

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

PBS STAKEHOLDER WORKING GROUP

MEETING IX—MEETING SUMMARY

NOVEMBER 18, 2020

HOST: THE NATURE CONSERVANCY, FLORIDA

FACILITATOR: FACILITATED SOLUTIONS, LLC

ZOOM ONLINE MEETING

Convened by:

Facilitated and Summarized by:



THANK YOU!

Oyster EBFM Working Group
Meeting IX November 18, 2020



PBS STAKEHOLDER WORKING GROUP

MEETING IX—MEETING SUMMARY November 18, 2020

Table of Contents

EXECUTIVE SUMMARY	3
DETAILED SUMMARY	6
I. INTRODUCTION	6
II. PBS PRESENTATION AND DISCUSSION	6
A. POTENTIAL APPROACH FOR SETTING OYSTER FISHERY RECOVERY GOALS AND METRICS	6
B. WORKING GROUP DISCUSSION OF GOALS AND MANAGEMENT FOR THE PLAN	8
III. PENSACOLA BAY SYSTEM GOAL FRAMEWORK	12
IV. OVERARCHING APPROACHES, STRATEGIES & ACTIONS	13
WORKING GROUP DRAFT OVERARCHING APPROACHES	13
GOAL A. A HEALTHY AND PRODUCTIVE OYSTER REEF ECOSYSTEM	14
GOAL B. THE MANAGEMENT AND REGULATION OF THE OYSTER FISHERY AND AQUACULTURE INDUSTRY	16
GOAL C. A THRIVING ECONOMY CONNECTED TO THE PENSACOLA BAY SYSTEM	18
GOAL D. AN ENGAGED AND INFORMED PUBLIC AND DECISION-MAKERS	18
V. STRATEGIES REFERRED TO OTHER ENTITIES	20
E. STRATEGIES TO BE REFERRED FOR EVALUATION TO THE PENSACOLA AND PERDIDO BAYS ESTUARY PROGRAM	20
F. STRATEGIES TO BE REFERRED FOR EVALUATION TO OTHER ENTITIES	21
VI. INITIAL PRIORITIZATION OF STRATEGIES	21
VII. PERFORMANCE MEASURES	21
VIII. PUBLIC COMMENT AND NEXT STEPS	21
APPENDICES	
Appendix #1 Meeting Agenda	22
Appendix #2 Working Group Members, Project Team, Facilitators & Public Participating	23
Appendix #3 Zoom Meeting Evaluation & Chat	25
Appendix #4 Project Schedule & Workplan	28
Appendix #5 Prioritization of Strategies & Actions	30
Appendix #6 Clean List of the Vision Themes, Goals, Outcomes, Objectives, Strategies & Actions	37
Appendix #7 Performance Measures	45
Appendix #8 Project Summary and Statement of Purpose	48

**OYSTER ECOSYSTEM-BASED FISHERY MANAGEMENT PLAN (O-EBFM) FOR THE
PENSACOLA BAY SYSTEM (PBS)**
PBS STAKEHOLDER WORKING GROUP
MEETING IX EXECUTIVE SUMMARY
November 18, 2020

Anne Birch, Florida Marine Program Manager, The Nature Conservancy (TNC), welcomed the Stakeholder Working Group members to the online Zoom meeting. Anne introduced the PBS facilitation team of Jeff Blair and Bob Jones with Facilitated Solutions LLC. Members, as an icebreaker, offered their favorite Thanksgiving dish. The facilitator reviewed the meeting objectives and agenda which members agreed to follow (*See Appendix #1*). Members also approved, without changes, the October 21, 2020 facilitator's VIII Meeting Summary, which members had received in advance of the meeting. The facilitator reviewed guidelines for PBS virtual meetings.

Laura Geselbracht, Senior Marine Scientist, The Nature Conservancy, described potential approaches for setting sustainable oyster fishery recovery objectives. The Oyster Habitat Suitability Model (HSM), which she presented at earlier Working Group meetings, was designed to inform the "where" of restoration. Suitability will also be dependent on the type of restoration to be conducted. For example, cultching will likely only be successful where hardbottom substrate is present. The HSM further narrows the most suitable areas for restoration of fished reefs.

The bottom mapping and reef condition assessment underway for East Bay will let us know which reef areas still have hardbottom and live oysters and their condition. Restoration will be most cost effective where hardbottom is still present in suitable oyster growing areas and will allow restoration efforts to avoid smothering reefs with a good amount of live oysters present. TNC is working with Escambia County to find funding to conduct similar mapping of the oyster reefs in Escambia Bay. Beyond the HSM, we should better understand the socioeconomics of the oyster fishery in the PBS.

Laura reviewed some questions related to the fishery, the shell model and reef area needed, placement of reefs near recruiting area, how much harvest the system can accommodate in terms of productivity level, management options and approach, and future enforcement and monitoring. The Working Group discussed: possible spat collectors and working with extension programs; inexpensive substrates (reef balls); and the Bream Fishermen Association report.

Following the presentation, the facilitator asked the Working Group to think about setting targets for the Pensacola Bay System around what is needed to establish oyster reefs for the future that are managed sustainably and can support some level of a wild harvest fishery.

- **What are the short- and long-term fisheries goals for the System?** Working Group comments covered: sedimentation as critical problem for restoring the system and the need to create strategies and actions address the complex issue; land use in relation to restoration, land/water buffers, wetlands and uplands, compliance with permitting and fertilizers and lawns on the water edge; streams and water flows disrupted and stream restoration; public education of homeowners, developers and builders (make the science and data understandable); NPDES (EPA) permit enforcement and evaluation, nutrient loading, dissolved O₂; salinity levels; stormwater systems, retention pond upkeep and runoff; oysters and reefs, spat production locations; monitor

oyster growth, survival and recruitment in the water column; and need to address changing climate conditions.

- **How much harvest can the system managed sustainably accommodate?** Working Group comments covered: bottom mapping; dissolved oxygen and sedimentation levels; oyster food source; data and hydrodynamic modeling; oyster resiliency; larval transport; and spat protection.
- **How much reef area at what productivity level is needed to accommodate sustainable harvest based on desired recovery goals?** Working Group comments covered: participation in the fishery; use bottom mapping; look at the Plan holistically and update every 5 years; sustainability needs to consider harvest, and open or limited harvest system, how it is conducted and what it looks like.
- **What type of management approach (e.g., limited entry) is feasible for ensuring equitable and sustainable harvest?** Working Group comments covered: all management options should be on the table; need funding to implement and monitor; use bridges for data; and address predation.
- **What reef areas are recruiting oysters?** Working Group comments covered: bridge pilings; NRDA project data; ongoing oyster mapping to fill in gaps; selection of cultch.
- **Currently, how many oyster harvesters participate in the wild harvest fishery?** Working Group comments covered: oyster fishing; fishery recovery goals; limited entry; cultch material.
- **Where to cultch (HSM and Spatial Management Plan can inform)?** Working Group comments covered: target starting point for oysters in the PBS; depends on objectives for the amount of ecological services in terms of how much cultch is needed.
- **How much cultching to start with?** Working Group comments covered: data needed to inform this question; future entrants; and alternative materials.
- **Type of management approach needed to ensure sustainability of oyster reefs for long-term harvest.** Working Group comments covered: data; alternative cultch materials; target starting point for oysters in the PBS; oysters ecosystem services; short-term (5 years) restoration goals such as watermen supported by fishery in 5 years; suitability for where oysters can grow; reef elevation; water quality benchmarks; population growth projections; don't ignore upland/upstream impacts; establish a turbidity target; sea level rise impacts; extreme rain events and drought; and engineering solutions for increased flushing of the Bay system?

The Working Group agreed on the “vision of success” themes that formed the basis for the PBS goal framework. For a complete list of the strategies and actions and Working Group comments see the Detailed Summary and see Appendix #6 for a clean list of statements following the November 18, 2020 Working Group meeting. The Working Group reviewed again the following plan organization and agreed it was an acceptable format to continue to refine the strategies and actions.

SECTION I: WORKING GROUP GOALS, OBJECTIVES, AND DRAFT PROPOSED STRATEGIES

Overarching Approaches (4)

Goal A: A Healthy and Productive Ecosystem - 9 Objectives, 9 Strategies, 14 Actions

Goal B: Management and Regulation of Wild Harvest and Aquaculture- 3 Objectives, 10 Strategies, 21 Actions

Goal C: Thriving Economy - 6 Objectives, 3 Strategies, 6 Actions

Goal D: Public Education Communication - 3 Objectives, 3 Strategies, 12 Actions

SECTION II: STRATEGIES TO BE REFERRED TO OTHER PROGRAMS OR ENTITIES

E. 8 Strategies and 9 Actions to be Referred for Evaluation to the Pensacola and Perdido Bays Estuary Program

F. Strategies to be Referred for Evaluation to Other Entities (none to date)

SECTION III: STRATEGIES RATED AS NOT ACHIEVING CONSENSUS (none to date)

SECTION IV: PERFORMANCE MEASURES FOR EACH GOAL AREA

SECTION V: TERMS, DEFINITIONS AND ACRONYMS

The facilitator reviewed draft criteria for Working Group members to keep in mind as they selected the rating for particular strategies. He suggested that members should rate each on own merits. The exercise yielded member views on each strategy on its own merits. The results of the exercise are captured in Appendix #5.

The facilitator noted the Working Group Draft Performance Measures to Evaluate Strategies for each goal area had not changed since the October Working Group meeting. The performance measures are set out in full in Appendix #7.

The facilitators invited members of the public to comment and there was no one who offered public comments.

