Seagrass Restoration Technology Development Initiative Technology Advisory Council Meeting Minutes

October 1, 2025

- Welcome to Reefhouse Resort and Mote's Key Largo Coral Nursery
- Logistics and Meeting Overview
- TAC Roll Call
    - Dr. Michael P. Crosby – Mote, Co-Chair - virtual
    - Dr. Laura Reynolds – UF, Co-Chair – in-person
    - Beau Williams – Governor Appt - virtual
    - Carter Henne – House Speaker Appt – unable to attend
    - Dr. James Douglass– Senate President Appt - virtual
    - Dr. Bradley Furman – FWC Appt - virtual
    - Scott Eastman – DEP Appt - virtual
- Co-Chair opening comments
    - Dr. Crosby:
        - Wanted to come but couldn't make it because ribbon cutting for 9th campus – Mote SEA
        - Moved all around the state, and will continue as we develop restoration strategy and genetics strategy
        - Keys is incredibly important because of connections to coral restoration and seagrass restoration
        - Maybe host the next one at Mote SEA to see the new aquarium, but could also be good to go west in Pensacola
        - Lots of similarities in stressors that coral reefs face (increasing ocean temps, pH, ocean acidification, disease, anthropogenic effects) and approach will be similar as well to focus on genetic resiliency as a primary vehicle for restoration so what is out planted will actually survive
        - Genetic resiliency approach has proven successful in coral and will hopefully see this soon in seagrass
        - Photo shows new SERR Compound, legislation emphasizes the fact that we need to continue to find funding
        - 3 facilities, and these are available for everyone involved
            - Greenhouse, biogeochemical carbon sequestration lab, Publix genetics lab
        - Packed agenda – updates on year 1 projects, and announcement of next projects, update on the 10 year plan, and genetic library update
        - Dr. Reynolds:
            - Thank you, I started working with seagrass in Florida bay so this is a great chance to reflect on everything
            - When we started this the 10 year plan sounded interesting, but had no idea how this would work, so it has been exciting to work with Becky and start to pull this together
            - 1 year projects are really hard to do, but what has started to come out of this is so exciting

                - Having managers and practitioners with the scientists is really inspiring
                - Thanks to Kevin, FDEP, and the TAC
            - Beau Williams
                - Aquatech has just secured 104 acres statewide to plant seagrass that are already permitted, if scientists would like to get their work out into the field
            - Scott Eastman:
                - Broader efforts and collaborations are a major benefit of the project
        - Dr. Crosby: more campuses in the pipeline through a partnership with the state parks, specifically in the keys at Bahia Honda for seagrass restoration
            - Will be similar to what our Key Largo nursery looks like
            - A staging point for restoration, but also a lot of education and outreach
- Reasonable notice of meeting – posted to Florida Administrative Registrar on September 15th, 2025
- Meeting minutes taken and posted on the website
- Restrictions on outside discussions
- Public records
    - Must be and are open and available to the public
- Seagrass Initiative Overview
    - Review for anyone new
    - Signed into law by Florida Governor DeSantis in July 2023
        - 403.93344 Florida Statutes
        - Partnership with DEP and UF
    - $10 million over 5 years contracted by DEP to Mote
    - Grant Agreement Executed February 2024
    - Legislative intent:
        - establish a collaborative and coordinated effort among public and private research entities to develop restoration technologies and approaches to address the loss of seagrass and the cascading ecological and economic impacts of that loss to communities in this state
        - department shall award funds specifically appropriated by the Legislature for the initiative to Mote Marine Laboratory, which shall function as the lead administrative component to achieve the goals of the initiative
        - initiative shall leverage state-appropriated funds with additional funds from private and federal sources
        - Mote Marine Laboratory and the University of Florida shall create a 10-year Florida Seagrass Restoration Plan to implement tools and technologies developed under the initiative
- Initiative Partners - DEP, UF, Mote
- Seagrass Initiative Progress Overview – Eve Iavarone
    - Mote Administrative Structure
    - 1st and 2nd Accomplishments and Priorities Report
    - Leveraged Funding
        - NOAA
        - Philanthropic

