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

GPBS STAKEHOLDER WORKING GROUP

MEETING II—ORGANIZATIONAL MEETING SUMMARY

NOVEMBER 15, 2019

HOST: THE NATURE CONSERVANCY, FLORIDA
FACILITATOR: FACILITATED SOLUTIONS, LLC

Convened by:	*Facilitated and Summarized by:*
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EXECUTIVE SUMMARY

Anne Birch, Florida Marine Program Manager, The Nature Conservancy (TNC), welcomed the Stakeholder Working Group members back to the second meeting and noted TNC was excited about the outcomes from the first meeting and looking forward to this meeting as we work together over the next 18 months seeking consensus on an oyster ecosystem-based fishery management plan for the Greater Pensacola Bay System. She suggested the timing was excellent for working together on this plan with the standing up of the Pensacola and Perdido Bays Estuary Program, new data on oyster reefs throughout the state, and a new Florida Ocean and Coasts strategic plan being developed.

She introduced Facilitated Solutions LLC and the facilitation team of Jeff Blair and Bob Jones. Members introduced themselves and the facilitator reviewed the meeting objectives and agenda and members agreed to follow the agenda. The facilitator briefly reviewed the Working Group operating assumptions and participation principles and consensus building procedures adopted at the first meeting. They also reviewed a set of guiding principles adopted at the first meeting.

The Working Group reviewed the overall Goal statement that was agreed on at the first meeting. A member suggested it should address the protection and conservation of existing oyster reef resources. The following was added to the statement and the members agreed with the revised statement: "The goal of the GPBS Working Group is to develop a package of consensus recommendations that address the protection and conservation of existing oyster reef resources, informed by the best available science, data, and stakeholders' experiences for the management and restoration of the GPBS…"

The Working Group agreed that definitions should be provided for "stakeholders" and "water quality". The TNC team agreed to bring back some draft definitions at the January 2020 meeting.

Dr. Rob Brumbaugh, TNC Florida Sr. Marine Scientist, presented a synopsis of water quality in the Pensacola Bay System with a particular focus on factors of importance for oyster reproduction, growth and survival, including salinity (good), stratification (good), temperature (good), pH (fair), light/water clarity (good), dissolved oxygen (fair), dissolved inorganic nutrients (fair), Chlorophyll a (fair), pathogens (fair), contaminants/toxins (fair), and sedimentation(fair). None of the ratings for the greater Pensacola Bay System estuary were judged to be poor. Rob also provided a brief overview of the State of Florida's regulatory program for addressing impaired waters.

Rob concluded that for oysters, oyster restoration, and oyster aquaculture, the overall picture is relatively positive. The members discussed the 1970s Monsanto signature spill accounting for a list of

pollutants that affect Escambia Bay to this day and how often the State undertakes water quality assessments.

In terms of oyster ecology, Rob noted the native range of the Eastern Oyster (*Crassostrea virginica)* is from Canada to Brazil: the salinity range is from >2 to 35+ ppt; the temperature range is from 5 to >30° C; the oyster's age of maturity is 1-2 years; its lifespan is 20+ years; and the maximum size is >8" (>20 cm) as confirmed by personal observations of Calvin Sullivan, GPBS oyster harvester and Working Group member. Rob referred to excerpts from the recent (2019) Oyster Integrated Mapping and Monitoring Program report that found, "Pensacola Bay provides appropriate salinity and temperature ranges for oyster habitat…There are an estimated 95-99 ha (235-245 ac) of oyster reef within Pensacola Bay…Water quality in the bay improved significantly since the passage of the Clean Water Act and implementation of best land-use practices within the watershed." The Working Group discussed shell budgets (net accumulation vs. disappearance of shell and reef substrate), larvae disbursement and settlement, oyster reproductive output, and reef heights.

Rob then presented decision support tools designed to assess oyster habitat suitability incorporating data on oyster distribution both historic and contemporary, oyster larvae, dissolved oxygen, salinity, sediment, and seagrass. It allows mapping and review of management-related information such as Gulf Sturgeon critical habitat, aquatic preserves, conditionally approved and prohibited harvest areas. He suggested these tools could help the Working Group identify areas for potential management and restoration recommendations and test various scenarios for reaching management goals.

Finally, Rob reviewed recent research (2017 Arnold et al) mapping oyster larval dispersal and settlement in the Pensacola Bay System. The study found that, "*because larvae also appear to be limiting in some areas of the PBS, substrate addition will not suffice and successful restoration will require both the addition of substrate and the addition of adults or larvae (Arnold 2008) to ensure sufficient delivery of larvae and subsequent recruitment. This is evidenced, for example, along the western shoreline of Escambia Bay (Station 5 from this study), where substrate addition has been conducted with no discernable benefit. Restoration efforts in these areas likely will not provide a suitable return on the restoration investment unless a larger larval pool develops within the PBS*."

In a second presentation, Rob Brumbaugh provided a high-level overview of the regulatory framework for managing harvest of oysters at the national and state levels. In terms of harvest statistics, Rob provided an overview of two chronological charts on harvest in pounds for Pensacola oyster fisheries landings and Florida West Coast oyster aquaculture. Members discussed the trend of declining harvests, and the natural oyster reef system die offs and rebuilding. FWC and FDACS agreed to provide a presentation on the regulation of the oyster.

Bryan DeAngelis, TNC North America Marine Habitat Scientist, presented on the history of TNC's work on coastal restoration, monitoring and informing local habitat decisions. He described the TNC work over the past two decades relating to oyster restoration in the Gulf of Mexico, the US and globally. He indicated they started their work on small pilot projects (bagging shells, moving shells, building oyster reefs, measuring results) but in recent years have been focusing on how to take their work to a larger scale through public and private partnerships in watersheds and estuaries. TNC projects once

measured in square feet 20 years ago; now projects are more commonly measured in acres, particularly in the Gulf of Mexico.

TNC invests in these public and private partnerships to recover and/or conserve the valuable ecosystem services these habitats provide. A large and growing array of ecosystem science confirms that coastal habitats are critically important and extremely valuable, yet this science is rarely translated into management objectives that could influence the way we evaluate and manage these habitats for our many needs. TNC has decided that efforts to integrate ecosystem service benefits into decision-making will require a more detailed, targeted approach focusing on socio-economic drivers for sustainable use, protection and restoration of ecosystems.

Bryan described TNC's roles in helping with implementation and assisting partners to develop capacity in order to implement larger scale projects. Projects may look different from project to project depending on their objective. TNC also works to create enabling conditions for restoration, for example, through enhancing permitting and assisting with site selection. Finally, TNC is committed to addressing key restoration research questions through monitoring and evaluation and assisting communities and resource managers to make informed decisions around habitat. For example, Bryan reviewed a project in Texas at Half Moon Reef (HMR) in Matagorda Bay. A study of the results indicated that the reef added $691,000 to Texas' GDP each year and generated an additional $1.273 million in annual economic activity. In addition, it created a dozen new jobs and $465,000 in annual labor income. 94% of anglers reported that the restored habitat offers a more satisfying experience than other fishing locations. Charter captains and recreational anglers both agreed HMR was an above-average to excellent fishing spot in Matagorda Bay to which they will return time and time again.

Bryan described how TNC has been working with partners to develop the science behind two other key ecosystem services: water filtration and fish production (the making of new/baby fish provided by oyster reefs each year). He showed examples of using water filtration as a habitat target to set ecosystem-based objectives at a bay or estuary scale (e.g. how much reef, oyster density, and oyster sized would be required to meet certain water filtration targets). . Along with appropriate controls on land-derived nutrients (farms, lawns, car exhaust, waste water discharge), water filtration could provide a buffer against eutrophication that robs oxygen from waters, contributes to harmful algal blooms and causes stresses or declines in other estuarine organisms. Similarly, some modeled scenarios of restoration in Pensacola Bay demonstrate how certain levels of restored reef could produce 8 million new blue crab a year representing an increase of 861,000 kg biomass. Ultimately, the message was that a "mosaic" approach to setting restoration targets and goals could result in identifying targets for multiple benefits, including oyster harvest, fisheries, water quality or other desired services that oyster provide.

The Working Group agreed tentatively on "vision of success" themes that were drawn from the questionnaire responses and reviewed and rated by the Working Group at the October 9 meeting. The vision themes represent key topical issue areas that characterize the desirable future for the oyster reef ecosystem and the greater Pensacola Bay System. The Vision Themes will be helpful in establishing a framework for the plan goals and objectives and are not ordered by priority. The theme, goals, and outcomes were reviewed and refined. The Working Group asked that "A Healthy

and Productive Oyster Reef Ecosystem" be listed first, which is reflected below. The facilitator reminded the group that these themes are not listed in order of priority and that the themes will be seamlessly integrated into the plan.

