

**OYSTER ECOSYSTEM-BASED FISHERY MANAGEMENT PLAN (O-EBFM)  
FOR THE PENSACOLA BAY SYSTEM (PBS)**

**PBS STAKEHOLDER WORKING GROUP**

**MEETING VII—MEETING SUMMARY**

**SEPTEMBER 28, 2020**

**HOST: THE NATURE CONSERVANCY, FLORIDA**

**FACILITATOR: FACILITATED SOLUTIONS, LLC**

**ZOOM ONLINE MEETING**

*Convened by:*



*Facilitated by:*



<http://facilitatedsolutions.org>.

**Pensacola Bay System Oyster EBFM Working Group  
September 28, 2020**

***Thank You!***



# PBS STAKEHOLDER WORKING GROUP

## MEETING VII—MEETING SUMMARY

September 28, 2020

### *Table of Contents*

<b>EXECUTIVE SUMMARY</b>	<b>3</b>
<b>DETAILED SUMMARY</b>	<b>8</b>
<b>I. WELCOME, AGENDA AND PROCEDURES</b>	<b>8</b>
<b>II. PBS PRESENTATIONS</b>	<b>8</b>
A. FWC APALACHICOLA BAY WILD OYSTER HARVESTING CLOSURE	8
B. PREDICTING BENEFITS IN PANHANDLE ESTUARY SYSTEMS: A PARTNERSHIP	10
C. SPATIAL MANAGEMENT APPROACH FOR THE OYSTER EBFM PLAN IN THE PENSACOLA BAY SYSTEM	11
<b>III. GREATER PENSACOLA BAY SYSTEM GOAL FRAMEWORK</b>	<b>12</b>
<b>IV. WORKING GROUP GOALS, OBJECTIVES, AND DRAFT STRATEGIES</b>	<b>13</b>
WORKING GROUP DRAFT OVERARCHING STRATEGIES	13
A. HEALTHY AND PRODUCTIVE OYSTER REEF ECOSYSTEM	14
B. THE MANAGEMENT AND REGULATION OF THE OYSTER FISHERY AND AQUACULTURE INDUSTRY	16
C. A THRIVING ECONOMY CONNECTED TO THE PENSACOLA BAY SYSTEM	18
D. AN ENGAGED AND INFORMED PUBLIC AND DECISION-MAKERS	19
<b>V. PERFORMANCE MEASURES</b>	<b>20</b>
<b>VI. PUBLIC COMMENT AND NEXT STEPS</b>	<b>24</b>
<b>APPENDICES</b>	
Appendix #1 Meeting Agenda	25
Appendix #2 Participating Working Group Members & TNC Team	26
Appendix #3 Meeting Evaluation	28
Appendix #4 Working Group Schedule and Workplan	30
Appendix #5 GPBS Themes, Goals, Outcomes & Objectives	32
Appendix #6 Project Summary	36

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PBS STAKEHOLDER WORKING GROUP  
MEETING VII EXECUTIVE SUMMARY  
September 28, 2020**

Anne Birch, Florida Marine Program Manager, The Nature Conservancy, welcomed the Stakeholder Working Group members to the online 7<sup>th</sup> meeting via Zoom. Anne introduced the PBS facilitation team of Jeff Blair and Bob Jones with Facilitated Solutions LLC. Members introduced themselves (*See Appendix #2*) and the facilitator reviewed the meeting objectives and agenda which members agreed to follow (*See Appendix #1*). Members also approved, without changes, the July 22, 2020 facilitator's VI Meeting Summary, which members had received in advance of the September 28 meeting. Jeff then reviewed guidelines for PBS virtual meetings.

The Working Group reviewed the project meeting schedule and workplan including a Watermen's Workshop to be convened on December 8, 2020 in the evening. After checking on possible member conflicts for the meeting dates, Anne Birch promised to send the Working Group members Zoom invites for the October 21, November 18, 2020, and the January 21, February 17, and March 17, 2021 meetings.

Presentations included: Mike Norberg, Regional Marine Fisheries Management Biologist, FWC, on the FWC Apalachicola Bay Wild Oyster Harvesting Closure; Matt Deitch UF and Jane Caffrey UWF on a project funded by the Florida RESTORE Act Centers of Excellence Program (FLRACE), which will assist estuary programs in Pensacola & Perdido Bays, Choctawhatchee Bay and St. Andrew & St. Joseph Bays; and Laura Geselbracht, Senior Marine Scientist, TNC on a Spatial Management Approach for the Oyster EBFM Plan in the Pensacola Bay System. (*Descriptions of the presentations are included in the detailed summary.*)

The Working Group continued to agree on the "vision of success" themes that were drawn from the questionnaire responses, reviewed and rated at the October and November 2019 Working Group meetings and formed the basis for the goal framework. The goals, outcomes, objectives and strategies were developed at the January-July meetings of the Working Group. (*See Appendix #7*)

**PBS STAKEHOLDER WORKING GROUP GOAL FRAMEWORK**

A. A Healthy and Productive Oyster Reef Ecosystem	B. The Management and Regulation of the Oyster Fishery and Aquaculture Industry
C. Thriving Economy Connected to the Greater Pensacola Bay System	D. An Engaged and Informed Public

The TNC Team recommended a new category of Overarching Strategies, which the Working Group reviewed and tentatively approved the following list of seven strategies.

1. Utilize the Habitat Suitability Model (HSM) as a means for identifying areas for oyster reef restoration and the siting of aquaculture facilities. NOTE: The HSM will be updated periodically as new or more refined data become available.
2. Annually assess and report on the progress of completing the Plan's Actions.

3. Establish a co-management advisory committee to periodically evaluate and adapt the Plan, as needed, and review effectiveness of management decisions. Composition: state management agencies (FWC, FDACS, FDEP), watermen, and other key stakeholders.
4. Create a comprehensive funding approach for plan implementation including a comprehensive analysis of future grant funding for strategies deriving from the Plan.
5. Evaluate non-traditional methods for implementing the Plan's management and restoration actions.
6. Evaluate and ensure that the PBS Plan works synergistically with and leverages the benefits of the other strategies, plans, and initiatives that are ongoing or planned for the PBS.
7. 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 PBS.

**The Healthy and Productive Oyster Reef Ecosystem** vision theme, goal, outcomes and objectives are set forth in Appendix 5. The goal for this theme is, "The Pensacola Bay System sustains a healthy and productive oyster reef ecosystem." There are nine objectives covering: oyster populations; ecosystem services; substrate; and future conditions. The TNC Team recommended revisions of current and new strategies which the Working Group reviewed and tentatively approved the following list of nine strategies:

1. Use data collection, monitoring, annual stock assessment data, and comprehensive shell budget models to inform management of oyster populations.
2. Establish restoration and management targets for functional harvested and non-harvested oyster reefs using ecological health indicators (e.g., amount of water filtered by oysters, amount of juvenile fish enhancement by reefs; seagrass habitat and other adjacent ecosystems established or restored).
  - a. *Action:* Create and manage a prioritized list and a spatially explicit map of restoration projects for the bay system based on the HSM and restoration and management targets.
3. Implement policies and programs for the return of sufficient oyster shell back to the PBS to support sustainable oyster populations and demographic targets and thresholds.
  - a. *Action:* Traditional and novel policies and programs are implemented to support return of shell back to the system to support oyster population and demographic targets and thresholds for wild harvest.
  - b. *Action:* Demonstrate the benefits of shell recycling programs to return shell back into the System.
4. Identify sources and manage and remediate sedimentation to the estuary impacting the oyster reef ecosystem.
5. Restore and create reef structures suitable for sustained oyster settlement for ecosystem services.
6. Utilize models and other relevant information on climate change impacts to influence adaptive, sustainable reef management.
7. Allocate sufficient funding for habitat restoration based on the oyster HSM and restoration and management targets (e.g., Develop funding source for cultch used in oyster reef restoration.)
8. Evaluate the effects of land use changes in the watershed on the health of oysters (e.g., floodplain forests, marshes, open spaces).
9. Characterize and quantify current biological (e.g., red tide) and chemical hotspots (e.g., pesticides, heavy metals) and inputs into the PBS and their effect on oysters.

**The Management and Regulation of the Oyster Fishery and Aquaculture Industry** vision theme, goal, outcomes and three objectives are set forth in Appendix 5. The TNC Team recommended and the Working Group agreed to adjust Objective 1 and 2 as indicated below:

1. Establish sustainable biological and production thresholds and targets for wild harvest.
2. For wild harvest and aquaculture, ensure management is adaptable and re-assessed on a periodic basis to account for changes in climate and other future environmental conditions.

The TNC Team recommended revisions of current and new strategies which the Working Group reviewed and tentatively approved the following list of nine strategies:

1. Oyster population and demographic targets and biological thresholds are developed (at the smallest scale that makes sense), using routine monitoring data combined with shell budget models. Need to define the scale used for the specific boundaries.
2. Evaluate management scenarios for the commercial oyster industry and recreational oyster fishing that provide for sustainable spat production and spawning, and the recovery of oyster populations (e.g., closures, rotational harvest, non-harvested spawning reefs, Territorial Use Rights of Fishing, limited entry, regulations, transferable license program).
  - a) *Action:* Evaluate existing allowable and minimally destructive alternative gear type options and harvest methods, including the use of experimental gear for wild oyster harvesting.
3. Enhance the monitoring and accuracy of commercial and recreational oyster harvest and aquaculture stock data collection and reporting methods for inclusion in restoration and management targets.
4. Promote opportunities for agencies, law enforcement and watermen to work together on enforcement of oyster resource regulations.
5. Restore and create reef structures suitable for sustained oyster settlement and production for harvesting.
6. Investigate oyster shell and oyster relay programs to move both cultch and live oysters to more favorable habitat based on the HSM, information on larval source areas and environmental conditions.
8. Create seafood industry/stakeholder/agency programs to cooperatively manage harvested reefs as part of cooperative management concept (e.g., relaying, growing their own and seed in various locations)
9. Develop an aquaculture growth plan that outlines and defines the optimal expansion of the plan is to prepare for expected future growth of the industry.)
  - a. *Proposed Action:* Develop Spatial Area Management Plan that maps ideal areas for aquaculture and future growth potential for aquaculture in the system using abiotic (DO, salinity, temperature, etc.) and social variables (proximity to docks, exclusion zones, etc.).
  - b. *Proposed Action:* Establish Aquaculture Use Zones (AUZ) for the Pensacola Bay System based on the Oyster EBFM Plan.

