Seagrass Restoration Technology Development Initiative Technical Advisory Council Meeting Minutes

February 16, 2024

Mote Aquaculture Research Park – 12300 Fruitville Rd, Sarasota FL 34240

I. Introductions and Opening Remarks

a. TAC Members:
   i. Dr. Michael P. Crosby – Mote, Co-Chair
   ii. Dr. Laura Reynolds – UF, Co-Chair
   iii. Beau Williams – Governor Appt
   iv. Carter Henne – House Speaker Appt
   v. Dr. James Douglass– Senate President Appt
   vi. Dr. Bradley Furman – FWC Appt
   vii. Scott Eastman – DEP Appt
b. Mote Employees: Kevin Claridge, Liz Longstreet, Eve Iavarone, Jake Sciliano
c. Dr. Crosby talks about challenges seagrass ecosystems are facing: some areas doing good some doing bad, manatee die off got the public's attention of seagrass die off effects
   i. Must conserve and restore these ecosystems
   ii. Seagrasses don't have the time for the natural evolutionary process, must find the good genetics scientifically which is what the initiative is about
d. Mote overview by Dr. Crosby
   i. 70 years, independent nonprofit, no bureaucracy allows us to do important research that some agencies and universities can't do, 9 campuses, MAP – 200 acres, closed snook life cycle, developed technologies for sustainable recycling water systems, ecotoxicology, molecular microbiology lab, RTMTDI, coral gene bank,
   ii. Seagrass program utilizes philanthropy as well – Ron and Marla Wolf Foundation
e. Announcement that DEP contract for state funding was just finalized

II. Review Meeting Agenda

a. Welcome, Logistics, and Meeting Overview
b. TAC Introductions and Role
c. Florida Sunshine and Public Records Laws
d. Seagrass Initiative Overview
e. Initiative Partners
f. Initiative Progress and Annual Report
g. DEP Grant Agreement
h. Reporting Requirements
i. 10-Year Seagrass Restoration Plan
j. Initiative Research Infrastructure

k. Year 1 Request For Proposals
l. Proposals Under Review
m. Public Comments
n. Research Facility Tour
o. TAC Comments and Recommendations

III. Overview of Seagrass Restoration Technology Development Initiative – 403.93344 Florida Statutes

a. (4) The Initiative Technology Advisory Council, an advisory council as defined in s. 20.03(7), is established as part of the initiative. The advisory council's membership must include marine science, technology development, and natural resource management representatives from this state's aquatic preserves, private organizations, and public or private research institutions. The council shall meet at least twice annually.
b. (a) The council shall be co-chaired by the president and chief executive officer of Mote Marine Laboratory and a representative from the University of Florida and shall be composed of the following members:
    i. One member from a private commercial enterprise, appointed by the Governor.
    ii. One member from a public or private university in this state, appointed by the President of the Senate.
    iii. One member from a non-university public or private marine environmental organization, appointed by the Speaker of the House of Representatives.
    iv. One member from the program who has expertise in seagrass ecosystems, appointed by the Secretary of Environmental Protection.
    v. One member from the Fish and Wildlife Research Institute who has expertise in seagrass, appointed by the executive director of the Fish and Wildlife Conservation Commission.
c. (b) Council members shall serve staggered 2-year terms and may be reappointed.
d. (c) Council members shall serve without compensation, and each organization represented shall cover all expenses of its respective representative

IV. Technology Advisory Council Role

a. 403.93344(4) F.S.: ”There is **established within the initiative the Initiative Technology Advisory Council**, an **advisory council as defined in s. 20.03(7) …The council shall meet at least twice annually**.
b. 20.03(7)F.S.: “Council” or “advisory council” means an advisory body created by specific statutory enactment and appointed to function on a continuing basis for the study of the problems arising in a specified functional or program area of state government and **to provide recommendations** and policy alternatives.
c. 403.93344(3) F.S.: The Seagrass Restoration Technology Development Initiative is established within the department as a partnership between the program, Mote Marine Laboratory, and the University of Florida.
d. **DEP contracted Mote** to lead the Initiative under State Agreement M2024
e. **Thus, the role of the Technical Advisory Council is to provide recommendations to Mote and partners on the Initiative.**
f. Comments: Mote will work with members calendars to create next meetings, future meetings can be on Zoom

