

MEETING SUMMARY

Coastal Oceans Task Force Meeting
Thursday April 10, 2014
Florida Atlantic University
Majestic Palm Room
777 Glades Road
Boca Raton, FL 33431

COTF members present:

Steven Abrams, Palm Beach County Commission
John Haddox, Martin County Commission
Kristin Jacobs, Broward County Commission
Eula Clarke, City of Stuart
Dana Wusinich-Mendez, National Oceanic and Atmospheric Administration
Jeff Torode, South Florida Dive Headquarters
Mike Kennedy, Recreational Fishing
Claire Schubert, Town of Hillsboro Beach Commission
Frank Caplan, Village of Key Biscayne
Chuck Collins, FFWC
Stuart Dodd, Town of Lauderdale-by-the-Sea
Bonnie Fischer, Town of South Palm Beach
James Byrne, TNC
Dick Dodge, NSUOC
Joanna Walczak, FDEP

Alternates present:

Ed Tichenor-Reef Rescue
Kevin Senecal, Divers Direct

COTF Members absent:

Susan Haynie, City of Boca Raton
Dawn Pardo, City of Riviera Beach
Michelle Kligman, Town of Surfside
Bob Jones, Southeastern Fisheries Association
Becky Hope, Port of Miami
Alex Lewy, City of Hallandale Beach
John Sprague, MIAF

Also present:

Dan Clark, Cry of the Water
Stephanie Clark, Cry of the Water

Welcome – Kristin Jacobs, Interim Chair

A motion to approve meeting summaries, both February 13, (corrected) and March 13, 2014 was made by E. Clark, seconded by C. Schubert, and passed unanimously.

1st Presentation:

Lauren Waters, Marine Industry and Coastal Construction Impacts Coordinator, FDEP,
Ecosystem Services, Value, and Coastal Construction

The first humans were only interested in the land for what it could provide in the way of food, shelter and water for them. But over thousands of years they observed, paid attention, learned on a daily basis where to find food, when to find food, when flowers would bloom, and when nuts and seeds would fall. This knowledge and understanding allowed us to make the leap to farming. We understood the land, and the seasons on land enough to know when to plant, where to plant. We learned how much water they need; we even learned how to fertilize them to help them grow. But we still had a lot of learning to do. Droughts, bugs, diseases could ruin entire crops. But again after thousands of years of observation on a daily basis we learned so much about growing things on land, that we could grow them almost anywhere. We grow entire fields of things like rice where they wouldn't normally grow. We got into the dirt and looked at the worms and beetles and microbes and over hundreds of years we came up with some solutions to diseases and some solutions to pests.

Eventually we started to put a value on the earth and the plants and animals. Of course there is the intrinsic value of food itself because we need it to survive, but not only that, humans began to place monetary value on plants for being rare, or beautiful, or endangered. In the mid 1600's in the Netherlands, the tulip, a flower that isn't good for food and doesn't even last, was an economic power house. One bulb was sold for 10x's a working man's annual salary.

We learned more than just the value but also the services that the environment provides to us and to other parts of the bigger ecosystem. So like the tulip, sometimes there is value just in the beauty of a large oak tree, value in the shade it provides. Of course value in food production, but not just food for us; this one tree could provide food for many other animals and birds can use it to escape predators and shelter its nest to raise chicks. All the way down to the butterflies and caterpillars and ants that live here in this 1 tree. What is the value of all of those services?

And over thousands of years we learned that with more trees...and not just more trees but we learned that with several kinds of trees and the shrubs and the wildflowers, that there will be even more services provided, you'd bring in bigger animals, and now today

we understand that we have to really look at the whole package to understand the value.

And what if we apply this to reefs? How far have we come with our understanding of reefs? Are we looking at our reefs in the same way?

Let's take a look at how far we have come. Early humans, the only view they had of the ocean, was the surface, big and blue. But eventually we started hunting and gathering in the oceans as well. Granted it was about 150,000 years after we had been hunting and gathering on land, so our knowledge had some catching up to do. But once we finally got into the water, we started learning about fish and clams just like we did on land. We learned about fish cycles, we learned about currents, we paid attention to the cycle of the moon. We learned which ones were tasty, and which ones maybe not so tasty. And this is kind of where we stay for quite a while.