**A Thriving Economy Connect to the Pensacola Bay System** vision theme, goal, outcome and three objectives are set forth in Appendix #5. The TNC Team recommended revisions of current and new strategies which the Working Group reviewed and tentatively approved the following list of three strategies:

1. Monitor key economic indicators for changes over time based on restoration efforts to the PBS.

- a. Action: Characterize the connection between enhanced recreational fishing and tourism opportunities and oyster reef habitat quality and quantity.
2. Develop a marketing and communication plan that promotes wild harvest and cultured oysters and the ecosystem services provided by restored oyster populations in the PBS and celebrates oysters as an important feature of the area's cultural heritage.
3. Align local and state government policies and practices that support oyster restoration, fisheries and aquaculture.

**An Engaged and Informed Public and Decision-Makers** vision theme, goal, outcome and three objectives are set forth in Appendix #5. The TNC Team recommended revisions of current and new strategies which the Working Group reviewed and tentatively approved the following list of three strategies:

1. Build a broad constituency to support outreach efforts that generate and increase public awareness and support for a healthy and well-managed oyster habitat and fisheries and the ecosystem services they provide.
  - a) *Action*): Businesses, industries, non-profits, and local governments are supportive and included in outreach and education efforts to generate and increase public awareness and support for a healthy and well-managed PBS ecosystem.
  - b) *Action*: Education efforts address both the positive and negative consequences of restored oyster reef habitat respectively.
  - c) *Action*: Seek public buy-in for supporting restoration efforts by highlighting the benefits to and enlisting the support of recreational fishing, ecotourism, and water sports interests.
2. Expand existing or create new mentoring and education programs focused on restoration and monitoring of oyster habitat and fisheries and training for aquaculture farming that involve all sectors of the community.
  - a) *Action*: Develop and support new and existing volunteer citizen-science programs for monitoring, data collection, and restoration efforts for oyster restoration projects at all levels (e.g., youth, adult, K-12, and colleges and universities). Demonstrate the benefits of shell recycling programs to return shell back into the System.
  - b) *Action*: Develop metrics for public engagement and education programs.
  - c) *Action*: Develop and support education programs that focus on oysters as drivers of restoration and management of the PBS.
  - d) *Action*: Develop education and mentoring programs to ensure there is new entry into restoration, wild harvest, and aquaculture industries.
  - e) *Action*: Design and implement local community initiatives for growing oysters for their ecosystem services (i.e., Mobile Bay oyster gardening), ensuring that science-based best practices are utilized.
  - f) *Action*): Develop a "future farmers" program that helps locals in the area learn about aquaculture and the potential for making a living by growing oysters in the PBS. (e.g., Partner with existing programs such as Sea Grant MS/AL programs).
  - g) *Action*: Develop an oyster workforce and mentoring and an education program for restoration, and monitoring of oysters for harvest and habitat restoration.
3. Demonstrate the economic and social benefits derived from the ecosystem services provided by oyster fisheries and restored/natural reef habitat.



**Performance measures** are the decision-support tools forecast results that stakeholders will use for weighing the potential outcomes of different strategies. For each of the goal areas, the TNC Team suggested the following subheadings for each goal area. The performance measures and those added by the Working Group are set forth in the detailed summary.

**A.) A Healthy and Productive Oyster Reef Ecosystem**

Habitat Restoration/Management (6 measures); Ecosystem Services (4 measures); In Combination with the Above Measures (5 measures)

**B.) The Management and Regulation of the Oyster Fishery and Aquaculture Industry**

Wild Harvest (6 measures), Aquaculture (3 measures); and In Combination with the Above Measures (2 measures). Working Group members suggested Including table of fisheries dependent and independent monitoring/metrics current and possibly needed (temporal/frequency, current vs. optimal)

**C.) A Thriving Economy Connected to the Pensacola Bay System**

Habitat Restoration/Management (2 measures); Ecosystem Services (6 measures); Wild Harvest (5 measures); Aquaculture (5 measures); Economic Value (4 measures); In Combination with the Above Measures Combined (6 measures); and Omitted (4 measures)

**D.) An Engaged and Informed Public and Decision-Makers**

Public Awareness (5 measures); Implementation (4 measures); and In Combination with the Above Measures Combined (1 measure)

The facilitators invited members of the public to comment and there was no one who offered public comments. They then reviewed possible agenda items for the Meeting VIII, which will take place October 21, 2020 in a Zoom virtual meeting format. The TNC Team agreed to review and address the comments in revised strategies and actions. The next several meetings will consist of further review and refinement of strategies and actions. The meeting concluded with a Zoom evaluation. *(See Appendix #3)*

*The meeting adjourned at 12:30 p.m. CT.*

# OYSTER ECOSYSTEM-BASED FISHERY MANAGEMENT PLAN (O-EBFM) FOR THE PENSACOLA BAY SYSTEM (PBS)

## PBS STAKEHOLDER WORKING GROUP

### MEETING VII DETAILED SUMMARY- September 28, 2020

*This section provides a more detailed summary of the meeting with additional data from the presentations and verbatim comments from the Working Group members during review and discussion of the Themes.*

## I. INTRODUCTION

### A. WELCOME AND AGENDA AND PROCEDURES REVIEW

Anne Birch, Florida Marine Program Manager, The Nature Conservancy, welcomed the Stakeholder Working Group members to the online Zoom 7<sup>th</sup> meeting. Anne introduced the GPBS facilitation team of Jeff Blair and Bob Jones with Facilitated Solutions LLC. Members introduced themselves (*See Appendix #2*) and the facilitator reviewed the meeting objectives and agenda which members agreed to follow (*See Appendix #1*). Members also approved, without changes, the July 22, 2020 facilitator's VI Meeting Summary, which members had received in advance of the September 28 meeting. Jeff then reviewed guidelines for GPBS virtual meetings.

The Working Group reviewed the project meeting schedule and workplan including a Watermen's Workshop to be convened on December 8, 2020 in the evening. After checking on possible member conflicts for the meeting dates, Anne Birch promised to send the Working Group members Zoom invites for the October 21, November 18, 2020, and the January 21, February 17, and March 17, 2021 meetings.

## II. PRESENTATIONS ON THE PENSACOLA BAY SYSTEM

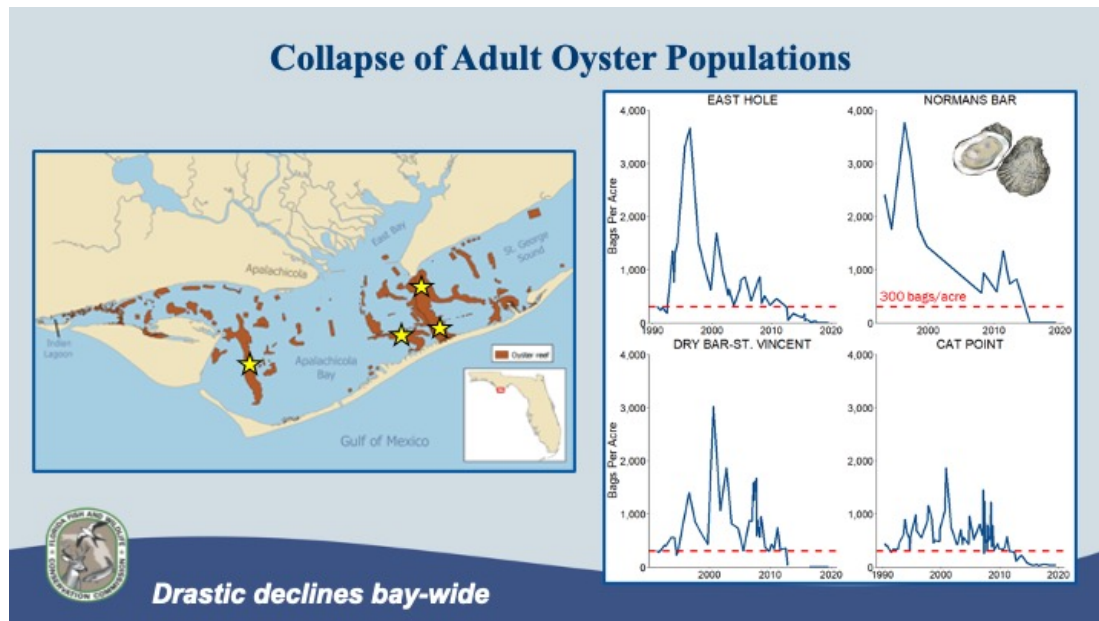
### A. FWC APALACHICOLA BAY WILD OYSTER HARVESTING CLOSURE

Mike Norberg, FWC, a member of the Working Group presented background and context for a proposal to close Apalachicola Bay to wild oyster harvesting. He noted at the July 2020 Commission meeting, staff provided [a FWC presentation](#) that briefly outlined oyster ecology and management in Florida; the history of Apalachicola and the Apalachicola Bay (Bay) oyster fishery; the status of the oyster population and fishery in the Bay; and an update on a recently funded, large-scale restoration project to promote the recovery of oysters in the Bay. They concluded the presentation with a proposal to temporarily suspend all wild oyster harvest from the Bay until 2025 in order to support restoration efforts and recovery of the Bay's oyster population.

A time series of adult oyster abundance monitoring data on multiple reefs (East Hole, Normans Bar, Dry Bar, and Cat Point), in the Bay from the mid-1990's through 2019 shows drastic declines in oyster abundance bay-wide. Since 2017, the level of abundance (300 bags/acre) necessary for oyster reefs to support a limited harvest were below 200 bags/acre, and by 2019, only two reefs had harvestable-size (3-inch) oysters. Both of these reefs were significantly depleted, with only an estimated 34 and 57 bags per acre on each reef, respectively. More so, some historic reefs have become so degraded that there is little-



to-no shell material left. From 2015-2019 average monthly recruitment (number of spat per shell) declined each year from May 2015 through December 2019.



The FWC Staff recommended the Commission approve the proposed draft rules to support restoration by conserving existing oyster shell and adult oysters in the Bay. Specifically, staff recommends suspending all harvest of wild oysters from the Bay and prohibiting on-the-water possession of wild oyster harvesting equipment through Dec. 31, 2025. Staff also recommended the Commission proactively implement these conservation measures by Executive Order, effective Aug. 1, 2020. Staff recognized environmental conditions in the Bay have changed and the fishery may not be able to support the level of harvest it did historically; however, staff believed that this project could be a significant step toward increasing wild oyster abundance and developing management options that adapt to current and future conditions.

