of oysters reefs, the oyster fishery, and the ecological and societal health of the ABS ecosystem while providing economic opportunities to the aquaculture industry.

GOAL B RECOMMENDATION

Closing the Apalachicola Bay to Wild Oyster Harvest. At the March 11, 2020 ABSI CAB meeting the CAB's FWC representative requested that the CAB recommend whether to close Apalachicola Bay to all wild harvest of oysters (commercial and recreational). The CAB discussed the issue and unanimously recommended to FWC that they immediately close Apalachicola Bay to all wild harvest of oysters. This recommendation was reviewed and accepted by FWC, and the closure of the Bay to recreational and commercial wild oyster harvest proactively went into effect on August 1, 2020 via Executive Order pending approval of final rules. The oyster fishery closed area has well-defined boundaries (set by FWC in consultation with FDACS) and contained within the Apalachicola Bay System as defined in FWC's

Rule 68B-27, F.A.C.¹ At the December 16, 2020 meeting the FWC approved the final rules to temporarily suspend all wild oyster harvest and to prohibit on-the-water possession of wild oyster harvesting equipment (tongs) from Apalachicola Bay through December 31, 2025.

The CAB agreed that in subsequent meetings, it would make science-based recommendations for the criteria and performance metrics that should be met before reopening the Bay to wild oyster harvest. Under consideration are the following strategies related to closing the wild oyster fishery.

GOAL B DRAFT STRATEGIES

1. Recommend specific criteria and/or conditions, with related performance measures for the reopening of Apalachicola Bay to limited wild oyster harvesting.
 - *Action 1-A.):* Use ABSI ecosystem health metrics and FWC/UF models to develop criteria for opening and closing wild oyster harvest and for determining sustainable harvest.
 - *Action 1-B.):* Work with FWC and FDACS to ensure that definitions of oyster population health are not only based on harvest metrics.

2. Conduct an oyster stock assessment for the ABS with periodic updates.

Lead: FWC	Partners: FSU, UF, NGOs, citizen scientists, watermen
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3. 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.
 - *Action 3-A.):* Use a co-management advisory committee to assess and make a recommendation to the state.
 - *Action 3-B.):* Convene an Oyster Advisory Board within FWC to review and make recommendations on management and enforcement of the oyster fishery once wild oyster harvesting resumes in Apalachicola Bay.

Lead: FWC	Partners: FDACS, FSU, UF, local governments
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4. 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.
 - *Action 4-A.):* Engage local stakeholders in determining total coverage (how much to protect), placement (where to protect), and size (how large) of all types of potential closed areas using gridded maps as well as distributions of selected fishery and ecologically important species.
5. Manage the commercial oyster industry and recreational oyster fishing to provide for sustainable spat production and the recovery of oyster populations.

¹ FWC's Rule 68B-27.013, F.A.C. (as modified in the proposed draft rule language presented at the July 22, 2020, commission hearing): "Apalachicola Bay" or "Bay" means all waters within St. George Sound, East Bay in Franklin County, Apalachicola Bay, St. Vincent Sound in Franklin County, and Indian Lagoon in Gulf County, including canals, channels, rivers and creeks.

- *Action 5-A.):* Evaluate management scenarios (e.g., seasonal (summer) closure to wild harvesting, rotational closures, 5-day work weeks, non-harvested spawning reefs (permanent closures), limited entry, transferable license program, closures based on stock levels (stock assessment), reduced bag limits, bag tags, relaying oysters to better habitat, additional enforcement presence, manage harvest areas to prevent the concentration of effort in specific locations (open larger areas).
- *Action 5-B.):* Develop strategies to limit oyster harvest to periods outside of peak spawning season.
- *Action 5-C.):* Evaluate existing allowable and minimally destructive alternative gear type options and harvest methods, including the use of experimental gear for wild oyster harvesting.

Lead: FWC	Partners: oystermen, FSU, UF, Sea Grant
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6. Restore and create reef structures suitable **in size, location, and structure** for **healthy and sustainable** ~~sustained and optimized for suitability~~ oyster settlement and production, **and** ~~for~~ harvesting.
- *Action 6-A.):* Include oystermen in discussions to evaluate cultching techniques and materials for growing oysters (e.g., historical non-traditional, trees), adding spat on shell or other substrates.
 - *Action 6-B.):* Include oystermen in discussions on spatial configuration of reefs (height, width, contours, etc.), locations (existing reefs and hard bottom), use of larger rock to protect restored reefs from siltation and sedimentation from prevailing currents and storms.

Lead: FWC	Partners: FSU, UF, Sea Grant, watermen and aquaculture organizations, local county programs
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- *Action 6-C.):* Design and implement restoration projects to achieve oyster fishery production targets.
- *Action 6-D.):* Design restoration projects that include both fished and non-fished reefs.