The facilitators then reviewed possible agenda items for the Meeting X, which will take place on January 21, 2020 in a Zoom virtual meeting format. The TNC Team agreed to review the results of the prioritization exercise and the comments on strategies and actions and revise the strategies and actions and send out in advance an updated Worksheet document. The next meeting will review and further refine strategies and actions. The Working Group members were invited to listen in on the meeting with Watermen that is being scheduled on December 4, 2020 in the evening starting at 5:30 pm CT. A meeting evaluation was conducted and *the meeting adjourned at 11:50 p.m. CT.*

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

**GPBS STAKEHOLDER WORKING GROUP
MEETING IX DETAILED SUMMARY**

November 18, 2020

This section provides a 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

Anne Birch, Florida Marine Program Manager, The Nature Conservancy, welcomed the Stakeholder Working Group members to the online Zoom meeting. Anne introduced the PBS facilitation team of Jeff Blair and Bob Jones with Facilitated Solutions LLC. Members, as an icebreaker, offered their favorite Thanksgiving dish. The facilitator reviewed the meeting objectives and agenda which members agreed to follow (*See Appendix #1*). Members also approved, without changes, the October 21, 2020 facilitator’s VIII Meeting Summary, which members had received in advance of the meeting. The facilitator reviewed guidelines for PBS virtual meetings.

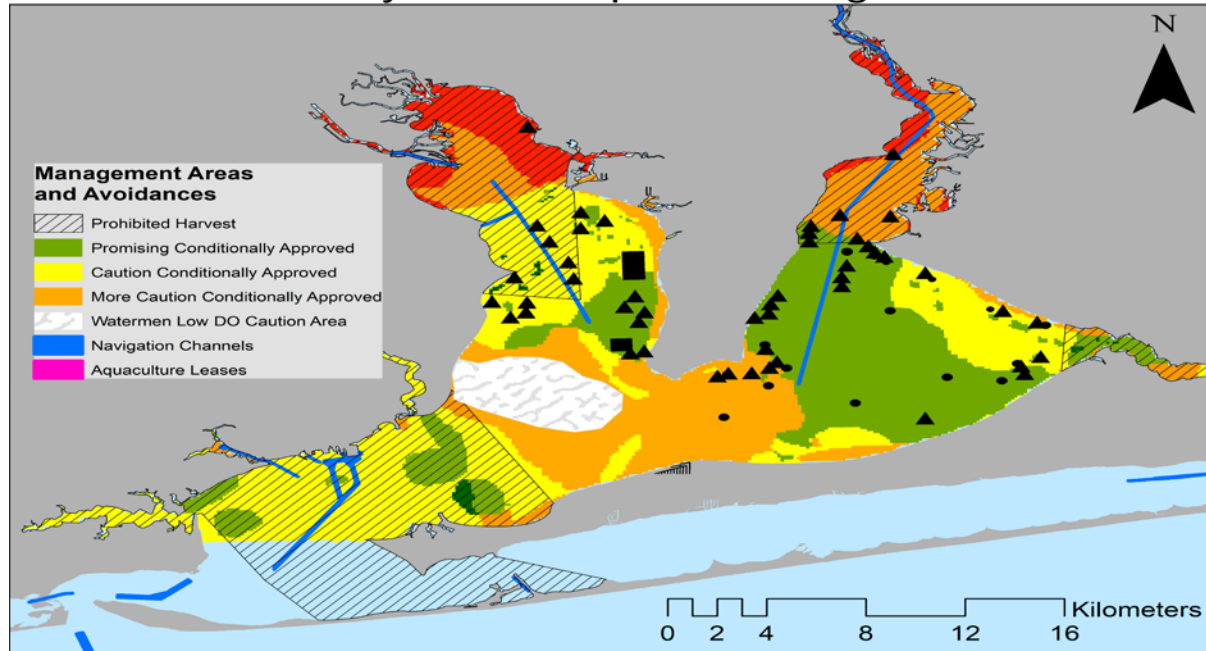
II. PRESENTATION AND DISCUSSION ON THE PENSACOLA BAY SYSTEM

A. POTENTIAL APPROACH FOR SETTING OYSTER FISHERY RECOVERY GOALS AND METRICS

Laura Geselbracht, Senior Marine Scientist, The Nature Conservancy, described potential approaches for setting sustainable oyster fishery recovery objectives. The Oyster Habitat Suitability Model (HSM), which she presented at earlier Working Group meetings, was designed to inform the “where” of restoration. On the HSM map, the green areas are most promising for restoring oyster reefs and the red least promising with yellow and orange being intermediate for restoring reefs. Suitability will also be dependent on the type of restoration to be conducted. For example, cultching will likely only be successful where hardbottom substrate is present.

The HSM further narrows the most suitable areas for restoration of fished reefs. These draft management areas are intended to be advisory and all siting decisions should consider field investigations to verify appropriateness. The bottom mapping and reef condition assessment underway for East Bay will let us know which reef areas still have hardbottom and live oysters and their condition. Restoration will be most cost effective where hardbottom is still present in suitable oyster growing areas and will allow restoration efforts to avoid smothering reefs with a good amount of live oysters present. TNC is working with Escambia County to find funding to conduct similar mapping of the oyster reefs in Escambia Bay.

Pensacola Bay DRAFT Spatial Management Plan



Beyond the HSM, we should better understand the socioeconomics of the oyster fishery in the PBS. Some questions that will need answers are:

- What is a good starting point to establishing the appropriate number of fishermen to accommodate, which will change over time?
- What amount of catch will these fishermen need to stay engaged in the fishery?
- What does the shell model tell us about how much reef area will be needed, i.e., how we should set our goals?
- Where should fished reefs go? Recruiting areas?
- What are the short- and long-term fisheries GOALS for the system?
- How much harvest can the system accommodate?
- How much reef area at what productivity level is needed to accommodate sustainable harvest based on desired recovery goals?
- What type of management approach (e.g., limited entry) is feasible for ensuring equitable and sustainable harvest?
- What reef areas are recruiting oysters?
- What is needed for future enforcement and monitoring.
- What areas producing larvae. Recent studies show that larvae don't travel far- spatial orientation of receiving and producing reefs.

Working Group Comments/Questions

- Do we have stock/spat collectors out there? *A: No, we don't have anything currently. This is a first effort.*

- Consider the use of inexpensive substrates, such as small concrete reef balls, and place on each of areas for potential areas of restoration. Work with Beth Fugate at FDEP. Empirical data will be needed.
- The Bream Fishermen Association report should provide useful information in that regard.
- Work with the Santa Rosa and Escambia County Extension programs in designing a spat collection initiative.

B. WORKING GROUP DISCUSSION OF GOALS AND MANAGEMENT FOR THE PLAN

Following the presentation, the facilitator shared the Working Group’s overarching goal and outcome, “A productive, and sustainably managed and regulated oyster reef fishery and ecosystem and aquaculture industry in the Pensacola Bay System.” “By 2030, oyster reefs in the Pensacola Bay System support a sustainably managed and productive fishery and aquaculture industry supported by stakeholders, using the best available science and monitoring to manage and regulate fishery and aquaculture activities in a fair and equitable manner.”

He asked the Working Group to think about setting targets for the Pensacola Bay System around what is needed to establish oyster reefs for the future that are managed sustainably and can support some level of a wild harvest fishery. The following are questions that were asked of the Working Group and their responses.

1. What are the short- and long-term fisheries goals for the System?

Working Group Comments/Questions

- **Sedimentation**
 - Sedimentation is critical problem to address (especially during storm/heavy rain and wind events) growth and development controls needed.
 - Clearing the land and red clay being used.
 - Get to the root sources/causes of the problems along with providing what the oysters need to exist. In terms of water quality degradation, a critical issue is sedimentation.
 - Sedimentation: new development, re-suspension of sediment already in system, which is larger contributor? Fix inputs first.
 - Development process and regulations for controlling silt and sand during construction work should address sedimentation. Construction regulations are only adequate when work is done correctly and follows best management practices but monitoring and enforcement of regulations is the issue.
 - Sedimentation is the biggest issue in terms of 1st or 2nd order streams that are impaired.
 - New development and resuspension of sediment already in the system. Does science know which one address?
 - Consider using shrimpers for removing sedimentation from Bay. Explore adapting beach renourishment approaches for removing clay from sand on barges after dredging.
 - Viability of restoration doubtful if sedimentation is not addressed.

- **Land use**
 - Restoration has to look at inputs. Without addressing land use issues, restoration is going to be difficult to achieve.
 - North end of Escambia County- lots of development- buffers not being implemented or enforced
 - Interface buffers between land and water not being enforced, stormwater not being contained properly
 - Growth into low lying wetland areas due to lack of upland land for development
 - Restoration has to look at inputs. Reality is that overall land use in ecosystem must address inputs. Advocated for a HUC 6 description to address upland inputs.
 - Existing compliance with permitting study needed.
- **Streams and water flow** don't interact correctly with their systems and dump into Bay.
- **Stream restoration** might need to come first. Start at upper end- stream restoration might be focused on streams vs. reefs.
- **Fertilizers on the water edge.** Living on the water with turf grass and use of chemicals/fertilizers, etc. impacts the water quality. Need to educate public on how to protect the water.
- **NPDES (EPA) permit enforcement** and evaluation is lacking and needs to be addressed.
- **Stormwater**
 - Existing compliance with stormwater permitting is important. Stormwater systems failure to control runoff in storm events and upkeep and maintenance of retention ponds is problematic.
 - Other issues include nutrient loading, dissolved O₂; salinity levels.
- **Oysters and Reefs.**
 - Reefs need to be tall enough spatially for people to harvest
 - Spat production locations (use reef balls to test data); Collecting spat information should be a short-term goal high on list and solicit volunteer help.
 - Monitor oyster growth, survival and recruitment in the water column.
 - Bream Fishermen Association study on spat: they monitor, survival, growth, and recruitment.
 - Build source (broodstock) reefs, hydrodynamic models show flow patterns for spat. Building low relief reefs to be fished by fishermen, while building sustainability.
- **Education** is important: homeowners, developers, builders (make the science and data understandable).
- **Changing climate.** Need to address changing climate conditions

2. How much harvest can the system managed sustainably accommodate?

WG Comments/Questions

- **Need bottom mapping**
 - When DO and sedimentation are addressed, the level will increase.
 - What are the oysters eating, are they food limited, phytoplankton as food source.
 - Bottom mapping data needed.
- **Pair EPA's hydrodynamic model with PPBEP.**
- **Oysters are a resilient critter.**
 - They have been knocked down for hundreds of years.