Mike also noted that in early 2020, FWC received a \$20 million commitment from the National Fish and Wildlife Foundation's Gulf Environmental Benefits Fund to conduct large-scale restoration of oyster habitat in the Bay. This project will fill in knowledge gaps to improve restoration success in light of changing conditions. It will also identify where, what material, and at what density to "cultch" (the introduction of oyster shell or material for oyster spat to settle on); include monitoring of restoration efforts; and developing a stakeholder-informed, adaptive management plan to improve future management of the wild oyster harvest fishery. They will coordinate with an FSU Apalachicola Bay System initiative (ABSI), funded by Triumph Gulf Coast, on both science and stakeholder engagement.

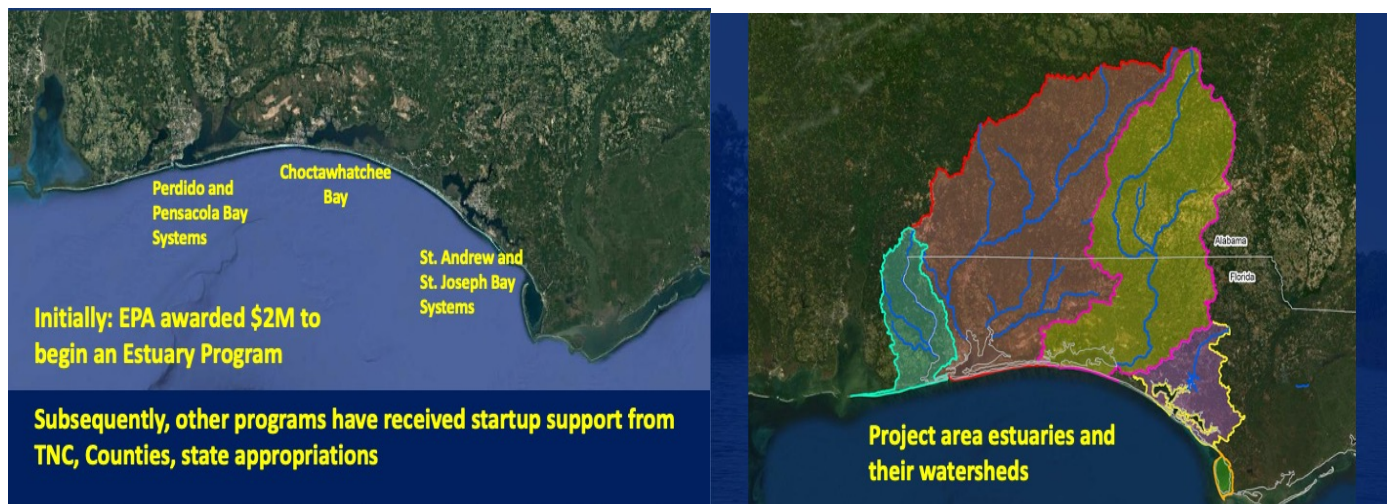
#### *Working Group Comments and Questions*

- How was the 300-bag threshold established? *A: Criteria for the FWC rule was based on sustainable harvest of 400 bags acre, with 300-bags represented a more limited harvest in Apalachicola Bay. The abundance was based on monitoring and below 300-bag will reduce days of harvest. This wasn't based on a shell budget etc. FWC adopted a rotational harvest approach.*
- The 300-bag number should be adaptable based on science.
- In terms of the monitoring criteria are you sampling to extrapolate oyster density? *A: We conduct Independent monitoring for density data.*

- What is success? Is it working? *A: We don't know yet. Monitoring of spat settlement and abundance data has and will continue in the context of adaptive management. The closure offers a couple years to allow time for restoration.*
- What impact will water availability or quantity have on the system? *A: Salinity in the Bay has been in a cascading decline since 2012. Fresh water flow is an unknown until litigation settled.*
- ABSI research project has a primary focus on what caused the collapse of bay. The ABSI Community Advisory Board has recommended that the Bay reopening for harvest be based on science.
- Is development, runoff, county land use impacts in Apalachicola a model for going forward in Pensacola Bay? *A: Each bay in Florida has some unique and common challenges and will not be a cookie cutter approach to management. The result in Pensacola Bay will be a planning and action framework.*
- In Pensacola Bay the decline in the oyster reef system is due to several factors such as: harvest without returning shell to system; major pollution events impacting seagrass and oysters; and sedimentation diminishing the hard bottom. It has been "death by 1000 small cuts." Something is causing low DO in Escambia Bay.
- Following the Deepwater Horizon oil spill, fishermen were catching mullet with oil in them. The flounder disappeared. The oysters declined. We don't have flounder back, mullet is reduced. It was a drastic decline. Water quality makes a huge difference. *A: Flounder declines is an issue throughout the Southeast Region. The FWC will have an October rulemaking meeting on the Bay closure.*

#### **B. PREDICTING BENEFITS IN PANHANDLE ESTUARY SYSTEMS: A PARTNERSHIP**

Drs. Jane Caffrey, UWF, and Matt Deitch, UF, presented on their project, funded by the Florida RESTORE Act Centers of Excellence Program (FLRACE), which will assist estuary programs in Pensacola & Perdido Bays, Choctawhatchee Bay and St. Andrew & St. Joseph Bays. The project will help to quantify impacts, stressors, and outcomes using adaptive management frameworks. Matt indicated the purpose of the grant is to develop adaptive management frameworks and models for each estuary. The project will:



compile literature that interested groups can use (year 1); inventory data sets (year 1); work with Estuary Programs (EPs) to develop conceptual models with indicators, stressors, potential causes, and impacts linkages (year 1); work with EPs to develop adaptive management frameworks and begin to organize data for models (years 2-3); and develop quantitative models for EPs to predict outcomes of proposed management actions (years 2-3).

Matt suggested that estuary programs want to advocate for, or implement, projects or management actions to benefit the estuary. Models can predict the change caused by the implementation of a particular action on stressors or indicators. Other estuary programs have used Indicators such as more Seagrass to reflect less indicator bacteria, more fish habitat.

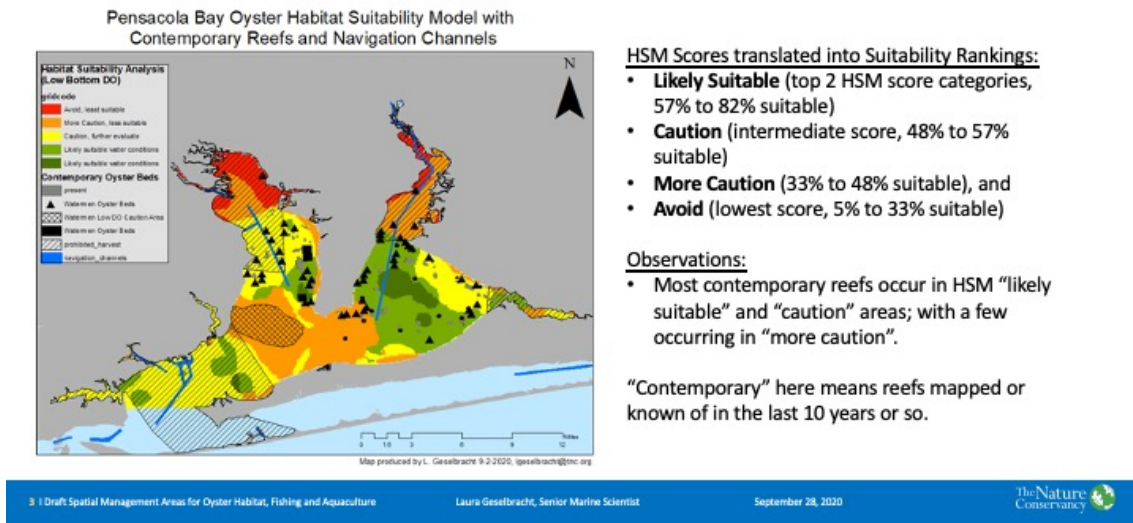
#### *Working Group Comments and Questions*

- Great work! We look forward to contributing the efforts in developing our plan.
- This is an exciting valuable project. Are you reaching out to gather data from the Bream Fishermen Association (BFA)? Working with and getting cooperation with FDEP and their data? A: We have experienced good cooperation. We will have access to the FDEP Legacy STORET portal. Some BFA data are not in the legacy records and we actively working from 1989 to present to digitize that data.
- The FDEP WIN, the Watershed Information Network, provides a modernized centralized environmental data management platform (excluding regulatory databases) as a successor to Florida STORET (STORage and RETrieval).
- In terms of our plan for improving the health of the Pensacola Bay System, we have oysters as a key indicator species.
- The PPBEP Estuary Program is working with Matt and Jane to summarize how the different pieces fit together, and engaging in a data exercise necessary to identify stressors and shared values for those participating in the estuary system in order to identify practical and meaningful actions to take for the health of the bay system. For example, if land use is an issue impacting the health of the estuary, we will identify and recommend management actions that can be taken by local governments and the development community.
- In working with the Panhandle estuaries, we expect to find different stressors and priorities for action in each estuary.

#### **C. Draft Spatial Management Approach for the Oyster EBFM plan in the Pensacola Bay System**

Laura Geselbracht, Senior Marine Scientist, TNC, reviewed the development of a spatial management approach for oyster habitat, fishing and aquaculture for the Pensacola Bay System plan. She suggested a spatial plan can be constructed from available information on the system including: the Habitat Suitability Model (HSM); Current Management Areas; Known Reef Locations; and Areas to Avoid. Laura provided an overlay map of available information with HSM scores for suitability which featured 4 categories: Likely Suitable (top 2 HSM score categories, 57% to 82% suitable); Caution (intermediate score, 48% to 57% suitable); More Caution (33% to 48% suitable); and Avoid (lowest score, 5% to 33% suitable). Most contemporary reefs mapped or known in the last 10 years occur in HSM “likely suitable” and caution” areas; with a few occurring in “more caution.”

