



## **Southeast Florida Coral Reef Initiative (SEFCRI) Team Meeting**

Thursday, June 6<sup>th</sup>, 2019

Fern Forest Nature Center, 201 S Lyons Rd, Coconut Creek, FL 33063

### **Attendees:**

DEP Staff: Kristi Kerrigan, Nicole D'Antonio, Evan Hovey, Iris Krehahn, Maurizio Martinelli, Francisco Pagan, Alycia Shatters, Mollie Sinnott, Joanna Walczak, Shelby Wedelich

SEFCRI Team Members: Ken Banks, Jennifer Baez, Barret Barry, Omar Beceiro, Patrick Bennett, Jim Bohnsack, William (Zach) Boudreau, Henry Briceno, Stephanie Clark, Ron Coddington, Jennifer Derby, Michael Dixon, Laura Eldredge, Joana Figueiredo, Kathy Fitzpatrick, Lawrence Glenn, DD Halpern, Christie Hurley, Jocelyn Karazsia, Cristin Krasco, Katie Lizza, Erin McDevitt, Caroline McLaughlin, Jena McNeal, Erik Neugaard, Lisa Miceli, Nick Morrell, Nikole Ordway, Shana Phelan, April Price, Jeff Schmidt, Frank Schmidt, Scott Sheckman, Angela Smith, Mason Smith, Sara Thanner, Ed Tichenor, Brian Walker, Ana Zangroniz, Shane Zigler

### SEFCRI Team Alternates:

Dan Clark, Melany Larenas, Scott Cravens, Steve Blackburn, Nelson Mendoza, Rachel Zuercher, Jeff Beal

Public Observers: Devin Tibor, Larry Teich, Stacy Schulman, Fara Ilami, Susana Hervas, Kai Lorena, Kurt Reynertson, Jim Ritterhoff, Leslie Bertolotti, Rod Braun, Alyssa Jones Wood, David Vance, Kirk Kilfoyle

Attendees without Written Record: Tyson Matthews, Wilson Mendoza, Trevor Bellandi, Katie Bose, Erick Ault, Rob Brumbaugh

**8:30 – 9:00 AM      Registration**

**9:00 – 9:30 AM      Welcome, Meeting Overview, and Introductions**

Kristi Kerrigan, moderator, opens the meeting, greets the SEFCRI Team, introduces staff members and reminders about the last Team meeting. Kristi K explains her role as a facilitator. Thanks Broward County for providing Fern Forest venue and for patience with date changes, and thanks Friends of Our Florida Reefs (FOFR) for providing refreshments and snacks.

Kristi K goes through the agenda, housekeeping, guidelines for discussion, and that is the meeting is being recorded by The Florida Channel. If the primary is present, the alternate is an

observer. If primary absent, alternate can actively participate. Primaries, alternates, and public observers can provide public comment, only the written comments will be included in the minutes.

Francisco Pagan – Welcome! I want to start with thank you's to all my staff for getting this meeting together. I want to thank Vice-Chairs for work during this year and taking info back to stakeholders. Thank you SEFCRI. We took a pause over the last year to focus on the disease outbreak. Thank you for your contributions and patience. It has been a productive and important year with many changing elements in the reef. SEFCRI has worked for years now recommending different management actions for the SE Florida reef: NGOs, agencies, private business, fishing, diving, and others representing reef interest of SE FL. You are all the stakeholders representing the region. Our program is now within the Office of Resilience and Coastal Protection (RCP). We have new staff members: Evan, Iris, and Emilie. I want to thank the current Vice-Chairs: Dan Kipnis, Shana Phelan, Henry Briceno, Ron Coddington, DD Halpern, and Angela Smith.

New members include Omar Briceno, Laura Eldredge, Zach Boudreau, Kaitlyn Lizza, Christie Hurley, and four open seats. I'd like to ask you all to introduce yourselves: please state your name, affiliation, and stakeholder group. Shelby Wedelich records attendance for the minutes.

Brian Walker – The TAC met the beginning of April to focus on land-based sources of pollution (LBSP) issues, coral disease, and sunscreen impacts. You'll hear similar talks to those at the meeting today. One of the big things with the TAC meeting this time was the Florida Department of Environmental Protection's Division of Environmental Assessment and Restoration (FDEP DEAR) group attended and gave presentations on their management decisions process overview. And that's a key partner in anything moving forward with LBSP, so it's good to engage that group and start having that interaction between them and the TAC in terms of understanding how to move forward on any issues.

We discussed current LBSP reduction, including monthly WQ surveys by David Whitall. We also talked about the outfall project, looking at antibiotic resistant (ABR) genes with Dale Griffin, especially the ABR gradient from the Hollywood Outfall. David Bean talked about green infrastructure. John Fauth gave an update on sunscreen. We heard updates on broader scope of coral disease efforts and updates from reef monitoring groups, who gave summaries of data understanding effects of coral disease. If there are any other issues you think of, please engage me to bring them to the TAC.

### **9:30 – 10:00 AM Executive Order: Protecting Florida Together and Southeast Florida Coral Reef Ecosystem Conservation Area (ECA)**

Joanna Walczak – Good morning! I've been here almost as long as SEFCRI, I started as MICCI Coordinator and I am actually now over the program. I oversee many programs in SE FL, from Martin County all the way down to the Dry Tortugas, excluding Biscayne National Park. So I have the CRCP, of which this group is a part. I also am the co-manager of the FKNMS, we uphold DEP's agreements with the National Wildlife Refuge complex of the sanctuary as well. I

also have some phenomenal Aquatic Preserves under me – Biscayne Bay Aquatic Preserves is represented here today. We also have the Florida Keys Aquatic Preserves, Lignumvitae Key and Coupon Bight, and we even make it out to the Dry Tortugas. As SE Regional Administrator, I serve as the conduit of information from national to state coral reef issues on state submerged lands, as well as leading management of all corals in Florida. We took a hiatus from SEFCRI, our team was very busy, focusing on disease response.

SEFCRI was formed to bring awareness to the northern third of reef tract and get information to manage that area. On July 1<sup>st</sup> the Southeast Florida Coral Ecosystem Conservation Area, or Coral ECA, was established. This includes state waters only and is different from Our Florida Reefs (OFR), but this is a legislative boundary passed by state. We will manage them the same way we have been. This is a first step to county and state representatives hearing from stakeholder recommendations. There is no legal authority or teeth yet, just a defined area. This is now the Florida Coral ECA, that is our new brand, talk to your stakeholders to build this name and educate about conserving this area. While this law was placed in DEP purview, we have no rulemaking authority. Legislature implements a law, but my agency implements a rule. These are separate public processes, and no statutory authority exists for this area yet. We have a legal intern tasked with determining existing authority and rules for this area, as well as what is missing. We're starting with DEP as submerged state lands managers, and FWC to manage fish. So, what can we do better? What do we need to change? We need a draft management plan, really a strategic plan. We have funding for this, but no teeth without rules. Right now, our governor and secretary are so pro-environment, we can give existing recommendations to build on what we already have based on OFR, Local Action Strategies (LAS), etc. This is a step forward for the agency and governor to provide better management.

Dan Clark – So we're calling it Coral Ecosystem Conservation Area?

Joanna W – The original acronym was the SEFLCRECA, we're steering away from that and calling it the Coral ECA. It is very important to include coral in the title.

Dan C – And what's the deal with RCP?

Joanna W – At first we were Office of Coastal and Aquatic Managed Areas (CAMA), then Florida Coastal Office (FCO), and now we are called the Office of Resilience and Coastal Protection (RCP), to emphasize the need to protect natural and built infrastructure.

As you may know, Ron DeSantis, our new governor, introduced his Bold Vision statements for the environment in FL. We have copies with roadmap for strategies. The Governor has invested money into reef resources to increase resilience. Some has gone to coastal communities to prepare for sea level rise, but most of the money has gone to the coral realm. Four million dollars out of six million dollars has been granted to address needs for coral resources, only one million (dollars) was allocated to coral previously so this is big.

We are working with federal agencies for funding as well, i.e. FEMA has recognized the value of natural infrastructure in storm protection and is considering payouts to help restore reefs after storm events. TNC and USGS conducted a study to value shoreline protection of reefs, and our

Florida reef tract was valued at millions of dollars in flood reduction and protection, in terms of both day-to-day tidal inundation and severe storms. That protection value, plus tourism value, biomedical prospects, among others - we have an economic engine. At the national level, we all know corals are globally threatened. We are looking at ways to help corals evolve to rapidly changing environment, be more action oriented, try things, fail fast and move on. Be bold - in 50 years, could we say that we did all we could do? The National Academy of Science (NAS) is looking at all the ways we can improve. We will include their report. NAS expertise focus is now on coral reefs as their highest priority. NAS has designed a competition to scale up reef restoration for ecosystem service and functions. It is dire for our economy to save this, we are asking industry minds to present on this. Also presenting on coral insurance, can we mechanize money for restoration post-storm as protection of shore protection asset?