V. *Florida's Sunshine Law*

a. The **Florida Sunshine Law applies** to the Seagrass Restoration Technology Development Initiative, Technical Advisory Council.
b. Florida's Sunshine Law was created to protect **every Floridian's right to public access of meetings and records** concerning government programs, which provides transparency.
c. **This applies to any meeting** where official acts are to be taken or **public business will be discussed**.

VI. *Reasonable Notice of Meetings*

a. The **public must be given reasonable notice of meetings** that are to occur.
b. DEP generally recommends notice for public advisory group meetings to be published in the **Florida Administrative Register** no less than 7 days before the meeting (posted on 2/6/24) and ensure that it is posted on the **Initiative website**.
c. Comments: all minutes presentations and agenda will be posted to Mote website

VII. *Minutes of Meetings*

a. **Minutes of meetings must be taken** and documented, but do not have to be verbatim.
b. This meeting's minutes will be posted on the Mote Seagrass Ecosystem Research & Restoration website.
c. Advisory Boards are not required to have audio recordings of their meetings; but if a meeting is recorded by a member or staff then it is a public record.
d. Comments: No recording, but could be done if there is interest from the public

VIII. *Restrictions on Outside Discussions*

a. Any discussion between two or more members of the Technical Advisory Council discussing a topic which may foreseeably come before their board **must occur in the sunshine**.
b. You are not restricted from socializing with other members of the Council, **but you may not discuss anything that may foreseeably come before the board**.
c. **Discussion of official matters outside of a public meeting is a violation of the Sunshine Law**.
d. Discussion:
    i. No conversations can happen outside the structure of the council.
    ii. No advising or guiding can happen in individual emails or conversations – must have in TAC meeting
    iii. Scott: Will be difficult, because members work together on other things, so individual contact will happen
    iv. Dr. Crosby: Individual contact can happen, as long as it does not pertain to the Initiative
    v. James: How does this translate to email chains?
    vi. Kevin: Will send emails to members, avoid talking about initiative if other people are on the email

IX. *Florida Public Record Laws*

a. **This Technical Advisory Council is subject to Florida's Public Records Law** (even if you yourself are not a government employee), because records relating to the Seagrass Restoration Technology Development Initiative are made or received in connection with the transaction of the official business of the State.

b. Public Records are **ALL** documents, papers, letters, maps, books, tapes, photographs, films, sound recordings, data processing software, etc. regardless of the physical form…or means of transmission made or received in connection with official action of an agency. Sec. 119.011(12), F.S.
c. **Public records must be open and available for the public to inspect and copy**.
d. **This includes emails, text messages, and social media**
e. Comments: Everything falls under this law, Mote will advise applicants of this and work with attorneys

X. Seagrass Initiative Overview

a. Signed into law by Florida Governor DeSantis in July 2023
    i. 403.93344 Florida Statutes
    ii. Partnership with DEP and UF
b. $10 million over 5 years contracted by DEP to Mote
c. Legislative intent:
    i. 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
    ii. 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
    iii. initiative shall leverage state-appropriated funds with additional funds from private and federal sources
    iv. 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
d. Comments:
    i. Kevin: Recurring appropriation and renewal of contract will happen every year, working on leveraging funds from other partners, will come to 10-year plan later – must give ourselves time throughout this initiative to come up with plan as we go

XI. Initiative Partner: University of Florida

a. Department of Soil, Water, and Ecosystem Sciences
b. Coastal and Marine Ecology Laboratory
c. Dr. Laura Reynolds, Assistant Professor Coastal Ecology
d. Genetics Lab for Seagrass Initiative