A. A Healthy and Productive Oyster Reef Ecosystem.

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.

Draft Goal: The Greater Pensacola Bay System sustains a healthy and productive oyster reef ecosystem.

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

The Members brainstormed the following key topical Issues:

- Identifiable and achievable targets;
- Growth;
- Public understanding and support;
- Best practices as a framework for recommendations;
- Link the Plan to the Estuary Program;
- Model successes from other estuaries and scale up faster;
- Leverage and support funding for advance wastewater treatment facilities;
- Geo spatial mapping;
- Integrate and build on existing management plans;
- Identify existing and planned projects;
- Resiliency and adaptive management as guiding principles;
- Clarify the interpretation of the plan and adapt for unforeseen consequences once it is being implemented;
- Help ensure the plan is informed by practitioners; and
- Create a performance-based plan.

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

Vision Theme B: The management, regulation, and restoration of the oyster fishery and aquaculture industry is conducted by working collaboratively with stakeholders to create and monitor a plan that ensures that protection of the fishery and habitat is 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.

Draft Goal: A productive, and sustainably managed and regulated oyster reef fishery and aquaculture Industry in the Greater Pensacola Bay System.

Draft Outcome: By 2030, stakeholders have established and supported a productive, science driven, sustainably managed, monitored, and appropriately and fairly regulated oyster fishery reef ecosystem and integrated with the aquaculture industry in the Greater Pensacola Bay System.

The Members brainstormed the following key topical Issues:

- Ongoing funding for management;
- Ecological restoration principles;
- Fish and oyster production objectives;
- Adapt for future changes and circumstances;
- Incorporate state vetted plans;
- Address enforcement of regulation;
- Manage wild harvest differently than aquaculture; and
- Regulation of aquaculture.

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.

Draft Goal: A healthy Bay system contributes measurably to a thriving economy for the Greater Pensacola Bay region.

Draft Outcome: By 2030, the Greater Pensacola Bay Region is thriving economically, in part by achieving and sustaining a healthy Bay System that supports a cultural heritage of an oyster fishery, oyster reef ecosystem, and aquaculture, and provides opportunities for sustainable and responsible industry, development, business, recreation and tourism.

The Members brainstormed the following key topical Issues:

- Growth and conflicts among users (e.g., space conflicts);
- Aquaculture regulation and user conflicts;
- Aquaculture Use Zones;
- Economic activities that rely on a healthy bay;
- Social science;
- Controlling runoff;
- Public pushback for living shoreline projects;
- Revenue generation for restoration and plan implementation; and
- Local government involvement.

D. An Engaged and Informed Public.

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

Draft Goal: The oyster reef ecosystem of the Greater Pensacola Bay System is supported and protected by an engaged and informed public.

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

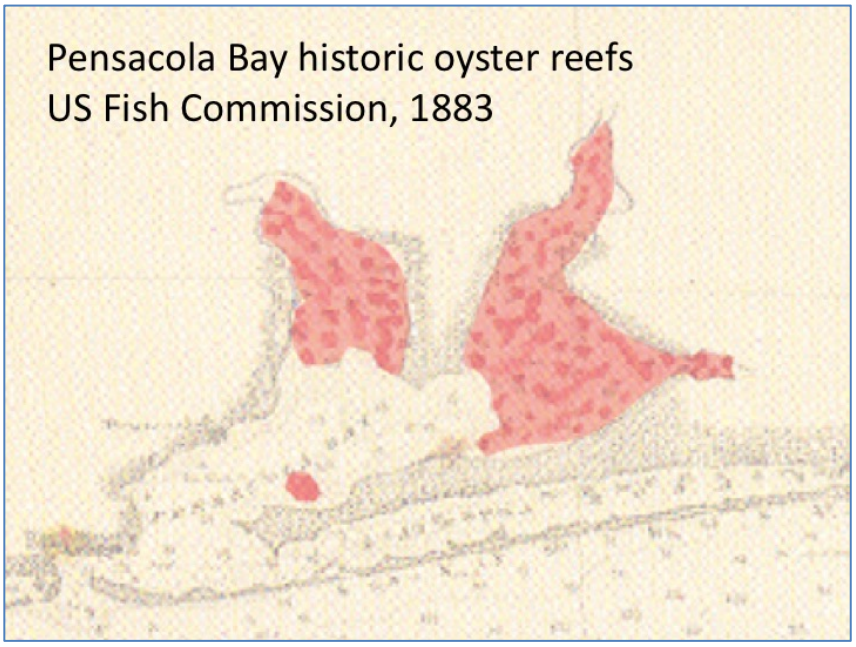
The Members brainstormed the following key topical Issues:

- A communication strategy to bring the GPBS back to health;
- Marine habitats- out of sight out of mind;
- Understand the amount of reef material removed from the system to help communicate to the public the need to restore it;
- Plan should integrate with the Pensacola & Perdido Estuary Program's future Comprehensive Conservation Management Plan (CCMP);
- Identify specific targets and action items to recommend for the CCMP;
- Local government support;
- Unique community/state partnership; and
- Present unbiased science to reduce any distrust of science – who and how it's presented matters;
- If the plan is to succeed don't speak only to the 'choir';
- Provide a definition of 'stakeholder'.

The facilitators reviewed possible agenda items for the 3rd meeting which will take place January 15, 2020 at the Sanders Beach Community Center in Escambia County. The Working Group members suggested consideration of the following: offer a deeper dive on the FWC/FDACs regulatory structure; exploration of an aquaculture use zone model (maybe include in DACS regulatory presentation); identify where are the existing and planned restoration projects locations and goals; present ideas for a communication strategy for the plan; a presentation on the regional economy and

its relationship to a healthy Bay; Restoration and management—a deeper dive; more input from oyster men at March 2020 meeting; draft performance measures review and consider the application for generating options.

The members completed meeting evaluation forms and adjourned at 2:00 pm.



The Nature Conservancy

OYSTER ECOSYSTEM-BASED FISHERY MANAGEMENT PLAN (O-EBFM)
FOR THE GREATER PENSACOLA BAY SYSTEM (GPBS)
STAKEHOLDER WORKING GROUP
MEETING II- November 15, 2019

DETAILED SUMMARY

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

I. INTRODUCTION

A. WELCOME

Anne Birch, Florida Marine Program Manager, the Nature Conservancy, welcomed the Stakeholder Working Group members back to the second meeting and noted The Nature Conservancy (TNC) was excited about the outcomes from the first meeting and looking forward to this meeting as we work together over the next 18 months seeking consensus on an oyster ecosystem-based fishery management plan for the Greater Pensacola Bay System. She suggested the timing was excellent for working together on this plan with the standing up of the Pensacola and Perdido Bays Estuary Program, new data on oyster reefs throughout the state, and a new Florida Ocean and Coasts strategic plan being developed.

B. AGENDA, CONSENSUS PROCEDURES AND GUIDING PRINCIPLES REVIEW

She introduced Facilitated Solutions LLC and the facilitation team of Jeff Blair and Bob Jones. Members introduced themselves and the facilitator reviewed the meeting objectives and agenda and members agreed to follow the agenda.

The facilitator briefly reviewed the Working Group operating assumptions and participation principles and consensus building procedures adopted at the first meeting. They also reviewed a set of guiding principles adopted at the first meeting covering: respecting differences; collaboration and consensus building; clear procedures equitably applied; and serving as accessible liaisons with the stakeholder groups and interests they have been appointed to represent.

C. OVERALL WORKING GROUP GOAL STATEMENT

The Working Group reviewed the overall Goal statement that was agreed on at the first meeting. A member suggested it should address the protection and conservation of existing oyster reef resources. The following as added to the statement and the members agreed with the revised statement.

The goal of the GPBS Working Group is to develop a package of consensus recommendations that address the protection and conservation of existing oyster reef resources, informed by the best available science, data, and stakeholders' experiences for the management and restoration of the GPBS.

The goal of the project is to ensure that the regulation and management of the oyster fishery, and oyster restoration polices are informed by the best available science and shared stakeholder stewardship values

The process will be designed so that members can evaluate oyster fishery practices and management options and restoration policies in the Greater Pensacola Bay System. The Working Group's recommendations, in the form of a GPBS Oyster Ecosystem-Based Fisheries Management Plan, will be directed to the TNC Project Team, the Pensacola and Perdido Bays Estuary Program, state managers and regulators, and other agencies/entities as appropriate.