- Need stabilized sediments.
 - Can work both sides of equation at once.
 - **Larval transport - understand** where these reefs can be to serve as sources for other reefs.
 - **Spat protection.** If wild harvesting is to happen you need to protect for brood stock-spat production.
- 3. How much reef area at what productivity level is needed to accommodate sustainable harvest based on desired recovery goals?**

WG Comments/Questions

- **Participation.** How many want to participate in wild harvest fishery?
 - **Use bottom mapping** to identify locations for restoration in the short term and avoid sedimentation and other land-based inputs.
 - **Look at the Plan holistically and update every 5 years.** Plan has to be adaptive based on changing circumstances.
 - **Sustainability needs to consider harvest,** and open or limited harvest system, how it is conducted and what it looks like.
- 4. What type of management approach (e.g., limited entry) is feasible for ensuring equitable and sustainable harvest?**

WG Comments/Questions

- **All management options should be on the table** for evaluation. e.g., limited entry for harvesters with history of fishing on PBS, or rotational closures to allow recruits to grow, etc.
- **Need funding to implement and monitor** effectively once a management strategy is adopted
- Understand locations of the reefs/oysters (maps)
- **Use bridges for data,** vertical pilings will show oyster populations at these locations, from past several years.
- **Predation,** vertical columns eliminate some of issues impacting bottom oysters.
 - Capture oyster drills and other oyster predators
 - Oyster drills not salinity tolerant below 12.
 - Cultch, even pre seeded, prevent predators. Especially in wild harvest areas

5. What reef areas are recruiting oysters?

WG Comments/Questions

- Bridge pilings
- NRDA project data may help identify areas.
- Oyster mapping ongoing and fill in gaps like Escambia Bay.
- Project Oyster Pensacola report (Jane Caffrey will distribute)
- Selection of cultch

6. Currently, how many oyster harvesters participate in the wild harvest fishery?

WG Comments/Questions

- **Oyster fishing.** Is oyster fishing a desired full-time occupation currently? If so, what is the level of harvest needed to support their livelihood?
- What is the amount of reef area and with what attributes (amount of cultch, amount of live oysters, etc.) needed to achieve this?
- Upcoming December PBS Watermen Workshop will vet this question.
- **Fishery recovery goals** are area based and people based.
- **Limited entry** to the fishery is on the table
- **Cultch material.** Granite cultch is harder to tong if larger pieces are used. Oyster shell degrades. The size of material has been sticking point. Granite and marble material- stayed put longer. Height of the reefs will be impacted if material leaves the system.
- Not a lot oyster fishing now. However, we should consider the future in the Plan.
- If successful in recovery, oystermen may come back locally and from other areas in state.

7. Where to cultch (HSM and Spatial Management Plan can inform)?

WG Comments/Questions

- **Target starting point for oysters in the PBS.**
 - How and where to cultch depends on the objective.
 - Need starting point or target for oysters and work back from there in terms of services, e.g., 80% of ecosystem services historically in the PBS.
 - Depends on objectives for the amount of ecological services expected or needed. This will determine how much cultch is needed.

8. How much cultching to start with?

WG Comments/Questions

- Do we have data on this question?
- What is future going to look like for future entrants?
- Does it have to be full-time? Commercial fishermen, aquaculture could complement when season closed.
- Consider alternative materials

9. Type of management approach needed to ensure sustainability of oyster reefs for long-term harvest.

WG Comments/Questions

- **Data?** Do we have data on this question? Addressed closure, limited entry, and monitoring above.
- **Alternative cultch materials.** Don't want to lose possibility of alternative materials, e.g., trees.

- **Target starting point for oysters in the PBS.** How and where to cultch depends on the objective. Need starting point or target for oysters and work back from there in terms of services, e.g., 80% of ecosystem services historically in the PBS.
- **Oysters ecosystem services**
 - On the ecosystem services side, oysters provide water filtration, sequester nitrogen, habitat for other species, shoreline stabilization, provide storm protection by buffering wave action, seafood, etc.
 - What should the short-term (5 years) restoration goals be?
- **Watermen supported by fishery in 5 years.**
 - X# of watermen supported by fishery in 5 years?
 - TNC suggested a 50% return to historic population levels in Florida waters for success on the studies.
 - There has been 80% loss of oysters and reefs globally and a 50% -80% loss in Gulf of Mexico according to a 2012 study (Beck et al).
- In terms of goals, look at the amount restored vs the amount lost.
- **Suitability for where oysters can grow.**
 - Need to factor in suitability for where oysters can grow. Sometimes this is new oyster reefs in areas where historic beds were found.
 - With the ecoservice services, water filtration goals or targets may depend on placement of reefs.
- **Reef elevation** needs to be factored in. If we need 2 feet off the bottom, we will need a lot more cultch.
- **Water quality benchmarks** can be a success criteria.
- **Population growth.** Account for increase/decrease population growth around the system.
- **Don't ignore upland/upstream impacts.** Balance creating oyster habitat in the water with upstream/upland impacts in terms of turbidity, chlorophyll nitrogen levels, etc.
- **Turbidity target.** How do we determine how to meet success criteria such as turbidity.
- **Sea level rise impacts.**
 - In terms of suitability, will sea level rise affect low tidal amplitude and flushing.
 - Should salinity levels in the future be based on more water in the bay?
- **Extreme rain events.** Expect more extremes in precipitation and-rain events, resulting in freshwater pulses as well as periods of drought.
- **Engineering solutions.** Should we be thinking engineering solutions in term of additional cuts in the Bay system for increased flushing?

III. PENSACOLA BAY SYSTEM GOAL FRAMEWORK

The Working Group agreed on the “vision of success” themes that formed the basis for the PBS goal framework. The goals, outcomes, objectives and strategies and actions were developed and refined at the January-October 2020 Working Group meetings. *(See Appendix #6 for a clean list of statements based on the Working Group’s input during the November 18, 2020 Working Group meeting).* The Working Group reviewed again the following plan organization and agreed it was an acceptable format to continue to refine the strategies and actions.

PBS Stakeholder Working Group, November 18, 2020 Meeting IX Summary

12

SECTION I: WORKING GROUP GOALS, OBJECTIVES, AND DRAFT PROPOSED STRATEGIES

Overarching Approaches (4)

Goal A: A Healthy and Productive Ecosystem - 9 Objectives, 9 Strategies, 14 Actions

Goal B: Management and Regulation of Wild Harvest and Aquaculture- 3 Objectives, 10 Strategies, 21 Actions

Goal C: Thriving Economy - 6 Objectives, 3 Strategies, 6 Actions

Goal D: Public Education Communication - 3 Objectives, 3 Strategies, 12 Actions

SECTION II: STRATEGIES TO BE REFERRED TO OTHER PROGRAMS OR ENTITIES

E. 8 Strategies and 9 Actions to be Referred for Evaluation to the Pensacola and Perdido Bays Estuary Program

F. Strategies to be Referred for Evaluation to Other Entities (*none to date*)

SECTION III: STRATEGIES RATED AS NOT ACHIEVING CONSENSUS (*none to date*)

SECTION IV: PERFORMANCE MEASURES FOR EACH GOAL AREA

SECTION V: TERMS, DEFINITIONS AND ACRONYMS

IV. OVERARCHING APPROACHES, STRATEGIES & ACTIONS

Appendix #6 contains the overarching approaches for the four Working Group goal areas, which include for each goal, the Vision Theme, Goal, Outcomes and Objectives and Strategies and Actions agreed to during the November 18, 2020 meeting. The underlined text represents suggested additions or deletions based on review of the TNC Team's review of the October 21, 2020 meeting results. These were reviewed, refined at times, and agreed to by the Working Group at the November 18, 2020 meeting.

OVERARCHING APPROACHES

1. Utilize the HSM as a means for identifying areas for oyster reef restoration and the siting of aquaculture facilities.
2. Evaluate non-traditional methods for implementing the plan's management and restoration actions.
3. Utilize models and other relevant information on climate change impacts to influence adaptive, sustainable reef management.
4. Identify local partners to coordinate and collaborate with on the implementation of strategies (e.g., watermen, citizen scientists and advocates, universities, local governments, PPBEP)

WG Comments/Questions

- OK, thumbs up, accept with change

A. A HEALTHY AND PRODUCTIVE OYSTER REEF ECOSYSTEM- DRAFT STRATEGIES AND ACTIONS

The Vision Theme, Goal, Outcomes and Objectives are listed in Appendix #6

1. Use data collection, monitoring, annual stock assessment data, and comprehensive shell budget models to inform management of oyster populations.
 - *Action A.):* Develop and implement a monitoring plan that references methodologies used.
 - *Action B.):* Develop shell budget model scenarios.
2. Enhance the monitoring and accuracy of harvested and non-harvested reefs and aquaculture stock data collection and reporting methods for inclusion in recovery targets (restoration and management).
 - *Action A.):* Design and implement a program(s) to supplement state monitoring activities (e.g., Oyster Corps).

Lead: FWC/FDACS/PPBEP Partners: local governments

3. 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).

Action A.): Create and manage a prioritized list with spatially explicit maps of restoration projects for the bay system based on the Habitat Suitability Model and restoration and management targets.

Action B.): Establish ecosystem service targets to manage the Bay System (e.g., water filtration, rec. fishing, and denitrification).

Lead: FWC Partners: local governments, PPBEP

4. Develop and seek a long-term funding source for the development of a dashboard with key metrics and indicators for monitoring ecosystem health that is used across programs and projects.

WG Comments/Questions

- OK, thumbs up, accept with change

Lead: PPBEP Partners: FWC, universities, local governments, citizen scientists

5. Develop a policy that there shall be no extraction of resources unless there is a comprehensive monitoring program in place providing the data required to sustainably manage the resource.

WG Comments/Questions

- This was suggested based on the importance of monitoring at the October meeting.
- This will be a self-imposed roadblock.
- This may equal a prohibition.
- Agree this is too strong a statement. Suggest best practices for monitoring and extraction?