XII. Initiative Partner: DEP Aquatic Preserve Program

a. Aquatic Preserve Act
    i. 258.35-258.46 F.S
    ii. “Ensure continuation of natural conditions of aesthetic, biological and scientific value”
b. 42 Statewide Preserves
c. 2.6 Million Acres
d. Place-Based Experts on:

i. Natural resources, ecological trends, stressors, research conducted/underway, recreational uses, partners, stakeholders, etc.

e. Comments:
   i. Kevin: He used to work for DEP, strategically, very important to bring them in
      1. They are place based experts – they are on the ground – know the place the people, the stressors

XIII. Seagrass Initiative Progress

a. Administrative Structure
b. Scientific Partners/Staff
c. State Contract Drafted
d. Launched Website
e. Technology Advisory Council
f. Request For Proposals
g. Annual Report
h. Greenhouse Infrastructure
i. Genetics Lab Equipment
j. Leveraged Funding
k. Comments:
   i. If you would like copies of the physical report, reach out to Kevin
   ii. Jamila transferring to NSF post doctoral fellow
   iii. Dominique Gallery accepted post doc position - will advertise this later
   iv. Mote website – all info is on one section put together by our CRC team
   v. Sharing genetic lab equipment with UF

XIV. DEP Grant Agreement to Mote

a. Administrative Oversight and Reporting
   i. 6-month Technical and Financial Reports
   ii. Competitive RFP process
   iii. Annual Report
   iv. Technology Advisory Council
   v. 10-Year Seagrass Restoration Plan
   vi. Education/Outreach Workshops and Materials
b. Initiative Research Equipment and Operations
   i. Genetics Lab and Greenhouse Nursery
   ii. Staffing, Equipment, Supplies, and Maintenance
c. Field Operations
   i. Travel for Field Seagrass and Stressor Research

XV. Initiative Reporting Requirements

a. 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.
b. DEP Contract Technical and Financial Reports
c. Public Website

d. TAC Meetings – FAR, Presentations, Public Comments and Minutes
e. Public Records

XVI. *10-Year Florida Seagrass Restoration Plan*

a. 403.93344(3)(d) F.S.:
    i. "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."
b. DEP Grant Work Plan:
    i. This work may, in part, be subcontracted by Mote to an external entity selected by Mote.
    ii. 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.
c. Comments:
    i. Kevin: Will need TAC member advise, wants to contract some of this work out to an external entity using Initiative funding, wants to get drafts well before June 2028, make a website or social media platform (doesn't want the plan to be a book that gets put on a shelf)
    ii. TAC members agree

XVII. *Initiative Research Infrastructure*

a. Provide multi-user seagrass research infrastructure for Initiative scientists
b. Free of charge for Initiative projects
c. Seagrass education and outreach
d. Test variety of field stressors (e.g. temperature, clarity, light, salinity, nutrients, pH) in a controlled setting
e. Assist determination of resilient seagrass genotypes
f. Hold diversity of genotypes and ecotypes for research
g. Additional raceway locations coming on-line soon in Florida Keys
h. Comments:
    i. Will be available to all scientists who are funded under the initiative
    ii. Liz has experience from Red Tide to manage this
    iii. Opportunity for a lot of education and outreach
    iv. Will help figure out which stressors people want to test
    v. Kevin wants to start to build genetic library – where is it housed? What kind of computers or things are needed
    vi. Other funding has been used to put raceways in the Keys, seems like a strategic spot for research
    vii. Carter: What is raceway size? Liz/ Kevin: 3x3x8 facilities will be on tour to give more information

XVIII. *Initiative Research Engagement*

a. 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.