So then we fast forward to one of our next big leap which would be building larger ships and sailing the oceans. Even 500 years ago, we had tamed most of the land, but we were just scratching the surface of our oceans. At that time when it came to reefs, most humans had never seen a reef. Since it wasn't until we had modern equipment and people like Jacques Cousteau started filming it in the 60's, most of our reef knowledge is measured in decades.

So while we have had thousands and thousands of years to learn and understand the land, we are only just now studying and beginning to understand our reefs and the services they provide like recreational opportunities, a place for animals to forage, to live, and to hide; and the value of those services. And just like on land it isn't 1 coral, or even 1 species of coral that makes a reef, it's also the gorgonians, and sponges, and algae that work together to increase the value of our reef system.

When we talk about coastal construction and what it means when we impact these systems and try to mitigate for permitted impacts to them, we need to take into consideration the entire value and realize that it all must be accounted for and replaced.

If you agree that our understanding of reef systems in general is still in its infancy, then our understanding of how coastal construction can impact reefs is just as new. That there are many direct and indirect impacts to our reefs is becoming clearer. Direct impacts like dredging may seem pretty obvious, but we have had quite a few lessons learned on how impacts can occur as well as how to prevent them.

There are anticipated impacts and unanticipated impacts. We can account for the impacts we anticipate like actually cutting through the reef, but sometimes there are unanticipated impacts like the anchors or cables that the construction vessels are using that can also impact a reef. Over the last several years we have worked hard to develop best management practices and best permitting practices to help anticipate these impacts and prevent those using innovative methods. For instance, maybe we can float

the cable or pipe. But sometimes even our preventive measures have needed improvement.



The large pipe in the image above was providing sand during a beach nourishment project, and tires were used so that presumably only the areas the tires touched would be impacted. Unfortunately the tires weren't large enough to help the pipe clear the valuable resources. Thinking back to the value, we all have a perspective now that what was lost here was not just one coral that was a hundred years old, there are also indirect impacts that we are still trying to understand.

You can have a project that is directly impacting the reef, but indirectly sediment from the project could cover the corals and block sunlight, and we are still trying to understand the tolerance level that the corals have to this kind of activity.

Ultimately, impacts may happen and when they do we try to mitigate for them, we try to replace the lost service by recreating reef elsewhere. But let's go back to our forest example for a minute. We realize that if we bulldoze it, that we are going to lose all those 100 year old trees. And now hopefully we are thinking about all of the other services and value we are losing as well. When we talk about mitigation, we mean trying to recreate what we have lost. So if we wanted to recreate our forest would we just put a pile of dirt down? We could, and some things might start to grow in it but they might not be the things we want.

So we would plant some baby trees, many different kinds of baby trees. OK, that's starting to look better, but what about time lag? When will this mitigation site actually perform like the forest we chopped down? It's going to take a while. It's the same thing with our reefs; we all know corals are slow growing.

When we impact the reefs we aren't just losing the services and value today, but we are losing it for years to come. When we mitigate, we can't just put a boulder in the water and hope the things we want will recruit to it. Just like that forest we can't just

transplant corals, we need to look at the sponges and soft corals too, and we have honestly only learned this in the last 20 years or so. We are just starting to mitigate for reefs like we have for forests and we are still learning. In fact, one thing we know now is that we still aren't recreating the natural reef system.

So what can we do? First avoid impacts, but if you have to have impacts then do what we can to minimize those impacts. If we can't minimize them, then do the best mitigation possible and make sure that we are actually mitigating for all of the services lost.

Examples of avoidance can include laying pipes and cables in natural reef breaks rather than going over the reef. This may cost a bit extra in the short term but will be well worth it in the long term. Minimization can involve educating construction teams on how important and valuable reef resources are. Mitigation is the last resort and, if we have to mitigate, make sure that the mitigation is going to fully replace the value of the reef to be impacted.