## Overlay of Available Information



Laura noted Ecological Reef Restoration Sites Can Serve as: Larval Source Areas for Fished Reefs; Water Quality Improvement Areas for the System; and Sportfishing Hotspots. She also noted an Important consideration for the suitability of surface/near surface aquaculture is the minimum surface dissolved oxygen (DO) and we should consider avoiding areas where surface DO sometimes falls below 2 ppt as this is lethal to oysters. For off-bottom or near bottom, aquaculture use the HSM for oysters applies.

### WG Comments

- We are interested in bacteriological issues and we want to put material in preferred area locations matching DO sink and bottom characteristics. This can be remedied in marginal areas by raising oyster beds above the level of low DO.
- Will we collect sediment quality inputs as an element in a monitoring program? A: Yes. The EPA National Coastal Condition Assessment has 30 sites in the Pensacola Bay system and they will be sampling in June 2021.
- How has Hurricane Sally impacted living shoreline projects? Do we know how they have fared in terms of optimal places for these beds? A: *FWC has been monitoring and these are considerations they hopefully will look into. There may have been a shift in sedimentation and a contractor for the East Bay project will survey it soon to see if sediment has affected the site.*

## III. PENSACOLA BAY SYSTEM GOAL FRAMEWORK

The Working Group continued to agree on the “vision of success” themes that were drawn from the questionnaire responses, reviewed and rated at the October 9 and November 15 Working Group meetings and formed the basis for the goal framework. The vision themes represent key topical issue areas that together characterize the desirable future for the oyster reef ecosystem and the Greater Pensacola Bay System. The goals, outcomes and objectives were developed at the January and April meetings of the Working Group. (See Appendix #5)



## PBS STAKEHOLDER WORKING GROUP GOAL FRAMEWORK

A. A HEALTHY AND PRODUCTIVE OYSTER REEF ECOSYSTEM	B. THE MANAGEMENT AND REGULATION OF THE OYSTER FISHERY AND AQUACULTURE INDUSTRY
C. THRIVING ECONOMY CONNECTED TO THE GREATER PENSACOLA BAY SYSTEM	D. AN ENGAGED AND INFORMED PUBLIC

### IV. WORKING GROUP GOALS, OBJECTIVES, AND DRAFT STRATEGIES

#### WORKING GROUP DRAFT OVERARCHING STRATEGIES

The TNC Team recommended and the Working Group reviewed a new category of seven (7) Overarching Strategies.

1. Utilize the HSM as a means for identifying areas for oyster reef restoration and the siting of aquaculture facilities. *(Moved from Goal B – This is an important tool, but not a strategy. Could be an Action for both Goals A & B)*

*Working Group Comments*

- Thumbs up on proposed changes.

2. Annually assess and report on the progress of completing the Plan's Actions.

*Working Group Comments*

- Thumbs up on proposed changes.

3. Establish a co-management advisory committee to periodically evaluate and adapt the plan, as needed, and review effectiveness of management decisions. Composition: state management agencies (FWC, FDACS, FDEP), watermen, and other key stakeholders.

*Working Group Comments*

- This should be part of the Estuary Program as convener
- Thumbs up on proposed changes.

4. Create a comprehensive funding approach for plan implementation including a comprehensive analysis for future grant funding for strategies deriving from the Plan. *(Moved from Goal D)*

*Working Group Comments*

- This should be part of the Estuary Program
- Thumbs up on proposed changes.

5. Evaluate non-traditional methods for implementing the plan's management and restoration actions.

*Working Group Comments*

- Need to clarify and define non-traditional methods
- Thumbs up on proposed changes.

6. Evaluate and ensure that the PBS Plan works synergistically with and leverages the benefits of the other strategies, plans, and initiatives that are ongoing or planned for the PBS.

*Working Group Comments*

- Thumbs up on proposed changes.

7. 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 PBS.

*Working Group Comments*

- This should be part of the Estuary Program
- Thumbs up on proposed changes.

#### **D. HEALTHY AND PRODUCTIVE OYSTER REEF ECOSYSTEM**

The Healthy and Productive Oyster Reef Ecosystem vision theme, goal, outcomes and objectives are set forth in Appendix 5. The goal for this theme is, “The Greater Pensacola Bay System sustains a healthy and productive oyster reef ecosystem.” There are nine objectives covering: oyster populations; ecosystem services; substrate; and future conditions.

#### **DRAFT ECOLOGICAL STRATEGIES**

1. Use data collection, monitoring, annual stock assessment data, and comprehensive shell budget models to inform management of oyster populations. (*Previously worded as: Manage oyster populations using data collection and monitoring, including using annual stock assessment data combined with comprehensive shell budget models.*)

*Update a spatial database and create a prioritized list of restoration projects with a variety of objectives. Consider as an Action under Strategy #2 below with revised wording*

*Working Group Comments*

- Thumbs up on proposed changes.
2. Establish restoration and management targets for functional harvested and non-harvested oyster reefs using 1-3 ecological health indicators (e.g., amount of water filtered by oysters, amount of juvenile fish enhancement by reefs; seagrass habitat and other adjacent ecosystems established or restored).
    - a. *Draft Action based on previous Strategy 2:* Create and manage a prioritized list and spatially characterized (spatially explicit) map of restoration projects for the bay system based on the Habitat Suitability Model and restoration and management targets.

*Working Group Comments*

- Add “spatially explicit” before map
  - Thumbs up on proposed changes.
3. Implement policies and programs for the return of sufficient oyster shell back to the PBS to support sustainable oyster populations and demographic targets and thresholds.

*Goal B previous Strategy #11 and Goal D Strategy #4 are similar. Consider as Actions under this Strategy*

    - a. *Draft Action (Goal B Strategy #11).* Traditional and novel policies and programs are implemented to support return of shell back to the system to support oyster population and demographic targets and thresholds for wild harvest.
    - b. *Draft Action (Goal D Strategy #4)* Demonstrate the benefits of shell recycling programs to return shell back into the System.

*Working Group Comments*

- Thumbs up on proposed changes.



4. "Identify sources and manage and remediate sedimentation to the estuary impacting the oyster reef ecosystem." (*Combine Strategies #5 & #6 into Proposed Revised Strategy #4*)

~~5. Identify sources and manage silt and sedimentation to the estuary impacting the oyster reef ecosystem.~~

~~6. Remediate sediments in areas of the Bay currently unable to support oyster reef growth.~~

~~7. Design and implement local community initiatives for growing oysters for their ecosystem services (i.e., Mobile Bay oyster gardening), ensuring that science-based best practices are utilized.~~

*Working Group Comments*

- Thumbs up on proposed changes.

5. Restore and create reef structures suitable for sustained oyster settlement for ecosystem services. (spatial)

*Working Group Comments*

- Thumbs up on proposed changes.

6. Utilize models and other relevant information on climate change impacts to influence adaptive, sustainable reef management.

*Working Group Comments*

- Thumbs up on proposed changes.

7. Allocate sufficient funding for habitat restoration based on the oyster HSM and restoration and management targets (e.g., Develop funding source for cultch used in oyster reef restoration.)

*Working Group Comments*

- Is this duplicated in the goal sections A and B?
- Thumbs up on proposed changes.

**New Proposed Strategies**

8. Evaluate the effects of land use changes in the watershed on the health of oysters (e.g., floodplain forests, marshes, open spaces).

*Working Group Comments*

- Thumbs up on proposed changes.

9. Characterize and quantify current biological (e.g., red tide) and chemical **hotspots** (e.g., pesticides, heavy metals), and inputs into the PBS and their effect on oysters.

*Working Group Comments*

- Add "hotspots" after chemical
- Thumbs up on proposed changes.

**B. THE MANAGEMENT AND REGULATION OF THE OYSTER FISHERY AND AQUACULTURE INDUSTRY**

The Management and Regulation of the Oyster Fishery and Aquaculture Industry vision theme, goal, outcomes and three objectives are set forth in Appendix 5. The TNC Team recommended adjusting **Objective 1 and 2** as indicated below:

1. Establish sustainable biological and production thresholds and targets for wild harvest.
2. For wild harvest and aquaculture, ensure management is adaptable and re-assessed on a periodic basis to account for changes in climate and other future environmental conditions. [*Note: The Working Group did not want the thresholds and targets to apply to aquaculture, so the Team tried to separate out the two themes of the objective to differentiate applicability.*]

#### Working Group Comments

- Thumbs up on proposed changes to the objectives.

#### DRAFT WILD HARVEST AND AQUACULTURE STRATEGIES

1. Oyster population and demographic targets and biological thresholds are developed (at the smallest scale that makes sense), using routine monitoring data combined with shell budget models. Need to define the scale used for the specific boundaries.
2. Evaluate management scenarios for the commercial oyster industry and recreational oyster fishing that provide for sustainable spat production and spawning and the recovery of oyster populations (e.g., closures, rotational harvest, non-harvested spawning reefs, Territorial Use Rights of Fishing, limited entry, regulations, transferable license program).

#### *Combine Goal B Strategies # 2 & 12 into a new Strategy #2*

- ~~2. Evaluate management scenarios of harvestable oyster reefs that allow for sustainable spat production and spawning to allow the oyster populations to recover (e.g., closures, rotational harvest, set aside spawning reefs).~~
- ~~12. Evaluate additional management strategies that support the current commercial oyster industry members (e.g., rotational harvest, Territorial Use Rights of Fishing, limited entry, regulations, transferable license program).~~
  - a. Proposed Action (Previous Strategy 6)* Evaluate existing allowable and minimally destructive alternative gear type options and harvest methods, including the use of experimental gear for wild oyster harvesting.

#### Working Group Comments

- Thumbs up on proposed changes.

3. Enhance the monitoring and accuracy of commercial and recreational oyster harvest and aquaculture stock data collection and reporting methods for inclusion in restoration and management targets.

#### *(To align with Theme A #3...or keep in "ecosystem benefits and sustainability targets"?) Combine Goal B Strategies # 3 & 4 into a new Strategy #3*

- ~~3. Enhance the monitoring and accuracy of commercial and recreational oyster harvest data collection and reporting methods through co-management of the resource by agencies and watermen.~~
- ~~4. Enhance the monitoring and accuracy of aquaculture stock and harvest data collection for inclusion in ecosystem benefits and sustainability targets.~~

#### Working Group Comments

- Include in both A and B
- Thumbs up on proposed changes.

4. *(Previous Strategy 5, Revised)* **Explore** increasing capacity for **enforcement** of oyster resource regulations by promoting opportunities for ~~co-management~~ oversight by agencies and ~~watermen~~, and working closely and collaborating with industry stakeholders.