Maurizio will give an update on the disease outbreak: it is challenging, large scale, and spreading. We need to focus on those efforts. Your CRCP staff are responding in addition to other tasks, we are giving the team more bandwidth, and looking at adapting the SEFCRI model for ways to get input. When we went through previous processes, we tried to be aware of today's issues. We re-evaluated all the projects and we'll take actions on those. We want to ensure that we remain that conduit of information, so please let us know your needs.

Dan C – We appreciate \$4 million for coral stuff, but if this was in oranges or sugar we'd get way more money. This is great but not enough for how valuable these resources are. If this was agriculture we'd be getting more support, but we have something more valuable here and we need to push our officials for more money to match.

Joanna W – I'm not in a position to say that.

Dan C – I know that, but others can, and they should.

Joanna W – Noted, thank you.

### **10:00 - 10:30 AM Coral Disease Outbreak Update**

Maurizio M – I will be updating you on the Stony Coral Tissue Loss Disease, that's the new name instead of unknown disease. We still can't ID the pathogen, but the new name reflects the signs we see in the field. In 2017 the outbreak extent was to the middle keys. In 2019 the disease reached Key West with 95% tract covered. The same disease signs have been observed in Jamaica, Mexico, US Virgin Islands, potentially in the Dominican Republic and Turks and Caicos. Some of these reports are anecdotal, but it is no longer just a Florida problem.

SECREMP surveys show the year and disease prevalence. There is some disease at background levels, but then it ramped up 2013 with a peak in 2016, disease levels have reduced but not gone away to background levels yet. Five years after the initial sighting in Miami-Dade, we can still see active infections, which is unlike other disease outbreaks in the past. Regional live tissue recorded in surveys have also dropped steeply, from 2014 – 2018 there was a 40% reduction in live tissue areas of corals, including some species not impacted by the disease. Live tissue area in species that are especially susceptible to the disease, such as *Meandrina meandrites* and

*Dichocoenia stokesii*, experienced very dramatic declines. This severely limits reproduction since corals are too few and far between for their gametes to meet and result in successful spawning and recruitment. *Montastrea cavernosa* live tissue area has also declined, but some recovery has been noted despite the presence of active infections. *Porites astreoides*, which was unaffected by disease, experienced a slight increase in live tissue area.

We received \$2.5 million in state funding for coral disease intervention and water quality monitoring. FWC, DEP, EPA and NOAA also supported efforts with research grants, position funding, and work, NFWF and NSF also supported coral rescue effort. There will likely be a bump in funding next fiscal year, according to our priorities which I will share later. There are over 60 response partners with DEP, FWC, NPS, and NOAA as leads, including counties, academia, NGOs, agencies, etc.

The response structure includes an Executive Coordination Team (ECT). As disease coordinator, I help all the teams work towards the common goals of the ECT, then the Disease Advisory Committee (DAC) takes input from the teams for open discussion. There are 9 teams that cross-collaborate and pollinate, with some people on multiple teams. The Management team includes lead agencies plus counties. They track funding, provide high level recommendations for allocation, review material, and provide place-based management perspective for other teams. The Reconnaissance and Intervention team monitors the leading edge of the disease front, notes where the disease is and isn't. Brian Walker's lab is taking charge up here by monitoring and treating corals over 2 m in diameter in the region. Two treatments are applied for intervention on colonies: (1) chlorine epoxy on disease lesion plus a fire break around the lesion and (2) antibiotic leave-in paste for coral and amoxicillin treatments. There have been varied results with this treatment. Showing treatment 1 and 2, but they are lesion level only and don't prevent reinfection on other colonies. Need to scale up to colony, reef, and region level treatment. Force Blue has assisted with 1000 corals in the Keys. The Coral Rescue team leads the effort to rescue priority species of non-infected corals for future restoration efforts. We need at least 50 genetically distinct individuals, 200 colonies of species, and 3000 total corals. We're starting to tap into national network for effort and need to propagate and restore. Collections have occurred all the way out to the Marquesas, we have 800 colonies so far - saving lots of live tissue over many types of species. This slide shows aquaria all over nation with Aquarium and Zoological Association (AZA) accreditation that have space and expertise to hold corals. The Restoration Trials team coordinates reintroduction of corals into system, and the team is also working on understanding the impacts of reintroduction. The Research and Epidemiology team conducts research with targets for management, treatments, and it has been an incredible collaboration to increase lab capacity. Research also includes in-situ monitoring of corals through time – tagged colonies to picture disease prevalence through time. The wax and wane of disease is tracked seasonally – targeting information to help monitoring and intervention and to track disease patterns in new area. Over time, the disease has gotten more virulent in Keys. The Regulatory team permits all actions and ensures mechanisms for mitigation and other rule aids. The Data Management team shares data among partners and the general public, as well as analyzing and synthesizing data. The Communication and Outreach team shares data to a general audience and allow stakeholders to participate in efforts. The Caribbean Cooperation team establishes

communication between Florida and the Caribbean to share success and failures and learn from each other. Priorities moving forward include whole colony treatment, finding space for propagation, collection and preservation of genetic material in the Coral ECA, and addressing environmental conditions influencing disease. Questions?

Dan C – On a call, there was a discussion about how disease spread in the US Virgin Islands, that it is showing up near anchorages offshore coming into port. Are we looking into if ballast water and ships are spreading the disease? I heard there's stuff like this in Jamaica and Mexico, wondering if there's a link?

Maurizio M – Yes. We are noticing trends with disease and shipping activity, so we are considering ballast water. The spread of disease doesn't match oceanographic currents, instead we're noticing it pop up in seemingly random places. EPA is investigating ballast water concerns to see if it is a vector and if so, how to manage it in an effective way.

Dan C – Brian, have you been out lately in this warm water? What are you seeing now?

Brian W – Yes, we are out there experimenting on the difference between epoxy and antibiotic treatments in *Montastrea cavernosa* specifically because that has been a problem child in terms of treating the corals. My initial impression is that the end of April was very rainy, and after all that there was an uptick in the way disease moves across coral colonies, the disease has been spreading across previously infected colonies are faster and some colonies are getting new lesions, this seems to be the case as well with *Orbicella* species. There are no new infected colonies, but infected corals have needed more treatment after rainy season. Into August and September, we would expect more treatments. May has been relatively dry, but we expect more treatments in the summer.

Henry Briceno – Have there been any other changes in water quality in April?

Brian W – The water has been clear with a west wind some days, but the onset of April was rainy, we've seen green water and turbidity lately, turbidity especially has increased with the wind. DEP is funding monthly water quality monitoring for more quantitative answers. They are collecting PAR and other parameters, but the data takes a long time to process and we can't look at relationship yet.

Henry B – We are deploying instruments now, we can talk after.

Cristin Krasco – How does physical removal of coral colonies impact wild spawning? Wouldn't that hurt natural spawning? Or are they so far gone that it's not likely happening anyway?

Maurizio M – Physical removal of coral colonies is only occurring in densely populated areas outside of disease margins. Within the Coral ECA, we are not collecting whole colonies, so they can still reproduce. It could be luck, or it could be that they are genetically suited to combat the disease. Within the Coral ECA, we are more likely to collect spawn and reproduce in lab.

Joana Figueiredo – Very often captive corals still spawn in lab when collection is well done, it shouldn't impact others in wild. All are reproductive, but so far in current conditions gametes can't meet because they are so far apart, and larvae have issues settling and surviving in macro-

algae and starting a new colony.

Maurizio M – The Coral rescue team had their first captive *Mycetophyllia* from the Lower Keys spawn and recruit in the lab.

Joana F – That’s happened with *Dendrogyra cylindrus* too.

Dan C – It takes us forever to get data back for water quality monitoring and coral counts. We haven’t seen stuff from last year, have failed on that in the past with water quality data and coral counts, and need to move more quickly.

Brian W – This response engages hundreds of professionals, we are getting information to the folks needed to make decisions on a regular basis, but it’s not always public in report because that takes time. We have weekly analysis and are responding to what we see in our treatments. For example, we are no longer treating *Montastrea cavernosa* with epoxy at all, we are strictly doing amoxicillin because we know there’s only a 20% success on that epoxy.

Dan C – So is this a water quality issue?

Brian W – The water quality is even worse with all the time in the lab.

Dan C - That should only take a week or two to communicate water quality results in the lab, not years.

Mike Dixon – Are there any concurrent water sampling efforts?

Maurizio M – Yes, but it’s not specific to the disease response. It is a regional water quality monitoring effort that we’ll hear more about later.

Mike D – So not at the sites overlapping with disease work? Is it part of the protocol to collect disease information?

Maurizio M – We’re seeing the coral disease outbreak throughout the region. They are two separate projects, with two different protocols, but there may be overlap in some sites.