        - Publix Seagrass Genetics Research Hub
        - Wolf Foundation Biogeochemical Carbon Sequestration Building
    - Initiative Technical and Financial Reports submitted
    - Released competitive 1st RFP
        - Funded 8 projects
        - Projects wrapping up
        - Receiving Final Reports
    - Released 2nd competitive RFP
        - Funded 7 projects
        - Subcontracts sent and executed
        - Projects underway
        - Updates on these at next TAC Meeting
        - Will be funding 6 more utilizing Year 3 funds
    - Continued work with consulting firm, Moffatt & Nichol, on the 10 Year Seagrass Restoration Plan
        - 122 management documents reviewed
        - Florida Seagrass Restoration Sites website completed utilizing GIS
        - Draft Plan Framework
    - Greenhouse structure completed
        - Projects in progress and completed
    - Outfitting "house" for visiting researcher lodging
- Facility Updates – Liz Longstreet
    - Will be expanding
    - Water trucked in from Sarasota bay that is treated and can be cut with RO to adjust salinity
    - Monitoring for temperature and DO
    - Greenhouse projects happening and booked until summer 2026
    - Currently UGA/TAMUCC, UNO, UCF
    - Additional raceway locations planned for the Keys
- Genetic Management Plan update – Dr. Dom Gallery
    - Publix building will be available to all funded projects and training for equipment will be available as well
    - Received samples from 6 funded projects so far
    - SOP was sent to Years 1 and 2 funded projects
        - Approximately 8-12 cm of tissue sample should be collected per individual
        - Place samples into a teabag, place teabags into ziplock bags with blue-indicator silica gel
        - Mail samples at ambient temperature overnight to Mote
    - Scott: regarding the samples you already have, have you mapped that out to see where we have data gaps (Dom can look at the metadata and prepare for the next meeting)
    - Krista: what endonuclease is being used?
        - BCGI
    - Email Dom associated metadata to Dom, working on website submission
    - We have contracted BreedBase at the Boyce Thompson Institute located at Cornell University to track genotypes and associated metadata

        - Built the initial accession for individuals we have received so far
        - Working with Breedbase and Big Sea to integrate the two platforms together
    - Extracted over 400 samples of 4 species of seagrass for the genetic library
    - Optimized the seagrass extraction protocol
    - Library preparations for 200 samples are ready for sequencing (including those with previous microsatellite sequencing)
- DEP Grant Agreement and Reporting Requirements
    - Beginning January 15, 2024, and each January 15 thereafter until its expiration, the initiative shall submit a report that contains an overview of its accomplishments to date and priorities for subsequent years to the Governor, the President of the Senate, the Speaker of the House of Representatives, the Secretary of Environmental Protection, and the executive director of the Fish and Wildlife Conservation Commission.
    - DEP Contract Technical and Financial Reports
    - Public Website
    - TAC Meetings – FAR, Presentations, Public Comments and Minutes
    - Public Records
- 10-Year Seagrass Restoration Plan – Becky Prado, Moffatt & Nichol
    - 403.93344(3)(d) F.S.: "In collaboration with the program, Mote Marine Laboratory and the University of Florida shall create a 10-year Florida Seagrass Restoration Plan to implement tools and technologies developed under the initiative."
    - DEP Grant Work Plan:
        - This work may, in part, be subcontracted by Mote to an external entity selected by Mote.
        - The Department, Mote, and University of Florida will oversee the development of the plan over the five years of the Initiative, may publish/release drafts and updates with the legislatively required Annual Report, may conduct workshops with seagrass research/restoration partners to facilitate practitioner/public input, and shall submit a Final Plan to the Department for implementation by June 30, 2028.
    - Kevin: we are making great progress towards our June 30, 2028 project deadline
    - Florida 10-Year Resilient Seagrass Restoration Plan Presentation by Becky Prado, Moffatt & Nichol
        - A very collaborative effort, and excited to be a part of this team
        - Wanted to make sure we were not duplicating existing efforts, so we have met with every entity and management to understand where we stand as a state, some of this has also gone to an international scale
        - 26 out of 122 plans look at seagrass restoration, 7 of those plans specifically had restoration targets that were focused on acreage and a recovery to historical loss, 2 of those plans had specific projects identified but there is not one statewide restoration plan
        - As part of this, we worked to create a statewide seagrass database with 73 actively planted seagrass restoration projects and nurseries. **Link here**
            - All coastal seagrass restoration, and also adding mitigation sites and freshwater sites as we get them
            - If you zoom in you can get detailed project information by site