- ~~5. Management of oyster resources are enforced through co-management oversight by agencies and watermen.~~

~~(Previous Strategy 6) Evaluate existing allowable and minimally destructive alternative gear type options and harvest methods, including the use of experimental gear for wild oyster harvesting. [Move as an Action under Strategy #2 above](#)~~

*Working Group Comments*

- Add “explore increasing capacity for enforcement”
  - Delete “and watermen” and add “working closely and collaborating with industry stakeholders”
  - Thumbs up on proposed changes.
5. Allocate sufficient funding for restoration of harvested reefs and aquaculture farms based on the oyster Habitat Suitability Model (HSM).

*Working Group Comments*

- Overarching Section- add as action item in Strategy #4.
  - Thumbs up on proposed changes.
6. Restore and create reef structures suitable for sustained oyster settlement and production for harvesting.

*Working Group Comments*

- Keep in both A and B
  - Historical non-traditional techniques used by watermen (trees)
  - Thumbs up on proposed changes.
- ~~6. Design and build subtidal reef structures suitable for sustained oyster settlement and harvesting.~~
7. Investigate oyster shell and oyster relay programs to move both cultch and live oysters to more favorable habitat based on the HSM, information on larval source areas and environmental conditions.
- ~~8. Traditional and novel policies and programs are implemented to support return of shell back to the system to support oyster population and demographic targets and thresholds for wild harvest.~~

“Implement policies and programs for the return of sufficient oyster shell back to the GPBS to support sustainable oyster populations and demographic targets and thresholds.” [Move as an Action under Goal A Strategy #3](#)

*Working Group Comments*

- Thumbs up on proposed changes.

8. Create public/private seafood industry/stakeholder/agency programs to cooperatively manage harvested reefs as part of cooperative management concept (e.g., relaying, growing their own and seed in various locations)

~~Review and revise state management agency regulations and management goals in consultation with oyster resource stakeholders to ensure they are clear, consistently applied, and enforceable and include a working feedback loop with regulators to refine the program and enhance compliance~~

*Working Group Comments*

- Change to “create seafood industry/stakeholder/agency”
- Reference “cooperative management” approach
- Thumbs up on proposed changes.

9. Develop an aquaculture growth plan that outlines and defines the optimal expansion of the aquaculture industry in terms of both number of leases and amount of leased area. (The idea of the plan is to prepare for expected future growth of the industry.)

*Former Strategy #'s 16 & 17 consider as Actions under former Strategy #15 that is now strategy #9*

c. *Proposed Action:* Develop Spatial Area Management Plan that maps ideal areas for aquaculture and future growth potential for aquaculture in the system using abiotic (DO, salinity, temperature, etc.) and social variables (proximity to docks, exclusion zones, etc.).

d. *Proposed Action:* Establish Aquaculture Use Zones (AUZ) for the Pensacola Bay System based on the Oyster EBFM Plan.

~~e. Develop “future oyster farmers” program that helps locals in the area learn about aquaculture and the potential for making a living by growing oysters in the PBS. (e.g., Partner with existing programs such as Sea Grant MS/AL programs).~~

*(Moved to Goal D Strategy 2 as Action f.)*

~~f. Develop education and mentoring programs to ensure there is new entry into restoration, wild harvest, and aquaculture industries.~~

*(Move as an Action under Goal D Strategy #2, Action g)*

*Working Group Comments*

- Thumbs up on proposed changes.

### **C. A THRIVING ECONOMY CONNECTED TO THE PENSACOLA BAY SYSTEM**

A Thriving Economy Connect to the Pensacola Bay System vision theme, goal, outcome and three (3) objectives are set forth in Appendix #5.

## DRAFT THRIVING ECONOMY STRATEGIES

1. Monitor key economic indicators for changes over time based on restoration efforts to the PBS. (*The Team sees this as a learning/data strategy and the communicating out results is in Goal D*)
  - a.) Proposed Action: Characterize the connection between enhanced recreational fishing and tourism opportunities and oyster reef habitat quality and quantity. (*Propose as an Action under Goal C Strategy #1 - Formerly Goal C Strategy #3*).

### Working Group Comments

- Thumbs up on proposed changes.
2. Develop a marketing and communication plan that promotes wild harvest and cultured oysters and the ecosystem services provided by restored oyster populations in the PBS and celebrates oysters as an important feature of the area's cultural heritage.
  3. Align local and state government policies and practices that support oyster restoration, fisheries and aquaculture.

## D. AN ENGAGED AND INFORMED PUBLIC AND DECISION-MAKERS

An Engaged and Informed Public and Decision-Makers vision theme, goal, outcome and three (3) objectives are set forth in Appendix #5.

## DRAFT PUBLIC EDUCATION COMMUNICATION STRATEGIES

1. *New proposed Strategy #1* Build a broad constituency to support outreach efforts that generate and increase public awareness and support for a healthy and well-managed oyster habitat and fisheries and the ecosystem services they provide.

*Consider Strategies # 1, 3 & 6 as Actions under the new proposed Strategy 1*

- a. *Proposed Action (previously strategy 1):* Businesses, industries, non-profits, and local governments are supportive and included in outreach and education efforts to generate and increase public awareness and support for a healthy and well-managed PBS ecosystem.
- b. *Proposed Action (previously strategy 3):* Education efforts address both positive and negative consequences of and depleted/lost oyster reef habitat respectively
- c. *Proposed Action (previously strategy 6):* Seek public buy-in for supporting restoration efforts by highlighting the benefits to and enlisting the support of recreational fishing, ecotourism, and water sports interests.

### Working Group Comments

- Thumbs up on proposed changes.
2. *New proposed Strategy #2* Expand existing or create new mentoring and education programs focused on restoration and monitoring of oyster habitat and fisheries and training for aquaculture farming that involve all sectors of the community. *Consider this Goal's previous Strategies 2, 7, 8, 9, & 10, as well as Goal A previous Strategy #7 and Goal C previous Strategy #5 as Actions under the new proposed Strategy*
    - a. *Proposed Action (previous strategy 2):* Develop and support new and existing volunteer citizen-science programs for monitoring, data collection, and restoration efforts for oyster restoration projects at all levels (e.g., youth, adult, K-12, and colleges and universities). Demonstrate the benefits of shell recycling programs to return shell back into the System.

- b. *Proposed Action (previously strategy 7):* Develop metrics for public engagement and education programs.
- c. *Proposed Action (previously strategy 8)* Develop and support education programs that focus on oysters as drivers of restoration and management of the PBS.
- d. *Proposed Action (previously strategy 9)* Develop education and mentoring programs to ensure there is new entry into restoration, wild harvest, and aquaculture industries.
- e. *Proposed Action (from Goal A Strategy 7):* Design and implement local community initiatives for growing oysters for their ecosystem services (i.e., Mobile Bay oyster gardening), ensuring that science-based best practices are utilized.
- f. *Proposed Action (from Goal B Strategy #18):* Develop a “future farmers” program that helps locals in the area learn about aquaculture and the potential for making a living by growing oysters in the PBS. (e.g., Partner with existing programs such as Sea Grant MS/AL programs).
- g. *Proposed Action (from Goal B Strategy 13):* Develop an oyster workforce and mentoring and education program for restoration, and monitoring of oysters for harvest and habitat restoration.

#### *Working Group Comments*

- Review list of actions for potential redundancies
- Thumbs up on proposed changes.

~~5. Demonstrate the benefits of shell recycling programs to return shell back into the System.~~  
[Moved to an Action under Goal A Strategy #3.](#)

- 3. Demonstrate the economic and social benefits derived from the ecosystem services provided by oyster fisheries and restored/natural reef habitat. ([Previous Strategy 6](#))

#### *Working Group Comments*

- Thumbs up on proposed changes.

## **V. PERFORMANCE MEASURES**

Performance measures are the decision-support tools forecast results that stakeholders will use for weighing the potential outcomes of different strategies. For each of the goal areas, the TNC Team suggested the following subheadings.

### **A. A HEALTHY AND PRODUCTIVE OYSTER REEF ECOSYSTEM**

#### **Habitat Restoration/Management**

1. Stock assessment and shell budget data to inform management
  - Extent/size, amount of oyster reef structure.
  - Density of live oysters, recent boxes and dead shell (number per m<sup>2</sup>).
  - Biomass of spawning stock (> 3 inches or 75 mm) and biomass of very-large spawning stock (> 5 inches or 127 mm).
  - Total oyster biomass (by reef and/or by reefs with different management objectives).
  - Weight of cultch (for shell budget)
  - Area and relief (spatial configuration and interstitial space) of settlement substrate in the estuary (possibly with goals defined for each ‘management objective’ – fishing, water filtration, fish production).



2. Reef height (feet or meters), where "reef" means live and dead shell, as well as other restoration material
3. Amount of shell returned to the system as result of policies and programs
4. Acres restored to meet ecological restoration objectives
5. Acres of bay bottom remediated of sediment in priority restoration areas
6. Acres of suitable and healthy oyster habitat remain stable or expanding with changes in climate and watershed land use changes

#### **Ecosystem Services**

7. Water quality is improving (e.g., biological and chemical and other inputs), juvenile fish and other reef species fish are increasing in abundance, seagrass area is expanding adjacent to reef areas, number of days of emergency closures is decreasing, and other ecosystem services TBD. Do we need to identify specific water quality metrics to track? (e.g., last bullet below under Combined with Above)
8. Larval abundance in the water column or on standardized settlement substrates is increasing. (Goal A S5)
9. Funding allocated for restoration
10. Volume of sediments entering the bay is reduced

#### **Combined with Above**

11. Shell budget model indicators (see 1)
12. Reef-enhanced species (or selected species) are increasing in abundance (See 7)
13. Seagrass area is expanding within the estuary. (See 7)
14. Number of reef-enhanced species (Oyster Calculator, and FWC's fishery-independent monitoring program). (See 7)
15. Collection of water quality improvement data to include clarity, filtration by oysters, total suspended solids, chlorophyll, salinity stabilization. (See 7)

#### *Working Group Comments*

- Thumbs up on proposed changes.

### **B. THE MANAGEMENT AND REGULATION OF THE OYSTER FISHERY AND AQUACULTURE INDUSTRY**

- The Working Group additions at the meeting are highlighted in **yellow**.