Lead: FWC	Partners: FSU, UF, NOAA for funding
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7. Recommend policies and actions that retain and recycle shell for habitat replenishment in the ABS.
- *Action 7-A.):* Develop agency rules and policies that require shell retention and recycling for habitat replenishment through a fee or incentive program.
 - *Action 7-B.):* Obtain legislative support for statutes that support or require shell recycling and oyster habitat replenishment. (e.g., Texas House Bill 51 (2017); [North Carolina General Statute §130A-309.10](#) (2010); Maryland House Bill 184; Chapter 157, F.S. (McClellan 1881).
 - *Action 7-C.):* Establish partnerships with local organizations, stakeholder groups, industry, and universities in shell recycling programs.
8. Investigate oyster shell and oyster relay programs to move both cultch and live oysters to more favorable habitat (relay programs are recommended only to be used for restoration experiments).
- *Action 8-A.):* Use model and mapping information on larval source areas and environmental conditions to inform the potential programs.
 - *Action 8-B.):* Research similar relay programs in other areas for potential models and cautions.

Lead: FDACS/FWC	Partners: FSU, UF, Sea Grant, FDEP, FDOH, stakeholders (oystermen)
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9. 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.

- *Action 9-A.):* Use model outputs to identify the oyster population abundance that can support sustainable harvest.
- *Action 9-B.):* Use model outputs to identify percentage of the total reef area that is sufficiently productive to support sustainable harvest.
- *Action 9-C.):* Use model outputs to identify annual; recruitment required to support sustainable harvest.
- *Action 9-D.):* Use model outputs to determine amount and frequency of habitat replacement to maintain productive oyster reefs.

Lead: FSU/UF	Partners: FWC, stakeholders
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10. 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.

- *Action 10-A.):* Evaluate and develop standards for a potential limited-entry fishery that would be managed adaptively with the number of entrants in the fishery based on the current sustainable harvest level. **Evaluate the development of a limited-entry oyster fishery program and associated standards through a transparent representative stakeholder driven consensus-building process that includes vetting the plan with local oystermen and FWC law enforcement.**
- *Action 10-B.):* Implement a **Bay-wide** summer wild harvest fishery closure ~~Bay-wide~~.
- *Action 10-C.):* Provide daily harvest limits in conjunction with a Monday – Friday five-day harvest week.
- *Action 10-D.):* Implement a recreational wild oyster harvest limit of for example, one 5-gallon bucket of oysters, and allow recreational harvest during the same season the fishery is open to commercial harvest using the same gear.
- *Action 10-E.):* Manage harvest areas to prevent the concentration of effort in specific locations by allowing all of the legal and approved (FDACS) harvest areas of the Bay to be open during the harvest season and harvesting hours (Strategy 10-B and 10-C above).
- *Action 10-F.):* Establish the 5% undersize oyster limit for both harvesters and dealers.
- *Action 10-G.):* Clarify that it is **an** allowable **practice** for oystermen to weigh oyster bags **while** on the water ~~in their boats~~ to ensure the bags meet the weight limit regulations.
- *Action 10-H.):* Implement stock-based temporary wild harvest closures in conjunction with regular stock assessments of the oyster density.
- *Action 10-I.):* Evaluate and determine a metric used to manage oyster reef harvest at a sustainable threshold. Consider a graduated set of thresholds.
- *Action 10-J.):* Implement annual fisheries dependent and independent stock assessments, with data collection methods and site selection done in collaboration with oystermen, for determining a sustainable level of wild oyster harvest for each season.

Lead: FSU/UF	Partners: FWC, stakeholders
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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.

- *Action 11-A.):* Develop maps using FDACS data showing all aquaculture activities in the ABS, superimposed on existing maps of essential fish habitat, fishing activities, seagrass beds, and natural existing hard bottom (reefs/bars) to identify potential conflicts.
- *Action 11-B.):* Utilize habitat and activity maps from *Action 5. A.* to identify potential new oyster restoration areas and areas that could be used as spawning reefs to enhance recruitment and productivity nearby harvested reefs.