        - On the right-hand side, you can add your site (then it is independently verified by Moffatt & Nichol and then a validated data point)
        - Key data inputs:
            - Project Identification & Location
            - Project Design & Implementation
            - Monitoring and Performance
- 10-year plan draft framework plan
    - Online format following simplified clickable format aligning with Mote's current website
    - Short in content and summary in nature
    - May include a technical report as a resource and reference
- Framework will include:
    - Introduction
    - Status of Seagrasses in Florida
        - Integration of genetics library
        - Integration of funded research outcomes Integration of funded tools and technologies Identify gaps and needs in research, tools, and technology
    - Status of Water Quality in FL
    - Restoration Status
    - Status of Seagrass Genetics in Florida
    - Resilient Seagrass Restoration Recommendations
        - Tier 1: Apply restoration suitability model- Develop a GIS based suitability model – provides a qualitative score for restoration
        - Tier 2: Genetic Fit Assessment/Recommendation
        - Tier 3: Place-based Manager Assessment - final determination/approval of site for restoration
    - Policy, Regulation and Best Management Practice
        - Policy and Regulation recommendations
        - BMP for selection and use of genetically resilient seagrass
        - Plant source/nursery validation
    - Recommendations Restoration Funding
        - Mitigation/in lieu fees
        - Carbon & Nitrogen Credits
        - Grant Funding
    - Seagrass Resources
        - Resilient Seagrass Nurseries
        - Resilient Seagrass Restoration Practitioners
        - Resilient Seagrass Technology
    - Next Steps/Gaps
    - References
- Questions
    - Althea: How can we site this for grant writing? Or where can we go to find these details?

    - Becky: Year 1 deliverable has been submitted to Mote, so Kevin and Eve have access, but if you have specific questions or comments reach out to me
- Initiative Research Engagement
    - 403.93344(3)(C)(1): Mote Marine Laboratory may, with the concurrence of the department, use a portion of the awarded funds to facilitate additional engagement with other pertinent marine science and technology development organizations in this state and around the world to pursue applied research and technology for the successful restoration of seagrass ecosystems.
- Funded Partner's Project Overview – Year 1 Projects Final Update Presentations
- Announcement of Year 2 Projects (no presentations)
    - Continued work from Dr. Laura K. Reynolds, University of Florida
    - *Comprehensive assessment of the genomic variability in Syrangodium filiforme populations in relation to environmental and stressor heterogeneity across Florida* – Dr. Iris Segura Garcia, Florida Atlantic University Harbor Branch
    - *The Resiliency of Halodule wrightii to Increased Temperature, Freshwater Discharge, and Light Limitation Florida* — Dr. Megan Conkling, Florida Atlantic University Harbor Branch
    - *Assisting the role of interspecific competition and sediment quality stressors on shoal grass restoration* – Dr. Jennifer Hansen, Brevard Zoo
    - *Differential gene expression and productivity in response to ocean warming for two Halodule wrightii populations across a latitudinal cline* –Dr. Erin Cox, University of New Orleans-
    - *Seagrass Strikes Back: A new hope for fighting Marine heatwaves (MHWs) with Thermo-Priming* – Dr. Linda Walters, University of Central Florida
    - *Influence of biochar on seagrass growth, health, and ecological interactions* – Dr. Toufiq Reza, Florida Institute of Technology
    - *Investigating the Influence of Ocean Acidification on Seagrass Resilience to Nutrient Loading* – Dr. Robert Johnson, University of Wisconsin-Madison
- RFP Update and Announcement of Year 3 Funded Projects
    - Due to increased proposals and positive reviews, we split funding from Year 2 RFP to fund some projects in Year 2 and some in Year 3
    - Year 3 Award Letters have been sent out and Subcontracts are being sent out
- Year 3 Funded Projects
    - *Genetic Diversity and Gene Expression Responses to Stresses of Targeted SAV* - Ecosphere Restoration Institute, University of South Florida
    - *Testing variation in stress tolerance and restoration potential of Florida seagrass subpopulations* - University of Georgia (Skidaway)/Texas A&M Corpus Christi, University of North Florida, Florida International University
    - *Developing Technology for Kilometer Scale Seagrass Restoration in Florida* - Ulysses Ecosystem Engineering, Florida International University
    - *Continued exploration of the potential for seed-based restoration using Manatee Grass* - Florida International University
    - *Assisting seagrass recovery in Southwest Florida: Examination of transcriptome-wide gene expression variation to identify low-light resilient Halodule wrightii genotypes* Gulf Shellfish Institute, Mote Marine Laboratory

    - *Using Long-Term Passive Acoustics to Evaluate Seagrass Restoration Efforts* - Mote Marine Laboratory
- No public comments
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