#### **Wild Harvest**

1. Stock assessment, shell budget, and harvest data to inform management – refer to Perf. Measure #1 in Goal A above, with the addition of the following metrics
  - Total harvest in **bag or pounds** ~~bushels~~
  - ~~Harvest by size category~~ (not reported)
  - ~~Harvest by location~~ (**not reported, Move but would be useful for evaluation of regulatory changes**)
  - Harvest by fishery type (recreational **needed in future**/commercial).
  - Time of harvest during the open fishing season.
  - Harvest per licensed harvester (**confidential data could possibly be aggregated depend on N**).
  - Effort expended harvesting/Catch per unit effort (catch per trip).
  - Amount of illegal harvest.

- Number of full-time harvesters that the fishery can support. (May be part of B)
  - Percent of live oysters harvested.
  - Biomass of oysters (> 3 inches) on fishable reefs
  - Extent and quality of stock assessment data collected
  - Amount of cultch on the reef
2. Extent/size and amount of harvestable oyster reefs
  3. Number of acres restored to meet fisheries restoration objectives
  4. Improvement of oyster populations on fished reefs
  5. Sufficient larval settlement and growth supports fished reefs to meet harvest targets
  6. Acres restored to meet harvest objectives

#### **Aquaculture**

7. Number and size of aquaculture leases.
8. Aquaculture expansion meets the criteria for optimal growth as defined in the aquaculture growth plan.
9. Aquaculture contributions to ecological services (biomass measurement needed to calculate use aggregate data)

#### **Combined**

9. Co-management program is created and functioning as proposed (e.g., enforcement, harvest targets, etc.)
10. Funding allocated for restoration of fished reefs and aquaculture training.

#### *Working Group Comments*

- Include table of fisheries dependent and independent monitoring/metrics current and possibly needed (temporal/frequency, current vs. optimal)

### **C. A THRIVING ECONOMY CONNECTED TO THE PENSACOLA BAY SYSTEM**

#### **Habitat Restoration/Management**

1. Number of jobs created for restoration
2. Cost of management measures (e.g., restoration efforts).

#### **Ecosystem Services**

3. Percentage of “residence time filtration” (Oyster Calculator).
4. Estimated enhancement of reef-enhanced species (Oyster Calculator, along with FWC’s fishery-independent monitoring program data).
5. Water quality data (e.g., Turbidity/Water clarity-reduction in suspended matter and chlorophyll, and (indicator for water quality: extent of seagrass cover)
6. Percent Removal of Nitrogen and Value of nitrogen reduction (\$ in dollars).
7. Filtration of estuary volume by oysters (wild and aquaculture stock) occurs within estuary residence time (27 days). Evaluate scale used.
8. Social benefits (value of ecosystem services). (i.e., quality of life, increase of sportfishing in the system, swimmable days)

#### **Wild Harvest**

9. Number of fishermen participating in the fishery

10. Cost/value per **pound** ~~bags~~
11. Value of harvest that meets an economic minimum for sustainability for waterman (e.g., revenue per harvester) **watermen's perspectives** regarding % from harvesting oysters
12. Percent of local oysters in the market.
13. Commercial and recreational total annual catch (bags/day)

#### **Aquaculture**

14. **Cost per oyster** ~~Cost/value per bags~~
15. Number of aquaculturists participating in oyster aquaculture farming
16. Total aquaculture production and revenue.
17. Percent of local oysters in the market.
18. Annual aquaculture production

#### **Economic Value**

19. Economic value of oyster restoration, oyster fishing and oyster aquaculture to the local economy
20. Workforce development initiatives designed to ensure the industry remains economically viable and sustainable.
21. Revenue raised in fees/bushel taxes.
22. Cost-Benefit Analysis (total economic investment versus outcome to economy)

#### **Combined**

23. Estimated filtration at estuarine scale (Oyster Calculator). (See 4)
24. Nitrogen reduction-sequestration, burial and/or denitrification (See 7)
25. Revenue per harvester (and perhaps its distribution) (See 14)
26. Commercial and recreational catch, as well as aquaculture production (bags per day, total annual catch). (See 14 and 19)
27. Economic measures (number of fishers, aquaculturists, days fishing). (See 10 and 16)
28. Performance metric for economic sustainability of the community (See 23)

#### **Omitted**

29. Travel time costs, and distance travelled.
30. Restoration costs avoided.
31. Area of prohibited (or open) waters.
32. Number of days of emergency closures.

### **D. AN ENGAGED AND INFORMED PUBLIC AND DECISION-MAKERS**

#### **Public Awareness**

1. Number of times Plan is referenced in growth management plans.
2. Number of people with improved understanding of the ecosystem services provided by oysters important to health and restoration of the PBS.
3. Number of businesses, schools, industries, non-profits, and local governments participating in outreach efforts.
4. Number of volunteers participating in oyster reef restoration efforts.
5. Number of Land Development Code policy changes implemented to enhance and protect the PBS.

#### **Implementation**

6. Percent of funds secured in relation to funds needed to implement the Plan.

7. Amount of local, state, federal (and RESTORE) funds allocated for management and restoration actions in the PBS.
8. The extent to which the Pensacola and Perdido Bays Estuary Program implements recommendations in the Plan.
9. Number of mentor program 'graduates' that enter the oyster restoration and/or fishery workforce in the PBS or other estuary in FL.

**Combined**

10. Amount of funding for Plan implementation. (See 6)

## **VI. PUBLIC COMMENT AND NEXT STEPS**

The facilitators invited members of the public to comment and there was no one who offered public comments. They then reviewed possible agenda items for the Meeting VIII, which will take place October 21, 2020 in a Zoom virtual meeting format. The TNC Team agreed to review and address the comments in revised strategies and actions. The next several meetings will review and refine strategies and actions. The meeting concluded with a Zoom evaluation. *(See Appendix #3)*

*The meeting adjourned at 12:30 p.m. CT.*

## Appendix #1 - Meeting Agenda

### OYSTER ECOSYSTEM-BASED FISHERY MANAGEMENT PLAN FOR THE PENSACOLA BAY SYSTEM

#### PBS STAKEHOLDER WORKING GROUP

#### MEETING VII

SEPTEMBER 28, 2020—8:30 AM – 12:30 PM CT

VIRTUAL MEETING VIA ZOOM

HOST: THE NATURE CONSERVANCY, FLORIDA

FACILITATOR: FACILITATED SOLUTIONS, LLC

#### MEETING VII OBJECTIVES

- ✓ To Approve Regular Procedural Topics (Agenda, and Meeting VI Summary Report)
- ✓ To Review Meeting Schedule and Updated Workplan
- ✓ To Receive Requested Presentations
- ✓ To Evaluate Revised Strategies and Propose Preliminary Action Steps
- ✓ To Review and Discuss Revised Performance Measures
- ✓ To Identify Needed: Next Steps, Information, Presentations, and Agenda Items for Next Meeting

#### PBS STAKEHOLDER WORKING GROUP MEETING VII AGENDA—SEPTEMBER 28, 2020

8:30 AM CT		CALL TO ORDER
1.	8:30	WELCOME, REVIEW OF VIRTUAL MEETING PARTICIPATION GUIDELINES, AND ROLL CALL
2.	8:40	REVIEW AND APPROVAL of Agenda
3.	8:45	APPROVAL OF FACILITATORS' SUMMARY REPORTS (JULY 22, 2020 MEETING)
4.	8:50	REVIEW OF PROJECT MEETING SCHEDULE AND WORKPLAN
5.	8:55	STAKEHOLDER REQUESTED PRESENTATIONS AND BRIEFINGS (20 MINUTES EACH) <i>FWC Apalachicola Bay Wild Oyster Harvesting Closure</i> —Mike Norberg, FWC <i>Predicting benefits in Panhandle Estuary Systems: A partnership to quantify impacts, stressors, and outcomes using Adaptive Management Frameworks</i> —Dr. Jane Caffrey, UWF and Dr. Matt Deitch, UF <i>Draft Spatial Management Approach for the Oyster EBFM plan in the Pensacola Bay System</i> - Laura Geselbracht, TNC
10:00 AM CT		GROUP PHOTO AND BREAK (15 MINUTES)
6.	10:15	A.) ECOLOGICAL: A HEALTHY AND PRODUCTIVE OYSTER REEF ECOSYSTEM <ul style="list-style-type: none"> <li>Evaluate Revised Strategies and Identify Related Preliminary Action Steps</li> </ul>
7.	10:45	B.) WILD HARVEST AND AQUACULTURE: THE MANAGEMENT AND REGULATION OF THE OYSTER FISHERY AND AQUACULTURE <ul style="list-style-type: none"> <li>Evaluate Revised Strategies and Identify Related Preliminary Action Steps</li> </ul>
8.	11:15	C.) Thriving Economy: A Thriving Economy Connected to the Pensacola Bay System <ul style="list-style-type: none"> <li>Evaluate Revised Strategies and Identify Related Preliminary Action Steps</li> </ul>
9.	11:45	D.) Public Education Communication: An Engaged and Informed Public <ul style="list-style-type: none"> <li>Evaluate Revised Strategies and Identify Related Preliminary Action Steps</li> </ul>
10.	12:05 PM	REVIEW AND DISCUSS REVISED PERFORMANCE MEASURES
11.	12:20 PM	PUBLIC COMMENT
12.	12:25	NEXT STEPS AND ASSIGNMENTS, INFORMATION NEEDS, PRESENTATIONS AND AGENDA ITEMS FOR THE NEXT MEETING (OCTOBER 21, 2020)
12:30 PM CT		ADJOURN

PBS Stakeholder Working Group, September 28, 2020 Meeting VII Summary

## Appendix #2 -Working Group Members, Project Team, Facilitators & Public Participating

(**Bold** = members who attended the September 28, 2020 meeting. When two people are listed on the same line the first person listed is the Working Group member and the second person listed is their Alternate)