- Typically, this monitoring is done during and following a stock assessment, e.g., red snapper stock assessment and monitor the sustainability of the harvest.
- Evaluate a policy vs. develop a policy?
- Harvest related to stock assessments and sustainability goals
- Perhaps link to a stock assessment for oysters in the fishery.
- TNC Team will review and propose a revised strategy for consideration at the January 2021 Working Group meeting

Lead: FWC Partners: FDACS, PPBEB, universities, local governments

6. 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.

- *Action A.):* Examine existing laws and create novel policies and programs to support return of shell back to the system (e.g., TX law requires return of material to the water).

Lead: FWC/FDACS Partners: UF Levin College of Law

- *Action B.):* Demonstrate the benefits of shell recycling programs to return shell back into the System.

Local entity

- *Action C.):* Identify the current location, quantity, and fate of shell material as a by-product of shucking.

Lead: Local Governments Partners: UF, DOH

Lead: FWC/FDACS? Partners UF Levin College of Law/ Sea Grant/PPBEP

7. Manage and remediate sources of sedimentation to the estuary and sediment sinks in the estuary impacting the oyster reef ecosystem.

- *Action A.):* Identify sources of sediment into estuary.
- *Action B.):* Identify how sediment sinks in the bay system affects oysters.

Lead: NFWFMD Partners: Geological Survey, local governments, FDOT, FDEP, EPA

8. Restore and create reef structures suitable for sustained oyster settlement that enhance ecosystem services in designated restoration areas.

- *Action A.):* Design and implement projects to achieve multiple ecosystem service targets (e.g., recreational fishing, shoreline protection).
- *Action B.):* Implement restoration projects simultaneously rather than sequentially.

Lead: FWC Partners: PPBEP, universities, local governments, FDOT, NGOs, coastal property owners

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

- *Action A.):* Track land use changes over time (retrospectively and prospectively) to determine if future changes could adversely affect oyster viability in the system.
- *Action B.):* Proactively address potential adverse impacts.

Lead: Local governments Partners: NWFMD, FDOT, RPC

B. THE MANAGEMENT AND REGULATION OF THE OYSTER FISHERY AND AQUACULTURE INDUSTRY— DRAFT STRATEGIES AND ACTIONS

The Vision Theme, Goal, Outcomes and Objectives are listed in Appendix #6

1. Conduct an oyster stock assessment for the PBS with periodic updates.

WG Comments/Questions

- OK with adding recommendation to FWC to do a stock assessment of oysters

Lead: FWC Partners: universities, NGOs, citizen scientists

2. Develop oyster population and demographic targets and biological thresholds (at the smallest scale that makes sense to inform harvest targets).
 - *Action A.):* Apply routine monitoring data and shell budget models.
 - *Action B.):* Define the scale used for the specific boundaries.

Lead: FWC Partners: universities

3. Manage the commercial oyster industry and recreational oyster fishing to provide for sustainable spat production and spawning and the recovery of oyster populations.
 - *Action A.):* Evaluate management scenarios (e.g., closures, rotational harvest, non-harvested spawning reefs, Territorial Use Rights of Fishing, limited entry, regulations, transferable license program).
 - *Action B.):* 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: PPBEP, universities, Sea Grant, watermen

4. Enhance the monitoring and accuracy of commercial and recreational oyster harvest and aquaculture stock data collection and reporting methods for inclusion in ~~restoration and~~ fisheries management targets.
 - *Action A.):* Develop and implement a monitoring plan that references methodologies used.
 - *Action B.):* Develop shell budget model scenarios. (*Lead Entity and Key Partners:* FWC)
 - *Action C.):* Collect annual estimate of aquaculture harvest (implement via FDACS).
 - *Action D.):* Evaluate whether recreational data should be monitored, how it would be implemented, and in consideration of a cost/benefit analysis for collecting the data.

WG Comments/Questions

- Suggested by Mike Norberg at last meeting. FWC and FDACS will share lead since aquaculture is included in this strategy

Lead: FWC/FDACS Partners: universities, Sea Grant, IFAS

5. Promote opportunities for agencies, law enforcement and watermen to work together on enforcement of oyster resource regulations.

- *Action A.):* Evaluate strategies for increasing the capacity of enforcement agencies.
- *Action B.):* Track law enforcement capacity over time.
- *Action C.):* Evaluate, and if needed, improve the process for watermen to communicate with law enforcement.
- *Action D.): Develop a process for managers and watermen to work with state attorneys and judges on enhancing enforcement and evaluating appropriate penalties.*

Lead: FWC Partners: universities, watermen and aquaculture organizations

WG Comments/Questions

- OK with addition of Action D.

6. Restore and create reef structures suitable for sustained oyster settlement and production for harvesting.

- *Action A.):* Work with watermen to evaluate cultching techniques for growing oysters (e.g., historical non-traditional, trees).

Lead: FWC Partners: universities, Sea Grant, watermen and aquaculture organizations, local county programs

- *Action B.):* Design and implement projects to achieve oyster fishery production targets.
- *Action C.):* Design projects that include both fished and non-fished reefs.

Lead: FWC Partners: universities, NOAA for funding

7. Investigate oyster shell and oyster relay programs to move both cultch and live oysters to more favorable habitat.

- *Action A.):* Use the HSM, information on larval source areas and environmental conditions to inform the potential programs.
- *Action B.):* Research similar relay programs in other areas as potential models and cautionary tales.

Lead: FDACS/FWC Partners: universities, Sea Grant, FDEP, FDOH, stakeholders (watermen)

8. Create public/seafood industry stakeholder programs to cooperatively manage harvested reefs.

- *Action A.):* Evaluate relaying oysters and/or distributing seed programs.

Lead: FDACS Partners: FWC, counties, Sea Grant, NRCS, stakeholders (watermen)

9. Support and prepare for the expected growth of aquaculture in the PBS.

- *Action A.):* Develop an aquaculture growth plan that outlines and defines optimal expansion of the aquaculture industry
- *Action B.):* Develop Spatial Area Management Plan that maps ideal areas for current and future growth using abiotic (DO, salinity, temperature, etc.) and social variables (proximity to docks, exclusion zones, etc.).
- *Action C.):* Establish Aquaculture Use Zones (AUZ).

Lead: FDACS Partners: FWC, counties, Sea Grant, NRCS, stakeholders (watermen)

10. 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.
- *Action A.):* Commission studies to collect and analyze data.

Lead: FDEP Partners: FWC, FDACS, universities, EPA

C. A THRIVING ECONOMY CONNECTED TO THE PENSACOLA BAY SYSTEM- DRAFT STRATEGIES AND ACTIONS

The Vision Theme, Goal, Outcomes and Objectives are listed in Appendix #6

1. Monitor key economic indicators for changes over time based on restoration efforts in the PBS.
 - *Action A.):* Characterize the connection between enhanced recreational fishing and tourism opportunities and oyster reef habitat quality and quantity.
 - *Action B.):* Identify which economic indicators will be most valuable to monitor.
 - *Action C.):* Include indicators that characterize and track the following: key ecosystem services of oyster habitat (e.g., water quality and sport fisheries enhancement), oyster fishery and oyster aquaculture industries.

Lead: PPBEP Partners: universities (UWF), Sea Grant, EPA Lab, stakeholders

2. Promote sustainable wild harvest and cultured oysters and the value of ecosystem services provided by restored oyster populations in the PBS.
 - *Action A.):* Develop and implement a marketing and communication plan, which celebrates oysters as an important feature of the area's cultural heritage.
 - *Action B.): Promote and market certification programs.*

WG Comments/Questions

- OK with changes in Strategy and Action 2 B.

Lead: PPBEP Partners: FDACS, universities (UWF), Sea Grant, EPA Lab, stakeholders

3. Align local and state government policies and practices that support oyster restoration, fisheries and aquaculture.
 - *Action 3. A.):* Evaluate existing policies and practices and recommend adjustments.

Lead: PPBEP Partners: FWC, Santa Rosa and Escambia Counties, stakeholders

D. AN ENGAGED AND INFORMED PUBLIC AND DECISION-MAKERS- DRAFT STRATEGIES AND ACTIONS

The Vision Theme, Goal, Outcomes and Objectives are listed in Appendix #6

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.

- *Action A.):* Businesses, industries, non-profits, and local governments are supportive and included in outreach and education efforts.
- *Action B.):* Education efforts address both positive and negative consequences of depleted/lost oyster reef habitat respectively.
- *Action C.):* 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.

Lead: PPBEP Partners: local governments, local partners, Sea Grant, Visit Pensacola

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 involves all sectors of the community.
 - *Action A.):* 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).
 - *Action B.):* Demonstrate the benefits of shell recycling programs to return shell back into the System.
 - *Action C.):* Develop metrics for public engagement and education programs.
 - *Action D.):* Develop and support education programs that focus on oysters as drivers of restoration and management of the PBS.
 - *Action E.):* Develop education and mentoring programs to create a new oyster workforce for restoration and monitoring, wild harvest, and aquaculture industries.
 - *Action F.):* 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.
 - *Action G.):* 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)

Lead: Sea Grant Partners: FWC, FDACS, universities, K-12, watermen, local governments/counties, career source, OysterCorps

3. Demonstrate the economic and social benefits derived from the ecosystem services provided by oyster fisheries and restored/natural reef habitat.
 - *Action A.):* Compile information on the economic and social benefits accruing from restored reefs (fished and non-fished).
 - *Action B.):* Seek out partnerships with researchers that have been doing this work.