Ron Coddington – When the Rescue team enters on a certain patch reef, we only take a small percentage of the species that are there, there are size limits on what you can take. We are leaving large viable corals behind. It goes to show that corals in devastated areas can survive, might be worth the risk to harvest some.

Maurizio M – Some of these larger colonies have been here for 300 years, they aren’t just surviving this disease, they survived so many other things that have happened in the past.

Brian W – There are large ones out there but we’re losing them.

Nick M – What is the success rate of the amoxicillin treatment?

Maurizio M – It varies. These are lesion level treatments, so you can look at “is it treating the lesion?” but that doesn’t answer the question “is it saving the coral?”. It depends on how you define success and over what period of time? Sometimes you can have successful treatment of a

lesion but have another one appears on the same colony. In general, we see 70-80% recovery over 2-3 months, then a dip again. But sometimes you can see variation by species, by location. Think of this treatment as a band-aid, just trying to preserve live tissue now so that we can apply whole colony treatments for the long term.

Nick M – Amoxicillin is a common treatment, and it is critical to take the whole course. How many treatments are applied and how frequent are they?

Maurizio M – The pharmaceutical design is to release medication over 3 days consistently for a 3-day dose. Brian Walker has more expertise, we're out of time but you could ask him for more details later.

**10:30 – 10:45 AM Break** (*refreshments provided by Friends of Our Florida Reefs*)

**10:45 – 11:45 PM Current CRCP & SEFCRI Project Updates**

AA/Reef Ambassador Program – Kristi Kerrigan, RR

Kristi K – AA 35 is the education trunks, there are 9 rotating with lesson plans, 4 trunks elementary, 5 middle school. Since last school year we have visited 50 schools with the trunks. A new PSA was produced for FL, 30 seconds on the importance of reefs. SEFCRI represented at 8 community events, interacting with 2,000 stakeholders, thanks to FOFR for volunteers. In the Reef ambassador program, counties help residents and visitors become coral champions through boater, diver, fishers, and visitor tips to conserve coral reef. All the information about coral champions is on the website. DEP's marketing department has centralized. There have been changes to social media access to consolidate DEP accounts. We encourage SEFCRI members to post and share to their own accounts. Earth Month classes happened in April.

SEAFAN, BleachWatch, Reef Cleanups – Iris Krehahn, AC

Iris K – Good morning, I'm the Associate coordinator. I'll be talking about SEAFAN, BleachWatch, and Marine Debris clean ups. For SEAFAN, anybody from the general public can report disturbances, this helps management with early detection of threats. There's online mobile reporting for 13 types of threats. We got 44 reports from 9 categories, mainly coral disease and marine debris, in 2018. April and May through October had the most reports. In 2019, received 18 reports so far, mainly for coral disease and marine debris. These are monthly trends, there was an increase in May.

Now looking at BleachWatch Data, we focus specifically on bleaching and disease reports. You need to take a 2-hour course to report through the BleachWatch Observer Network and it increases our confidence in these reports over general SEAFAN reports. In 2018 we received 33 reports of bleaching and 37 for no bleaching. We received 28 disease and 39 no disease reports in 2018. It's important to know where disease and bleaching is and where it is not. The overall severity 2018, was mainly partial bleaching, paling and no bleaching. In 2019 so far, there are 4

reports of bleaching, 6 of no bleaching, 5 of disease and 5 with no disease. Severity levels of reports included 2 partial bleaching, 3 paling, and 5 reports of no bleaching.

Last year there were two BleachWatch instructor trainings conducted at Broward and Palm Beach counties. The goal is to train trainers in the four-county region. There is a class session one day and an in-water session one day – we trained 18 new instructors. This effort was funded by FOFR and the Munson Foundation. Eleven dive charters participate in annual clean ups. For marine debris clean ups, 141 total participants picked up 238 lbs. of trash off the reef. Items picked up were mostly fishing debris and general trash: plastic, wood, and metal. So far, the same charters are confirmed for 2019 clean ups with more coming soon. BleachWatch classes are happening during this summer in the Southeast Florida region.

#### CRPA, Marine Events, Vessel Impact Tracking – Mollie Sinnott, RIPR

Mollie Sinnott – Hello, my name is Mollie Sinnott and I am the Reef Injury Prevention and Response (RIPR) Coordinator. The Coral Reef Protection Act (CRPA) implemented July 2009 made it illegal to damage coral reef, mainly focusing on direct unplanned impacts. My program pursues enforcement cases; examples include crushed coral, sheared sponges, rubble berms from groundings, and impacts from anchoring on reef and cable drags. Marine Events are also linked to the CRPA. All offshore vessels at events could be on reef, and it is difficult to enforce CRPA at events that attract 100s-1000s of vessels.

For the Air Shows we've worked with USCG and partners (FAA, FWC, NOAA, FDEP, counties, cities, L&E, organizers) to implement safety zones and expand environmental issues into safety zone planning. For example, the Miami Beach Air Show has a no anchor-zone safety box. We've expanded the zone to push spectators off known coral reef habitat. The boundary goes to South Beach from Government Cut, with local law enforcement keeping vessels east of boundary line, this encourages spectators to anchor in sand. In Miami Beach we've had success with boaters anchoring in sand.

The Fort Lauderdale Air Show is more difficult, it has been going on for the past decade. In 2016 we implemented a safety zone with coral input. The zone was started and designed in 2016, reevaluated in 2017 to reshape box. This shape brings spectators closer, but also extends out to protect more reef. The safety zone goes from Port Everglades to 6 miles north, but is limited to shallower water. The FAA zone designated landing, and the safety box keeps spectators out. The inlet reference keeps people out of south, and having the north marker helps enforcement. There is still reef in this area, but the amount of sand present makes this significantly better. Thousands of vessels still anchor offshore, but this design still minimizes overall damage. This aerial image shows the success of box. Vessels have stayed out of red box, it can be really effective at preventing damage, especially after extending further south and north since 2016. The extension incorporates known nurseries and Acropora patches. There have been RIPR site checks after marine events, but it is difficult to tie impact to vessel. So, we continue with safety zone to take that pressure off. We're requesting new aerials.

Touching on Beach events (Tortuga, Rip Tide), they are smaller events but still have lots of impact. It is very difficult to enforce the CRPA despite collaborating with enforcement and other partners. So our focus has been on outreach, we met with the city of Fort Lauderdale to discuss this and it helps to have outreach. Some event organizers have even agreed to have outreach, stating not to anchor on reef to watch the show. However, if the show advertises no offshore anchoring, there is the catch-22 that it plants the idea of the possibility of anchoring offshore to see the show. Some outreach has helped, there has been relatively minimal damage lately, but we have been finding more marine debris impacts from event. So these are my efforts, does anybody have any questions?

Jim Bohnsack – What do we tell the public about anchoring in outreach for the air show?

Mollie S – We tell people about the boundary of the safety box and encourage them to anchor east of boundary.

Jim B – We should tell people that light bottom means sand and it is okay to anchor there.

Mollie S – DEP and USCG auxiliary will distribute that information when possible. There are occasional problems with staff capacity and since USCG auxiliary is composed of volunteers, sometimes in bad weather they are unreliable. The FL Marine Patrol is also out there, advising people to stay out of the safety zone.

Brian W – So I can say that this effort started in 2006. We came up with many designs and have determined that simple is best. It can be a zoo out there, an estimate of 1500 boats offshore. With that many out there, it's not practical to ask boaters to not anchor on reef, plus rafting and anchoring pose additional safety concerns. We've tried lots of different things, but this is what works.

Mollie S – We also do have messages at a variety of events that go out to boaters at the ramp to educate them.

Brian W – The cluster of boats on north and south sides of the boundary all anchoring on reef is unavoidable.

Dan C – How long after marine events do you monitor and do site checks?

Mollie S – We try to monitor the area within 2 weeks of the event. We have 2 teams of 2 divers each.

Dan C – Well I've got roughly 1 million tires I want to report off Fort Lauderdale. Divers should record tires out on the reef. Do we tell divers to report that? Because they are migrating on reef. If we're not, that's a big gap in SEAFAN.

Lisa Miceli – Could we coordinate reef clean ups a day or two after the events?

Mollie S – Our primary task is to survey the area. We pick up what we can while we're out there, but we could coordinate with Iris and Kristi.

Lisa – I'll help, just need a boat.

Mollie S – Most of what we observe out there are anchors cut, cinderblock with chain and rope. It seems to be a boater education issue, they need to learn how to safely anchor within a low relief area.