PBS STAKEHOLDER WORKING GROUP MEMBERS AND PUBLIC ATTENDANCE	
MEMBER	AFFILIATION
<b>Building/Development</b>	
1. <b>Shelby Johnson</b>	Johnson Construction of Pensacola, Inc.
2. <b>Glen Miley</b>	biome Consulting Group
<b>Business/Real Estate/Economic Development/Tourism</b>	
3. <b>Will Dunaway</b>	Environmental Lawyer
4. <b>Donnie McMahon</b>	Business and Aquaculture
<b>Environmental/Citizen</b>	
5. <b>Christian Wagley</b>	Healthy Gulf
<b>Local Government</b>	
6. <b>Shelley Alexander/Tanya Linzy</b>	Santa Rosa County Environmental Programs
7. <b>Chips Kirschenfeld/ Mark Nicholas</b>	Escambia County Natural Resources Management
8. <b>Matt Posner/Whitney Scheffel</b>	Pensacola and Perdido Bays Estuary Program
9. <b>Mark Jackson</b>	Pensacola City Administrator
<b>Recreational Fishing</b>	
10. <b>Chris Phillips</b>	Hot Spot Charters
<b>Seafood Industry</b>	
11. <b>Thomas Derbes II</b>	Aquaculture
12. <b>Pasco Gibson</b>	Seafood Industry/Waterman
13. <b>LD Henderson</b>	Waterman
14. <b>Josh Neese</b>	Aquaculture
15. <b>Pete Nichols</b>	Seafood Industry/Waterman
16. <b>Tommy Pugh</b>	Seafood Dealer
17. <b>Phil Rollo</b>	Seafood Dealer
18. <b>Calvin Sullivan</b>	Oyster Harvester
19. <b>William (Hub) Williamson</b>	Oyster Harvester
<b>State Government</b>	
20. <b>Beth Fugate</b>	FDEP/Aquatic Preserves
21. <b>Kent Smith/Katie Konchar</b>	FWC Division of Habitat and Species Conservation
22. <b>Mike Norberg</b>	FWC Division of Marine Fisheries Management
23. <b>Portia Sapp</b>	FDACS Division of Aquaculture
24. <b>Paul Thurman</b>	NWFWMD
<b>Tourism</b>	
25. <b>Shawn Brown</b>	Visit Pensacola
<b>University/Research</b>	
26. <b>Jane Caffrey</b>	UWF
27. <b>Rick O'Connor</b>	UF/IFAS Escambia County
28. <b>Chris Verlinde</b>	UF/IFAS/Sea Grant Santa Rosa County
<b>PROJECT TEAM AND FACILITATORS</b>	
<b>THE NATURE CONSERVANCY</b>	
<b>Anne Birch</b>	Marine Program Manager, Florida
<b>Bryan DeAngelis</b>	Marine Habitat Scientist, North America
<b>Laura Geselbracht</b>	Sr. Marine Scientist, Florida
<b>Andrea Graves</b>	Marine Projects Coordinator, Florida
<b>FACILITATED SOLUTIONS, LLC</b>	
<b>Jeff Blair</b>	Working Group Facilitator



<b>Robert Jones</b>	Working Group Facilitator
<b>PUBLIC</b>	
<b>1. Stephen Hawkins</b>	WOOD
<b>2. Matt Deitch</b>	UF
<b>3. Haley Gancel</b>	UF
<b>4. Amanda Croteau</b>	UWF
<b>5. Robert Turpin</b>	Escambia County

### Appendix #3- Zoom Working Group Member Meeting Evaluation, May 19, 2020

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

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

#### 2. The meeting objectives were met.

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

#### 3. The facilitation of the meeting was effective for achieving the stated objectives

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

#### 4. Follow-up actions were clearly summarized at the end of the meeting

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

#### 5. The meeting was the appropriate length of time.

Average Rating	5.Strongly Agree	4.Agree	3.Not Sure	2.Disagree	1.Strongly Disagree
3.3 of 5	1	4	1	3	0

#### 6. Working Group Members had the opportunity to participate and be heard.

Average Rating	5.Strongly Agree	4.Agree	3.Not Sure	2.Disagree	1.Strongly Disagree
4.7 of 5	6	3	0	0	0

#### 7. Zoom Chat Comments

- Chris V: Monday mornings can be challenging.
- Anne Birch: Full presentation can be found on...FWC's website:  
<https://MyFWC.com/about/commission/commission-meetings/july-2020/Florida> Channel:  
<https://thefloridachannel.org/videos/7-22-20-florida-fish-wildlife-conservation-commission-part-1/Apalachicola> oysters starts ~1:50:2009:58:40
- Shelley Alexander: Are there active oyster aquaculture leases in Apalachicola during the closure?  
 Jeff Blair: yes.
- Beth Fugate: STORET/WIN

- Shelley Alexander: Hurricane Sally dumped quite a bit of sediment in these green areas of the watershed based on SRC assessments

## Appendix #4 - Project Schedule & Workplan

*Meetings Dates are Subject to Change*

PBS STAKEHOLDER WORKING GROUP MEETING SCHEDULE AND WORKPLAN		
STANDING UP AND ORGANIZATION OF THE PBS STAKEHOLDER WORKING GROUP		
<i>TNC/Facilitated Solutions LLC Stakeholder Assessment and Report</i>	<i>May-Sept. 2019</i>	<i>TNC contracted <a href="#">Facilitated Solutions, LLC</a>, based in Tallahassee, to conduct a series of stakeholder interviews and meetings in the community outline key issues and to recommend stakeholder representatives on a Working Group. Facilitated Solutions LLC subsequently designed and facilitated the Working Group meetings and process going forward.</i>
<i>Stakeholder Working Group Questionnaire</i>	<i>Sept. 2019</i>	<i>Working Group members completed a questionnaire in advance of the Organizational Meeting</i>
<b>Meeting I. Studer Institute</b>	Oct. 9, 2019	Scoping and organizational meeting, review of the assessment report and questionnaire, and review and refinement of overall project purpose, vision and goal framework.
<b>Meeting II. UF/IFAS SRC Extension</b>	Nov. 15, 2019	Introduction to tools (e.g. oyster calculator, etc.) and member requested presentations on oyster ecology and restoration. Review and refinement of vision themes and goal framework.
SCOPING OF PBS ISSUES, IDENTIFICATION OF PERFORMANCE MEASURES & OPTIONS		
<b>Meeting III. Sanders Beach</b>	Jan. 15, 2020	Presentations on regulatory management roles and framework for oysters, and strategic communications. Review and refinement of vision goals (4) framework continued. Introduction to potential performance measures to evaluate strategies.
<b>Meeting IV. <a href="#">Zoom Platform</a></b>	April 9, 2020	Presentations on Oyster Habitat Restoration Suitability Model, Pensacola & Perdido Bays Estuary Program (PPBEP) and <u>G</u> ulf of Mexico <u>E</u> cosystem Service Logic Models & <u>S</u> ocio-Economic Indicators-GEMS Project. Review of draft vision theme and objectives, identification of strategies and related performance measures to evaluate strategies.
<b>Meeting V. <a href="#">Zoom Platform</a></b>	May 19, 2020	Member requested presentations on FDEP Responsibilities in Oyster and Estuarine Management in Florida, An Economic Research Agenda for the PBS, and Shell Budget Briefing. Review testing acceptability and refinement of strategies in the 4 goal areas, review performance measures for evaluating strategies, and identify potential Plan implementation actions and steps.
<b>Watermen Workshop <a href="#">Zoom Platform</a></b>	June 4, 2020	Workshop with Working Group watermen stakeholders to hear their comments and perspectives regarding draft Objectives and Strategies.
BUILDING CONSENSUS ON PBS OYSTER ECOSYSTEM-BASED FISHERIES MANAGEMENT PLAN		
Update and Presentation to PPBEP	July 14, 2020	Presentations by TNC to the Pensacola & Perdido Bays Estuary Program's Technical Advisory Committee on the Plan goals and framework.

<b>Meeting VI.</b> <b>Zoom Platform</b>	July 22, 2020	Member requested presentations. Review of comments and suggestions from Watermen Workshop. Review testing acceptability and refinement of strategies in the 4 goal areas, review performance measures for evaluating strategies, and identify potential Plan implementation actions and steps.
TENTATIVE: Presentation to PPBEP	Sept. 2020 Date TBD	Presentation by TNC to the Pensacola & Perdido Bays Estuary Program's Policy Board on the Plan goals and framework.
<b>Meeting VII.</b> <b>Zoom Platform</b>	September 28, 2020	Review of comments and suggestions from the PPBEP presentations, test acceptability and refinement of strategies and action steps for the Goals each in turn starting with Goal A. Review habitat suitability spatial maps.
<b>Meeting VIII.</b> <b>Zoom Platform</b>	October 21, 2020	Test acceptability and refinement of strategies and action steps for each of the Goals in turn. Utilize habitat suitability spatial maps for evaluating strategies.
<b>FINALIZING CONSENSUS ON PBS OYSTER ECOSYSTEM-BASED FISHERIES MANAGEMENT PLAN</b>		
<b>Meeting IX.</b> <b>Zoom Platform or</b> <b>UF/IFAS</b>	Nov. 18, 2020	Test acceptability and refinement of strategies and action steps for each of the Goals in turn. Utilize habitat suitability spatial maps for evaluating strategies. Review the PBS Oyster Ecosystem-Based Fisheries Management Plan outline.
Watermen Workshop #2	December 8, 2020	Review strategies and draft actions with watermen
Update and Presentations to PPBEP	January 2021 Date TBD	Presentations by TNC to the Pensacola & Perdido Bays Estuary Program on the Plan's progress and the Estuary Program's role in implementing the Plan.
<b>Meeting X.</b> <b>Zoom Platform</b>	Jan. 21, 2021	Refinement of actions steps for strategies. Review and consensus testing of Draft Plan and implementation guidance and agreement on Draft Plan for Public Workshop,
<b>Meeting XI.</b> <b>Zoom Platform or</b> Studer Institute	Feb. 17, 2021	Review of public comment and refinement of the Plan.
<b>Meeting XII.</b> <b>Zoom Platform or</b> UF/IFAS SRC Extension	March 17, 2021	Refinement and agreement on the PBS Oyster Ecosystem-Based Fisheries Management Plan and implementation guidance. Plan will be presented to relevant agencies for evaluation and implementation.
<i>Presentation of final PBS Oyster Ecosystem-Based Fisheries Management Plan to the PPBEP</i>	<i>April 2021</i>	<i>Presentation by TNC and Working Group members to the Pensacola &amp; Perdido Bays Estuary Program on the Plan and the Estuary Program's role in implementing the Plan.</i>

## Appendix #5- Vision Themes, Goals, Outcomes & Objectives

The GPBS Working Groups agreed to the following statements at the October & December 2019, and January & April 2020 meetings.