Lead: PPBEP Partners: universities, Sea Grant, Visit Pensacola

V. STRATEGIES REFERRED TO OTHER ENTITIES

E. STRATEGIES TO BE REFERRED FOR EVALUATION TO THE PENSACOLA AND PERDIDO BAYS ESTUARY PROGRAM

1. 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.
 - *Action A.):* Enlist and work with advocacy groups to help improve conditions in the PBS.
2. Create a comprehensive funding approach for Plan implementation including a comprehensive analysis for future grant funding for strategies, including support for sustainable monitoring, deriving from the Plan.
 - *Action A.):* Evaluate funding sources for implementation of management and restoration strategies included in the PBS Ecosystem-Based Oyster Fisheries Management Plan (e.g., region-wide Gulf trustee implementation group for NRDA funding.)
 - *Action B):* Evaluate grant opportunities from recommendations included in the PBS Ecosystem-Based Oyster Fisheries Management Plan.
 - *Action C.):* 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.)
 - *Action D.):* Allocate sufficient funding for restoration of harvested reefs and aquaculture farms based on the oyster Habitat Suitability Model (HSM).
 - *Action E.):* Evaluate funding sources to generate awareness, education, and support for a healthy oyster and PBS ecosystem.
 - *Action 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 G.):* Work across estuary programs to fund and leverage large scale monitoring for the Panhandle Region - Perdido to Suwanee Bays.
 - *Action H.):* Develop and seek a funding source to provide cultch for habitat restoration.

WG Comments/Questions

- OK with changes in Actions F, G & H.
3. Establish a co-management advisory committee under the auspices of the Estuary Program 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.
 - *Action A.):* Annually assess and report on the progress of completing the Plan's Actions.
 4. 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.
 5. Long-Term Environmental Impacts. Consider the impacts including but not limited to ocean acidification and climate change/sea level rise on the oyster resource. Population growth
 6. Water Quality Standards. Develop a set of water quality strategies as common ground that can address pollution and sediment impacts on the oyster resource.

7. Nutrient Credit Trading. Consider nutrient credit trading impacts on oyster fishery/resource.
8. Research Needs. Conduct research needed to continue to address and find solutions for oyster disease, predation and oyster spat.

Lead: PPBEP Partners: agencies, local governments, stakeholders as appropriate

F. STRATEGIES TO BE REFERRED FOR EVALUATION TO OTHER ENTITIES

- None to date.

VI. INITIAL PRIORITIZATION OF STRATEGIES

The facilitator led the Working Group in the initial prioritizing of the current strategies. He reviewed draft criteria for Working Group members to keep in mind as they selected the rating for each strategy. He suggested that members should rate each strategy on its own merits. Below are the average of the Priority Ratings for each of the Plan's strategies. The ranking order for level of priority used a 10-point scale. The results of the exercise are captured in Appendix #5.

VII. PERFORMANCE MEASURES

The facilitator noted the Working Group Draft Performance Measures to Evaluate Strategies for each goal area had not changed since the October Working Group meeting. The performance measures are set out in full in Appendix #7.

VIII. PUBLIC COMMENT AND NEXT STEPS

The facilitators invited members of the public to comment and there was no one who offered public comments. The facilitators then reviewed possible agenda items for the Meeting X, which will take place on January 21, 2020 in a Zoom virtual meeting format. The TNC Team agreed to review the results of the prioritization exercise and the comments on strategies and actions and revise the strategies and actions and send out in advance an updated Worksheet document. The next meeting will review and further refine strategies and actions. The final two meetings in February and March 2021 will finalize the recommended plan. The Working Group members were invited to listen in on the meeting with the Watermen Working Group members that is scheduled for December 8, 2020 starting at 5:30 pm CT. The meeting concluded with a Zoom evaluation. *(See Appendix #3). The meeting adjourned at 11:50 p.m. CT.*

Appendix #1 - Meeting Agenda

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

PBS STAKEHOLDER WORKING GROUP

MEETING IX

NOVEMBER 18, 2020—8:30 AM – 12:00 PM CT

VIRTUAL MEETING VIA ZOOM

HOST: THE NATURE CONSERVANCY, FLORIDA

FACILITATOR: FACILITATED SOLUTIONS, LLC

MEETING IX OBJECTIVES

- ✓ To Approve Regular Procedural Topics (Agenda, and Meeting VIII Summary Report)
- ✓ To Review Meeting Schedule and Updated Workplan
- ✓ To Receive Requested Presentations
- ✓ To Discuss Action Steps for Implementing Strategies
- ✓ To Conduct a Strategies Prioritization Exercise
- ✓ To Identify Needed: Next Steps, Information, Presentations, and Agenda Items for Next Meeting

PBS STAKEHOLDER WORKING GROUP MEETING IX AGENDA—NOVEMBER 18, 2020

1.	8:30	WELCOME, REVIEW OF VIRTUAL MEETING PARTICIPATION GUIDELINES, AND ROLL CALL
2.		REVIEW AND APPROVAL OF AGENDA
3.		APPROVAL OF FACILITATORS’ SUMMARY REPORTS (OCTOBER 21, 2020 MEETING)
4.		REVIEW OF PROJECT MEETING SCHEDULE AND WORKPLAN
5.	8:45	STAKEHOLDER REQUESTED PRESENTATIONS AND BRIEFINGS (20 MINUTES EACH) <ul style="list-style-type: none"> • <i>Briefing on Using Habitat Suitability Spatial Maps for Beginning the Discussion on Oyster Fisheries recovery—TNC Team</i>
6.	9:30	FACILITATED DISCUSSION <ul style="list-style-type: none"> • How Do We Set Goals for the Recovery of the Oyster Fishery in the PBS?
10:30 AM CT		GROUP PHOTO AND BREAK (15 MINUTES)
7.	10:00	A.) ECOLOGICAL: A HEALTHY AND PRODUCTIVE OYSTER REEF ECOSYSTEM <ul style="list-style-type: none"> • Review Strategies and Action Steps • Prioritization of Strategies
8.		B.) WILD HARVEST AND AQUACULTURE: THE MANAGEMENT AND REGULATION OF FISHERY <ul style="list-style-type: none"> • Review Strategies and Action Steps • Prioritization of Strategies
9.		C.) Thriving Economy: Connected to the Pensacola Bay System <ul style="list-style-type: none"> • Review Strategies and Action Steps • Prioritization of Strategies
10.		D.) Public Education Communication: An Engaged and Informed Public <ul style="list-style-type: none"> • Review Strategies and Action Steps • Prioritization of Strategies
11.	11:30	APPROVE FRAMEWORK FOR PLAN (GOALS, OBJECTIVES, STRATEGIES, AND ACTIONS)
12.	11:45	PUBLIC COMMENT
13.	11:55	NEXT STEPS AND ASSIGNMENTS, INFORMATION NEEDS, PRESENTATIONS AND AGENDA ITEMS FOR THE NEXT MEETING (JANUARY 21, 2020) <ul style="list-style-type: none"> • Review of action items and assignments • Identify needed information and presentations for the next meeting • Identify agenda items for the next meeting • Watermen’s Workshop participation overview • Meeting evaluation – Online Survey
12:00 PM CT		ADJOURN

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

(**Bold** = members who attended the November 18, 2020 meeting. *Italics* for members who couldn't attend. 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)

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

FACILITATED SOLUTIONS, LLC	
Jeff Blair	Working Group Facilitator
Robert Jones	Working Group Facilitator
PUBLIC	
Haley Gancel	UF
Amanda Croteau	UWF
Hannah Matthews	UF/IFAS/Sea Grant

Appendix #3

Zoom Working Group Member Meeting Evaluation and Chat, November 18, 2020

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>
4.4 of 5	5	8	0	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>
4.4 of 5	5	8	0	0	0

3. 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>
4.4 of 5	5	8	0	0	0

4. 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>
4.5 of 5	7	6	0	0	0

5. 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>
4.0 of 5	2	11	0	1	0

6. 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>
4.5 of 5	7	7	0	0	0

7. Zoom Chat Comments During the Meeting

- Jane Caffrey: I agree with Glen
- Jane Caffrey: no, very little (no) data on inputs versus resuspension in PBS
- Whitney Scheffel PPBEP: The PPBEP will be able to prioritize these system wide issues and it's our plan to do so. Even though we aren't regulatory, we can bring law makers, elected officials, etc. the scientific information to be able make better more informed decisions. Jane Caffrey, Matt Deitch, Haley, Amanda and PPBEP are going to be leading a workshop tomorrow prioritizing stressors in Pensacola and Perdido Bays & watersheds. If you are interested in joining in and continuing this conversation, please let me know. I can send you a link to register.
- Barbara Albrecht: Thank you Glen, you are spot on! Also, new subdivisions are resulting in loss of native plant species and replacement with grass and non-natives. The grasses are now being

treated with pesticides and herbicides which are endangering the pollinators. All of these issues are connected and impacting our surface waters and many contaminants are sticking to the sediments.

- Barbara Albrecht: Identify the sources...
- Whitney Scheffel
PPBEP:<https://us02web.zoom.us/meeting/register/tZlodu2vpz8sHNCDXdsbLMW9iK-20kS2U1in>
- Laura Geselbracht: Arnold et al oyster larvae paper:
- Laura Geselbracht: <http://www.eula.cl/musels/wp-content/uploads/2014/09/Arnold-et-al-JSR-2017-Pensacola-Bay-larval-dispersal.pdf>
- Whitney Scheffel PPBEP: Workshop is from 8:30 - 12:30 CT tomorrow November 19. We are going to be splitting participants into break out groups discussing specific focus areas: Fish & Wildlife, Habitat, Water quality/quantity, Sediment Quality/quantity and the goal is to prioritize stressors, ID performance metrics to address these stressors, and ID hot spot locations in the watershed where these things are occurring.
- Beth Fugate: there should be some spat data on reseeded reefs for NRDA
- Barbara Albrecht: Robert - how are the Navy Point Reefs doing compared to the Polk Street reefs? What differences are being observed between sites? growth rates, cementing etc.
- Matt Posner | PPBEP: Beth, it might be good to have whoever is overseeing the NRDA project to present whatever data they have at our next meeting
- Glen Miley: That would be great!!
- Barbara Albrecht: Hydrodynamic Models, Bathymetric Surveys and LiDAR for the entire watershed should be run every 5 years.
- Matt Posner | PPBEP: The Estuary Program is in discussions with the Water Management District and EPA to fund these longer-term data needs on some recurring basis as this is a need in Choctawhatchee and St. Andrew/St. Joe as well.
- Robert TURPIN: I haven't looked that closely at the Polk reefs, so I can't offer an opinion. However, I think Bayou Grande has a substantial spat supply.
- Rick O'Connor: I know Charlie and the Blackwells monitor the grass at their project but have chose not to monitor the oysters. Not sure if FDEP has been.
- Beth Fugate: I would have to look back at the last monitoring for our project in Bayou Grande but I know that settlement has been good, but there's also been die off. Would attribute to heavy summer rain events. Will get back out to monitor reefs when we can
- Barbara Albrecht: Invasive Species & Predator Gumbo, lionfish & oyster drills
- Glen Miley: Pensacola version of West Indies Salad= Oyster Drill and Lionfish ceviche! Get it on all local menus
- RKTURPIN: Eat them to beat them!
- Laura Geselbracht: Also, sport fisheries for finfish.
- Anne Birch: Shellfish Reefs at risk detailing loss of reefs
<http://www.conservationgateway.org/ConservationPractices/Marine/HabitatProtectionandRestoration/Pages/shellfishreefsatrisk.aspx>
<https://academic.oup.com/bioscience/article/61/2/107/242615>
- Amanda Croteau: Some thoughts on the issue of harvest - Do we have an understanding about the spatial distribution of harvest pressure. Are there areas that experience more pressure and

vice versa are there areas that are relatively untouched due to lack of access /navigability /preference. Important to understand when thinking of spatial regulation. Maybe a question for the watermen meeting to get their thoughts?