D. Definitions

The Working Group agreed that definitions should be provided for "stakeholders" and "water quality. The TNC team agreed to bring back some draft definitions at the January 2020 meeting.

II. REQUESTED PRESENTATIONS ON THE GREATER PENSACOLA BAY SYSTEM

A. Oyster Ecology, Baseline Conditions and Data Describing the GPBS

Rob Brumbaugh provided an overview presentation as requested by the Working Group at the first meeting on baseline conditions for the greater Pensacola Bay System (PBS) including water quality, oyster biology, decision support tools and modeling oyster larvae.

1. Water Quality

He presented a synopsis on Water Quality in the Pensacola Bay System developed by Laura Geselbracht, Senior Marine Scientist, TNC Florida. It included estuary ratings (good, fair, poor) for the following measures: salinity (good), stratification (good), temperature (good), pH (fair), light/water clarity (good), dissolved oxygen (fair), dissolved inorganic nutrients (fair), Chlorophyll a (fair), pathogens (fair), contaminants/toxins (fair), and sedimentation(fair). None of the ratings for the greater Pensacola Bay System estuary were judged to be poor.

Rob reviewed the following water quality issues in the greater Pensacola Bay System:

- **pH**. In terms of pH the Pensacola Bay System ranges between 4.1-9.1 with a mean of 7.8. State of Florida surface water criteria designate a general acceptable pH range of 6.5-8.5
- **Excess nutrients.** In terms of excess nutrients sources include fertilizers (urban and agricultural), livestock waste and atmospheric deposition from fossil fuel combustion. Excessive nutrients can cause algal blooms and lead to low levels of dissolved oxygen (hypoxia). Nutrients are highest in the bayous of PBS
- **Dissolved oxygen.** In terms of dissolved oxygen, approximately 24% of PBS has low DO values in summer. DO may be depleted due to the decay of organic matter by bacteria or animal respiration. This depletion is mostly observed in near-bottom waters during warm summer months, where respiration consumes more oxygen than is replenished. Some estuarine waters are naturally more susceptible to low DO due to poor mixing and stratification. Anthropogenic inputs of nutrients and organic matter usually exacerbate the condition
- **Chlorophyll a.** In terms of Chlorophyll a, which is used to estimate phytoplankton in the system, a large amount of phytoplankton or bloom may indicate excess nutrients in the system. Blooms can reduce the amount of light reaching SAV and cause hypoxia when they die and decompose.
- **Toxins.** In terms of toxins in general, some PBS biota contain concentrations of PCBs, dioxins, furans, DDT, mercury, Cd, Zn, and inorganic that may pose public health risks. Consumption risk is lowest for shrimp. The health risk is greater for consumption of fish and blue crabs collected from Bayous Texar, Chico, and Grande, upper Escambia Bay, and lower Escambia River. There is a public health risk advisory for the consumption of striped mullet collected from Escambia Bay.
- **Mercury.** In terms of mercury, no mercury concentrations in fish, oysters, blue crabs, and freshwater mussels collected by the USEPA personnel from 98 sites in the PBS during 1993-2000 exceeded the USFDA action limit of 1.0 ppm. However, for the more at-risk population (women of child bearing age, children, and subsistence fishers), the action were exceeded by as much as 89% of samples. The EPA screening levels for subsistence fishers was exceeded for 42 of 47 (89%) oyster and blue crab samples
- **PCBs.** In terms of PCBs, they continue to be found in the sediments of the lower Escambia River and Escambia Bay. These are legacy pollutants that may continue to degrade benthic habitats in the Pensacola Bay System. PCBs were found in oysters from Indian Bayou, but were below detection in East Bay oysters. The USEPA recreational screening value was exceeded at all locations for dioxins/furans and dioxin-like PCBs. Areas of the higher health risks were Bayous Texar, Chico, and Grande and western Escambia Bay. Oysters from Escambia and East Bays and crabs from East and Blackwater Bays generally contained lower levels of contaminants.
- **Trace metals.** In terms of trace metals, inorganic arsenic screening concentrations were exceeded for 100% (crab hepatopancreas), 93% (edible crab tissue), 54% (crab muscle), and 96% (oyster) of samples. Arsenic, cadmium, and zinc pose a health risk to human consumers of seafood collected from Escambia Bay and River.

- **Sedimentation.** In terms of sedimentation, inadequate control of run-off from unpaved roads entering waterways that empty into the PBS is the main source. Blackwater Bay appears to have shifted from a sandy to a relatively silty-clay environment and the silty-clay area of central East Bay has noticeably expanded.

He provided an overview of the DEP regulatory program for impaired waters, TMDLs, and basin management action plans for the Greater Pensacola Bay including a 2013 DEP report on "Nutrient TMDLs" for North Escambia Bay, Judges Bayou, and Bayou Chico, and an "Dissolved Oxygen TMDL for Judges Bayou.

Rob suggested that for oysters, oyster restoration, and oyster aquaculture the overall picture is relatively positive. He indicated the PBS historically supported SAV and the loss of it throughout the Pensacola Bay System has been attributed to poor water quality and possibly lack of water clarity. Oyster restoration and oyster aquaculture can help clarify the water improving conditions for SAV growth. Low dissolved oxygen in winter especially close to the bottom may be a problem for oyster survival in some locations. Dissolved oxygen concentrations at the surface and on the bottom should be monitored at several locations throughout the PBS. For people the risk of consuming chemically contaminated seafood needs further study to characterize contaminated areas and risks to people.

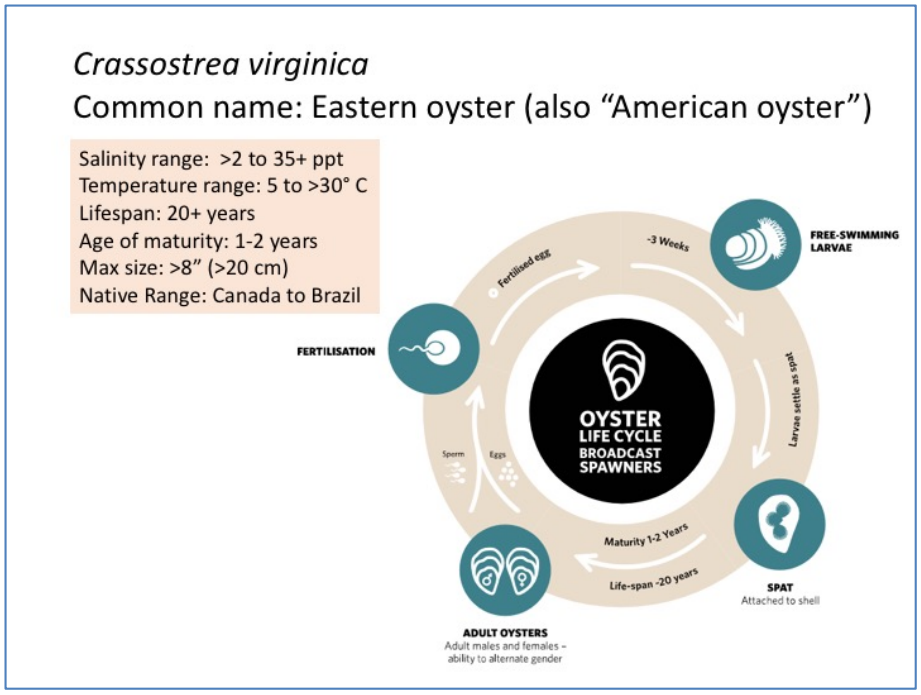
November 15, 2019 Comments/Questions

- Outlier polluter % of large amount of pollutants. Monsanto signature spill event probably accounts for the large amount of pollutants. There were concerns about Escambia River and upper Escambia bay identified in 1969 and supported in a 1975 report. Dr. Jane Caffrey (UWF) is providing additional references for consideration and data for refinement of oyster suitability models.
- How often does the State undertake a water quality assessment? *A. The State does a water quality assessment every 5 years. TMDLs/ Basin Action Plans are required to meet clean water standards.*

2. Oyster Biology

Rob noted the native range of the Eastern Oyster (*Crassostrea virginica)* spans from Canada to Brazil. The salinity range is from >2 to 35+ ppt, the temperature range is from 5 to >30° C, the oyster's age of maturity is 1-2 years and its lifespan is 20+ years, and the maximum size: >8" (>20 cm). Rob referred to excerpts from the recent 2019 FWC report on Oyster Integrated Mapping and Monitoring Program that found, "Pensacola Bay provides appropriate salinity and temperature ranges for oyster habitat…There are an estimated 95-99 ha (235-245 ac) of oyster reef within Pensacola Bay…Water quality in the bay improved significantly since the passage of the Clean Water Act and implementation of best land-use practices within the watershed."