Lead: FDACS	Partners: FSU, UF, FWC, oystermen
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12. 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.
- *Action 12-A.):* Develop strategies to increase FWC enforcement presence and number of checkpoints to provide a deterrent to illegal activities.
 - Provide law enforcement presence during peak harvesting periods.
 - Provide law enforcement presence on the water during all harvest season hours.
 - *Action 12-B.):* Develop strategies to ensure consistent practices are used for enforcement of regulations regarding the consistency of enforcement in the harvestable and marketable size of oysters. (See Actions 10-F and 10-G)
 - *Action 12-C.):* Revise statutes and/or rules as needed to require FWC to check harvested oysters for size before they are washed and processed, and once processed there should not be enforcement of oysters should not be inspected for once processed there should not be any enforcement of size limits.
 - *Action 12-D.):* Evaluate and enhance as required the regulations and enforcement practices to ensure Implement and enforce a requirement that dealers accurately identify the source of oysters after processing and packaging.
 - *Action 12-E.):* Evaluate and revise as required the statutory and/or regulatory requirements Amend the statutes to allow FWC to check to ensure that FWC has authority to enforce oyster regulations at the dealers' location.
 - *Action 12-F.):* Work with FWC and FDACS to implement recommended enforcement changes.
 - *Action 12-G.):* Work with oystermen to evaluate current rules and regulations to ensure they are enforced consistently, fairly, and practically with an understanding of real-world on-the-water harvesting practices and constraints.
 - *Action 12-H.):* Evaluate and seek authority to implement a tiered system of penalties for purposeful violators (increased fines and license suspensions ranging from increased length of suspension to the permanent loss of license) to keep purposeful violators out of the industry.
 - *Action 12-I.):* Encourage community and industry support for consistent judicial imposition of penalties within the existing penalties framework for oyster harvest violations, including imposing stricter penalties for habitual and willful violators.
 - *Action 12-J.):* Prior to the opening of each harvest season FWC should conduct a joint workshop between FWC law enforcement and the oystermen to review the current rule and regulations, identify any changes, discuss enforcement approaches relative to harvest practices and constraints on the water, and to provide mutual two-way education, and enhance communication and collaboration between FWC and oystermen.
 - *Action 12-K.):* Work together and with other stakeholders to seek funds to support the recommended increased law enforcement presence in the Bay.

Lead: FWC/FDACS | **Partners:** FSU-CAB, CAB Successor Group, oystermen, oyster dealers

GOAL C

A FULLY FUNDED ECOSYSTEM-BASED ADAPTIVE MANAGEMENT AND RESTORATION PLAN SUPPORTED BY APALACHICOLA BAY SYSTEM STAKEHOLDERS

VISION THEME C: The Apalachicola Bay System Ecosystem-Based Adaptive Management and Restoration Plan is science-based and developed with engagement and support from the Apalachicola Bay System stakeholders, and is fully funded.

GOAL C: The Apalachicola Bay System Ecosystem-Based Adaptive Management and Restoration Plan is supported by the Apalachicola Bay System stakeholders, and is fully funded.

OUTCOME: By 2030, the Apalachicola Bay System is a productive and sustainably managed ecosystem. A fully funded and well-executed science-based Ecosystem-Based Adaptive Management and Restoration Plan that incorporates the monitoring necessary for evaluation and adaptation is broadly supported by Apalachicola Bay System stakeholders with guidance from a permanent stakeholder advisory board.

GOAL C OBJECTIVES

C1) To establish a fully funded permanent, representative stakeholder process to monitor the long-term implementation of the Plan.

C2) To support efforts to identify funding sources and define mechanisms for full implementation of the Plan.

GOAL C DRAFT STRATEGIES

CAB Proposed Strategies During the ABSI Process

- 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.
 - *Action 1-A.*): Continue CAB meetings and public workshops as outlined in the FCRC proposal for 2021.
- 2) During 2021, the ABSI Team will form a sub-committee within the CAB to evaluate the efficacy of forming a CAB successor group. The intent of a successor group would be to ensure continuity between the CAB members and the agencies responsible for oyster management. [Status: initiated]
 - *Action 2-A.*): The subcommittee will define a plausible scope of work for the successor group, including evaluating regulatory processes and engaging with and being accountable to decision-makers and the public for the actions laid out in the Plan and the implementation thereof.

- *Action 2-B.):* The subcommittee will evaluate the best organizational structure for ensuring longevity of the successor group, including working under the auspices of a state agency, an estuary program, or private/public partnerships.

3) A successor group to the CAB will be developed and in place by the time the Plan is completed.

- *Action 3-A.):* The successor group actively engages with state programs to encourage their adoption of ABSI’s long-term monitoring guidelines and metrics for assessing water quality, oyster abundance, and demographics and to regularly review and update these guidelines and metrics to maintain a healthy and sustainable oyster harvest and ecosystem.
- *Action 3-B.):* The successor group will monitor the Plan’s implementation and make recommendations for revisions required to adaptively respond to changing conditions.
- *Action 3-C.):* The successor group encourages agencies to prioritize the Plan’s recommendations for investing more funding in the management and restoration of oyster resources.
- *Action 3-D.):* The successor group should evaluate whether to initiate the development of an Apalachicola Bay Estuary Program (ABEP) to coordinate and lead in the implementation and monitoring of the Apalachicola Bay System Ecosystem-Based Adaptive Management and Restoration Plan. The successor group should explore whether it’s a better model to be a part of EPA’s National Estuary Program or to model the ABEP after the EPA program with funding provided from other entities as was done with the St. Andrew and St. Joe Bays Estuary Program.

