



# Coastal Resilience Advisory Group (CRAG) Semi-Annual Meeting

## Meeting Minutes

**Date:** January 31, 2024  
**Time:** 1:00-2:30 PM CST  
**Location:** TEAMS  
**Prepared by:** Alina Maruniak, CDM Smith

### **Attendees:**

Representatives from the following organizations: Defense Advanced Research Projects Agency (DARPA), Saint Andrew and Saint Joseph Bays Estuary Program (SASJBEP), Air Force Civil Engineer Center/Civilian Force Development Panel (AFCEC/CFDP), Rutgers University, Resources and Ecosystem Sustainability Tourist Opportunities and Revived Economies of the Gulf Coast States Act (RESTORE), The Nature Conservancy (TNC), Tyndall Air Force Base (AFB), Florida Department of Environmental Protection (FDEP), Naval Research Lab (NRL), Central Panhandle Aquatic Preserves, Florida Fish and Wildlife Conservation Commission (FWC), Jacobs Northwest Florida Water Management District (NFWWMD), University of Florida (UF) Center for Coastal Solutions, Air Force Readiness and Environmental Protection Integration (REPI), Tyndall Airfield Management, US Department of Agriculture (USDA), SERPPAS CRRAWG, US Fish and Wildlife Service (USFWS), Northwest Florida Sentinel Landscape Defenders of Wildlife, Naval Undersea Warfare Center (NUWC) on behalf of Darpa, Tyndall Bird Aircraft Safety Hazard (BASH)

Online Participants: Garey Payne, Jessica Graham, Jake Goodwin, Ryann Rossi, Krys Garay Rodriguez, David Bushek, Jim Muller, Kelly Blake, Jenny Shinn, Matt Lambert, Katie Konchar, Edwin Wallace, Jonathon Brucker, Stephanie Dohner, Becca Hatchell, Tunch Orsoy, Anne Birch, Beatriz Marin-Diaz, Darryl Boudreau, Christine Angelini, Andrew Altieri, Jonathan Feldman, Robert Bendick, LaToya Hudson, William Chavez, Jon Cornman, Michelle Covi, Patty Kelly, Kent Wimmer, Melody Ray-Culp, Erica Felins, Jason Bird, Alina Maruniak, Keith (No Last Name Available), Christine Shepard, Katie Plichta, Simeon Yurek, Addie Thornton, Michael Sharp, David Seay, Heidi Stiller, Jeff DeQuattro, Catrina Martin

Meeting Objective: The objective of this meeting was to inform stakeholders of the resilience work being performed near Tyndall AFB and surrounding locations of St. Andrew Bay.

### **Meeting Summary:**

Dr. Jessica Graham (SASJBEP) started the stakeholder working group/coastal resilience advisory group (CRAG) meeting.

### **CRAG Update**

Mr. Garey Payne (AFCEC/CFDP) welcomed guests to the semi-annual CRAG meeting. Colonel Bartlow was not able to attend due to previous commitments.

- The program has been selected as finalist for a federal level award. Once it is cleared for public release, Mr. Payne will send out more details.

## **Nature-Based Solutions at Tyndall AFB**

Ms. Katie Konchar, TNC, presented a progress update on the design and permitting phase of the projects which includes work from TNC, Tyndall AFB, Jacobs, University of Florida, and US Naval Research Laboratory.

### *Project Overview*

- 3 Nature Based Solutions (NBS) funded by Readiness and Environmental Integration Program (REPI) at Tyndall AFB.
  - 1,000 linear foot (LF) living shoreline (East Bay Living Shoreline)
  - 1,500 LF oyster reef breakwater (East Bay Oyster Reef)
  - 3,500 LF submerged shoreline stabilization structure (Saint Andrews Sound Submerged Shoreline)
- There is a fourth NBS focused on seagrass restoration funded by Bay County RESTORE Act award. The team is working to integrate this project with the submerged shoreline stabilization project at Buck's Beach.
- All NBSs aim to provide wave attenuation, mitigate shoreline erosion, provide habitat, and protect adjacent habitat.