### THEME A. A HEALTHY AND PRODUCTIVE OYSTER REEF ECOSYSTEM (ECOLOGICAL)

**VISION THEME A:** The oyster reef ecosystem is managed in a manner that supports ecosystem services by protecting and enhancing the habitat and resource in a sustainable and productive manner.

**GOAL:** The Greater Pensacola Bay System sustains a healthy and productive oyster reef ecosystem.

**Outcome:** By 2030, the oyster reef ecosystem within the Greater Pensacola Bay is managed in a sustainable manner providing measurable ecosystem services.

**Key Topical Issues:** At the November 15, 2019 meeting members brainstormed key topical issues including: Identifiable and achievable targets; Growth; Public understanding and support; Best practices as a framework for recommendations; Link the Plan to the Estuary Program; Model successes from other estuaries and scale up faster; Leverage and support funding for advance wastewater treatment facilities; Geo spatial mapping; Integrate and build on existing management plans; Identify existing and planned projects; Resiliency and adaptive management as guiding principles; and, Clarify and mitigate potential impacts to sustainably managing the PBS.

#### OBJECTIVES

##### Oyster Populations

1. Measurements of oyster reef and population conditions (including larval production spat settlement, Spawning Stock Assessment, shell budgets) are defined and quantifiable, with target and threshold levels identified.
2. Oyster recruitment and survivorship occurs in the estuary on an annual basis at a level that sustains oyster harvest and ecosystem services from oyster reefs.
3. Spawning stock biomass and parental standing stock has increased across the ecological gradients (e.g., salinity, dissolved oxygen) appropriate for oyster growth and survival
4. A net positive shell-budget on both fished and non-fished reefs is sustained while oyster reef restoration is underway.

##### Ecosystem Service

5. Ecosystem services and ecological health indicators are defined and measurable, with identified target and threshold levels.

##### Substrate

6. Policies and programs are established and implemented that provide the means to return a significant portion of the harvested oyster shell back to the GPBS for substrate needed for larval recruitment to enhance population productivity.
7. Abundant oyster settlement substrate exists across the estuarine ecological gradients, where appropriate for oyster growth and survival.

##### Future Conditions

8. Climate-ready considerations are incorporated into restoration and management plans for the GPBS to consider changes in management and future environmental conditions, such as freshwater flow



(quantity, timing, hydrodynamics), water quality (e.g., salinity and temperature), sea level, and habitat change.

9. Impacts and activities from future climate scenarios affecting the health and restoration of the GPBS ecosystem are considered and addressed to minimize negative effects to the GPBS ecosystem

## **B. THE MANAGEMENT AND REGULATION OF THE OYSTER FISHERY AND AQUACULTURE INDUSTRY (WILD HARVEST AND AQUACULTURE)**

**VISION THEME B:** The management, regulation, restoration and enhancement of the oyster fishery and aquaculture industry is conducted by working collaboratively with stakeholders to create a plan that ensures that protection of the fishery and habitat is monitored and implemented in a manner that is supported by science, data, and field and industry experience and observation, and provides fair and equitable access to the oyster resource.

**GOAL:** A productive, and sustainably managed and regulated oyster reef fishery and ecosystem and aquaculture industry in the Greater Pensacola Bay System.

**OUTCOME:** By 2030, oyster reefs in the Greater Pensacola Bay System support a sustainably managed and productive fishery and an aquaculture industry and supported by stakeholders, using the best available science and monitoring to manage and regulate fishery and aquaculture activities in a fair and equitable manner.

**KEY TOPICAL ISSUES:** Ongoing funding for management; Ecological restoration principles; Fish and oyster production objectives; Adapt for future changes and circumstances; Incorporate state vetted plans; Address enforcement of regulation; Manage wild harvest differently than aquaculture; Regulation of aquaculture; define fair and equitable; and, Consider providing access to the fishery through changes in licensing requirements, building in a preference for locals or specific user types.

### **OBJECTIVES**

1. Establish and follow a biological threshold for harvest that provides for a sustainable commercial and recreational wild oyster fishery.
2. Growth and expansion of the oyster aquaculture industry in the GPSBS uses best management practices that has broad support of the industry and community and enables economic opportunities, while maximizing beneficial services of aquaculture, and preventing negative effects to the GPBS and its users.
3. Sustainable production thresholds and targets for wild harvest and aquaculture, respectively, are considered adaptable and re-assessed on a periodic basis to account for changes in climate and other future environmental conditions.

## **C. A THRIVING ECONOMY CONNECTED TO THE GREATER PENSACOLA BAY SYSTEM**

**VISION THEME C:** The Greater Pensacola Bay System oyster fishery, aquaculture, and oyster reef ecosystem serve as key components of the region's cultural heritage and economic viability and serve to sustain an economically viable and thriving fishery, recreation and tourism industry.

**GOAL:** A healthy Bay System contributes measurably to a thriving economy for the Greater Pensacola Bay region.

**OUTCOME:** By 2030, recovery of the Greater Pensacola Bay ecosystem spurred by restoration of oyster reef ecosystems and a sustainable oyster fishery and development of aquaculture has led to a thriving economy that provides opportunities for sustainable and responsible industry, development, business, recreation and tourism.

**KEY TOPICAL ISSUES:** Growth and conflicts among users; Aquaculture regulation and user conflicts; Aquaculture Use Zones; Economic activities that rely on a healthy bay; Social science; Controlling runoff; Public pushback for living seashore projects; Revenue generation and the plan; Local government involvement; Access opportunities to the water; Maintaining working waterfronts; and, Promotion and branding of aquaculture and oysters and the health of the Bay.

**OBJECTIVES**

1. Develop a Marketing Strategy to promote wild harvest and cultured oysters and the ecosystem services provided by improved oyster populations in the GPBS.
2. Oyster reefs, oyster fishing and oyster aquaculture are recognized as key components of the local economy and Panhandle region, including supporting diverse and healthy fisheries, ecotourism, and other recreational activities.
3. Economic indicators of the commercial oyster fishery, aquaculture industry and associated industries in the GPBS demonstrate increasing viability and growth over X years.
4. Key water quality management investments are being made with the goal of protecting and enabling the oyster fishery and oyster aquaculture industry (including land use impacts).
5. The wild harvest fishery and oyster aquaculture industries provide economic and career growth opportunities.
6. Industries, and businesses within the GPBS are supportive and compatible with a healthy and well-managed GPBS ecosystem.
7. Growth management policies, plans and regulations affecting the GPBS are compatible with a healthy and well-managed ecosystem while maintaining a thriving economy and supporting cultural heritage.

**THEME D: AN ENGAGED AND INFORMED PUBLIC AND DECISION-MAKERS (PUBLIC EDUCATION COMMUNICATION)**

**VISION THEME D:** Stakeholders of the Greater Pensacola Bay System are committed to working together collaboratively to serve as a hub for best practices and research, and provide education and communication on the importance of maintaining the health and productivity of the oyster reef ecosystem, fishery, and aquaculture, and the role they play in ensuring a thriving community.

**GOAL:** The oyster reef ecosystem of the Greater Pensacola Bay System is supported and protected by an engaged and informed public, and decision-makers.

**OUTCOME:** By 2030, the Greater Pensacola Bay System, stakeholders, private and nonprofit civic leaders, the public, and decision-makers are informed of the importance of sustaining the health of the Bay System, and work actively together along with elected and appointed leaders and managers to invest in and implement the Plan.

**KEY TOPICAL ISSUES:** A communication strategy to bring the PBS back to health; Marine habitats- out of sight out of mind; Plan should fit into the Estuary CCMP; Local government support; Unique community/state

partnership; Distrust of science; and, Lack of information and measures on benefits to the community for a restored system.

**OBJECTIVES**

1. Establish a coordinated outreach and education plan to increase public awareness and support for a healthy and well-managed GPBS ecosystem.
2. Businesses, industries, non-profits, and local governments are supportive and included in outreach and education efforts to generate and increase public awareness and support for a healthy and well-managed GPBS ecosystem.
3. Funding resources are identified and utilized to generate awareness, education, and support for a healthy oyster and GPBS ecosystem.
4. The new estuary program incorporates and promotes the recommendations of the new oyster plan.

## Appendix #6 Project Summary and Statement of Purpose

**PROJECT SUMMARY.** The Nature Conservancy (TNC) in Florida is convening stakeholders to develop an oyster ecosystem-based fisheries management plan for the Greater Pensacola Bay System (GPBS). For the purpose of this initiative the system is defined as Escambia, Pensacola, East and Blackwater Bays in Escambia and Santa Rosa Counties. TNC has been supporting and implementing projects in the GPBS for the past several years in collaboration with partners. Oysters and the once vibrant fishery are disappearing from the System. Significant funding as a result of the Deepwater Horizon oil spill is being dedicated to restoration of oysters throughout the Gulf of Mexico. This is a once-in-a-lifetime opportunity to reverse the trend and create a robust future for oysters and the fishery in Florida and the Gulf.

**STATEMENT OF PURPOSE.** The goal of the initiative is that by 2022 an oyster ecosystem-based fisheries management plan (Plan) for the GPBS is approved by the stakeholders. The Plan will be offered as a model for management of oyster resources throughout Florida's estuarine systems, the Gulf of Mexico and other regions. The intent is for the Plan to be developed, owned and implemented by the community and the State, not a "TNC plan".

The Working Group and the resulting Plan will seek to address and determine the priority of multiple objectives including wild harvest, oyster aquaculture, ecosystem service outcomes (i.e., clear water, more crabs and fish, nitrogen removal), and social benefits (e.g., recreational angling opportunities, and opportunity to participate in defining credible management processes) for the GPBS.

The Plan resulting from this initiative will help to define long-term estuary-scale goals for restoring and sustaining oysters in the estuary. It will work in the broader context of the Pensacola and Perdido Bays Estuary Program that received EPA funding in 2018 as part of the Deepwater Horizon oil spill settlement. The program hired an executive director in 2019 and is organizing to develop a Comprehensive Conservation and Management Plan (CCMP) for the Pensacola and Perdido Estuary System.

**PROJECT WEBPAGE (URL):** <https://ppbep.org/oyster-ebfm-plan>

**PROJECT FACILITATION:** Meetings are facilitated, and meeting reports drafted by Jeff Blair and Robert Jones from Facilitated Solutions, LLC. Information at: <http://facilitatedsolutions.org>.