Lead: FSU	Partners: CAB, CAB sub-committee, other stakeholders
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4) Create a comprehensive funding approach for the Apalachicola Bay System Ecosystem-Based Adaptive Management and Restoration Plan implementation including a comprehensive analysis for future grant funding for strategies, including support for sustainable monitoring deriving from the Plan.

- *Action 4-A.):* Evaluate and seek funding sources for implementation of management and restoration strategies included in the Apalachicola Bay System Ecosystem-Based Adaptive Management and Restoration Plan (e.g., state agencies, region-wide Gulf trustee implementation group for NRDA funding.)
- *Action 4-B.):* Evaluate and seek grant opportunities from recommendations included in the Apalachicola Bay System Ecosystem-Based Adaptive Management and Restoration Plan.
- *Action 4-C.):* Allocate sufficient funding for habitat restoration based on oyster habitat suitability mapping and modeling and restoration and management targets (e.g., Develop funding source for cultch used in oyster reef restoration.)
- *Action 4-D.):* Allocate sufficient funding for restoration of harvested reefs and aquaculture farms based on oyster habitat suitability mapping and modeling.
- *Action 4-E.):* Evaluate and seek funding sources to generate awareness, education, and support for a healthy oyster and ABS ecosystem.
- *Action 4-F.):* Develop and seek long-term funding for a comprehensive monitoring program that is used across programs and projects with a dashboard on metrics and indicators to leverage resources, standardize the metrics and indicators measured, and to share data.
- *Action 4-G.):* Work across estuary programs to fund and leverage large scale monitoring for the Panhandle Region – Perdido to Suwanee.
- *Action 4-H.):* Develop and seek a funding source to provide cultch for habitat restoration.

Lead: FSU-ABSI	Partners: Restoration Partners Working Group; Successor Group
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GOAL D

AN ENGAGED STAKEHOLDER COMMUNITY AND INFORMED PUBLIC

VISION THEME D: Stakeholders of the Apalachicola Bay System are committed to working together to disseminate relevant information and advocate for a sustainably managed oyster-based ecosystem. In so doing, the group will facilitate innovative research, development and implementation of best management practices and serve as a hub for information exchange as well as new innovation, education and communication opportunities.

GOAL D: A productive and well-managed Apalachicola Bay System is supported by an actively engaged and informed stakeholder community and public.

OUTCOME: By 2030, stakeholders, private and nonprofit civic leaders, and the public are informed of the importance of sustaining the health of the Apalachicola Bay System, and are engaged and working actively together along with elected and appointed leaders and managers to invest in and implement the Plan.

GOAL D OBJECTIVES

D1) To coordinate community engagement efforts to increase public awareness of and support for a healthy and well-managed ABS ecosystem; and to ensure that businesses, industries, non-profits, and local governments are supportive and included in these efforts.

D2) To measure public and stakeholder understanding of the issues important to the health and restoration of the Bay and socio-economic indicators.

GOAL D DRAFT STRATEGIES

- 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. [Status: initiated]
- 2) Build, with the help of the CAB, community support and stewardship by educating stakeholders on the importance of maintaining healthy oyster reefs and by engaging them in the Bay restoration through a variety of hands-on programs.
 - *Action 2-A.):* Form a sub-committee within the CAB that can spearhead an outreach and community engagement effort and develop a community outreach strategy intended to inform and educate stakeholders and the public about the research, the Plan developing through ABSI, and focusing on a healthy ABS ecosystem. The intended audience includes local city, county, and state government officials, businesses and organizations, citizens of every age, and other interested stakeholder groups.
 - *Action 2-B.):* Define what makes a successful shell recycling program, and work with local groups, businesses and other stakeholders to help initiate its development.
 - *Action 2-C.):* Develop a “Bay Stewards” program to honor, reward, and provide incentives for businesses and individuals that demonstrate their stewardship of the resource.

- 3) Support and participate in providing educational opportunities for students at all levels (primary & secondary school through college) to understand the value of their coastal ecosystems, importance of stewardship and the role oysters play in ecosystem health and fisheries.

Action 3-A.): Work with existing entities (e.g., [WeatherStem](#), [Scientist in Ever Florida School \(Florida Museum\)](#)) to expose more K-12 students to the research being conducted by ABSI.