### *Project Progress*

- Data collection and filed surveys are complete. This includes permit required surveys and surveys to inform design.
- 30% design is complete as of October 2023, and the team will reach 60% design in the coming months.
- 30% design included material alternatives analysis, a preliminary basis of design report (BODR) for each project.
  - The BODR will be updated for 60% design.
  - Key outcomes from 30% design:
    - Jacobs worked with Tyndall Bird Air Strike Hazard (BASH) and determined all projects will be submerged below mean low low-water level to avoid risks associated with birds.
    - Performance for wave attenuation will be assessed during operational conditions.
  - Selection of preferred alternatives occurred in 30% design phase.
- Programmatic Environmental Assessment (EA) is underway. This supports NEPA compliance for all NBS proposed along the full 40 miles of Tyndall's coastline at a conceptual level, and the four NBS projects in detail.
- Jacobs is working on the draft Description of Proposed Action and Alternatives (DOPAA) which serves as the first few chapters of the Programmatic EA. This is currently under review at Tyndall.

## *Schedule*

- 60% design planning is underway lead by Jacobs with anticipated completion in May 2024.
  - Regional Hydrodynamic and Wave Transformation Model is included. Focuses on optimizing wave attenuation, structure stability, habitat and cost.
  - Early results show good wave attenuation during operational conditions.
  - A tentative schedule was reviewed. A final design will be selected at the end of February 2024 ahead of the anticipated 60% completion date of May 2024.
- After completion of 60% design, the team will work on completing the Programmatic EA then submit for state and federal permitting. One year for permit review and construction.

## *Project Funding Status*

- REPI has provided funding in three rounds: 2021 REPI Challenge, 2022 REPI Program, 2023 REPI Program. These awards supported survey, engineering, design, and survey work and some funding for construction.
- Submitted 2024 REPI Proposal in the fall of 2023. Funding would cover construction and monitoring of the three REPI projects. News should come out soon.
- The team will submit a proposal for the upcoming NFWF-NCRF funding cycle.
- Bay County RESTORE Act has provided funding for the seagrass restoration project.

## *East Bay Living Shoreline Project*

- There are two metrics for the project: enhance 5 acres of seagrass and protect 0.25 linear mile of shoreline.
- University of Florida (UF) Center for Coastal Solutions has completed environmental assessments at the site in 2022 and 2023 lead by Dr. Andrew Altieri and Dr. Marin-Diaz.
- Ghost Shrimp and stingrays live in the original project area, with sandy areas accompanying their presence. Experimental results of seagrass mimics were completely buried with sediment due to the bioturbations from the ghost shrimp and stingrays, leading the team to change the location of the project to increase chances of seagrass transplant success.
- TNC has proposed the integration of the Submerged Shoreline Stabilization project with the structures at Buck's Beach.
  - This area has experienced 50 acres of seagrass loss since 2011.
  - Installation of the structures paired with seagrass restoration can provide an integrated approach to enhancing coastal resilience.

## *Floor Opened for Questions*

- Mr. Jonathon Feldman announced that the REPI Proposal submitted a few months ago (2024 REPI) won \$1.3 Million.
  - Kent Wimmer asked Katie Konchar and Jonathon Feldman to provide a brief paragraph for his newsletter.

## DARPA Reefense

Dr. Dave Bushek provided an overview on the project, which is taking place at Baker Point, out of the way of the REPI project sites.

### *Project Information*

- The project has 3 phases:
  - Phase 1 was completed in November 2023. This phase included development of concrete materials, reef testing, producing F1 generation of disease resistance oysters. The team is working to obtain permits.
  - Phase 2 has been initiated and includes the construction of a 50-meter reef segment, experiments and design refinement, production of F2 and F3 generations of disease resistant oysters, and monitoring of site characteristics.
  - Phase 3 will come after phase 2 and include the construction of a second 50-meter reef segment, continuing experimentation and material development, deployment of F3 or F4 disease resistant oysters, monitor of reef site and characteristics.
- Performance metrics for the phases include wave attenuation, increase recruitment with reduced predation, increase growth and disease resistance, low installation cost, low maintenance cost.
- Two reef materials/mixes are being developed and optimized for application.
- Materials are being tested for various properties, structures, biological attachment, durability, and more. The two mixes will be tested for their field performance in phase 2.
  - Each mix was tested with oysters as they were being developed.
- Reef Design Lab in Australia was a partner in developing the shape of the structures used for constructing the reef.
  - Criteria used to determine the best form: wave attenuation, habitat features, colonization, predation refuge, durability, stability, affordability, and practicality.
- Dr. Kelly Kibler at the University of Central Florida (UCF) has been working to determine the shape and fine structure of natural reef and how density of oysters on a reef affect velocity and sediment transport.
- University of Western Australia set up wave flume tanks with configurations determined from previous testing. There are four configurations and 15 layouts. About 500 different tests were run in the flume.
  - Phase 1 objective (70% wave attenuation) phase 2 was 90%; a few configurations did reach 90% wave attenuation.
  - Three oyster arrays were tested in a flume: mountain, valley, and plateau which were tested against a cone array. These tests were to determine how oyster larvae grow on structures based on flow and configuration.
  - Deployed half scale modules in New Jersey at Delaware Bay. This allowed the team to see how the modules worked in the field and see recruitment and scour at a larger scale.