XIX. Request For Partner Research Proposals

a. Open to any/all interested parties
b. In accordance with Florida Sunshine and Public Record Laws
c. Anticipated grant funding in year one is $1M+
    i. Likely $50-$250K for each grant, 4-8 organizations
    ii. Support not to exceed 1 year
        1. may request longer in second year RFP
    iii. No Match Required
d. Proposal guidelines/timelines:
    i. Mote.org and proposals@seagrassinitiative.org
    ii. Opened December 1, 2023
    iii. Closed January 31, 2024
    iv. Notification of Awards in March 2024
    v. Contracting in April 2024
    vi. Project Period May/June 2024 to May/June 2025
e. Core infrastructure developed at Mote for projects
f. Use of Mote facilities/infrastructure is free of charge
g. Collaboration with Initiative Partners encouraged not required
h. Proposal Reviewer Scientists:
    i. DEP, UF, and Mote scientists
    ii. Each scientist will review proposals using provided questionnaire
    iii. Project updates will be provided during TAC meetings for comments/recommendations
i. Projects will generally receive 50% of the awarded funds upon contract execution
    i. 25% upon approval of the Interim Report
    ii. 25% upon approval of the Final Report
j. Comments:
    i. Dr. Crosby: Not academic research, this is a seagrass restoration technology development research – must have new technologies on the end of this
        1. Must have new strategies for multiple different seagrass species in multiple different habitat types
        2. Dr. Crosby has been called by legislature to make presentations on this already
        3. Restoration must be significantly enhanced by the end of this initiative
        4. Must keep this in mind when reviewing proposals, how will this enhance survivability on a much broader scale
    ii. Scott: Can some of the research be applies to some ecosystem side effects?
    iii. Dr. Crosby: absolutely, I am from Florida lived all over FL used to live by IRL and go swimming with my brother as a kid where water was crystal clear – will never

go back to the way it was but we must improve water quality. Genetically resilient seagrass can help survive stressors, but must not limit genetic diversity, ecosystem impacts are important but must deliver concrete findings

iv. Kevin: RFP Proposal shared with some DEP AP Managers, Jamila, Laura, and Mote team

XX. Request For Proposal Priorities

a. Year 1 of the Initiative will focus on:
    i. examining the **genetic diversity of seagrass populations** and associated field stressors across Florida;
    ii. developing a **genetic library** of Florida seagrass;
    iii. **testing the resilience** of different statewide seagrass populations to multiple environmental stressors in controlled lab and nursery settings;
    iv. **examine existing seagrass restoration technologies** and/or conduct planning efforts and pursue regulatory approval for testing novel seagrass restoration technologies;
    v. **organizing and encouraging collaboration** among the scientists and restoration practitioners working on Florida seagrass genetics to achieve the goals of the Initiative (this will be partially accomplished through this RFP, the Initiative Technology Advisory Council, and a forthcoming Initiative Workshop).

XXI. Initiative Proposals Under Review

a. Florida Atlantic University, Harbor Branch Oceanographic Institute: *Assessment of Population Genomic Variability Associated to Stress Resistance in Florida Seagrasses*
    i. Identify genetic differences among natural seagrasses that vary in environmental degradation
    ii. Identify specific genotypes and gene complexes that are associated with habitats of specific stressor history
    iii. Biscayne Bay, Palm Beach Shores, IRL
    iv. *Syringodium filiforme*
b. University of Georgia, University of North Florida, Florida International University: *Testing variation in stress tolerance and restoration potential of Florida seagrass subpopulations*
    i. Test the stress tolerance of different statewide seagrass subpopulations in mesocosm
    ii. Seek to uncover suite of proteins that could server as “fingerprint” for stress tolerance
    iii. Contribute to seagrass genetic library
    iv. Biscayne Bay and Tampa Bay ?
    v. *Thalassia testudinum*
c. University of New Orleans, Vesta: *Addressing uncertainties to facilitate restoration success of Halodule wrightii beds: Does seagrass genetic variation and genotypic identity enhance primary productivity and confer resilience to stressors?*
    i. Map seagrass bed genetic variation and productivity across low-light and high-heat gradients
    ii. Field and mesocosm testing