Action: 3-B.): Provide training and financial support for new workforce entrants in the Franklin County Community through an aquaculture internship program.

Action 3-C.): Provide research opportunities for undergraduate and graduate students in science that supports the ABSI mission.

Lead: CAB outreach subcommittee	Partners: FSU, CAB, CAB Successor Group, ABS stakeholders
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SECTION II STRATEGIES OUTSIDE THE SPECIFIC SCOPE OF ABSI AND TO BE REFERRED TO OTHER PROGRAMS OR ENTITIES

The strategies that are not a part of the Ecological (Goal A), Sustainable Management of Oyster Resources (Goal B), The Management and Restoration Plan (Goal C), and An Engaged Stakeholder Community and Informed Public (Goal D) components of the Apalachicola Bay System Ecosystem-Based Adaptive Management and Restoration Plan including: training, marketing, education, communication, economic development, and funding are being moved to this category. They will be included as recommendations in an appendix, and the CAB should identify a responsible entity to refer the recommendations to for their development, implementation, monitoring, and maintenance.

GOAL E A THRIVING ECONOMY CONNECTED TO A RESTORED APALACHICOLA BAY SYSTEM

VISION THEME E: A restored Apalachicola Bay System sustains a vibrant commercial oyster fishery, a thriving aquaculture industry and recreational and tourism-related activities and development opportunities that underpin a strong local economy and resilient coastal community.

GOAL E: The broader Apalachicola Bay Region is thriving economically as a result of a fully-restored Apalachicola Bay System.

OUTCOME: By 2030, the broader Apalachicola Bay Region is thriving economically as a result of a restored Apalachicola Bay System that reflects a unique coastal cultural heritage, based on a vibrant oyster fishery, while simultaneously providing new opportunities for sustainable and responsible development, business, recreation and tourism.

GOAL E OBJECTIVES

E1) To ensure that economic indicators of the commercial oyster fishery and associated industries in the ABS demonstrate increasing viability and growth.

E2) To ensure that industries and businesses within the ABS are compatible with a healthy and well-managed ABS ecosystem.

E3) To develop growth management policies, plans and regulations affecting the ABS that are compatible with a healthy and well-managed ABS ecosystem while maintaining a thriving economy and supporting cultural heritage.

E4) To develop an oyster aquaculture industry that provides economic opportunities and is complementary to the wild harvest fishery.

GOAL E DRAFT STRATEGIES

- 1) Work with existing partners (e.g., the Chamber of Commerce, Apalachee Regional Planning Council, and city and county staff) to monitor and report on the economic benefits of a restored ABS, including key economic indicators relevant to the commercial oyster fishery and associated industries in the region. This can be displayed as a dashboard that includes key economic indicators over time based on restoration efforts in the Apalachicola Bay System (ABS).
- 2) Recommend monitoring² and enforcement programs continue with appropriate metrics to measure output from and impact of harvest on oyster reefs.
- 3) Support planning tied to economic indicators that consider future conditions (climate, SLR, reduced river flow) and their effects on the ABS.
- 4) Work with oystermen and other community stakeholders to promote post-recovery Apalachicola oysters.
- 5) Develop complementary industries in wild oyster harvest and oyster aquaculture that provide new economic opportunities by building a network of experts that can help Franklin County citizens build successful programs through business training, identifying sources of funding for equipment, and developing products that will enhance and diversify local industries.
- 6) Develop new markets for selling oysters to areas within and outside of Florida in part by investing in location (Apalachicola Bay) branding.
- 7) Review land development regulations to provide flexibility while supporting and enhancing efforts to maintain and revitalize working waterfronts in Apalachicola and Eastpoint to ensure preservation of Franklin County's cultural heritage and a viable seafood industry.
- 8) Coordinate with the local business community and governing bodies (i.e., city and county commissions) to ensure that growth management plans, land use and development regulations meet strong standards that are compatible with and minimize the environmental impact of industry and business activities within the ABS and are conducive to a healthy ecosystem.

² Ongoing fisheries-dependent and fisheries-independent monitoring by FWRI, coupled with ABSI complementary data based on request of watermen. Both entities are sharing data with one another which is critical for ABSI model development. (We remain unable to get FWRI data)

- 9) Engage commercial fishermen in the restoration of the bay and encourage future participation in restoration such as monitoring, shell recycling, shelling, and relaying.
- 10) Coordinate with and encourage recreational businesses and activities that recognize the importance of and support a sustainable commercial oyster fishery and the importance of the seafood industry to the Region's cultural heritage.
 - *Action 10-A*): Coordinate and work with initiatives such as the Regional Recreation Economy Alliance to leverage resources to support the local economy.