- DARPA is also tasked with developing disease resistant oysters. The breeding program is being run at Auburn University.
  - Dermo disease in the gulf is the focus of the breeding program.
  - The lab is using genomic selection to select for oysters.
  - Oysters are spawned, the larva are raised to oyster seeds, and then grown in the field.
  - Florida does not allow oysters with genotypes from outside of Florida to be used for restoration so a genetic line from East Bay oysters was tested along with a Gulf Wide genetic line with large genetic variation. The Florida line had better resistance to dermo.
  - There were similar levels of disease between the Gulf Wide line and the Florida line, but there was higher mortality in the Gulf Wide line This suggests that while there was similar “immunity” to the disease, the Florida line had a higher “tolerance” and could survive the infection.
  - The DARPA team is now working on raising the second generation of oysters.
- Site surveys have been completed and permit applications are being prepared.
  - Hoping to encourage marsh grass and submerged aquatic vegetation (SAV) development along the shoreline behind the oyster modules.
- Two 50-meter segments will be set up along the shoreline of breakwater structures comprised of the reef modules, behind that will be habitat areas to help capture current flows for seagrass growth made of alternative structures such as shell bags, small modules, or oyster castles. This will encourage marsh development along the shore.

*Floor Opened for Questions:*

- Ms. Melody Ray-Culp asked if the modules to be used are already selected (reef ball, eco discs, etc.)?
  - DARPA reef structure will be the modules shown in the presentation. The variable being tested is the shape of the module configuration.
  - The DARPA project is not a part of the three REPI projects that TNC presented on. The DARPA project is independently funded. The project is in a different location than TNCs.
  - Katie Konchar explained that they chose limestone as preferred material. The footprint of the project has been decided, the shape and orientation will be determined in the summer.
- What amplitude was used for the flume study for the DARPA project?
  - The amplitude was based on a 40-year return period for wave heights and scaled according to the module size.
- Mr. Darryl Boudreau asked if the DARPA team has coordinated with FSU at all, the Tallahassee Marine Lab is working on disease resistant oysters in Apalachicola Bay.
  - Dr. Bushek has reached out and they have spoken. There has not been coordination yet.

**Tyndall Dune Vegetation Project**

Ms. Melanie Kaeser with FWS was not able to attend the meeting so Dr. Jessica Graham read the slides provided by Melanie.

- Placement of sediment rods occurred in January 2024
- Ground LiDAR work was conducted December 6, 2023. This will be used to detect baseline condition of sand dune elevations. LiDAR will also be collected at a later date to compare conditions.
- Plot set up and baseline vegetation monitoring occurred January 3-6, 2024, before planting started
- Planting plugs of dune species will take place between January 10 and mid-February 2024. There will be 30-, 60-, and 90-days checks after planting to check survival. Sedimentation will also be monitored to assess accumulation.

## **St Andrew Bay Aquatic Preserve**

Mr. Jon Brucker with Florida Department of Environmental Protection manages the Central Panhandle aquatic preserves which includes Saint Andrews and Saint Joseph Bay Aquatic Preserves. Mr. Brucker provided an update on monitoring of the Natural Resource Damage Assessment (NRDA).

### *Project Description*

- Monitoring the NRDA subtidal oyster reef restoration in West, North, and East Bays. In December 2023, the 5<sup>th</sup> round of monitoring was completed.
- In 2016, 17,000 cubic yards of granite were placed on 9 reefs and monitoring has been ongoing since then.
  - There were good results seen in the East Bay system after this placement, but limited growth in North and West Bays.
  - Anyone interested in the data report can reach out to Mr. Brucker or wait for the results to be published soon.
- In St. Andrews Bay Aquatic Preserve, FDEP has been working with Florida Coastal Conservation Association. They have received \$1 Million to do propeller scar (prop scar) restoration within the preserve.
- Previously NRDA prop scar restoration project focused solely on Saint Joseph Bay. Restoration should be taking place this year in St. Andrews Bay.
- In St. Joseph Bay, the team is wrapping up the second round of NRDA sea grass prop scar data project. Data should be out within the month. Then continue with third and final year of monitoring at St. Joseph Bay.