Today, I brought you an educational binder that we created for construction companies, contractors etc. to help educate them on our local ecosystem. As you flip through the binder, you will see short descriptions about each of our coastal habitats and why they are important. This is important education because many of the companies are not local. You will see a section on best management practices which are things, like the floating cables, that we can do to reduce impacts to our reefs. You will see that the binder is not complete; we are adding new chapters and hope that this can be a living document so that as we continue to learn and improve we can modify this binder.

Recommendations:

- Use available resources to educate contractors, consultants etc., on the importance and value of our reef systems
- Ensure permits contain best management and permitting practices.
- Plan for the future and the cost-benefit of coastal construction projects.
- If impacts to reefs are expected to occur, understand and account for the direct and indirect impacts which may result in the immediate loss of value and services, as well as over time.

Comments and Questions:

D. Wusinich-Mendez, NOAA. Reiterated that we do not have the technology to recreate the reef and all its attendant services, all we can do is imitate it.

Is there any education for divers, construction workers, etc., perhaps in their certification processes, that would increase their knowledge regarding this issue? *Divers do, through the reef tour boats and guides. For the construction industry, some permits require one or more persons (in the company) to have a certain level of knowledge but none (at this time) for all the workers to be*

exposed to information regarding the reef ecosystem. SEFCRI has created a program targeted to contractors, construction permitting agencies and project designers to educate them regarding the value of the reef ecosystem.

Are you saying that the persons or agencies approving the permits don't understand the value of the reefs? *Sometimes, no.*

C. Collins, FFWC. FDEP has a clearing house that when a project comes in to be permitted all the information regarding the permit request gets disseminated to any concerned agencies in order to provide a forum for input. The clearing house takes all the information it receives and then composes a final comment letter for the proposed project.

E. Tichenor, Reef Rescue, presented a picture taken that morning in Boca Raton, showing what he believes is a beach renourishment project in violation of its permit. Ed expressed the opinion that the contractor is able to do this without the FDEP becoming aware of it, by shutting down the project when DEP is investigating.

2nd Presentation

Camille Coley, Associate Director, FAU Southeast National Marine Renewable Energy Center, *Blue Energy: FAU's Southeast National Marine Renewable Energy Center*

The Center's Mission is to enable commercialization of marine hydrokinetic energy (MHK). It was designated as a National Renewable Energy Center by the Department of Energy (DOE) in 2010, one of three in the nation. The close proximity and potential energy capture of the Gulfstream current makes the southeast Florida coast an ideal location for this type of research.

Achieving commercially-viable MHK is a complex of technology systems, environmental systems, safety, social systems, permits and licenses; all impacting each other.

Timeline for Center Development.

2007

- FAU received \$5M Centers of Excellence award to establish new center.
- Some engineering research was initiated and preliminary infrastructure set up.
- Center management was recruited and a cross-disciplinary team assigned to advisory group.

2008

- FAU, through membership in Florida Energy Systems Consortium (FESC), was awarded \$8.75M.

- FAU brought together the US Army Corps of Engineers (USACE), Coast Guard, NOAA, and the Minerals Management Service (now the Bureau of Ocean Energy Management (BOEM)) together for the first time regarding MHK projects.
- MHK research projects at FAU were selected and initiated

2009

- FAU was awarded 1st MHK federal funding (\$1.2M)
- A long-term ocean measurement program was initiated
- MHK high school curriculum was prepared
- The FAU MHK research portfolio was filled and theme areas organized
- The Center signed the 22nd industry partnership agreement

2010

- US DOE awarded FAU with the Southeast National Marine Renewable Energy Center (SNMREC) designation
- FAU was awarded 2nd federal MHK CDP (\$2M)
- FAU hosted the 1st U.S. academia, industry, and government dialog and environmental conference
- FAU submitted the 1st lease application draft to Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE)
- “Teach the Teacher” curriculum training in 5 SE Florida counties was begun on MHK and renewable energy with over 200 participants.