Lead: ABSI CAB Successor Group	Partners: Stakeholder groups, Chamber of Commerce, local government
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**ADDITIONAL STRATEGIES OUTSIDE OF ABSI SCOPE
TO BE REFERRED TO OTHER PROGRAMS OR ENTITIES**

- 1) Develop surveys or other tools that can be used to measure and track changes in stakeholder and public understanding of the issues important to the health and restoration of the Bay.
- 2) Engage the general public (students, residents and tourists) in learning about the history and the ecological and economic importance of the Apalachicola Bay region, including the natural resources, and lumber, cotton shipping, and fishing industries.
- 3) Build Gulf-wide mechanism for communities interested in the restoration and revitalization of fisheries to exchange best practices and lessons learned. [Status: this is developed through FWC]
- 4) Provide training and financial support for new workforce entrants (particularly young entrants) interested in being employed in existing industries as well as and developing industries in new fisheries, aquaculture, and restoration science.
- 5) Work with State legislators and state agencies to develop funding strategies, and incentives for involving local watermen, seafood dealers, restaurants, aquaculture operations, and private citizens in oyster reef restoration efforts that will increase the viability of oyster resources.
 - *Action 5-A*): Identify source of shell, or other restoration material.

Lead: ABSI CAB Successor Group	Partners: Stakeholder groups, Chamber of Commerce, local government
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ATTACHMENT 7
PERFORMANCE MEASURES AND ESTUARINE METRICS

SECTION V
PERFORMANCE MEASURES
METRICS ASSOCIATED WITH OBJECTIVES (TO MEASURED ANNUALLY)
AND ESTUARINE METRICS

PERFORMANCE MEASURES: The regular measurement of outcomes and results, which generates reliable data on the effectiveness, efficiency, and sustainability of programs and plans. The decision support tools will be used when available to forecast results that will help weigh the potential outcomes of different strategies.

PERFORMANCE MEASURES	
GOAL A—A HEALTHY AND PRODUCTIVE BAY ECOSYSTEM	
OBJECTIVES	RECOMMENDED METRICS
<p>A1) To use observations, monitoring, experiments and modeling conducted through ABSI and related efforts to create decision support tools that can inform how a range of natural and human influenced factors will affect the ABS ecosystem.</p> <p>Goal for Objective A1: User-friendly informative decision support tools available to ABS resource managers.</p>	<ul style="list-style-type: none"> • Oyster population dynamics (recruitment, growth, mortality, shell budgets). • River flows under climate and management scenarios (River flow model). • Current speed and direction and particle trajectories (proxy for larval dispersal), under different river flow, tidal and wind-forced scenarios (hydrodynamic model). • Temperature, salinity, oxygen, pH, nutrients and organic carbon dynamics under different climate and management scenarios (combined river flow and hydrodynamic models). • Reef area and height (total area of patches of living and nonliving oyster shell or substrate with and without live oysters). • Area and distribution of suitable oyster habitat (from predictive habitat models) for current and future conditions.
<p>A2) To help establish a comprehensive monitoring plan to evaluate the health of the ABS oyster resource and its measurable ecosystem services with clearly defined performance measures and strong coordination among the</p>	<ul style="list-style-type: none"> • Regularly updated maps of intertidal and subtidal reefs • Oyster recruitment rates

<p>various entities conducting research in the region.</p> <p>Goal for Objective A2: A monitoring plan approved by stakeholders and resource management.</p>	<ul style="list-style-type: none"> • Density ($\#/m^2$) of live and dead oyster juveniles (<25mm), sub-adults (26-75 mm) and market size (> 76 mm) adults. • Oyster size-frequency distribution (using shell height) (mm) • Reproductive status • Condition index • Pest and predator prevalence • Disease prevalence • Environmental variables (temperature, salinity, oxygen, turbidity, pH, nutrients)
<p>A3) To use existing and new research, and decision support tools to identify viable strategies for restoration and management of the ABS oyster resources and the function of the ABS ecosystem.</p> <p>Goal for Objective A3: Management and restoration plan that increases ecological function of oyster reefs in the ABS.</p>	<ul style="list-style-type: none"> • Understanding of optimal restored reef, placement, dimensions and materials. • Identification of optimal locations for broodstock reefs (areas closed to harvest). • Increase density of legal oyster populations on both restored and non-restored reefs ($\#/m^2$).to at least 100 m^3 (levels observed in 2000). • Statistically significant increase (over current conditions) in diversity and abundance of ecologically- and economically-important species (resident and transient). • Maintenance of sufficient live oysters and dead shell to sustain a healthy oyster reef ecosystem.
<p>A4) To define measurable ecosystem services that can be used to determine the level of change in ecological health (e.g. oyster fishery harvest, habitat for other fishery species, abundance and condition indices for oyster reef and population health) and societal benefit derived from Apalachicola Bay System management and restoration efforts, with target and threshold levels identified.</p> <p>Goal for Objective A4: Improved oyster reef ecosystem services for the ABS.</p>	<ul style="list-style-type: none"> • Change in the amount of shoreline habitat that is protected (Goal: increase in shoreline extent, elevation, marsh cover). • Change in the amount of sustainable wild oyster harvest that is supported by restored oyster populations. • Improved recreational and commercial fisheries of oyster-reef related species (stone crab, sheepshead, drum). • Improved water clarity in the vicinity of restored oyster reefs.
<p>GOAL B—SUSTAINABLE MANAGEMENT OF OYSTER RESOURCES</p>	
<p>B1) To develop through a transparent and inclusive process a science-based ABS oyster recovery and adaptive management plan for both commercial and recreational</p>	<ul style="list-style-type: none"> • Establish sustainable allowable catch in total biomass (kg), including harvest rate