iii. *Halodule wrightii*

d. Ecosphere Restoration Institute, University of South Florida: *Genetic Diversity of Targeted Seagrass Assemblages in Florida*
    i. Collection/analysis of seagrass samples of established and restored sites while documenting stressor factors
    ii. Contributing to the genetic library
    iii. *Halodule wrightii*
e. Brevard Zoo, University of Central Florida, Florida Tech: *Investigating Potential Effects of Caulerpa prolifera on Shoal Grass Restoration in Florida*
    i. Lab, Mesocosm, and Field Experiments
    ii. *Halodule wrightii*
f. Ulysses Ecosystem Engineering, Florida International University: *Developing Technology for Kilometer Scale Seagrass Restoration in Florida*
    i. Optimizing/automating/field validation mechanical seed injection tool
    ii. Characterizing seed germination factors
    iii. *Syringodium filiforme*
    iv. Comments:
        1. Carter: Are they producing more seeds or just using more seeds?
        2. Kevin: Trying to produce more seeds to therefore plant more
        3. Dr. Crosby: Are seeds more viable or if you stress it does it make less viable, that is the important question?
g. Gulf Shellfish Institute, Mote: *Assisting seagrass recovery in Southwest Florida: Evaluation of hard clam (Mercenaria campechiensis) facilitation and identification of resilient Halodule wrightii phenotypes*
    i. Evaluates co-planting of clams with seagrass
    ii. Identifying resilient shoal grass phenotypes that can be nursery grown
    iii. Light stressor mesocosm experiment
    iv. Incorporate collections into genetic library
h. AquaTech Eco Consultants, Aquaticus Plants: *Halodule wrightii Genetics Library for Resiliency and Restoration*
    i. Determine if there is significant genetic difference between *Halodule wrightii* populations across Florida and discern if those genotypes impact survivability in adverse water conditions
    ii. Determine if there is a subset of 'ecotypes' of *Halodule wrightii* best suited for restoration
    iii. Nursery and Field-based approach
    iv. Comments:
        1. James: Are we supposed to see proposals?
        2. Kevin: No, we are using separate review panel
        3. Dr. Crosby: You all are not review panel, you are advisory panel. The review panel decides what gets funding, but TAC can give advice. Overview of advice rather than specific advice on individual proposals. Must avoid potential real or seemingly view of conflict
        4. Scott: Can we say there are key points that stand out?

5. Kevin/Dr. Crosby: Yes
6. Kevin: I want to fund specific parts of proposals in red tide so will be similar for this

i. Florida International University: *A new approach to seagrass restoration in Florida: exploring the potential for seed-based restoration*
   i. Review history of Florida seagrass restoration
   ii. Assess suitability of fast-growing, early successional seagrass for seed based restoration
   iii. Investigate sexual reproduction, seed set, and seed banks in Florida Keys
   iv. Experimentally determine cues for promoting germination in mesocosms
   v. *Syringodium filiforme*