2011

- SNMREC conducted the 1st sea trials with mooring and telemetry buoy (MTB) which monitored current and environmental conditions
- Baseline sea turtle aerial surveys began
- Lease addendum and final application submitted to BOEMRE (redefined to 3 blocks (each block is 3 miles x 3 miles)).
- Second year of high school curriculum training

2012

- BOEMRE issued Draft Environmental Assessment (EA) for SNMREC IP lease activities
- 40th FAU graduate student supported
- Second year of aerial sea turtle surveys conducted
- Major testing infrastructure and research platforms were in fabrication and assembly
- A series of 7 regional public forums conducted

2013

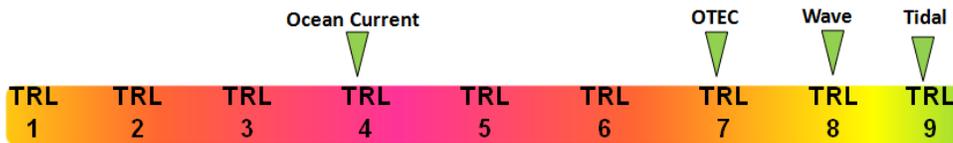
- SNMREC awarded 1st MHK National Science Foundation (NSF) grant
- BOEM Environmental Assessment (EA) with Findings of No Significant Impact (FONSI) released, DOE FONSI released, State of FL Consistency Determination issued
- SNMREC helped organize the 1st MHK international industry supported research project
- Final MTB sea trial conducted
- Research turbine 1st (in water) tow test conducted

Industry Partners - Ocean Current MHK Industry 2014

Verdant Power
 Safrema Energy
 Minesto Tidal Energy
 Solutions
 Anadarko

Orpc
 Aquantis
 Crowd Energy

Maturity of MHK compared to other, similar, technologies.

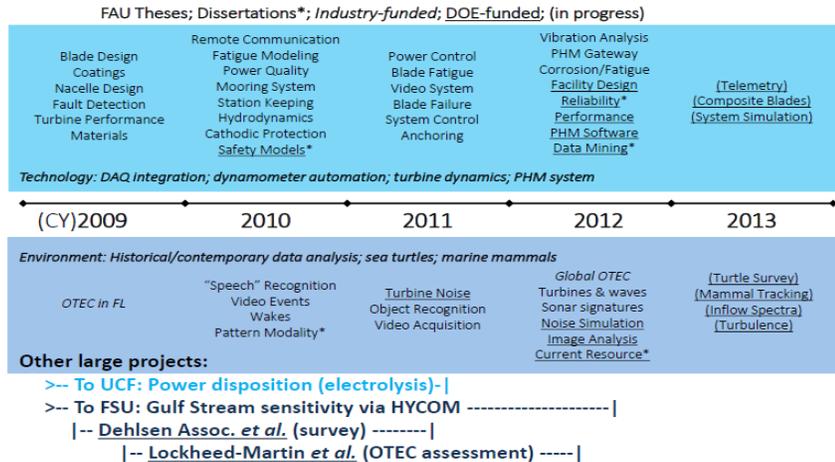


TRL- Technology Readiness Level

OTEC = Ocean Thermal Energy Conversion

The Center fulfills its mission by providing support to all companies in all phases of ocean tidal energy research and acting as a liaison between research companies, government entities, and original equipment manufacturing companies. It is also conducting its own research.

SNMREC Research Overview



The future includes plans to:

- Leverage industry support to foster research initiatives
- Diversify public research funding (NSF, NOAA, BOEM, etc.)
- Use available grant funds to complete TRL 4-6 test capabilities (2014-15)
- Develop more comprehensive workforce development/academic programs
- Begin providing regulatory assistance and guidance to industry projects
- Position the Center for sustainability and to provide greater contribution

Challenges being faced include: funding, regulatory dependencies and industry stability.