MICCI/CRCP 9: Turbidity – Shelby Wedelich, MICCI

Shelby Wedelich – Hello, my name is Shelby Wedelich and I am the Maritime Industry and Coastal Construction Impacts (MICCI) Coordinator. MICCI 28A and B were about turbidity monitoring and measurement, suspension and deposition impacts, and improving monitoring and practices. We are currently working on CRCP 9, or the turbidity translator- this looks at turbidity in NTUs, total suspended solids (TSS), and photosynthetically active radiation (PAR), in order to establish the relationships between light, turbidity, and sediments impacting the reef resources. We are looking at representative construction projects in 4 counties in the Coral ECA. We've identified one project in Martin County at Jupiter Island and measurements are complete. Shout out to Kathy Fitzpatrick, Callaway, ATM, and Jupiter Island for their help with this project. We measured turbidity, PAR, and TSS at the surface and mid-depth at high and low tide during and after construction. Preliminary results indicate a general trend that increase in turbidity has a general increase in TSS. As turbidity goes up, PAR goes down. The intersection between light availability, suspended particles, and turbidity could be informative. Once again, these are only preliminary results, we need more data. We are seeking measurements from 3 more projects, completed by June 30, 2020.

DD Halpern- What was the Jupiter Island project?

Shelby W- It was a beach nourishment project. Kathy F can speak to this since it was her county.

Kathy F – It was a sand bypassing project. The project started 6/7miles south of inlet. One question is, are you going to track sediment characteristics in these projects? Part of the sand is double handled, so the amount of fines are different. That project was different from other projects in the region, so that's why it's important to include more projects in the region.

Shelby W – So we currently aren't collecting sediment samples for this effort, but it would be important to consider for future efforts and that's why we want a regional scale. You're right, that project is different from other types of projects in the region, so the more projects we have over the region, the more focus we have on different types of native materials is critical. We'll be touching on that, but focus on different materials is a great idea for a future effort.

Dan C- Have you picked the 3 new projects?

Shelby W- We're still in the process for selection

Dan C - After the dredge material gets put on beaches, it gets crunched more and more fine over time as the waves get to it. Do you go out after the initial project and remeasure?

Kathy F - Most permits require us to study that after the fact with the sediment characteristics.

Shelby W – So this effort currently only looks at the sediments suspended in the water, not what is deposited however if we have the data through the permits I don't see why we can't use this either now or in future efforts.

Henry B – The PAR vs turbidity data isn't definitive. That line there could go anywhere.

Shelby W - Right, these are preliminary results and I do have a team in another division looking at this data as well.

Henry B - You only have one site, one experiment. You can't expect to have some sense of coherency from only one experiment.

Shelby W – Exactly, this is Phase 1 of the project.

Henry B – Are you taking measurements of current direction when you record that data? Are you noting wind speed and depth?

Henry B – So, I don't like your data. Besides that, are you taking measurements of current direction, do you have those measurements?

Shelby W – Yes, so they are recording tide, current direction, other conditions at the site as well as the location in the reports that we get and that's what we're analyzing.

Henry B – I recommend you do a very serious analysis of your turbidity as a function of current direction, because you usually have very significant differences depending on where the water is coming from.

Shelby W – I think we could incorporate current variability. Thank you.

#### Water Quality Monitoring Project and Watershed Management Plan – Alycia Shatters, LBSP

I'm going to start with watershed scale planning for reduction of land-based sources of pollution (LBSP) in South Florida. Various pollutants are affecting FL reefs, coming from different sources. Some of these sources are able to be managed. I'll give a quick overview of process for how watershed management plan for Boynton was created. The watershed was delineated into 9 inlet contributing areas (ICAs) with South Florida Water Management District (SFWMD). We prioritized 9 ICAs and chose Boynton Inlet contributing area as the location for the watershed management plan project. We worked with consulting partners and Boynton partners to further breakdown areas into sub-watersheds. We defined land-use coefficients and discussed different best management projects to reduce LBSP. These are our recommendations- 1. Reduction of fertilizer use to be most cost-effective. 2. Next most cost-effective would be conversion from septic to sewer. 3. Stormwaters management would produce order of magnitude less effective reduction in LBSP. This is a very collaborative partnership of local, state, and federal agencies that don't always work with coral reef data. The current plan and recommendations are being used by partners, including DEP.

Now we will switch gears to talk about the water quality monitoring program. In 2015, DEP and NOAA identified data gaps in water quality issues and used that to identify a new water

monitoring plan. Sampling started in 2016 and expanded in 2017. Currently we've collected over 2,000 samples and 15,000 data points per year. This includes samples from inlet, reef, and outfalls for each site, monitoring several analytes. The data tells us: 1. We can see the influence of inlets and outfalls. 2. We can see the difference between ICAs themselves. This could be due to land use factors (easier to manage) or physical oceanographic factors (trickier to manage). Maybe we could compare to local or existing datasets. 3. We can use these data to evaluate water quality status in South Florida. 4. We can see the change over time- large swings in analytes at reef sites over time. Reef systems are not static. Regular sampling is important to understand what the analytes are doing over time on the reefs. We can compare these regional data to local data. Potential uses of the data include comparison with disease data to look for correlations as well as biological data. Field sampling will continue this year for all 9 inlets. Early 2020 is our publication goal. Sampling framework is in place, we can potentially add other relevant analytes as things come up.

Ron C- With Callaway, we're looking at all these analytes. We do between 30-60 inspections underwater. One of the most common reason for checks is concrete deterioration and metal corrosion due to chemical concentration of the water. There are 3 engineering companies that do these inspections. Can something like that be used?

Allie S- That can be something as simple as taking this data and comparing it to local data sets

Dan C - This has been a #1 priority for the team for a long time, so I'm happy to see this project is finally happening.

Kristi K- Next we'll be talking about some of the projects coming up this new fiscal year, July 1.

## **11:45 – 12:05 PM    Upcoming CRCP & SEFCRI Projects**

### Upcoming CRCP Projects - *Francisco Pagan, Manager*

Francisco P - Upcoming new CRCP SEFCRI projects. Work on disease response is ongoing. Next projects are more focused on disease and water quality, which didn't require a project team. This will include coral colony and sediment microbial analysis, to see how can the microbial community in and around corals affect coral health? We will continue to support watershed management plans and local projects to help reduce LBSP around Boynton. We will provide support to land-based and sea-based nurseries of corals for restoration. We're also exploring data needs for fisheries management, as well as coordination of a reef management plan for Coral ECA. Projects that have been ongoing: SECREMP has over 15 years collecting data about changes in benthic community. SEAFAN also has continued support. The mooring buoy program has continued support. Teacher Trunks will continue to have support. Continued support for TAC. We received positive feedback on regulatory field reference guides, we'll be updating and printing new copies for regulatory district.

FDOU 52: Data Needs for Fisheries Management – Mason Smith, FWC

Erick Ault- want to acknowledge team effort. It's been a while since we last met- at the last meeting, this project was put forward. The goal is to find gaps in fisheries data with support from stakeholders. Firstly, we need stakeholders to define how they want fisheries to be managed. Can use to request regional management approach from FWC. Project is in infancy stage, with FWC leadership we have established partnership with UF lab. We are currently in situational analysis. Through stakeholder interviews, we have begun to find out what processes will be the best strategy to go forward. It can be a combination of factors, not just one. The desired outcome is an informative tool to take data and use it on the management side to help guide management and research strategies. It could be used to help prioritize projects and what/where they will be.

Nikole H- Do you ever use data from citizen science groups?

Erick A- This is not something they usually do. For some of underwater fisheries surveys they might compare the data. It could be opportunity to engage more in that area.

Mike Dixon- So you guys are right now in the survey stage?

Erick A- I believe so, I defer to Kai on that one.

Kai Lorena – We are in the survey stage in the broadest sense, by conducting interviews with stakeholders.

Brian W- We know fishing habits are different in the Northern and Southern part of the Coral ECA. Are you considering spatial aspects of management or are you using a total Coral ECA approach?

Erick A - We're definitely open to all options, but we're waiting to see where the process leads them to.

Brian Walker- Are you including pelagic species?

Erick A - We're primarily looking at fish that use coral as main habitat.

Francisco P- Thank you Mason and Erick for presentation. This is one of the LAS that you voted on quite recently and we've been able to start working on this as a project very quickly.

Cristin K - If we signed up for another project team at the last meeting, will the coordinators be reaching out to us to tell us about the other LAS that haven't been specifically mentioned?

Francisco P- Coordinators hadn't been reaching out to people on other projects because we've been focusing on coral disease. We're starting to engage all those project teams again, and coordinators will reach out to you. The level of engagement will be higher than the last year we had.