- "Competent to settle" means oysters are ready to settle. Their favorite place to settle is on an oyster shell.
- Positive shell budget? A. *An "oyster reef" recruitment/growth exceeds death and removal.*
- Do oysters after they mature and age increase in fecundity? *A. Exponentially. Size matters related to reproductive output.*
- Height of reefs is important for sweeping sediments and waste by-products away from oysters.
- Half-moon reef in lower PBS was created or enhanced in the 1880s with oysters from Chesapeake Bay (comment from Working Group Member Calvin Sullivan).
- Oyster reefs are our coral reefs: both create their own structures for survival, both provide fish habitat, etc.



3. Decision Support Tools

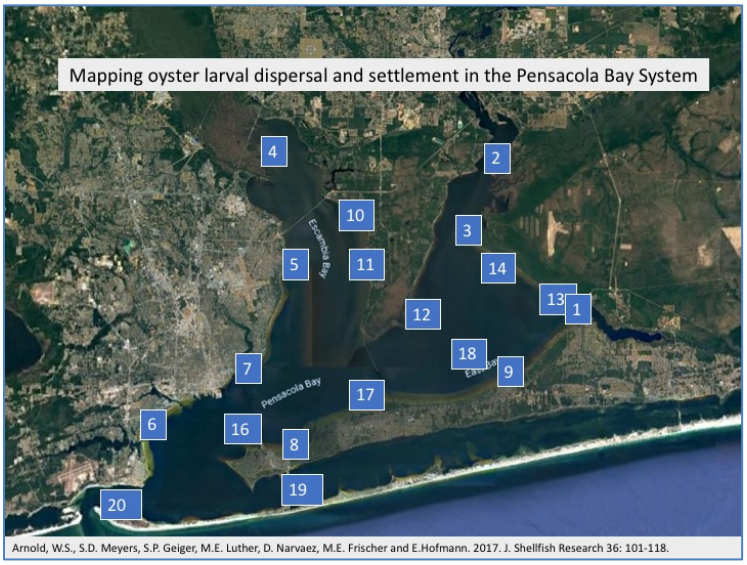
Rob presented decision support tools designed to assess oyster habitat suitability incorporating data on oyster distribution both historic and contemporary, oyster larvae, dissolved oxygen, salinity, sediment, and seagrass. It allows mapping and review of Gulf Sturgeon critical habitat, aquatic preserves, prohibited harvest areas, marsh migration, and regulatory flooded marsh. It also provides data on mapping oyster larval dispersal and settlement in the Pensacola Bay System. He suggested these tools could help the Working Group test options and recommendations related to sites for oyster restoration.

November 15, 2019 Comments/Questions on Habitat Suitability

- In reviewing the EPA water quality data, dissolved oxygen is driven by stratification, i.e. if there is not much river flow, there is not much hypoxia, where there is extensive river flow you find more hypoxia.
- We've had a hypoxia kill in the east shore of East Bay.
- There is low oxygen in deeper waters and winds can push this low oxygen water into the shallows. *A. We can re-do the stratification analysis to see how much mixing there is and if it results in driving oxygen down in deeper waters.*
- The model identifies areas of bay bottom where it is better to be an oyster.
- *½ bay a decent place to be an oyster on the bottom (more area available on the surface for aquaculture, where sediment type is not a consideration). Not all areas that are suitable for oyster growth and reproduction are available for harvest (shellfish sanitation and public health reasons) but these areas provide other benefits like fish production and filtration of water).*
- Did you run a habitat analysis for Santa Rosa Sound? A. We didn't run habitat analysis due to Gulf sturgeon critical habitat.

4. Larval Dispersal and Settlement in Pensacola Bay system

Rob reviewed recent research (2017 Arnold et al) mapping oyster larval dispersal and settlement in the Pensacola Bay System. The study found that, "because larvae also appear to be limiting in some areas of the PBS, substrate addition will not suffice and successful restoration will require both the addition of substrate and the addition of adults or larvae (Arnold 2008) to ensure sufficient delivery of larvae and subsequent recruitment. This is evidenced, for example, along the western shoreline of Escambia Bay (Station 5 from this study), where substrate addition has been conducted with no discernable benefit. Restoration efforts in these areas likely will not provide a suitable return on the restoration investment unless a larger larval pool develops within the PBS."



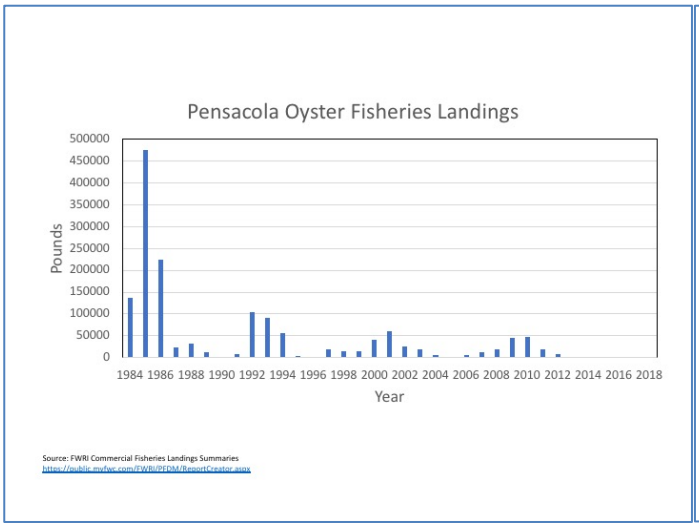
November 15, 2019 Comments/Questions

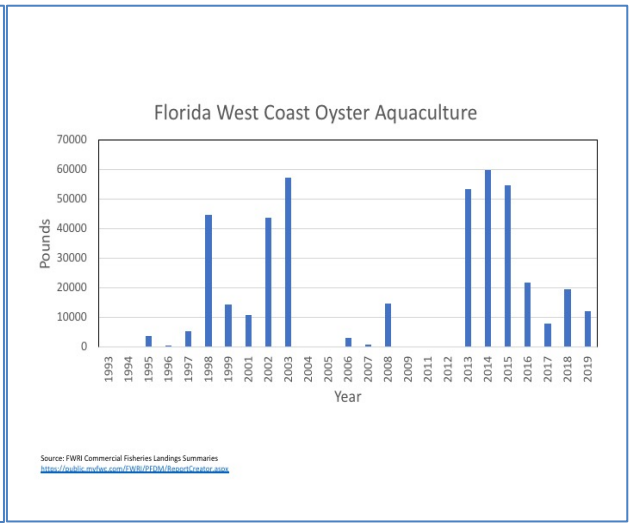
- About 10% left the Bay without settling.
- Not all oyster spawning is the same. There are peaks in April/May, and August/September in these locations.
- It looks like we need both substrate and production of larvae and where the substrate is put might matter. Don't place all shells in one spot.
- In Pensacola Bay is both recruitment and substrate limited? *A. Yes*
- We've seen periodic oyster die offs after 3-4 years (possibly oxygen depletion in some locations).
- Older and larger oysters produce more larvae.
- Were historical reefs used in the analysis. *A. Yes. The Habitat suitability index maps where current and historical reefs have been found. Green is where those reefs are located.*
- What is a "Jubilee event"? *A: Oysters are adapted for a variable environment and a natural part of system is oyster die offs. If we have abundant larval supply and substrate the ecoservices can be delivered in other locations.*
- Fluctuation in oyster populations and reef condition is not a bad or unanticipated outcome.
- Need to consider the entire the PBS not just harvestable waters. Not only for harvest but consider for recreation and other ecological benefits (e.g., fish production).
- Half-moon reef is currently 7 feet off the bottom in water ~14 feet deep.

B. Regulatory Framework and Harvest Statistics for Oyster Fishery and Aquaculture

Rob Brumbaugh provided an overview of the regulatory context of oysters at the national and state levels.

In terms of harvest statistics, Rob provided an overview of two chronological charts on oyster production in pounds for Pensacola wild oyster fisheries landings and Florida West Coast oyster aquaculture.





November 15, 2019 Comments/Questions

- Drop off in oysters following storms e.g. in 2004.
- Declining catch is a trend nationally and globally.
- In 1985 due to a storm hitting Apalachicola, oystermen came over to Pensacola causing a spike in fishing pressure. A reminder that reported landings don't reflect abundance but catch.
- In the 1880s PBS saw harvests of 300,000 pounds of oysters.
- Oyster reefs have shut down every 10 years allowing reefs to rebuild back up.
- Aquaculture is part of equation in PBS.
- FDACS close areas until they collect clean water samples.
- Mike Norberg with FWC and Michelle Smith with FDACS offered to present a "deeper dive" on regulation at the January meeting.