- Laura Geselbracht: Good point Amanda!
- Glen Miley: SKANSKA
- Barbara Albrecht: Thank you!

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 Facilitated Solutions, LLC, 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>
Meeting I. Studer Institute	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.
Meeting II. UF/IFAS SRC Extension	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		
Meeting III. Sanders Beach	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.
Meeting IV. Virtual Meeting Zoom Platform	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.
Meeting V. Virtual Meeting Zoom Platform	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.
Watermen Workshop Virtual Meeting Zoom Platform	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.

Meeting VI. Virtual Meeting Zoom Platform	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.
Meeting VII. Virtual Meeting Zoom Platform	September 28, 2020	Test acceptability and refinement of strategies and action steps for the Goals (A-D). Review habitat suitability spatial maps. Review and revise performance measures.
Update and Presentation to PPBEP	October 7, 2020	Presentation by TNC to the Pensacola & Perdido Bays Estuary Program's Policy Board on the Plan goals and framework.
Meeting VIII. Virtual Meeting Zoom Platform	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.
FINALIZING CONSENSUS ON PBS OYSTER ECOSYSTEM-BASED FISHERIES MANAGEMENT PLAN		
Meeting IX. Virtual Meeting Zoom Platform	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 Virtual Meeting Zoom Platform	December 8, 2020 5:30 PM CT	Review strategies and actions with watermen.
Update and Presentation 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.
Meeting X. Virtual Meeting Zoom Platform	Jan. 21, 2021	Refinement of actions steps for strategies incorporating watermen's feedback. Review and consensus testing of strategies and action steps for Draft Plan.
Meeting XI. Virtual Meeting Zoom Platform	Feb. 17, 2021	Review and consensus testing of Draft Plan and implementation guidance, and agreement on Draft Plan.
Meeting XII. Virtual Meeting Zoom Platform	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 & Perdido Bays Estuary Program on the Plan and the Estuary Program's role in implementing the Plan.</i>

Appendix #5-- Working Group Prioritization of Strategies, November 18, 2020

PRIORITIZATION RANKING SCALE:												
<i>Scale Range 10 - 1 (10 highest rating to 1 lowest rating)</i>												
10 = Highest Level of Priority—Urgent/Critical	5 = Medium Level of Priority											
9 = Very High Level of Priority	4 = Medium Low Level of Priority											
8 = High Level of Priority	3 = Low Level of Priority											
7 = Medium High Level of Priority	2 = Very Low Level of Priority											
6 = Moderately High Level of Priority	1 = Lowest Possible Priority—Not Worth Pursuing											
Goal A: A Healthy and Productive Oyster Reef Ecosystem												
“The Pensacola Bay System sustains a healthy and productive oyster reef ecosystem” 9 Objectives and 9 Strategies												
Strategies	Avg.	Rank	10	9	8	7	6	5	4	3	2	1
1.) Use data collection, monitoring, annual stock assessment data, and comprehensive shell budget models to inform management of oyster populations.	9.1	2	5	8	4	0	0	0	0	0	0	0
2.) Enhance the monitoring and accuracy of harvested and non-harvested reefs and aquaculture stock data collection and reporting methods for inclusion in recovery targets (restoration and management).	8.2	5	2	6	6	3	0	1	0	0	0	0
3.) 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).	8.2	6	4	7	1	2	2	2	0	0	0	0
4.) Develop and seek a long-term funding source for the development of a dashboard with key metrics and indicators for monitoring ecosystem health that is used across programs and projects.	7.8	8	4	2	3	5	4	0	0	0	0	0
5.) Develop a policy that there shall be no extraction of resources unless there is a comprehensive monitoring program in place providing the data required to sustainably manage the resource.	5.8	9	1	2	1	0	4	7	2	0	1	0
6.) 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.	8.1	7	1	6	7	3	0	1	0	0	0	0
7.) Manage and remediate sources of sedimentation to the estuary and sediment sinks in the estuary impacting the oyster reef ecosystem.	9.2	1	12	1	2	0	1	1	0	0	0	0

Strategies	Av g.	Rank	10	9	8	7	6	5	4	3	2	1
9.) Evaluate the effects of land use changes in the watershed on the health of oysters (e.g., floodplain forests, marshes, open spaces).	8.6	4	10	2	2	1	2	0	0	0	1	0

Goal B: Wild Harvest & Aquaculture												
“A productive, and sustainably managed and regulated oyster reef fishery and aquaculture industry in the Pensacola Bay System.” 3 Objectives and 10 Strategies												
Strategies	Av g.	Rank	10	9	8	7	6	5	4	3	2	1
1.) Conduct an oyster stock assessment for the PBS with periodic updates.	9.4	1	9	5	3	0	0	0	0	0	0	0
2.) Develop oyster population and demographic targets and biological thresholds (at the smallest scale that makes sense to inform harvest targets).	8.4	3	1	8	5	2	1	1	0	0	0	0
3.) Manage the commercial oyster industry and recreational oyster fishing to provide for sustainable spat production and spawning and the recovery of oyster populations.	7.6	6	2	5	3	2	2	2	1	0	0	0
4.) Enhance the monitoring and accuracy of commercial and recreational oyster harvest and aquaculture stock data collection and reporting methods for inclusion in restoration and fisheries management targets.	7.2	7	1	3	2	7	1	2	1	0	0	0
5.) Promote opportunities for agencies, law enforcement and watermen to work together on enforcement of oyster resource regulations.	7.7	5	5	3	2	1	1	5	0	0	1	0
6.) Restore and create reef structures suitable for sustained oyster settlement and production for harvesting.	8.1	4	2	7	4	1	1	2	0	0	0	0
7.) Investigate oyster shell and oyster relay programs to move both cultch and live oysters to more favorable habitat.	6.5	9	1	3	1	3	4	3	0	1	0	0
8.) Create public/seafood industry stakeholder programs to cooperatively manage harvested reefs.	6.4	10	1	2	2	3	3	3	2	1	0	0
9.) Support and prepare for the expected growth of aquaculture in the PBS.	6.7	8	1	2	3	2	5	2	2	0	0	0
10.) 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.	8.9	2	9	5	1	0	0	0	2	0	0	0

Goal C: A Thriving Economy Connected to the Pensacola Bay System												
"A healthy Bay System contributes measurably to a thriving economy for the Pensacola Bay region."												
6 Objectives and 3 Strategies												
Strategies	Avg.	Rank	10	9	8	7	6	5	4	3	2	1
1.) Monitor key economic indicators for changes over time based on restoration efforts in the PBS.	7.9	3	4	4	4	0	2	2	1	0		0
2.) Promote sustainable wild harvest and cultured oysters and the value of ecosystem services provided by restored oyster populations in the PBS.	8.1	2	4	5	2	3	1	1	1	0	0	0
3.) Align local and state government policies and practices that support oyster restoration, fisheries and aquaculture.	8.2	1	6	1	4	3	2	1	0	0	0	0

Goal D: An Engaged and Informed Public and Decision-Makers												
"The oyster reef ecosystem of the Pensacola Bay System is supported and protected by an engaged and informed public, and decision-makers."												
2 Objectives and 3 Strategies												
Strategies	Avg.	Rank	10	9	8	7	6	5	4	3	2	1
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.	8.8	1	7	4	3	2	0	1	0	0	0	0
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 involves all sectors of the community.	8.1	3	3	5	4	3	0	2	0	0	0	0
3.) Demonstrate the economic and social benefits derived from the ecosystem services provided by oyster fisheries and restored/natural reef habitat.	8.2	2	3	8	2	1	1	1	0	1	0	0

E: Strategies referred to the Pensacola and Perdido Bays Estuary Program												
8 Strategies												
Strategies	Avg.	Rank	10	9	8	7	6	5	4	3	2	1
1.) 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.	8.6	1	5	7	1	2	1	1	0	0	0	0
2.) Create a comprehensive funding approach for Plan implementation including a comprehensive analysis for future grant funding for strategies, including support for sustainable monitoring deriving from the Plan.	8.2	3	5	5	5	2	2	1	0	2	0	0
3.) Establish a co-management advisory committee under the auspices of the Estuary Program to periodically evaluate and adapt the plan, as needed, and review effectiveness of management decisions. Composition:	6.6	6	0	2	2	6	2	5	0	0	0	0

state management agencies (FWC, FDACS, FDEP), watermen, and other key stakeholders.														
4.) Long-Term Environmental Impacts. Consider the impacts including but not limited to ocean acidification and climate change/sea level rise, and population growth on the oyster resource.	6.6	7	2	2	4	1	2	3	1	1	0	1		
5.) Water Quality Standards. Develop a set of water quality strategies as common ground that can address pollution and sediment impacts on the oyster resource.	8.5	2	7	4	0	3	2	1	1	0	0	0		
6.) Nutrient Credit Trading. Consider nutrient credit trading impacts on oyster fishery/resource.	6.2	8	1	2	2	4	1	3	1	2	1	0		
7.) Research Needs. Conduct research needed to continue to address and find solutions for oyster disease, predation and oyster spat.	7.7	5	2	4	4	4	1	1	0	1	0	0		
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 PBS.	7.8	4	4	5	2	1	1	3	0	0	0	0		

PRIORITY OF STRATEGIES BY GOAL AREA

The number in parenthesis is the Working Group’s average ranking of that strategy as shown in Appendix 5. The Strategies are listed from highest to lowest in ranking values.