## 12:05 – 12:30 PM Vice-Chair Elections and Results

Kristi K- Do we have a quorum today? Yes. We will do some voting. All primaries please stand, as well as alternates standing in place of primaries. Everybody standing will vote. Public observers and others who are sitting, please do not vote. All of the Vice-Chairs from the last 2 years please stand to be thanked and appreciated. Accomplishments over last 2 years include developing new LAS, updating language to charter, reviewing several new member applications, and representing your stakeholder group. The roles and responsibilities of Vice-Chairs include participating in monthly conference calls, reviewing member applications, representing stakeholders, taking leadership roles on LAS projects, helping to fill vacant team seats, and being the conduit of information between stakeholders, the SEFCRI Chair, and the SEFCRI body. There is only 1 nominee for each position, so campaigning optional. There are 43 members present, quorum of 32+ people needed to vote in. Each nominee will have a moment to say a few words:

Pat Bennett (Fishing) - I'll do my best

Shana Phelan (Diving) - I've been a member of SEFCRI for 6 years, I am happy to continue

Joana Figueiredo (Academic) - Hello. I work at NOVA, and I have worked with corals for 10 years. My area of focus is coral larval and sexual reproduction, and I am also interested in sedimentation effects.

Ron Coddington (Private Business) - I live, work, and play in the Coral ECA. If selected I want to reach out more to private business owners over next 2 years

DD Halpern (Other) – I hope to bring other stakeholder groups together since they come from different backgrounds.

Angela Smith (NGO) - I run an NGO, Shark Team One. I want more chances to meet with and involve everyone since last group didn't meet often.

Jena McNeal (Local Agency) - This is one of the few roles I haven't had at SEFCRI, I'm looking forward to trying it.

Mason Smith (State Agency) - We haven't met on SEFCRI level- looking forward to more communication.

Jennifer Derby (Federal Agency) - Hello, I've been involved with reef protection in Keys. I'm in a relatively new role in EPA Enforcement and Compliance with Clean Water Act.

Francisco P - For protocol, I need to ask the stakeholders if there are any new nominations: (1) Fishing: None. (2) Diving: None . (3) Academia: None . (4) Private Business: None . (5) Other: None . (6) NGO: None . (7) Local: None . (8) State: None . (9) Federal: None . Seems there are no more nominees. So, there are 2 voting options- individual vote for each candidate or single vote for all 9 candidates (block vote).

Jim B - If we like this block, can we just vote with unanimous consent?

Francisco P- Raise your hands if you want to set this block for all 9 candidates. 42 hands raised for quorum. There were no dissents. The motion gets carried over for unanimous consent of the new Vice-Chairs. Thank you everyone for your participation.

**12:30 – 1:30 PM Lunch**

**1:30 – 2:15 PM Recent Regional Events and Updates from SEFCRI Members**

FWC Commission Meeting Updates – *Mason Smith, FWC*

Mason S – Here are the rule updates since our last meeting for the ECA. Blue Heron Bridge protections and shark regulations are in the hotspot, including Angela and DD as partners in these changes. For some background: Blue Heron Bridge is a world-renowned dive site with unique life and easy access. Palm Beach County (PBC) investments in the park include a snorkel trail, it is a special area loved by the diving community. Here's a timeline of how we got to the rule change in April. At past OFR meetings and going back decades, we have talked about Blue Heron Bridge a long time. In 2017, PBC had a stakeholder meeting concerning aquarium collections from the area. Going to that meeting, people like seeing grunts, snappers, etc. but a lot of folks also like the unique fish like the frogfish, seahorse, and other tropicals. The Marine Life rule affects aquarium trade collection (shrimp, sea cucumber, tropicals, plants, etc.). The hobbyist and commercial aquarium industries are long-standing and organized, with limited entry fishery and in general they are good stewards of their fishery. Local concerns were likely recreational or small scale commercial, however people were still concerned with collections. The county reached out to Shana and others to establish the situation on the ground. When we talked to stakeholders at the commission, they had a direct request about that rule. An aquarium from Texas collected fish, got a lot of media attention and concern. A common misconception is that there was a response to that event with rulemaking, but the process had started earlier. However, that event did bring media attention to the rule-change process and more stakeholders to the table.

Blue Heron Bridge lines up with bridge markers and channel markers. Marine life fishery is the only collection ban. Transit is still allowed through that area with marine life collected elsewhere, and people can still use Blue Heron Bridge boat ramp and residential docks as needed. Considerations include high interest topics brought to commissioners i.e. small area (46 acres), and we are making an effort to collaborate with everybody, including upset collectors. We will still include inshore areas for collection, just not the same places as it was allowed before. The ban only applies to marine life fishery, fishing pier and bait are still allowed, the direct concern of collecting was addressed while fishing allowed. This had stakeholder support with wide consensus – counties, stakeholder groups, commercial marine life industry and others supported this initiative, this item had unprecedented support. Hopefully this will address user conflicts. However, some critters aren't in marine life rule as aquarium fish, so those aren't covered but hopefully this doesn't cause too many issues. Being near 100 yards of beach, there is no spearfishing near the area - however we still encourage lionfish harvest with nets and slurp

guns that collectors also use. So please don't attack folks with a net – if they are there to harvest lionfish we still want to encourage that.

The next topic is shark fishing. Dr. Kajira at FAU documents sharks near beach, that represents a user conflict between shark fishermen, swimmers, surfers, etc. Over the past year, we went through rules addressing these conflicts that are going into effect July 1<sup>st</sup>. The education component is big, it's an exciting fishery but if you don't know what you are doing you can hurt yourself or the shark. We are requiring education for a shark fishing permit unless you are under 16, then you must be with an adult who has taken course. The user conflict involved swimmers not feeling safe while fishermen were chumming from shore. This is a rare practice but it has occurred and caused concern, so we're changing it statewide. Shark survival influences regulations i.e. circle hooks, appropriate gear cutters, and non-stainless steel to minimize the time the shark is out of water and increase its chances of survival after release. Prohibited species to catch include tiger, hammerhead, lemon, sandbar, etc. FWC determines these species are too vulnerable to harvest in Florida waters; these are above and beyond ESA protections. Sharks being dragged on the beach attracted people taking pictures and touching; we get that everyone wants their photo but long fight times and extended time out of the water decreases survival. Bottom line, sharks have to be kept in the water with their gills submerged, lifting their head is only allowed to remove the hook. This is a mix between protection for the shark and facilitating release. Temporary protection i.e. if the shark is undersize or out of season, temporary possession is allowed for picture and measure to determine release was allowed, however now delayed release is illegal (i.e. for measurement and to take the picture) to enhance survival. Next steps, include encouraging education of fishers under 16 and others, and a reminder that these rules are in effect July 1<sup>st</sup>.

Dan C – What is the penalty or fine for breaking a rule?

Mike Dixon – It would be a fine, it is not a criminal case. License violations are fines unless rule making says otherwise.

Mason S – Certainly education component and PSA.

Rob Brumbaugh – When is the next commission meeting?

Mason S – The next meeting is July 17<sup>th</sup> and 18<sup>th</sup> in Stuart. There's no agenda yet, but the first day usually covers marine items. If you want to add new items, the end of the first day is usually public comment. It will be in Hutchinson Island.

Shana P – Thanks FWC for helping through this year-long process.

Dan C – Is Mike Sole on board?

Mason S – Yes.

Unidentified – Just want to ask again so everybody is clear, is spearfishing allowed at Blue Heron Bridge?

Mason S – No, spearfishing is not allowed within 100 yards of the beach, pier, or dock. However, we can and do encourage net collection of lionfish.

Coral Rescue Effort – Charles Callaway, Callaway Marine Technologies Inc.

Charles Callaway – So this is a quick update on FL Disease Response with NOAA, UM, NSU and others. We are a business who also wants to help. Maurizio discussed stony coral tissue loss disease (SCTLD). In 2018, there was a workshop to initiate rescue effort, to prevent infection, preserve genets, and provide stock. There are 15 species listed, plus others, that are identified as endangered and targeted for rescue. They are taken to Keys Lab, NSU, Mote, UM, and other temporary facilities for holding. Then they are transported to other aquaria in New Jersey, Texas, and Iowa for long term housing. Corals are photographed, collected by hand, and identification information and number collected are recorded. All this information is stored on tags. Coral on tile with a tag goes to an aquarium and can be tracked back to the collection site. As part of a small pilot project in September and October, we and our partners collected 180 corals in Key West and transported them to Keys Marine Lab.

In the next phase (phase 2), we want to collect 3000 corals ahead of the disease boundary, from day trips and liveboards. As of May 16<sup>th</sup>, 1,103 corals have been collected, some are at NOVA Southeastern University (NSU) in Fort Lauderdale. Coral processing occurred in pilot at Keys Marine Lab (KML). Genetic info was collected, and each coral was assigned a tag and plate to follow coral to aquaria after the process. Corals were processed on the liveboard quickly with an assembly line: genetic sample, tile, and tag on boat before transport. Corals were taken to UM, they provided some vessels with support from FWC to transfer from liveboard tanks to UM facility. NSU Trip 2 was the same process: we transported the corals from the Marquesas to Fort Lauderdale, then corals were cared for at NSU. In our upcoming trips we expect to meet the goal of relocating 3,000 corals in the next few months. The industry view on this project is for one or two agencies, however this effort is much larger, and collaboration has been outstanding between divers, field workers, and agencies.