C. Briefing on TNC Restoration Projects and Ecosystem Services

Bryan DeAngelis presented on the history of the Nature Conservancy's work on coastal restoration, monitoring and informing local habitat decisions. He described the TNC work over the past two decades relating to oyster restoration in the Gulf of Mexico, the US and globally. He indicated they started their work on small pilot projects (bagging shells, moving shells, building oyster reefs, measuring results) but in recent years have been focusing on how to take their work to a larger scale through public and private partnerships in watersheds and estuaries. TNC projects once measured in square feet 20 years ago, now are measured in acres in the Gulf of Mexico.

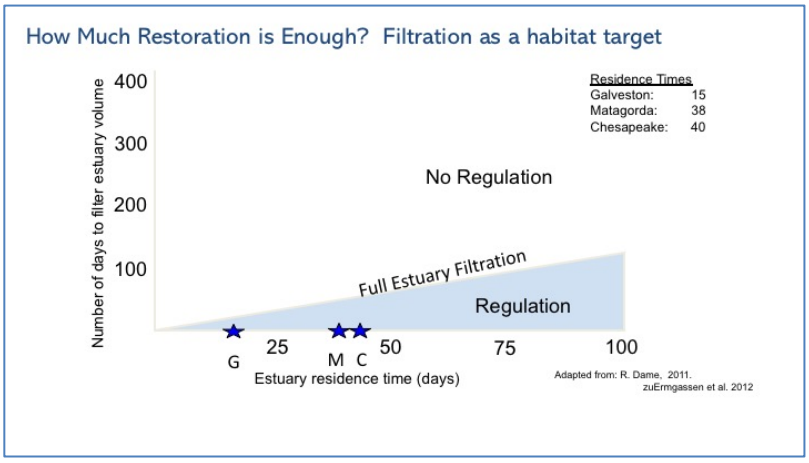
He suggested that the TNC invests in oysters because these public and private investments are meant to recover and/or conserve the valuable ecosystem services these habitats provide. A large and

growing array of ecosystem science confirms that coastal habitats are critically important and exceedingly valuable, yet this science is rarely translated into management objectives that could influence the way we evaluate and manage these habitats for our many needs. The TNC has decided that efforts to integrate ecosystem service benefits into decision-making will require a more detailed, targeted approach focusing on socio-economic drivers for sustainable use, protection and restoration of ecosystems.

Bryan described TNC's roles in helping with Implementation and assisting partners to develop capacity in order to implement larger scale projects. He suggested these projects all look different as they are designed for different purposes. TNC also works to create enabling conditions for restoration through enhancing permitting and site selection. TNC is committed to addressing key restoration research questions through monitoring and evaluation and assisting communities and resource managers to make informed decisions around habitat.

For example, TNC promotes that all projects should monitor basic oyster reef performance, including the aerial extent of reef areas and footprints, reef heights, and oyster demographics such as density, settlement & recruitment, and size frequency. Environmental variables such as temperature, salinity, and dissolved oxygen need to be weighed in reef restoration. Monitoring is critical to inform ecosystem-based goals for oyster habitat related to water filtration, fisheries productivity, denitrification, recreational fishing enhancement, and shoreline protection and stabilization.

As an example of measuring ecosystem services provided by restoration projects, Bryan reviewed a project in Texas at Half Moon Reef in Matagorda Bay. A study of the results indicated that the reef added $691,000 to Texas' GDP each year and generated an additional $1.273 million in annual economic activity. In addition, it created a dozen new jobs and $465,000 in annual labor income. 94% of anglers reported that the restored habitat offers a more satisfying experience than other fishing locations. Charter and rec boats both agreed HMR was an above-average to excellent fishing spot in Matagorda Bay to which they will return time and time again.



Bryan discussed how TNC is using this type of science to inform how ecosystem services can be used to set restoration goals. Specifically, he discussed two key ecosystem services TNC has been focusing on recently, water filtration and fish production (the making of "new" baby fish provided by the reef,

annually). He suggested this graph is a representation of how we can use water filtration as a habitat target to set ecosystem-based objectives at a bay or estuary scale and described the science behind water filtration. For example, the clearance rate of oysters is the number of days until an oyster population filters a volume of water equivalent to the volume of the estuary. He noted the residence times in Galveston Bay, Matagorda Bay, and Chesapeake Bay. The line represents the point at which the filtration time equals the residence time. Points above the line are not filtering the full volume of the estuary within the residence time. Restoring shellfish populations in these estuaries for biomass, sufficient to fulfill their historic role of 'regulating' estuarine productivity, would be a step toward

ecosystem-based management. Along with appropriate controls on land-derived nutrients (farms, lawns, car exhaust, waste water discharge), this would provide a buffer against eutrophication that robs oxygen from waters, contributes to harmful algal blooms and causes stresses or declines in other estuarine organisms. Similarly, some model scenarios demonstrate how achieving certain restoration scenarios in Pensacola Bay could produce 8 million new blue crab a year representing an increase of 861,000 kg biomass.

He suggested ultimately, a "mosaic" approach to restoration involves setting quantitative targets for various services, including oyster harvest, and other key ecosystem services such as water quality and fish production (as illustrated by the above figure).

November 15, 2019 Comments/Questions

- Intermediate approach. Balancing investments in substrate enhancement and larval production?
- TNC has published a Monitoring and Assessment Handbook to share lessons learned in their projects
- Why use filtration as a target? *A. Ecosystem targets should be set in relation to what you want back; filtration is easily estimated and can be related to bay health and historic conditions.*
- We would benefit from a demonstration of the goal setting tool
- These fish production models use standardized density per acre? *A: We have collected all the data we can get from Texas to Florida. It incorporates variability and lumps all data together for areas that are ecologically similar.*

- Water quality parameters (filtration) are based on oyster biomass and oyster density (number per square meter of reef)
- Impressed with the recreational fishing enhancement in Half Moon Reef in MatagordaBay, Texas
- Reefs for oyster harvest, fish production, water filtration will be designed differently.
- This is a solid argument for progress across the system by managing estuaries for ecosystem services
- Fisheries and water filtration
- We will need to define more clearly water quality among our other key terms, e.g. diving the Great Lakes before and after zebra mussels. It should be simple and compelling, e.g. water my kids can swim in
- Parts in the system have been good for 5 years, some parts are not so good. Build on and don't duplicate the efforts to create aquatic preserve plans. We will need to determine what restoration efforts are needed in each county. Both counties are working together on improving sedimentation control work together
- We need to keep in mind the work of Estuary program in helping to define water quality. Needs to be translatable, e.g. sea grass to certain depth and water clarity
- We need to determine and target what areas can support growing oysters in PBS.

III. DRAFT GREATER PENSACOLA BAY SYSTEM VISION OF SUCCESS THEMES

The Working Group agreed tentatively on "vision of success" themes that were drawn from the questionnaire responses and reviewed and rated by the Working Group at the October 9 meeting. The vision themes represent key topical issue areas that characterize the desirable future for the

oyster reef ecosystem and the greater Pensacola Bay System. The Vision Themes will be helpful in establishing a framework for the plan goals and objectives and are not ordered by priority.

A. A HEALTHY AND PRODUCTIVE OYSTER REEF ECOSYSTEM.

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. (*10/9/19 average rating= 4.0 on a 4 point scale)*

Draft Goal: The Greater Pensacola Bay System sustains ~~is~~ a healthy and productive oyster reef ecosystem.

GBPS 11-15 Comments

- The goal would be more action oriented if we add "Sustains" or supports.