<p>industries that includes: broad stakeholder and community support; a long-term, comprehensive monitoring plan that will be carried out by state agencies and their contractors; a regulatory framework that allows for rapid modifications when needed to address changing environmental conditions; and enforceable regulations that contain penalties sufficient to deter violations and harm to the resource. It is imperative that this Plan be constructed with the direct involvement of entities within the State of Florida (e.g., FWC, FDACS, State Legislature) in cooperation with other relevant agencies to enhance the likelihood of its implementation.</p> <p>Goal for Objective B1: A stakeholder supported adaptive management plan for the ABS.</p>	<p>and shell budgets.</p> <ul style="list-style-type: none"> • Incorporate commercial and recreational harvest in oyster stock assessment model for ABS. • Model different adaptive management approaches, to promote sustainability of the fishery, and long-term planning and investment by harvesters and dealers. • Assign some existing reefs as broodstock reefs that are closed to harvest • FWC law enforcement increases presence during oyster open season, and develops appropriate penalties for regulation violations • FWC establishes a long-term state-wide oyster monitoring program
<p>B2) To make recommendations to FDACS for oyster aquaculture best management practices that allow for the unimpeded recovery of oyster reefs, the oyster fishery, and the ecological and societal health of the ABS ecosystem while providing economic opportunities to the aquaculture industry.</p> <p>Goal for Objective B1: Identify positive and negative interactions between oyster aquaculture and wild oyster restoration and fisheries.</p>	<ul style="list-style-type: none"> • FDACS, FWC or other entity supports studies to identify aquaculture practices that affect oyster restoration and fisheries, and other habitats within the ecosystem.
<p>GOAL C—A FULLY FUNDED AND SUPPORTED MANAGEMENT & RESTORATION PLAN</p>	
<p>C1) To establish a fully funded permanent, representative stakeholder process to monitor the long-term implementation of the Plan.</p> <p>Goal for Objective C1: Establish a stakeholder group to ensure community support for the management and restoration plans.</p>	<ul style="list-style-type: none"> • Creation of an ABSI CAB successor group to continue stakeholder engagement in the management and restoration process
<p>C2) To support efforts to identify funding sources and define mechanisms for full implementation of the Plan.</p> <p>Goal for Objective C2: Obtain sufficient funding to implement restoration and management plans.</p>	<ul style="list-style-type: none"> • Form a small stakeholder group that will identify and obtain funding for large scale continued restoration of the ABS oyster reefs.
<p>GOAL D—AN ENGAGED STAKEHOLDER COMMUNITY AND INFORMED PUBLIC</p>	
<p>D1) To coordinate community engagement efforts to increase public awareness of and support for a healthy and</p>	<ul style="list-style-type: none"> • Number of people with improved understanding of the ecosystem services