Dan C – When you transport corals to holding tanks, are the tanks open circuit? Or do they have individual filtration systems per tank?

Charles C – The tanks are closed circuit with multistep filtration.

Joana F – Seawater is sent to each tank separate from one other. Disease, if present, will not transfer between tanks, and species are evenly distributed among tanks to prevent loss of all one species if a tank fails.

Dan C – Are we preserving or doing histology on the corals in the tanks in case they might have been exposed to the disease?

Charles C – That hasn't happened yet, all the corals are healthy thus far. Histology hasn't been considered yet.

Maurizio M – If corals show signs of tissue loss, they are removed and quarantined, but the others that have been collected showed no signs of disease. Corals are quarantined 60-90 days

before sent to aquaria; they have to meet biocriteria guidelines and strict separation criteria for facilities.

Brian W – In terms of disease intervention, about a third of corals stop showing signs of disease by changing the environment they are in, so that is not as big of a concern as we thought.

Dan C – So if we clear up water quality we may not have as much of a problem on the reef.

### TNC's Respect Our Reefs Campaign – *Cristin Krasco, The Nature Conservancy*

Cristin Krasco – FRRP, TNC and partners have started the campaign #RespectOurReef. This gets word out to divers and anglers about reef protection through social media and a pledge to take 7 steps to respect our reef. If you're interested, we promote material to respect our reef and can provide outreach material to stakeholders. Thank you!

### Open Floor SEFCRI Updates

Scott Sheckman – Thanks for supporting Friends of our Florida Reefs (FOFR). FOFR came out of SEFCRI in 2013, we helped to create a friends group for CRCP in 2015. Some of you are donors and board members, shout out to you! FOFR has done a lot over the past few years. In 2017, we supported USCRTF financially, and used excess funds to support the BleachWatch classes and the Train the Trainers program. We have 9 board of directors. Last year we supported the education trunk program with books, DVDs, and models. We will support new trunks this year and 3D printers for coral models, which turn from blue to white in warm water to teach kids about coral bleaching. The 3D printer is a great asset for team building models. We are helping with BleachWatch program, please see the website, in addition to supporting reef clean ups - we reach out to boaters and divers so we can pick up and weigh trash on reef. FOFR helps DEP table at events, and we will be guest speakers at World Oceans Day at Discovery Museum in Fort Lauderdale this Saturday. Thanks again to donors, if you are interested in donating, we are a tax-deductible non-profit and accept corporate donations. Thanks to Stoked on Salt and FORCE-E, you can join us for a coconut lionfish art night. There's a Hallandale beach event as well to pass a resolution to ban harmful sunscreens and protect the reef. Please come to [floridareef.org](http://floridareef.org) for more info.

David Vance – Saltwater Brewery also has an Oceans Day charity this Saturday in addition to the event at Discovery Museum in Fort Lauderdale.

April Price – In Martin county there will be a Lionfish Roundup June 22<sup>nd</sup>, we have 80 diver bags. See me to distribute materials in bags and for vending opportunities, Kristi can share with the team.

Steve Blackburn – Congress added \$1.5 million to Geographic Initiative for coral health, and another \$500,000 for seagrass monitoring in Calloosahatchee, Indian River Lagoon, plus \$500,000 for Biscayne Bay Aquatic Preserve seagrass and water quality monitoring. If interested, please apply for these grants.

Rachel Zuercher – I've been working with FIU and TNC to model and map fishing in reef tract. Draft results include a fishing impact map with hotspots and coldspots on fish assemblage for spatial process and user conflicts. I've also mapped fish biomass, and I'm moving forward with predicted biomass maps based on different management scenarios. If you have ideas on scenarios, please let me know.

## **2:15 – 3:15 PM      Success Stories for Community Engagement**

### LID/GI Manual and Raingardens as a Demonstration Project with the City of Boynton Beach – Allie Shatters, DEP

We have upcoming watershed-scale planning. A few CRCP projects will support the watershed management plan: the Low Impact Development and Green Infrastructure (LID/GI) Best Management Practices (BMP) manual and a series of LBSP reduction pilot projects in Boynton Beach. LID/GI is a tool for local partners to mitigate LBSP reaching corals. The target audience includes local public and private entities without prior knowledge of LBSP impacts. It includes material on Florida hydrology, geology, and has the specific aim of reducing LBSP to reefs, including site planning, stormwater control measures, implementation design at site, and considering project maintenance and global interaction for develop and maintain stormwater control measures (SCM). It also includes a manual Matrix to quickly describe how to use tool. The SCM is organized by benefits, site applicability, and implementation considerations. The draft manual was sent for partners to review. In May, there was a workshop to raise awareness and allow local experts share experiences, including small group discussions and how to move manual forward and implement it in the community. Final version is targeted for June and July.

LBSP reduction pilot projects in Boynton Beach include 2 rain gardens and 1 bioswale in Boynton ICA as proof of concept projects. Rain gardens are shallow retention ponds with Florida native plants that filter stormwater. Bioswales treat water similarly with sedimentation and filtration. These have been implemented in Intercoastal Park and Harvey Park, and there's a rain garden by East Water treatment plant. We're completing environmental compliance review now, and will continue to monitor.

Angela S – Are there plans for education on rain gardens reaching out to the general public, or is this more on small scale outreach?

Allie S – Yes, it was brought up in the panel to implement rain gardens in local schools, which are part of outreach as default.

Angela S – You can get a plaque to integrate rain gardens into a wildlife certification.

Dan C – Stormwater magazine is a great resource for this, especially with ideas from NE Region and their requirements.

## Insuring Coral Reefs to Ensure a Resilient Future – Rod Braun, TNC

Hello, I work on climate and coastal resilience with TNC, including greenhouse gas reduction and community impacts. Natural systems protect the coast and are cost effective. Coral reefs and mangroves break up wave energy, up to 97% of that comes from reefs: they are the first line of defense. As reefs degrade, flooding increases. A USGS and TNC report shows the protective value of coral reefs as business case benefits for protecting people and assets. The study simulated storm events with natural system and what change in damage occurs with changes in reef height. The Florida Reef Tract protects 19.6 km of land, 5,000 buildings, and \$1.6 billion in assets. Looking at a 100-year storm event, the reefs help save \$1.3 billion in economic activity, and even without storms there is a protection value of \$356 million per year. Making natural protection mainstream helps to move from gray to green infrastructure investment.

The coastal risk and resilience program is science based, involved in policy, planning, and increase community resilience. We need to make the bridge to insurance sector with premiums under SLR scenario, in this case study on insuring a natural asset, a coral reef. We look at enabling conditions as well as the following: 1. Who owns natural infrastructure? 2. What does it protect? 3. Can it suffer damage from threat? 4. Is repair possible? Can we calculate loss and restoration cost? Quintana Roo, Mexico is an example – we are close to insuring area off the reef in Cancun to protect assets. They realized that reefs protect beaches which protect tourism. So, the asset is coral reefs, the risk is hurricanes (among others), and the insurance is a parametric policy paid out on an event-based trigger. In this case, a certain hurricane category needs to hit in a certain geographic area to trigger payoff. If a Category 3, 4, or 5 hurricane hits in the polygon, it triggers a payout. This graph shows correlation of live coral loss to windspeed: as hurricane intensity goes up, live coral cover goes down, starting at a Cat 3 with significant harm.

The governance of this insurance is in Coastal Zone Trust – government, hotels, and other NGOs sit on that board. Funds go into the trust and trustees decide how to spend money. Hotels spend some bed tax into this fund – it's not just about policy but also about restoration and pre-disaster funding. The trust funds the parametric policy as well to payout for return to reef within days of damage. Rather than taking months to assess the damage, this enables a rapid response to reattach and upright corals to recover more quickly from storm. We're looking at global scale, expanding to 10 countries in the UN and Caribbean. In the US, we are hoping to scale the policy in Hawaii and Florida for restoration. So, we're doing a Feasibility Study with enabling conditions to consider threats to insure here. Today we are assessing the need for insurance and identifying potential buyers for product. Eventually we'll put the product in place, this phase is imminent in Quintana Roo. We will keep asking about enabling conditions to drive this process the proper way to determine which threats are insurable, the draft FEIS is through January 2020, then we meet with industry leaders, then the public policy rollout is slated for March 2020, and we will finalize the study in August or September 2020.

Shana P – What is the value of the polygon in Cancun?

Rod B – Category 3 triggers a 40% payout and it builds up from there. So, for a reef valued at \$2 million there is a \$5 million payout.

Shana P – Does the board decide the proceedings for payout?

Rod B – Yes, the payout is for rapid response events but there is a separate trust fund for restoration throughout.

DD H – A lot of stakeholders are paying in with excess money, who holds the policy and what is their incentive for payout?

Rod B – In this case, the region ensures hotels paying in to the 60 km area. Companies are willing to insure because hotels have the interest. Insurance companies are bidding because they see the payout ratio.