Draft Outcome: By 2030, the oyster reef ecosystem within the Greater Pensacola Bay is managed in a sustainable manner and is providing measurable ecosystem services
~~By 2030, the Greater Pensacola Bay System is includes a healthy and productive oyster reef ecosystem managed in a sustainable manner and providing measurable ecosystem services.~~

GBPS 11-15 Comments

- *Suggested edit:* By 2030 the oyster reef ecosystem within the Greater Pensacola Bay is managed in a sustainable manner and providing measurable ecosystem services

Brainstorm Key Topical Issues -11/15 Comments

- **Identifiable and achievable targets**. Come up with identifiable targets. What do you want back?
- "Identifiable and achievable targets"
- **Growth**. Challenge- changing population density, what's happening on the land. Can we work with this
- **Public understanding and support**. Comes back to education part. Meeting these targets, linked to educating all on the value of these ecosystem services
- **Best practices as a framework for recommendations.** Using documented best practices as a framework vs. only focused on oysters
- **Estuary Program.** Lots of these components will be incorporated into the Estuary Program.
- Looking at watershed issues and climate change considerations
- Recommendations/objectives to provide guidance for the Estuary Program
- **Model successes from other estuaries and scale up faster.** Looking across other estuaries for documented evidence of success when you prioritize consensus targets. This will help you scale up and move much faster in securing funding and getting the community on board
- **Leverage and support funding for advance wastewater treatment facilities.** Leverages and support funding advanced wastewater treatment facilities. E.g. Tampa Bay
- **Geo-spatial mapping.** Geospatially referenced map is key for what we should recommend to do in each area. Tangible roadmap- from management and restoration perspective.
- **Integrate and build on existing management plans.** Integrate existing management plans-e.g. aquatic preserves, that are already vetted and approved by state

- **Identify existing and planned projects.** Where are existing and planned projects? Need to get a up to date list and the recommended Plan should fit into existing and planned projects
- **Resiliency and adaptive management as guiding principles**. Resiliency and adaptive management as guiding principles in the Plan. We should highlight that as a possible outcome in drafting the plan
- Include adaptive management and resiliency clauses- plan continues to be informed by practitioners as implementation proceeds
- **Clarify and mitigate potential impacts to sustainably managing the PBS.** E.g. tree ordinance in Pensacola. Outcome of ordinance has dramatic impact on private properties. Once codified, outcomes to property owners. No opportunity to adjust that
- Walton County, scrub communities. Absolute protection to scrub provided. Laudable objective but destroyed as they were not maintained and became pine forests.

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

Vision Theme B: The management, regulation, and restoration of the oyster fishery and aquaculture industry is conducted by working collaboratively with stakeholders to create and monitor a plan that ensures that protection of the fishery and habitat is 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. (*10/9/19 average rating= 3.8 on a 4 point scale)*

GBPS 11-15 Comments

- 5 uses of "and" in the last clause. Substance is right, edit to make less cumbersome
- Learned from presentations there are 3 reasons for have oyster reefs (enhance fisheries, provide ecosystem services, and enable harvest). Only one of the three related to harvest. Is the resource only the oyster for harvest? "Fair and equitable access"? What is meant by "resources." *A: Related to Vision theme B. Think of these vision themes working together. Resource referring to oysters available/appropriate for harvest.*
- Add "oyster" to resource
- Leading thought is this biased towards harvesting fisheries? *A: Lead with B?*
- 1st half of vision-right

Draft Goal: A productive, and sustainably managed and regulated oyster reef fishery and aquaculture Industry in the Greater Pensacola Bay System.

GBPS 11-15 Comments

- Are there good communications among all different local, state and federal regulators? *A. Working Group members responded that yes, there is some communication and coordination and attempts to improve coordination in recent years. E.g. FWC wild harvest, FDACS aquaculture*
- Aquaculture industry- reef applications coming into Santa Rosa County. County Commissioners and SR Sea Grant reviews the applications. We are getting a lot of applications in East Bay

- "Seems like the ship's on fire." Why are we having to do this? *A. The facilitator responded that management of the resource is driven by stakeholders, including the state, and that all voices are needed at the table to seek consensus on a GPS plan*
- State agencies implement the laws with notice and input from the public. Political interests are involved. Administrative rules and regulatory authorities have to be considered. E.g. FWC has authority to do restoration of habitats. DEP/Trustees owns and manages public lands
- Education of the public and elected and appointed officials is a very critical vision theme.
- Fisheries-need to get all people engaged. E.g. Flounder. Big trouble and need for regulation changes- bag limit down and size up
- Important to pursue a consensus approach of all stakeholders and agencies to make progress
- Use the 6-digit HUC code as the geographic area to focus on the Plan. e.g. Yellow River not included in 8 HUC code? *A. We will bring a visual of the 6 or 8 HUC code system to next meeting*
- More manageable to plan from watershed basis. We have the right people at the table- those with a stake in the future of the Bay system
- Some recommendations might lead to changes in the statewide system. This is the first ecosystem-based oyster plan in the state
- Everyone at the table? Oyster shells. Involve restaurants in gathering shells. Are these involved? *A: Each represents a broader group of interests and you should bring back discussions from your interest group for the Working Group to consider.*

Draft Outcome: By 2030, stakeholders have established and supported a productive, science driven, sustainably managed, monitored, and appropriately and fairly regulated oyster fishery reef ecosystem and integrated with the ~~complementary~~ aquaculture industry in the Greater Pensacola Bay System.

GBPS 11-15 Comments

- "Integrated" vs. ~~complementary~~?

Brainstorm Key Topical Issues

11/15 Comments

- **Ongoing funding for management.** How do we ensure ongoing funding to do management and monitoring?
- **Ecological restoration principles.** Include Ecological restoration principles as an objective- clarifying what is good water quality. Include targets. Historical water quality standards-
- Spatial configuration of reefs- optimal harvest- identify harvest rates for optimal reef characteristics
- **Fish and oyster production objectives**. E.g. fish production as an objective in addition to an oyster production? May fit better in the next vision theme
- **Adapt for future changes and circumstances.** Look to the future for objectives and the plan. E.g. changes in fresh water flow, ongoing assessment of our world as it changes. Will need to adapt to changing circumstances

- **Incorporate state vetted plans**. Local plans vetted and initiated
- **Address enforcement** of management of regulations. Long term problem. Value of the commodity drives this
- **Manage wild harvest differently than aquaculture.** Should we regulate/manage aquaculture and wild harvest differently? E.g. FWC requires reporting for wild harvest of oysters Aquaculture has no reporting requirement. Minimum size for wild, but no size limits for aquaculture. Wild oysters managed as public resource vs. aquaculture as a private resource
- Will struggle with wild and aquaculture into the same management context
- **Regulation of aquaculture**- requires seed document, and send monthly production
- Differences between wild and aquaculture industries, e.g. Summer differences
- FDACS not strictly aquaculture. Also regulate wild oyster harvest for public health purposes

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. (*10/9/19 average rating= 4.0 on a 4 point scale)*

Draft Goal: A healthy Bay system contributes measurably to a thriving economy for the Greater Pensacola Bay region.

11/15 Comments

- Economy thriving without a healthy bay system. Distinguish things driving the economy that are good for and bad for the PBS
- Estuarine dependent businesses and quality of life in terms of a healthy bay

Draft Outcome: By 2030, the Greater Pensacola Bay Region is thriving economically, in part by ~~as a result of~~ achieving and sustaining a healthy Bay System that supports a cultural heritage of an oyster fishery, oyster reef ecosystem, and aquaculture, and provides opportunities for sustainable and responsible industry, development, business, recreation and tourism.

11/15 Comments

- Make this consistent with the goal
- Delete "as a result of" and substitute "in part by"

Brainstorm Key Topical Issues

11/15 Comments

- **Growth and conflicts among users.** As we grow, we will have conflicts with space, e.g. aquaculture and wild harvest. Oyster groups vs. shrimp groups disturbing the bottoms. User conflicts. Address before we have it and address how best to prevent it
- User conflict with aquaculture- homes that are built before and/or after facilities
- Education is a strategy for minimizing user conflicts. E.g. FWC determine where shrimpers are fishing. Stakeholder inclusion in the process
- User conflicts- perspective useful- social science side= surveys, gauging broader public opinion vs. organized citizens at commission meetings
- Addressing NIMBY, e.g. deed restrictions on fire management for public land adjacent to a new development. Help with planning uncertainty
- **Aquaculture regulation and user conflicts**- if they are increasing water quality and not limiting navigation, they are free to do what they want
- Aquaculture regulations require a clean bottom that isn't used by other fisheries and that can lead to conflict, e.g. in Alligator Harbor there have been some conflicts
- Conflicts between industries and between land use needs, submerged lands and those onshore looking out
- Need to know what the aquaculture regulation is that is driving that issue and consider recommendations
- If the State says, these are your aquaculture areas, are you done? Encourage aquaculture, shouldn't be too hard and reasonably straightforward. If it is uncertain, it won't facilitate aquaculture
- If we have a roadmap for this- will reduce uncertainty
- **Aquaculture Use Zones.** Think of zoning as a strategy. Define it and measure it
- Aquaculture- state water- no existing plan? DACS pushing aquaculture. This has been lessor driven
- Submerged land leasing program- 100 yards of a house/neighborhood, send out public notice
- Aquaculture use zones? How they are managed differently from individual leases
- Submerged land use management plan is needed to look at the future and create a plan
- FWC has commented on FDACS proposed leases. Have to consider impacts on rec fishing etc.
- Siting a reef? Sturgeon researchers, USFWS. Neighbors who don't like looking at aquaculture farms
- State submerged lands controlled by the state. Neighbors have not authority to deny (beyond 25 feet setback)
- E.g. of the lease application in Pensacola. Neighbors were opposed and Local government commission has to sign off