Questions and Comments:

What is the return on investment in regards to the amount of money being invested? Is the amount of the expenditures justified? *Recently the US Department of Energy estimated that 163 terawatt-hours of energy could potentially be extracted annually from the Gulf Stream between North Carolina and Florida. The entire US use is about 4 billion terawatts per year so this could translate into a \$16 billion per year industry that could be attracted.*

How does MHK compare to solar energy? *MHK provides power on a consistent basis, solar doesn't work when it's cloudy. Our biggest need for energy is in the summer when South Florida is in the rainy season.*

Is FPL contributing to this project? *Not financially.*

Is the center only researching turbine and propeller based projects. *Yes, only marine hydrokinetic energy and ocean thermal energy is being researched. There are other centers that research other types of alternative energy generation.*

Do you believe that more information regarding the environmental impact as well as hazards of MHK will be available by next year after actual ocean testing has been started? *Yes, there will a variety of cameras, sensors and other environmental monitors in place on and around the devices and the boats providing us with data.*

Where is the 3-mile block for testing located? And why do you believe it is an optimal location for this project? *Just south of Port Everglades, 13-17 miles offshore on the Miami Terrace, on sand bottom, depths from 230-300 meters. A sand bottom was needed for the mooring system. As the lease negotiations proceed, 3 small locations (1000' x 1000') will be requested within that zone in order to have 3 testing sites being run simultaneously.*

How are you planning to account/prevent the fouling of the blades? *Our testing trials are only from 8-10 hours at a time, so for us, fouling is not an issue. It will be an issue for the companies that will be conducting large scale commercial power generation that they will have to address.*

What methods of transmitting the power generated are being considered? *Cable is the most common one being considered but that is an area that still needs to be addressed. Right now, the power generated will be dissipated into the water.*

Have methods of disposal of obsolete or unrepairable material and platforms been considered? *Yes, all of the materials being considered in the construction of the MHK generators are of the same type as what artificial reefs are currently constructed of. Therefore, anchoring and abandoning obsolete materials and platforms would be the proposed method at this time.*

SEFCRI update:

Meghan Balling, FDEP. Our Florida Reefs (OFR) had kick off meetings in March 2014, one for Martin and Palm Beach counties (North Area) and one for Broward and Miami-Dade counties (South Area). The North Area meeting had 16 of 25 member groups attending and 13 members of the general public. The South Area meeting had 22 of 24 member groups present and 18 people from the general public and the press and was featured on Channel 12 News. The next scheduled meeting for the South group is Tuesday April 22 at the Nova Oceanographic Center and for the North Working Group

Monday April 28th. James Byrne of The Nature Conservancy will be speaking on coral and Curtis Bragg and Kevin Carter will be speaking on water. Starting in May, there will be standing meeting dates on the 3rd and 4th Wednesday of every month for the south and north working groups.

Waste tire removal update:

Dr. Pat Quinn, Broward County NRPMD. Approximately 1-2 million tires were deposited in the ocean in the 1980's to form an artificial reef. This was not a successful program, the bindings for the tires broke and tires are bouncing around on the ocean floor and hitting the reef, which is not good for the corals. A field of about 700,000 tires is 1 ½ miles offshore of Fort Lauderdale. The US military removed around 72,000 tires between 2007-2009. An application to have the military resume removal in 2015 has been submitted.

The FDEP has surplus funding left from previous tire removal project and should start removing tires using a private contractor in June 2014 till September 2014 and then again June through September 2015.

Question: What about removing the tires in the shallower reef areas? Working in shallow water doesn't give them the military the dive training they are seeking. The private local contractor that is scheduled to start in June might be a possibility for the shallow areas.

What about getting money from the State from the tire disposal fee monies we all pay when we buy tires? That tax money is not only used for tire disposal, it is used for a number of different projects by the State.

Draft list of recommendations from presenters: Ken Banks, Broward County NRPMD This is a running list of recommendations that have been brought forward by the presenters and task force members. If you have made a recommendation and it is not on the list, please let Ken Banks know. There has been no discussion on advancing any of the recommendations, which will come later in the process. This will be a running list that will be updated and presented at each meeting.

New business: none

Public Comment: Dan Clark, Cry of the Water

Wants the Task Force to address:

- Beach projects: Silt and sediment (from beach projects) are important to water quality.
- Tire removal (from the sea floor)

- Create a beach management plan and get it implemented.

Next scheduled meeting is May 8, 2014. It was agreed that the meeting site will be NSU Oceanographic Center, 8000 North Ocean Drive, Dania Beach, FL 33004. The topic will be *SCUBA diver impacts to coral reefs*.

Meeting adjourned 3:31 PM.