Dan C – 60 km of area pay in to \$1 million? How do you get sufficient funds to an area?

Rod B – That is a damage dependent payout. A number of folks are bidding, i.e. Swiss Re, among others

Joana F – How does money get used for climate change or disease when you are unsure if you can reverse damage at a local scale? Our stressors are more than hurricanes.

Rod B – We need key folks to weigh in and see what can be done. Sometimes insurance is not the appropriate mechanism.

Brian W – Some policies don't pay out for Acts of God, does that apply here?

Rod B – No, Acts of God are not a concern here because this system is trigger based.

Jenny Baez – Can we look at insurance against vessel impacts?

Rod B – Yes, that's possible.

Erin McDevitt – Who oversees the policy, and how do you divide funds among the trust?

Rod B – The board of trustees oversees the policy. Funds divert hotel tax to that in addition to beach restoration, and industries have decided to get involved on how funds are distributed.

Shana P – Who owns reef?

Rod B – The reef is federally owned in Mexico and endorsed.

DD H – Is there a mechanism in place to prevent pre-existing conditions being used as an excuse to avoid paying the claim?

Rod B – Yes, the existing reef condition needs to be worked out and agreed on.

Angela S – How do you change valuation of the reef after a storm reduces value of reef?

Rob B – Do you differentiate between pre-existing conditions versus insuring the reef is resilient?

Rod B – Resilience insurance is more about the pay in versus pay out, a pay in can reduce your premium and may make more sense in Florida.

## FORCE BLUE Project Protect – Jim Ritterhoff, FORCE BLUE

Jim Ritterhoff – 75 years ago today Bill Ritterhoff stormed Normandy, just wanted to say thanks Dad. Force Blue trains veterans to act in reef restoration. This solves the problems of a degraded reef and the difficulty of returning combat veterans to civilian life without a mission. These are very specialized veterans with millions worth in training, it makes sense to use that and give them a new mission. Over the last two years, we have been highly sought after. Our first deployment was post-Irma, we saved an 800 lb pillar coral named Archie with 6 force blue members. We've formed many partnerships and had 4 deployments after Irma and Maria. In December we partnered with DEP for the Stony Coral Tissue Loss Disease response, and engaged in the Big Pine Key mission. Over 11,000 corals have been treated. We've also been invited to Capitol Hill 6 times. People will talk to SEALS and Marines about environmental issues and respond to them in a way they might not respond when they speak to scientists. We have reciprocity through NAUI and NOAA to go worldwide. Force Blue has been in over 50 news stories plus appearances on CBS News. Ellen DeGeneres and Jeff Storlaskey (Chasing Coral) are helping to organize a TV series on Force Blue.

Florida Project Protect has a goal to help with disease response. We agreed to move our mission to Florida for the next 3 years with Project Protect – the deployment to help save reefs in Florida. In December, we helped NSU and DEP and Keys partners for six months, through weather and shut downs, to get in the water and slow down the spread of disease, we'll play this excerpt of a documentary on the project. I'm proud to say our team has treated 9,000 lesions on 1,100 corals from Carysfort to Looe Key. It has been an astonishing success, we're seeing 70% recovery with treatment. There's a lot more to do, we want to keep fighting. Right now, we are on mission with vets and scientists from FAU and the turtle hospital to treat and test for fibroapillomatosis (FP), helping turtles getting CAT scans, we are engaged all this week. Next Thursday, we will do a Superbowl outplanting of 100 Acropora corals in Rainbow Reef in celebration of 100<sup>th</sup> season of the NFL, partnered with Verizon, Frost, UM, DEP, hopefully with more effort to come, here's the video. So, we'll plant 100 corals next Thursday, but we're also hoping to make this much bigger. We want to get the NFL and their partners excited to sponsor and create effort to unite stakeholders with novel technology to restore 100 yards of hope – that's a football field-sized ecosystem with corals, sponges, sea urchins. We will use new technology to monitor the reef and film crews will document whole thing. ABC and NBC documenting, hopefully NFL jumps on to help with coral restoration on Florida coral reef tract. Thank You.

Pat B – How do you catch turtles?

Jim R - It's hard, some swim 10 knots, lots you can catch with nets (small greens). For the larger ones, you have to chase them with boats to tire them out and then grab them by the shell, get them on the boat for treatment and then put them back.

Jocelyn Karazsia – Does Force Blue accept civilian volunteers, and is there a volunteer training program?

Jim R - You have to be military trained and have seen combat to be in Force Blue, however we realize that more people want to help. More than 30,000 people have gone through army dive

school since 9/11. Loads of special ops divers in foreign countries are interested in the program and want to help. We're creating Force Blue Assistant Scientific Diver programs for all veterans with at least a Rescue Diver certification, not just special ops. For civilians, if you spend 2-3 days training with us, you can get on the boats and help so we can have more volunteers. These are just getting off the ground now, but that's the plan.

Jenny B - How big is Force Blue?

Jim R - We have 12 divers, then 4 full time staff. We position this as a reserve unit, so we ask our guys to commit 6 weeks a year on a rotating basis. Ideally, we will build a base in Florida to keep guys in and bring them, I think there is enough work here to do this. We are unique because we pay our veterans the equivalent GSA rate, we want to give them an alternative mission. Paying per diem lets them come work, and we want to expand this to full time work.

Erin M - Thank you for your service, what is your funding source?

Jim R – Our funding source depends on project, but we're almost entirely privately funded: Joanna's group and DEP helped us get down here with the coral restoration funding, a lady in California who just really likes sea turtles helped with the turtle project funding, and other organizations help as well, visit our website for more – we need big corporate sponsors to aid in funding, but right now it is just word of mouth and people contributing.

**3:15 – 3:30 PM**      **Break** (*refreshments provided by Friends of Our Florida Reefs*)

**3:30 – 3:50 PM**      **Sunscreens in the Marine Environment**

John Fauth (remote webinar) – Sorry I'm not here in person, but I'll disclose that I have no conflict of interest, brand endorsements, or grant proposals. The NPS in USVI at St Johns noticed degradation on the reefs. At Trunk Bay I found a vendor who asked me to stick around after the cruise crowd passed through. We noticed hundreds of people from cruise crowding the beach, and once they left there was a noticeable sunscreen sheen on the water that wasn't there before. So, we studied this and found that oxybenzone poses a threat to coral reefs. We coordinated press releases for this public university work. We organized the release for Darryl Fears at Washington Post, and sent the story before the press release. However, the post title changed to claim sunscreen "massacres coral reefs" and a media frenzy ensued. The attention has continued, with former President Clinton advocating mineral based sunscreens at a conference last night. Several areas in Mexico have banned chemical sunscreens, in addition to Hawaii, Bonaire, Palau, Aruba, then Key West. ASEAN now requires warning labels on sunscreens with >.5% oxybenzone. Most bans are directed at chemical UV filters oxybenzone and octinoxate, including REI ban beginning in 2020. Whole Foods no longer sells products with oxybenzone and octinoxate in US stores.

US Food and Drug Administration is doing review of 16 sunscreen ingredients currently listed. FDA has already recommended discontinuing use of PABA and trolamine, there is insufficient

data for 12 ingredients, and only two sunscreen ingredients are deemed generally safe by the FDA. Zinc oxide and titanium oxide are safe, have been used a long time. These sunscreens are less popular because they give you a white and pasty look, so manufacturers looked to clear products but unfortunately these may not be safe. 10 years ago, the CDC found over 90% of American blood samples contained oxybenzone. In 2014, oxybenzone was named the contact allergen of the year. Last month an FDA pilot study showed oxybenzone absorbed into the bloodstream in under 2 hours. Oxybenzone is an endocrine disruptor, in experimental trials it decreased testosterone levels and had significant associations in changes in pregnancy duration and head circumference, implicated in Hirschsprung's disease (develop nerves in end of intestine, impacts peristaltic contractions that moves feces through the system), this disease causes fetal constipation and is painful. Nurses say surgeons can sometimes take out the section of the intestine and reattach it, but if they can't then the babies have to use a colostomy bag. Sunscreen is often pushed, and you can imagine pregnant women reaching for the sunscreen, but at what cost?

Oxybenzone is shown to be toxic to green algae, bettas, invertebrates, and dolphins - over 245 studies show harmful effects. 300 kids in science fairs have sent requests asking for oxybenzone to use in experiments. Madison Precht, (Bill's daughter) did an experiment with coral fragments – when she exposed frags to mineral sunscreen they were fine, but oxybenzone-exposed corals bleach and die. Oxybenzone is genotoxic, phototoxic, and a skeletal endocrine disruptor, it encases larvae in their own skeleton to kill the coral. It has synergistic effects, amplifying impacts from other compounds and threats, i.e. bleaching. Oxybenzone is synergistic with bleaching. If this is a \$100 impact, that changes from nickel and dime impact to \$500 impact since effects multiply synergistically, instead of just additive effects. So banning harmful ingredients in sunscreens can have even larger positive effects. Jellyfish Lake in Palau noted a decline in golden jellyfish from drought, temperatures, and sunscreen. Once the lake was closed and tourists were required to rinse off sunscreen upon reopening, jellyfish populations bounced back and the lake is re-opened, but with more controls on number of visitors.