### *Floor Opened for Questions*

- Dr. Bushek asked if the source of oyster mortality is known.
  - In West Bay, sedimentation has caused reefs to be covered. In North Bay it is silty. In East Bay, it may be due to water quality. FWC is sampling more often and not seeing oysters reach maturity.
- How was the selection of granite vs limestone determined? The Department of Agriculture identified, purchased, and deployed material. Due to this, three different materials were used in Apalachicola Bay, St. Andrews Bay, and Pensacola. It came down to product availability and cost at the time of selection. Granite has done the best, then limestone, then fossilized oyster shells.

## Bay County Vulnerability Assessment

The project was done by FAMU-FSU College of Engineering, presented by Dr. Jessica Graham. Any questions should be directed to Dr. Ebrahim Ahmadisharaf and Dr. Eunsaem Cho.

- A vulnerability assessment, which looks at sea level rise, precipitation, and tidal fluctuations, is required by Florida statute to access Florida Resilient funding in 2024 and 2025. Many municipalities across Florida are doing vulnerability assessments. The objective is to determine if critical infrastructure is at risk for flood damage.
- Input data includes topography, land use, precipitation, tide level, streamflow, and sea level rise. The model outputs flood depth, at-risk infrastructure, and vulnerable areas for the study area.
  - The team used the model to acquire data on all the critical infrastructure in Bay County.
- The vulnerability assessment looks at tidal flooding, storm surge flooding, rainfall-induced flooding, and a combination of the flood types for the at 100- and 500-year events.
- Maps were reviewed that showed the various scenarios and flood events. One critical point of infrastructure reviewed was Der Point Lake which is the area's drinking water source.
- The critical asset exposure analysis for the 100- and 500- year floods were reviewed.
- The team has acquired Tyndall GIS files from Jacobs so Tyndall infrastructure will be included in the next vulnerability assessment.

## Northwest Florida Sentinel Landscape

Mr. Kent Wimmer with Defenders of Wildlife presented on the Northwest Florida Sentinel Landscape.

- The Department of Defense, Agriculture, and Interior created the sentinel landscape program to provide partners with greater access to funding assistance.
- Agencies designate areas for land conservation with state organizations, non-governmental organizations (NGOs), and private partners.
- The overall goal is to protect testing and training missions of military installations, conserve habitat for listed species, and maintain working farms and forests.
- Northwest Florida was designated as a sentinel landscape in 2022. There are 13 in the US and 2 in Florida with a third being proposed in northeast Florida.
- Climate Resiliency and Private Lands & Natural Systems work groups were created to achieve regional resiliency sustainability goals.
  - Working group meetings occur every month. Interested parties are encouraged to reach out to Mr. Wimmer if they would like to join the meetings.
- Reviewed FY22-23 accomplishments which include: \$32 Million to conserve 30,000 acres of land in NW Florida, enrollment of 90,000 acres of private land in state and federal land stewardship programs, pursued federal and state coastal resiliency and environmental restoration programs.
  - Partners have been awarded over \$14 Million for climate and coastal resiliency projects.

- Defender of Wildlife is hosting a briefing for the NFWF Coastal Resiliency fund for Sentinel Landscape Partners on Tuesday, February 20<sup>th</sup> at 3 PM Eastern/2 PM Central time. If anyone is interested, send an email to Mr. Wimmer and he will send information on how to join the call.
- Financial partner for all sentinel landscapes is Legacy Work Group which will be providing a climate resilience specialist to aid all partners coordinate and develop projects to attract more climate resilience funding. It will be a three-year position.

### **Open Announcements and Updates**

- Ms. Becca Hatchell – In West Bay, St. Andrew Bay the team is working to augment previously restored oyster reef with oyster shell and limestone rock. Approximately 6 acres of additional seagrass transplantation will occur around April 2024.
- Mr. John Brucker – There is a Bay Day event in Port St Joe the weekend of February 3, 2024.
- Mr. Garey Payne – Since everyone is working on small pieces of their project independently, communication about what work is going on is key. He encourages everyone to share information on the projects going on in the area so everyone can be more informed. The position that Mr. Wimmer mentioned may end up being the person that keeps track of all the projects going on in the area.
- Mr. Garey Payne – Hopefully the next CRAG meeting will include a 60% design update from the Jacobs/TNC team.
- Mr. Kent Wimmer – FWC has a website that monitors conservation accomplishments. Is there a way to include these projects on that website? Dr. Jessica Graham agreed that this is on the list of items the team would like to accomplish.
- Dr. Jessica Graham – the next CRAG meeting will be in May/June 2024.