DETERMINATION OF PRIORITY 1, 2, AND 3 STRATEGIES FROM PRIORITIZATION RANKING RESULTS			
10 – 8 Ranking	Strategies that achieve an average ranking of from 10 - 8 will be classified as: Priority 1 Strategies = Important To Do Now		
7 – 5 Ranking	Strategies that achieve an average ranking of from 7 - 5 will be classified as: Priority 2 Strategies = Important But Less Time Sensitive		
4 – 1 Ranking	Strategies that achieve an average ranking of from 4 - 1 will be classified as: Priority 3 Strategies = As Time and Resources Allow		
PRIORITY 1 STRATEGIES = IMPORTANT TO DO NOW (AVERAGE RATINGS BETWEEN 10-8)			
GOAL A	GOAL B	GOAL C	GOAL D
Manage and remediate sources of sedimentation to the estuary and sediment sinks in the estuary impacting the oyster reef ecosystem.	Conduct an oyster stock assessment for the PBS with periodic updates.	Align local and state government policies and practices that support oyster restoration, fisheries and aquaculture.	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.
Use data collection, monitoring, annual stock assessment data, and comprehensive shell budget models to inform management of oyster populations.	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.	Promote sustainable wild harvest and cultured oysters and the value of ecosystem services provided by restored oyster populations in the PBS.	Demonstrate the economic and social benefits derived from the ecosystem services provided by oyster fisheries and restored/natural reef habitat.

Restore and create reef structures suitable for sustained oyster settlement that enhance ecosystem services in designated restoration areas.	Develop oyster population and demographic targets and biological thresholds (at the smallest scale that makes sense to inform harvest targets).		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 involves all sectors of the community.
Evaluate the effects of land use changes in the watershed on the health of oysters (e.g., floodplain forests, marshes, open spaces).	Restore and create reef structures suitable for sustained oyster settlement and production for harvesting.		
Enhance the monitoring and accuracy of harvested and non-harvested reefs and aquaculture stock data collection and reporting methods for inclusion in recovery targets (restoration and management).			
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).			
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.			

PRIORITY 2 STRATEGIES = IMPORTANT BUT LESS TIME SENSITIVE (AVERAGE RATINGS BETWEEN 7-5)

GOAL A	GOAL B	GOAL C	GOAL D
Develop and seek a long-term funding source for the development of a dashboard with key metrics and indicators for monitoring ecosystem health that is used across programs and projects.	Promote opportunities for agencies, law enforcement and watermen to work together on enforcement of oyster resource regulations.	Monitor key economic indicators for changes over time based on restoration efforts in the PBS.	
Develop a policy that there shall be no extraction of resources unless there is a comprehensive monitoring program in place providing the data required to sustainably manage the resource.	Manage the commercial oyster industry and recreational oyster fishing to provide for sustainable spat production and spawning and the recovery of oyster populations.		
	Enhance the monitoring and accuracy of commercial and recreational oyster harvest and aquaculture stock data collection and reporting methods for inclusion in restoration and fisheries management targets.		
	(Support and prepare for the expected growth of aquaculture in the PBS.		
	Investigate oyster shell and oyster relay programs to move both cultch and live oysters to more favorable habitat.		
	Create public/seafood industry stakeholder programs to cooperatively manage harvested reefs.		

PRIORITY 3 STRATEGIES = AS TIME AND RESOURCES ALLOW (AVERAGE RATINGS BETWEEN BELOW 5)

GOAL A	GOAL B	GOAL C	GOAL D
NONE	NONE	NONE	NONE

STRATEGIES REFERRED TO OTHER ENTITIES

E: STRATEGIES REFERRED TO THE PENSACOLA AND PERDIDO BAYS ESTUARY PROGRAM
Priority 1 Strategies = Important To Do Now (AVERAGE RATINGS BETWEEN 10-8)
1.) 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.
2.) Water Quality Standards. Develop a set of water quality strategies as common ground that can address pollution and sediment impacts on the oyster resource.
3.) Create a comprehensive funding approach for Plan implementation including a comprehensive analysis for future grant funding for strategies, including support for sustainable monitoring deriving from the Plan.
4.) 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.
5.) Research Needs. Conduct research needed to continue to address and find solutions for oyster disease, predation and oyster spat.
Priority 2 Strategies = Important But Less Time Sensitive (AVERAGE RATINGS BETWEEN 7-5)
6.) Establish a co-management advisory committee under the auspices of the Estuary Program 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.
7.) Long-Term Environmental Impacts. Consider the impacts including but not limited to ocean acidification and climate change/sea level rise, and population growth on the oyster resource.
8.) Nutrient Credit Trading. Consider nutrient credit trading impacts on oyster fishery/resource.
Priority 3 Strategies = As Time and Resources Allow (Average Ratings between below 5)
None
F. STRATEGIES TO BE REFERRED FOR EVALUATION TO OTHER ENTITIES
None to date.

Appendix #6- Clean List of the Vision Themes, Goals, Outcomes & Objectives, Strategies and Actions

The strategy statements listed under each theme reflect the changes made by the PBS Working Group during the November 18, 2020 Working Group meeting. These strategies will continue to be refined and added to and won't be adopted by the Working Group until the final meeting in March 2021.

SECTION I. WORKING GROUP GOALS, OBJECTIVES, STRATEGIES & ACTIONS

WORKING GROUP OVERARCHING APPROACHES

1. Utilize the HSM as a means for identifying areas for oyster reef restoration and the siting of aquaculture facilities.
2. Evaluate non-traditional methods for implementing the plan's management and restoration actions.
3. Utilize models and other relevant information on climate change impacts to influence adaptive, sustainable reef management.
4. Identify local partners to coordinate and collaborate with on the implementation of strategies (e.g., watermen, citizen scientists and advocates, universities, local governments, PPBEP)

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 Pensacola Bay System sustains a healthy and productive oyster reef ecosystem.

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

OBJECTIVES:

Oyster Populations

1. Measurements of oyster reef and population conditions (including larval availability, 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 harvested and non-harvested 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 harvested and non-harvested ~~fished and non-fished~~ oyster reefs is sustained while oyster reef restoration is underway.

Ecosystem Service

5. Key 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 PBS for substrate needed for larval recruitment to enhance population productivity on harvested and non-harvested oyster reefs.
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 PBS 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 PBS ecosystem are considered and addressed to minimize negative effects to the PBS ecosystem.

DRAFT ECOLOGICAL STRATEGIES

1. Use data collection, monitoring, annual stock assessment data, and comprehensive shell budget models to inform management of oyster populations.
 - *Action A.):* Develop and implement a monitoring plan that references methodologies used.
 - *Action B.):* Develop shell budget model scenarios.
2. Enhance the monitoring and accuracy of harvested and non-harvested reefs and aquaculture stock data collection and reporting methods for inclusion in recovery targets (restoration and management).
 - *Action A.):* Design and implement a program(s) to supplement state monitoring activities (e.g., Oyster Corps).
3. 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).

Action A.): Create and manage a prioritized list with spatially explicit maps of restoration projects for the bay system based on the Habitat Suitability Model and restoration and management targets.

Action B.): Establish ecosystem service targets to manage the Bay System (e.g., water filtration, rec. fishing, and denitrification).
4. Develop and seek a long-term funding source for the development of a dashboard with key metrics and indicators for monitoring ecosystem health that is used across programs and projects.
5. Develop a policy that there shall be no extraction of resources unless there is a comprehensive monitoring program in place providing the data required to sustainably manage the resource. *TNC Team will review and propose a revised strategy for consideration at the January 2021 Working Group meeting*

6. 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.
Action A.): Examine existing laws and create novel policies and programs to support return of shell back to the system (e.g., TX law requires return of material to the water).
Action B.): Demonstrate the benefits of shell recycling programs to return shell back into the System.
Action C.): Identify the current location, quantity, and fate of shell material as a by-product of shucking.
7. Manage and remediate sources of sedimentation to the estuary and sediment sinks in the estuary impacting the oyster reef ecosystem.
Action A.): Identify sources of sediment into estuary.
Action B.): Identify how sediment sinks in the bay system affects oysters.
8. Restore and create reef structures suitable for sustained oyster settlement that enhance ecosystem services in designated restoration areas.
Action A.): Design and implement projects to achieve multiple ecosystem service targets (e.g., recreational fishing, shoreline protection).
Action B.): Implement restoration projects simultaneously rather than sequentially.
9. Evaluate the effects of land use changes in the watershed on the health of oysters (e.g., floodplain forests, marshes, open spaces).
Action A.): Track land use changes over time (retrospectively and prospectively) to determine if future changes could adversely affect oyster viability in the system.
Action B.): Proactively address potential adverse impacts.

THEME 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.

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.