One body's worth of sunscreen is toxic to corals in the area of about 3 Olympic-sized swimming pools. And places where people aggregate when they swim have much higher levels of toxicity. A hazard assessment was done with US EPA methodology with species in our region, including *Porites astreoides*, *Montastrea cavernosa*, *Acropora cervicornis*, *Orbicella spp*, to show which concentrations of oxybenzone show moderate impacts. The European Union approach shows severe chronic impacts to adults and larval lifestages. In several parts of Florida we are approaching hazardous levels of sunscreen compounds in the water. NPS recommendations include checking your sunscreen's label, using mineral based sunscreens (non-nano), covering up, and staying in the shade. If you are smart about clothing and shade, you can be okay without products even when outside in the field. Mineral sunscreens are effective, and just as good as chemical sunscreens, aside from vanity there is no good reason to avoid mineral sunscreens and all major brands have at least one. It's time for management action on this. To quote Dr. Cheryl Woodley, "While added research may add to our impacts, added research shouldn't be a pre-requisite for management actions" Consumers are aware, it is time to act. Thanks to Cheryl, Craig, and the vendor at Trunk Bay vendor who pointed out sunscreen sheen. Questions?

Dave V – Does the oxybenzone kill green algae? Should we dump it in Lake Okeechobee to fix that problem?

John F – Remember, oxybenzone will still rinse out in wastewater stream and outfalls and through septic tanks and freshwater bodies. We are continually finding negative effects, we should stop using it, not just on the beach but also inland is just as important.

**3:50 – 4:05 PM**      **Public Comment** (*Appendix I*)

**4:05 – 4:30 PM**      **SEFCRI 2019 Charter Revisions and Rollout**

Kristi K- We have 30 primary members. That's exactly 50%, so we have a quorum.

Francisco P- At the last meeting, you voted to send these additional edits to the charter back to the Vice Chairs and we are presenting those to you now. There are 3 proposed changes. For each of these, you can approve, reject, or send back to the Vice Chairs. If all three are approved, you will have a new Charter for 2019. Change #1. Alternate designation. The first proposed change was rejected at the last SEFCRI Team meeting, and here is the new proposed change: The primary could yield to the alternate on a topic as necessary or appropriate.

Ron C- When we discussed this, we came to this conclusion because sometimes the primary and alternate have different areas of expertise.

DD H - I thought this was going to be decided by the primary at the discretion of the Vice-Chairs?

Francisco P- The idea with this change was to leave the decision to the primary. I'll open it to approval.

Kristi K - Raise your hand if you want to approve the new change.

31 people voted for the change. Motion passes.

Francisco P - Change #2 Proposed members to be appointed for a term of 4 years (instead of 3). Currently SEFCRI membership is 3 years but Vice-Chair membership is 2 years. This change allows Vice-Chairs to serve 2 consecutive terms without having to renew membership mid-term. Raise hands who approve.

29 people voted for the change. Motion passes.

Kristi K – Change #3 pertains to page 13 of the charter: the proposed change reads that “All new LAS SOWs submitted for consideration by the SEFCRI teams shall include tangible outcomes and performance measures, considering current strategic or other action plans including as appropriate, but not limited to...” and can reference both the old and new plans in the list on the slide.

Joana F – What was the rationale for changing these, and including some of these plans and not others? I see some plans up here that might not be relevant to us.

Kristi K – This way it was just more inclusive of different options, we didn't want to force everyone to use this entire list and "must" is a very strong word. Vice-Chairs felt that "shall" is a bit softer in tone, also this allows for other plans to be used that aren't on this list.

Francisco P – I want to add that since the Charter is only updated every 5 years, if a plan on this list is updated or something else comes out, then we don't have to wait 5 years to use the latest information.

Ron C – In our discussion the words "as appropriate" were added to give wiggle room, essentially.

Joana F – Well what happens when different organizations come up with recommendations that are included in this plan, but the recommendations don't fit with what other plans are suggesting?

Francisco P – If anything, we could easily change this by adding other plans, or update the list separate from just the other charter updates.

Kathy F – Well you wouldn't have to make every LAS match with every LAS.

Francisco P – Kathy, Joana, do you have any other questions? Do you want to vote?

Joana F – I'm fine, we can vote.

Francisco P - Do you want to consider this today or send it back to the Vice-Chairs? Raise hands if you want this sent back to the Vice-Chairs. No hands.

Kristi K- Please raise hands to approve the new proposed language.

26 people voted for the change. Motion passes.

Francisco P- Last vote: everybody who wants to certify the new charter, raise hands.

29 people voted for the change. Motion passes. SEFCRI has a new charter until 2024.

**4:30 – 4:35 PM Marina Topics - None**

**4:35 – 4:40 PM Remembrance of Stephen Attis**

Kristi K and Nikole O held a moment of silence to honor the life of Stephen Attis, husband of SEFCRI Member Jane Fawcett.

**4:40 – 4:45 PM Wrap Up & Adjourn**

Francisco P- Thank you to everyone, old Vice-Chairs, and new Vice-Chairs for all their hard work. Thanks to the staff and everyone for the opportunity to work together. Our next meeting

will be the TAC meeting in the Fall and then another SEFCRI meeting. The Vice-Chairs will be able to communicate those dates to you.

## APPENDIX I

### PUBLIC COMMENT CARDS

Wishes to Speak  
 Does not wish to Speak

Meeting Date: 4/5



Southeast  
Florida  
Coral Reef  
Initiative

Comments:-

Joanna + Scott want me to share  
news of the Coral Reef Ordinance +  
Reso passed in Hallandale Beach last night

Name: Alyssa Jones Wood  
Affiliation: City of Hallandale Beach  
Address: 630 NW 2nd St HB  
Email: ajoneswood@cob.org

If your name appears it will be affiliated with your comments on any report issued.  
Send comments to: coral@dep.state.fl.us

Wishes to Speak  
Does not wish to Speak

Meeting Date: June 6, 2019



Southeast  
Florida  
Coral Reef  
Initiative

Comments:

Changing Seas Episode on the coral disease  
called "Corals in Crisis" is airing 6/20/19 @ 8pm  
on PBS. Advanced showings are at John Pennetkamp  
on World Oceans Day + NSU Palm Beach College 6/25 @ 6pm.

Name:

Affiliation:

Address:

Email:

Brian Walker

NSU

walkerb@nova.edu

If your name appears it will be affiliated with your comments on any report issued.  
Send comments to: coral@dep.state.fl.us

  

Wishes to Speak  
Does not wish to Speak

Meeting Date: 6-6-19



Southeast  
Florida  
Coral Reef  
Initiative

Comments:

Termy Gordon Sellers has been  
charged.  
Mitigation reef will be built  
for ~~reef~~ damage from Seg II  
beach project  
If RCTL was impacting Og,  
the state would be doing alot  
more

Name:

Affiliation:

Address:

Email:

DAW Clark

Cry of the Water

P.O. Box 8142

reefteam@water.org

If your name appears it will be affiliated with your comments on any report issued.  
Send comments to: coral@dep.state.fl.us

Wishes to Speak  
Does not wish to Speak

Meeting Date: 6/6/19



Southeast  
Florida  
Coral Reef  
Initiative

Comments:

Success Story: FWC rule in effect  
April 1, 2019 which prohibits the  
collection and possession of marine life  
species within the Blue Heron Bridge  
at Phil Foster Park

Name: Nikole Heath + Shana Phalen  
Affiliation: \_\_\_\_\_  
Address: \_\_\_\_\_  
Email: nikole@forceone.com

If your name appears it will be affiliated with your comments on any report issued.  
Send comments to: coral@dep.state.fl.us

  

Wishes to Speak  
Does not wish to Speak

Meeting Date: 6/6/19



Southeast  
Florida  
Coral Reef  
Initiative

Comments:

Stony Coral Tissue Loss Disease has been observed in corals throughout  
Biscayne National Park, one of the largest marine national parks in the U.S.  
and has also spread farther south throughout the Florida Keys National Marine  
Sanctuary. These vibrant marine ecosystems are home to thousands of organisms  
that depend on coral reefs for habitats, breeding, spawning, & foraging grounds  
and it is vital that scientists and policy makers collaborate to protect  
and preserve these important ecosystems for future generations to enjoy through the  
implementation of effective management tools.

Name: Stacie Schulman  
Affiliation: National Parks Conservation Association  
Address: \_\_\_\_\_  
Email: sschulman@npca.org

If your name appears it will be affiliated with your comments on any report issued.  
Send comments to: coral@dep.state.fl.us