<p>well-managed ABS ecosystem; and to ensure that businesses, industries, non-profits, and local governments are supportive and included in these efforts.</p> <p>Goal for Objective D1: An engaged and informed community, including K-12 and adults in the local area and beyond.</p>	<p>provided by oysters</p> <ul style="list-style-type: none"> • Number of businesses, schools, industries, non-profits, and local governments participating in outreach efforts. • Number of volunteers participating in oyster reef restoration efforts. • Number of internship program “graduates” that enter the oyster aquaculture workforce in the ABS or other estuary in Florida. • Number of K-12 students reached by ABSI.
<p>D2) To measure public and stakeholder understanding of the issues important to the health and restoration of the Bay and socio-economic indicators.</p> <p>Goal for Objective D2: Understand stakeholder commitment to a healthy ABS ecosystem.</p>	<ul style="list-style-type: none"> • Survey of stakeholders to assess level of understanding of the ecosystem services provided by oysters, and commitment to adopting measures that improve ABS health.
<p>GOAL E—A THRIVING ECONOMY CONNECTED TO A RESTORED ABS</p>	
<p>E1) To ensure that economic indicators of the commercial oyster fishery and associated industries in the ABS demonstrate increasing viability and growth.</p> <p>Goal for Objective E1: Increased viability and growth of oyster fishery and associated industries.</p>	<ul style="list-style-type: none"> • Monitor economic indicators of a successful wild oyster industry, and assess causes of positive and negative trends.
<p>E2) To ensure that industries and businesses within the ABS are compatible with a healthy and well-managed ABS ecosystem.</p> <p>Goal for Objective E2: Create a decision support tool to assess the effect of ABS industries on ecosystem health.</p>	<ul style="list-style-type: none"> • Monitor metrics associated with Goal A and with objective E1 (above) to determine whether they have positive, neutral or negative interactions
<p>E3) To develop growth management policies, plans and regulations affecting the ABS that are compatible with a healthy and well-managed ABS ecosystem while maintaining a thriving economy and supporting cultural heritage.</p> <p>Goal for Objective E3: A healthy, well-managed ABS and thriving working waterfront industries.</p>	<ul style="list-style-type: none"> • Assess effect of growth management plans on ABS ecosystem health and economic growth
<p>E4) To develop an oyster aquaculture industry that provides economic opportunities and is complementary to the wild harvest fishery.</p>	<ul style="list-style-type: none"> • Assess economic indicators associated with aquaculture and wild oyster harvest • Assess social and economic compatibility between the two industries using

Goal for Objective E4: Establish complementary oyster aquaculture and wild oyster harvest industries.	stakeholder survey tools.
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ESTUARINE METRICS

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.

ESTUARINE METRICS	
CATEGORY	ASSOCIATED METRICS
Environmental	<p>For eastern oysters, the optimal range of salinities is 15-25 ppt and temperatures are 20-30°C. Use hydrodynamic models to estimate:</p> <ul style="list-style-type: none"> • Spatial and temporal footprint of optimal salinity conditions under different flow regimes (and temperatures if possible). • Spatial and temporal footprint of unfavorable conditions (< 10 ppt, > 25 ppt) under different flow regimes. • Assess spatial and temporal footprint of potential oyster food sources (nutrients, chlorophyll, phytoplankton and particulate organic material). • Use <i>in situ</i> instruments to validate and parameterize models to increase accuracy. • Use ANERR data (current and historical) to hindcast environmental conditions (temp, salinity, oxygen, turbidity, pH, nutrients) relative to historical water flows. • Compare river flows (seasonal means and variances) and ‘footprint’ of optimal conditions, before and after the cessation of dredging the Apalachicola River for navigation purposes. • Model flows with theoretical no withdrawal scenario to look at just climate projections on flow.
Biological - Oysters	<p>Measurable biological responses may be <i>immediate</i> (e.g. mortality in response to extreme conditions), <i>delayed</i> (e.g. high mortality from predation/disease in response to extended high salinities) or <i>sub-lethal</i> (e.g. reduced growth in response to long-term suboptimal conditions). The following variables can be measured during monthly monitoring and results interpreted in the context of observed or modeled optimal/sub-optimal environmental conditions.</p> <p>Biological metrics include:</p> <ul style="list-style-type: none"> • Mortality (boxes) – juveniles, sub-adults, adults. • Recruitment - river outflow can change current regime and environmental conditions, which influence larval survival, and dispersal. • Condition index – decreases under sub-optimal conditions.

	<ul style="list-style-type: none"> • Disease (Dermo) prevalence – increases in high salinity warm conditions. Primarily affects adults. • Reproductive status – can be impacted under long-term suboptimal conditions.
Ecological - Oysters	<ul style="list-style-type: none"> • Oyster population dynamics – number of live, dead and boxes for juvenile, sub-adult and adult oysters can identify size-related mortality events. • Use past observations on reef distribution and predictive habitat models (for climate and management scenarios) to identify optimal locations for oyster restoration. • Compare current and historical reef height and footprint to identify target reef size for restoration.
Ecological - Other Species	<ul style="list-style-type: none"> • Predator abundance (high salinities facilitate predators such as oyster drills, crown conch, stone crabs). • Occurrence of pests (boring sponge, blister worms) and parasites (flatworms). • Use FWC Fisheries independent monitoring data to assess distribution of fishes (and managed invertebrate species) relative to river flow and modeled/observed environmental data.