DRAFT WILD HARVEST AND AQUACULTURE STRATEGIES AND ACTIONS

1. Conduct an oyster stock assessment for the PBS with periodic updates.
2. Develop oyster population and demographic targets and biological thresholds (at the smallest scale that makes sense to inform harvest targets).
Action A.): Apply routine monitoring data and shell budget models.
Action B.): Define the scale used for the specific boundaries.
3. Manage the commercial oyster industry and recreational oyster fishing to provide for sustainable spat production and spawning and the recovery of oyster populations.
Action A.): Evaluate management scenarios (e.g., closures, rotational harvest, non-harvested spawning reefs, Territorial Use Rights of Fishing, limited entry, regulations, transferable license program).
Action B.): Evaluate existing allowable and minimally destructive alternative gear type options and harvest methods, including the use of experimental gear for wild oyster harvesting.
4. Enhance the monitoring and accuracy of commercial and recreational oyster harvest and aquaculture stock data collection and reporting methods for inclusion in ~~restoration and~~ fisheries management targets.
Action A.): Develop and implement a monitoring plan that references methodologies used.
Action B.): Develop shell budget model scenarios. (*Lead Entity and Key Partners:* FWC)
Action C.): Collect annual estimate of aquaculture harvest (implement via FDACS).
Action D.): Evaluate whether recreational data should be monitored, how it would be implemented, and in consideration of a cost/benefit analysis for collecting the data.
5. Promote opportunities for agencies, law enforcement and watermen to work together on enforcement of oyster resource regulations.
Action A.): Evaluate strategies for increasing the capacity of enforcement agencies.
Action B.): Track law enforcement capacity over time.
Action C.): Evaluate, and if needed, improve the process for watermen to communicate with law enforcement.
Action D.): Develop a process for managers and watermen to work with state attorneys and judges on enhancing enforcement and evaluating appropriate penalties.
6. Restore and create reef structures suitable for sustained oyster settlement and production for harvesting.
Action A.): Work with watermen to evaluate cultching techniques for growing oysters (e.g., historical non-traditional, trees).
Action B.): Design and implement projects to achieve oyster fishery production targets.
Action C.): Design projects that include both fished and non-fished reefs.
7. Investigate oyster shell and oyster relay programs to move both cultch and live oysters to more favorable habitat.
Action A.): Use the HSM, information on larval source areas and environmental conditions to inform the potential programs.

Action B.): Research similar relay programs in other areas as potential models and cautionary tales.

8. Create public/seafood industry stakeholder programs to cooperatively manage harvested reefs.

Action A.): Evaluate relaying oysters and/or distributing seed programs.

9. Support and prepare for the expected growth of aquaculture in the PBS.

Action A.): Develop an aquaculture growth plan that outlines and defines optimal expansion of the aquaculture industry

Action B.): Develop Spatial Area Management Plan that maps ideal areas for current and future growth using abiotic (DO, salinity, temperature, etc.) and social variables (proximity to docks, exclusion zones, etc.).

Action C.): Establish Aquaculture Use Zones (AUZ).

10. 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.

Action A.): Commission studies to collect and analyze data.

THEME 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.

OBJECTIVES

1. Oyster habitat, oyster harvesting, and oyster aquaculture are recognized and valued as key components of the local economy and cultural heritage by the PBS community and the state.
2. Economic indicators of the commercial oyster fishery, aquaculture industry and associated industries in the PBS demonstrate increasing viability and growth over 10 years.
3. Investments in water quality management are being made with the goal of protecting and supporting the oyster habitat and oyster aquaculture industry (including land use impacts).\
4. The oyster fishery and oyster aquaculture industries provide economic and career growth opportunities.
5. Industries, and businesses within the PBS are supportive of and compatible with a healthy, well-managed, and resilient PBS ecosystem.
6. Government policies, plans and regulations affecting oysters are compatible with a healthy and well-managed ecosystem while maintaining a thriving economy and supporting cultural heritage.

DRAFT THRIVING ECONOMY STRATEGIES AND ACTIONS

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

Action A.): Characterize the connection between enhanced recreational fishing and tourism opportunities and oyster reef habitat quality and quantity.

Action B.): Identify which economic indicators will be most valuable to monitor.

Action C.): Include indicators that characterize and track the following: key ecosystem services of oyster habitat (e.g., water quality and sport fisheries enhancement), oyster fishery and oyster aquaculture industries.

2. Promote sustainable wild harvest and cultured oysters and the value of ecosystem services provided by restored oyster populations in the PBS.

Action A.): Develop and implement a marketing and communication plan, which celebrates oysters as an important feature of the area's cultural heritage.

Action B.): Promote and market certification programs.

3. Align local and state government policies and practices that support oyster restoration, fisheries and aquaculture.

Action 3. A.): Evaluate existing policies and practices and recommend adjustments.

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

VISION THEME D: Stakeholders of the 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 Pensacola Bay System is supported and protected by an engaged and informed public, and decision-makers.

OUTCOME: By 2030, the Pensacola Bay System stakeholders are informed of the importance of sustaining the health of the Bay System and work actively to invest in and implement the Plan.

OBJECTIVES

1. Establish a coordinated outreach and education plan to increase public and stakeholder awareness and support for a healthy and well-managed oyster and PBS ecosystem.
2. The Pensacola and Perdido Bays Estuary Program incorporates and promotes the recommendations of the PBS oyster plan.

PUBLIC EDUCATION COMMUNICATION STRATEGIES AND ACTIONS

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.

Action A.): Businesses, industries, non-profits, and local governments are supportive and included in outreach and education efforts.

Action B.): Education efforts address both positive and negative consequences of depleted/lost oyster reef habitat respectively.

Action C.): 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 involves all sectors of the community.

Action A.): 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).

Action B.): Demonstrate the benefits of shell recycling programs to return shell back into the System.

Action C.): Develop metrics for public engagement and education programs.

Action D.): Develop and support education programs that focus on oysters as drivers of restoration and management of the PBS.

Action E.): Develop education and mentoring programs to create a new oyster workforce for restoration and monitoring, wild harvest, and aquaculture industries.

Action F.): 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.

Action G.): 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)

3. Demonstrate the economic and social benefits derived from the ecosystem services provided by oyster fisheries and restored/natural reef habitat.

Action A.): Compile information on the economic and social benefits accruing from restored reefs (fished and non-fished).

Action B.): Seek out partnerships with researchers that have been doing this work.

SECTION II STRATEGIES REFERRED TO OTHER ENTITIES

STRATEGIES TO BE REFERRED FOR EVALUATION TO THE PENSACOLA AND PERDIDO BAYS ESTUARY PROGRAM

1. 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.

Action A.): Enlist and work with advocacy groups to help improve conditions in the PBS.

2. Create a comprehensive funding approach for Plan implementation including a comprehensive analysis for future grant funding for strategies, including support for sustainable monitoring, deriving from the Plan.

Action A.): Evaluate funding sources for implementation of management and restoration strategies included in the PBS Ecosystem-Based Oyster Fisheries Management Plan (e.g., region-wide Gulf trustee implementation group for NRDA funding.)

Action B): Evaluate grant opportunities from recommendations included in the PBS Ecosystem-Based Oyster Fisheries Management Plan.

Action C.): 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.)

Action D.): Allocate sufficient funding for restoration of harvested reefs and aquaculture farms based on the oyster Habitat Suitability Model (HSM).

Action E.): Evaluate funding sources to generate awareness, education, and support for a healthy oyster and PBS ecosystem.

Action 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 G.): Work across estuary programs to fund and leverage large scale monitoring for the Panhandle Region - Perdido to Suwanee Bays.

Action H.): Develop and seek a funding source to provide cultch for habitat restoration.

3. Establish a co-management advisory committee under the auspices of the Estuary Program 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.

Action A.): Annually assess and report on the progress of completing the Plan's Actions.

4. 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.
5. Long-Term Environmental Impacts. Consider the impacts including but not limited to ocean acidification and climate change/sea level rise on the oyster resource. Population growth
6. Water Quality Standards. Develop a set of water quality strategies as common ground that can address pollution and sediment impacts on the oyster resource.
7. Nutrient Credit Trading. Consider nutrient credit trading impacts on oyster fishery/resource.
8. Research Needs. Conduct research needed to continue to address and find solutions for oyster disease, predation and oyster spat.

Appendix #7- Draft Performance Measures

Performance measures are the decision-support tools forecast results that stakeholders will use for weighing the potential outcomes of different strategies.

A.) A HEALTHY AND PRODUCTIVE OYSTER REEF ECOSYSTEM

Related Performance Measures to Evaluate Strategies

Habitat Restoration/Management

1. Stock assessment and shell budget data to inform management
 - a. Extent/size, amount of oyster reef structure.
 - b. Density of live oysters, recent boxes and dead shell (number per m²).
 - c. Biomass of spawning stock (> 3 inches or 75 mm) and biomass of very-large spawning stock (> 5 inches or 127 mm).
 - d. Total oyster biomass (by reef and/or by reefs with different management objectives).
 - e. Weight of cultch (for shell budget)
 - f. 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

B.) THE MANAGEMENT AND REGULATION OF THE OYSTER FISHERY AND AQUACULTURE INDUSTRY RELATED PERFORMANCE MEASURES TO EVALUATE STRATEGIES

Wild Harvest

- i. Stock assessment, shell budget, and harvest data to inform management – refer to Performance Measure #1 in Goal A above, with the addition of the following metrics:
 - Total harvest in bag or pounds
 - Harvest by fishery type (commercial and recreational)

- Time of harvest during the open fishing season.
 - Harvest per licensed harvester (consistent with confidential data policies)
 - Effort expended harvesting/Catch per trip unit effort
 - Amount of illegal harvest.
 - Number of full-time harvesters that the fishery can support.
 - 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's contributions to ecological services based on biomass measurements (consistent with confidential data policies).

C.) A THRIVING ECONOMY CONNECTED TO THE PENSACOLA BAY SYSTEM- RELATED PERFORMANCE MEASURES TO EVALUATE STRATEGIES

Habitat Restoration/Management

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

Ecosystem Services

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

Wild Harvest

8. Number of fishermen participating in the fishery
9. Cost/value per pound
10. Value of harvest that meets an economic minimum for sustainability for watermen (e.g., revenue per harvester)

11. Percent of local oysters in the market.
12. Commercial and recreational total annual catch (bags/day)

Aquaculture

13. Cost per oyster
14. Number of aquaculturists participating in oyster aquaculture farming
15. Total aquaculture production and revenue.
16. Percent of local oysters in the market.
17. Annual aquaculture production

Economic Value

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

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

Related Performance Measures to Evaluate Strategies

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 Florida.

Appendix #8 - 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://myescambia.com/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>.