- Robert Turpin- county owns the permit for the reef. Make a zone and define the rules
- **Economic activities that rely on a health bay.** Promote, incentivize and facilitate economic activity is crucial. Generating media content on the benefits of a healthy bay
- Implement specific restoration objectives and tie into sustainable economic activity
- Economy- need an economist? Seek expertise or include that perspective for the Working Group
- Feed right into the Estuary program. Working to get a business partnership activity off the ground. Visit Pensacola engaged? Jack Brown, Interim director begins work on Monday
- **Social science**- acknowledge this could be useful to the development of the plan
- **Controlling runoff**
- **Public pushback for living shoreline projects.** How did the public pushback happen at Navy point? (note: appears to be user conflict and a function of limited stakeholder engagement on project objectives, not oyster reef performance, per se)
- **Revenue generation and the plan.** Look for options to tie revenue generation to the plan. Tax/fee tied to this. Bed tax. E.g. Fishing license examples
- **Local government involvement**. involved in this. Robinson. Need to educate and inform elected officials. Have local government involved. Need them on board to implement the plan.

D. AN ENGAGED AND INFORMED PUBLIC.

Vision Theme D: Stakeholders of the Greater Pensacola Bay System are committed to working together collaboratively to serve as a hub for best practices and research, and provide education and communication on the importance of maintaining the health and productivity of the oyster reef ecosystem, fishery, and aquaculture, and the role they play in ensuring the community thrives. (*10/9/19 average rating= 4.0 on a 4 point scale)*

Draft Goal: The oyster reef ecosystem of the Greater Pensacola Bay System is supported and protected by an engaged and informed public. (*10/9/19 average rating= 4.0 on a 4 point scale)*

11/15 Comments

- This should focus on the oyster reef ecosystem
- Is this an Estuary Program goal?
- Have goals and targets in mind first. We should be asking the public, what does the Bay mean to you? How do you value it?

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

Brainstorm Key Topical Issues

11/15 Comments

- **A communication strategy to bring the GPBS back to health**. Stress with the public you are trying to bring it back to what it was before the changes occurred, e.g. material removed, tons and cubic yards removed from historic levels. E.g. with beach restoration ACOE putting sand out at sea. Trying to bring it back
- Reach people that don't have an appreciation of oysters in the system. Not only the people already engaged. Success needs broad public support
- Oyster reefs are the ultimate renewable resources
- Is marketing and brand development a part of the plan
- Farris Bukhari, FL TNC Strategic Communications & Marketing Director, offered to help. Use multiple channels to craft smart messages.
- **Marine habitats- out of sight out of mind**. If oysters harvested from terrestrial systems and depleting overtime. Trawl- destructive technique
- **Plan should fit into the Estuary CCMP**. Who is going to "own" the plan? This plan can work into the Estuary CCMP. This plan should be adopted by local governments
- **Local government support**. Reducing management certainty and working with elected officials
- Hope that Santa Rosa and Escambia counties and the City of Pensacola support the plan. You have to be on their agenda in 2020 Commercial real estate group. Donnie is a member of the group and presented a concept of what he was doing.
- Urge Working group members to do the same with the group they represent
- **Unique community/state partnership**. 3 agencies that manage the system- also have to agree what has gone into of the plan
- The mechanism for state approval is still unclear, but this was designed as a community/ state partnership
- This is the first in the state. We don't have a state plan or plans on an estuary basis around the state. This was cleared this at higher level before FWC came to the table.
- Local community issues and the state issues are inter-connected
- **Distrust of science.** Distrust of the community of what is going on in terms of science. Not sure what is going on. How do you present as not biased? Much depends on who presents it and how.
- Much misinformation is out there.

IV. NEXT STEPS

The facilitators reviewed possible agenda items for the Meeting III, which will take place January 15, 2020 at the Sanders Beach Community Center in Escambia County. The Working Group members suggested consideration of the following:

- Offer a deeper dive on the FWC/FDACS regulatory structure
- Exploration of an aquaculture use zone model (maybe include in FDACS regulatory presentation)
- Where are the existing and planned restoration projects locations and goals?
- Present ideas for a communication strategy for the plan
- The regional economy and its relationship to a healthy Bay

- Science presentations- they are informing the Working Group
- Restoration and management—a deeper dive
- Need more input from oyster fishers - time to let them talk more. Suggested a 'time certain' at the March meeting. What happened, and what we need to do. Pasco and Calvin will help invite the other oystermen Working Group members to attend.
- Consider the plan as an agenda topic for the County Commissions and City Councils to brief them on the project and goal
- Santa Rose County Marine Advisory Board- Pasco Gibson serves on it and can help provide access.
- Escambia Marine Advisory Council
- FWC Commission meeting in December or future meeting. Time for public comment. FWC representative will help with this
- Matt Posner as the point person for integrating the plan with the Estuary Program. He will be presenting on December 12 to the Santa Rose County Commission
- Draft performance measures review and consider the application for generating options
- Manage towards something, need to measure the progress looking forward.

The members completed meeting evaluation forms (See Appendix #3) and adjourned at 2:00 pm.

Appendix #1
Meeting II Agenda

OYSTER ECOSYSTEM-BASED FISHERY MANAGEMENT PLAN (O-EBFM)
FOR THE GREATER PENSACOLA BAY SYSTEM (GPBS)
GPBS STAKEHOLDER WORKING GROUP

MEETING II—ORGANIZATIONAL MEETING
NOVEMBER 15, 2019
UF/IFAS SANTA ROSA COUNTY EXTENSION, MILTON, FL 32570
HOST: THE NATURE CONSERVANCY, FLORIDA
FACILITATOR: FACILITATED SOLUTIONS, LLC

MEETING II OBJECTIVES

- ✓ To Approve Regular Procedural Topics (Agenda and Meeting I Summary Report)
- ✓ To Receive Requested Presentations: Oyster Biology and Environmental Requirements, Regulatory Framework and Harvest Statistics, and Current Conditions for Oysters in the GPBS
- ✓ To Receive a Briefing Regarding the Function and Role of the Decision-Support Tools
- ✓ To Review and Refine As Needed the Overall Goal Statement
- ✓ To Review and Refine Vision Themes, Goals, Key Issues, and Performance Measures
- ✓ To Identify Needed Next Steps and Information, and Agenda Items for Next Meeting

GPBS STAKEHOLDER WORKING GROUP MEETING II AGENDA—NOVEMBER 15, 2019

All Agenda Times—Including Adjournment—Are Approximate &Subject to Change

1.	**8:30 AM**	**WELCOME AND INTRODUCTIONS**
2.	**8:40**	**REVIEW AND APPROVAL of Agenda**
3.	**8:45**	**APPROVAL OF FACILITATORS' SUMMARY REPORT (OCTOBER 9, 2019 MEETING)**
4.	**8:50**	**STAKEHOLDER REQUESTED PRESENTATIONS** • Oyster Ecology, Baseline Conditions and Data Describing the GPBS (30) • Regulatory Framework and Harvest Statistics for Oyster Fishery and Aquaculture (20) [Rob Brumbaugh]
~9:45		***BREAK***
5.	**10:00**	**BRIEFING ON TNC RESTORATION PROJECTS, ECOSYSTEM SERVICES, AND OYSTER CALCULATOR DEMO** [Bryan DeAngelis]
6.	**10:30**	**Review and Refine Overall Goal Statement (As Needed)**
7.	**10:45**	**A. THE MANAGEMENT AND REGULATION OF THE OYSTER FISHERY AND AQUACULTURE** • Review and Revise Vision Theme as Needed • Review and Refinement of Draft Goal Statement • Identification and Prioritization of Key Issues • Review and Identification of Draft Performance Measures • Identification of Information Needs
12:15 PM		***WORKING LUNCH—ON SITE***

		Lunch Provided By The Nature Conservancy
8.	**12:45**	**B. A HEALTHY AND PRODUCTIVE OYSTER REEF ECOSYSTEM** • Review and Revise Vision Theme as Needed • Review and Refinement of Draft Goal Statement • Identification and Prioritization of Key Issues • Review and Identification of Draft Performance Measures • Identification of Information Needs
9.	**2:15**	**OVERVIEW OF VISION THEMES FOR DISCUSSION AT MEETING III** C. A Thriving Economy Connected to the Greater Pensacola Bay System D. An Engaged and Informed Public
10.	**2:30**	**PUBLIC COMMENT**
11.	**2:45**	**NEXT STEPS AND AGENDA ITEMS FOR THE NEXT MEETING** • Review of the Working Group meetings schedule • Review of action items and assignments • Identify agenda items and any needed information for the next meeting • Meeting evaluation
~3:00 PM		***ADJOURN***

MEETING FACILITATION

Meetings are facilitated by Jeff Blair and Robert Jones from Facilitated Solutions, LLC. Information at: http://facilitatedsolutions.org.