XXII. Questions or Comments from the TAC?

a. Carter: Is this is the only time to connect on projects before funding? Is there a desire in the group to provide comments and look at this internally?
b. Dr. Crosby: Suggests the group give general advice like "give priority to projects on x,y,z"
c. Beau: Are the FIU proposals are connected?
d. Kevin: They are separate funding but working together
e. Dr. Crosby: These are one year projects, if they are not producing then they will not get funded again. Nothing is guaranteed
f. Carter: (In reference to FIU Proposal) Do you do large planting units? Or do you start with the smallest unit? I think there is value in seed planting, hard to find seeds so how do you plant them without them floating away
g. Kevin: That's what Jim was thinking, is there a way to manipulate the seed biology?
h. Dr. Crosby: There is a dichotomy in identifying and determining methods that can work vs the actual deployment and use of those methods. How do you deploy technologies on work on the scale that you need them to? So, where do you focus the funds? Genetic resiliency, seeds with viability, and then deployment?
i. Carter: When talking about genetics, there is a regulatory framework that really needs to be worked out – issues with moving plants within different areas in FL
j. Dr. Crosby: This is a similar issue to what we are facing with coral. Can we take known resilient coral genotypes from lower keys and plant in Jupiter for example? They are going extinct, so why are you worried about moving genotypes when they could die. Agency's choice, but we can help develop a strategy that changes this.
k. Scott: There needs to be proof of concept to do no harm, but yes, it is a similar situation.
l. Dr. Crosby: We need to work on restoration despite water quality issues Water quality will never be what it was.
m. James: If we start planting in areas that don't have great water quality, people will notice this and maybe pick up more restoration. Sounds like there in knowledge in this room that I want to learn more about. Do we have helpful information that will help practitioners, help me? Need to get up to speed on these prospects.
n. Dr. Crosby: 2 million per year will go quick, so we must be smart and strategic.
o. Kevin: I didn't include UF funding on ppt, Laura can you speak more on that?
p. Laura: We are focusing on getting a good genetic library of species throughout the state, using microsatellite markers, but also have the opportunity to produce genomes with

this funding. So, we have tools to create a library of plants to test stuff on, include microbiomes, and how we hold plans in nurseries. Also, we want to look at are there things we can do to stress them in the nurseries to prepare for planting in wild.

q. Scott: what was total ask?
r. Kevin: $1.5 million to fund all the projects.
s. Scott: I have been asked for letters of support, so how does that work?
t. Dr Crosby: You are not a part of selection process, so you can write letter of support. That is exactly why you are not a part of the selection committee.
u. Kevin: One of the big picture goals is to solve the problem of the lack of genetic library across state
v. James: By genetic library do we mean genome or microsatellite?
w. Laura: We don't have an answer yet.
x. James: Were some of them looking at genotypes in field conditions?
y. Kevin: We tried to steer towards that in the RFP.
z. James: As a group, what do we think are genetic features that are most promised for resilient stock within FL?
aa. Dr Crosby: We must think about what the major stressors are now, and also in the next decade. Low light, acidification, nutrients, depending on specific location. We don't need field of seagrass of one genotype resilient to one stressor, but must find one or two so we are careful of genetic diversity.
bb. Laura: Stressors are going to change, so diversity is important.
cc. Dr. Crosby: That's where sexual reproduction is important. Like crossing genotypes that are resilient to different stressors. Want to increase diversity of genotypes. It's the approach we take to coral and cold be important for this.
dd. Scott: How do we go best about planting? How do these function in the ecosystem? How does the seagrass interact with clams, fish, etc. in all the different aspects? Is there overlap with stressors and HABs?
ee. DR. Crosby: There is potential to utilize red tide infrastructure and testing facility in the future to look at this.
ff. Public comment (Whitney Laboratory): Will projects be sourcing from highly stressed location, hoping that those is those highly stressed ecosystems that are surviving could be helpful in finding resilient genotypes?
gg. Laura: Stress regimes are different throughout FL. So just because they are resilient in one area doesn't mean they will be resilient in another area.
hh. Carter: Fastest growing nonnative species of seagrass washed up on FL shores recently.
ii. Scott: I wanted to bring that up, it was found in IRL
jj. Carter: In the St. Johns and South Florida district
kk. James: Are we looking at sexual reproduction? Identifying sexually active species in any proposals?
ll. Kevin: Only 1 proposal talked about sexual reproduction aspect.
mm. Laura: UGA's would look at *thalsia* flowering
nn. Scott: What if we can get conditions to improve, is there space for other species who maybe aren't as resilient? The nonnative seagrass talked about earlier supposedly came from Puerto Rico

oo. Carter: It's nonnative to Caribbean and moving north

XXIII. End