Appendix #2 Working Group Members, TNC Project Team & Facilitators

(**Bold** = members who attended the November 15, 2019 meeting*)*

GPBS STAKEHOLDER WORKING GROUP MEMBERSHIP AND REPRESENTATION	
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. Will Dunaway	**Environmental Lawyer**
4. Donnie McMahon/ **Thomas Derbes II (Alternate)**	**Business and Aquaculture**
Environmental/Citizen	
5. Christian Wagley	**Healthy Gulf**
Local Government	
6. Shelley Alexander/ Naisy Dolar (Alternate)	**Santa Rosa County Environmental Programs**
7. Chips Kirschenfeld/**Mark Nicholas**	Escambia County Natural Resources Management
8. Matt Posner	**Pensacola and Perdido Bays Estuary Program**
9. Keith Wilkins/**Chris Mauldin (Alternate)**	Pensacola City Administrator
Recreational Fishing	
10. Chris Phillips	**Hot Spot Charters**
Seafood Industry	
11. Pasco Gibson (afternoon)	Seafood Industry/Waterman
12. Josh Neese	Aquaculture
13. Pete Nichols	Seafood Industry/Waterman
14. Tommy Pugh	Seafood Dealer
15. Phil Rollo	Seafood Dealer
16. Calvin Sullivan	**Oyster Harvester**
17. William (Hub) Williamson	Oyster Harvester
State Government	
18. Beth Fugate	**DEP/Aquatic Preserves**
19. Mike Norberg	**FWC Division of Marine Fisheries Management**
20. Portia Sapp/**Michelle Smith (Alternate)**	**DACS Division of Aquaculture**
21. **Kent Smith/ Katie Konchar (Alternate)**	**FWC Division of Habitat and Species Conservation**
22. Paul Thurman	NWFWMD
University/Research	
23. Jane Caffrey	**UWF**
24. Rick O'Connor	**UF/IFAS Escambia County**
25. Chris Verlinde	**UF/IFAS/Sea Grant Santa Rosa County**

PROJECT TEAM AND FACILITATORS	
THE NATURE CONSERVANCY	
Anne Birch	**Marine Program Manager, FL**
Robert Brumbaugh	**Senior Marine Scientist, FL**
Bryan DeAngelis	**Marine Habitat Scientist, North America**
Andrea Graves	Marine Projects Coordinator, FL
Darryl Boudreau (morning)	**Watershed Coordinator, FL**
FACILITATED SOLUTIONS, LLC	
Jeff Blair & Bob Jones	**Working Group Facilitators**

GREATER PENSACOLA BAY SYSTEM STAKEHOLDER WORKING GROUP
MEETING II, NOVEMBER 15, 2019—MILTON, FLORIDA
MEETING EVALUATION SUMMARY REPORT

Members used a 0 to 10 rating where a 0 meant Totally Disagree and a 10 meant Totally Agree. The average ratings and comments from the 16 evaluation forms that were submitted are presented below.

1. PLEASE ASSESS THE OVERALL MEETING

9.6 The background information was very useful.
9.6 The agenda packet was very useful.
9.4 The objectives for the meeting were stated at the outset.
9.0 Overall, the objectives of the meeting were fully achieved.

1. DO YOU AGREE THAT EACH OF THE FOLLOWING MEETING OBJECTIVES WAS ACHIEVED?

9.3 Oyster Biology and Environmental Requirements Presentation.
8.7 Regulatory Framework and Harvest Statistics Presentation.
9.1 Current Conditions for Oysters in the GPBS Presentation.
9.0 Function and Role of the Decision-Support Tools Briefing.
9.5 Overall Goal Statement Review and Refinement.
9.6 Vision Themes, Goals, Outcomes, Objectives, Key Issues, and Performance Measures Review and Refinement.
9.6 Next Steps, Schedule and Assignments Discussion.

2. PLEASE TELL US HOW WELL THE FACILITATOR HELPED THE PARTICIPANTS ENGAGE IN THE MEETING.

9.4 The members followed the direction of the Facilitator.
9.9 The Facilitator made sure the concerns of all members were heard.
9.8 The Facilitator helped us arrange our time well.
9.9 Participant input was documented accurately in the meeting and in the Facilitator's Report (last meeting's summary report).

3. PLEASE TELL US YOUR LEVEL OF SATISFACTION WITH THE MEETING?

9.9 Overall, I am very satisfied with the meeting.
9.9 I was very satisfied with the services provided by the Facilitator.
9.8 I am satisfied with the outcome of the meeting.

4. PLEASE TELL US HOW WELL THE NEXT STEPS WERE COMMUNICATED?

9.8 I know what the next steps following this meeting will be.
9.8 I know who is responsible for the next steps.

6. WHAT DID YOU LIKE BEST ABOUT THE MEETING?

- The flow of conversation was easy!

- Very informative and good discussions
- Discussion from government stakeholders
- Calm disagreements talked through
- Presentations
- Science presentation
- Science and professionalism
- Oyster biology
- Unified movement on oyster spatial planning element
- Good venue
- Bryan's birthday surprise.

7. HOW COULD THE MEETING HAVE BEEN IMPROVED?

- Deeper regulatory review
- Larger screen to read
- "Cards up" not practiced
- No improvements
- Don't think it can

8. DO YOU HAVE ANY OTHER COMMENTS? PLEASE USE THE BACK OF THIS PAGE IF NEEDED.

- This is a great step in the right direction.
- Expertly planned and facilitated with all the right stakeholders at the table.

Appendix #4 Project Schedule & Workplan

Meetings Dates are Subject to Change

PROJECT WORKPLAN

GPBS STAKEHOLDER WORKING GROUP MEETING SCHEDULE AND WORKPLAN		
STANDING UP AND ORGANIZATION OF THE GPBS STAKEHOLDER WORKING GROUP		
Meeting I.	Oct. 9, 2019	Scoping and organizational meeting, review and refinement of overall project purpose, vision and goal framework.
Meeting II.	**Nov. 15, 2019**	Review and refinement of goal framework, draft management plan outline, review of science and data gaps. Introduction to decision-support tools and requested presentations.
SCOPING OF GPBS ISSUES, IDENTIFICATION OF PERFORMANCE MEASURES & OPTIONS		
Meeting III.	Jan. 15, 2020	Review of oyster management plans, issues and options. Identification of draft performance measures, draft outline of Oyster Ecosystem-Based Fisheries Management Plan.
Meeting IV.	March 18, 2020	Identification of decision-support tools options, review of performance measures and identification of policy issues, review of Oyster Ecosystem-Based Fisheries Management Plan outline.
Meeting V.	May 20, 2020	Review of decision-support tools scenarios and consensus rating of options and policy Issues. Review and agreement on draft Oyster Ecosystem-Based Fisheries Management Plan. Public Workshop Draft.
Public Workshop 1	June 2020	Review of Vision, Goal Framework, Plan outline, issues & options.
BUILDING CONSENSUS ON GPBS OYSTER ECOSYSTEM-BASED FISHERIES MANAGEMENT PLAN		
Meeting VI.	July 22, 2020	Review of public comments on Draft Plan, review of decision-support tools scenario results and consensus rating of options, draft performance measures, and identification of policy issues.
Meeting VII.	Sept. 16, 2020	Review of Draft Plan, recommendations on policy issues, decision-support tools scenario results, and consensus rating of options.
FINALIZING CONSENSUS ON GPBS OYSTER ECOSYSTEM-BASED FISHERIES MANAGEMENT PLAN		
Meeting VIII.	Nov. 18, 2020	Review and consensus testing of Draft Plan and recommendations on policy issues.
Meeting IX.	Jan. 27, 2021	Review and consensus testing of Draft Plan and implementation guidance and agreement on Workshop Draft Plan.
Public Workshop 2	February 2021	Review of GPBS Oyster Ecosystem-Based Fisheries Management Plan and implementation guidance.
Meeting X.	March 17, 2021	Review of public comment, refinement and consensus on the GPBS Oyster Ecosystem-Based Fisheries Management Plan and implementation guidance.

PROJECT WEBPAGE (URL): TBD

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

GPBS 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.