FOCUS AREA	OBJECTIVE	PROJECT #	PROJECT TITLE
Awareness & Appreciation	Conduct an inventory to compile existing coral reef outreach and education programs, products, and points of contact being utilized in southeast Florida	39	Project will update the original needs assessment for Awareness and Appreciation. Outreach messaging will then be evaluated and updated as necessar, specifially to be locally relevant
	Increase the awareness of industry representatives, the public, and other stakeholders on the benefits (monetary and environmental) of compliance with regulations. Develop and deliver a workshop program about the purpose and benefits of regulatory compliance.	40	Create and promote educational materials and presentations to inform local stakeholders about the impacts of discharges on the southeast Florida reef tract. Educate that reducing discharges will benefit overall reef health and functionality.
	Develop a campaign targeting youth in the 4-county area about the southeast Florida coral reef ecosystem and the SEFCRI.	41	Update and modernize the information contained within each Coral Reef Conservation Kit (AA LAS 35).
		42	Work with local county curriculum coordinators to integrate SEFCRI and local coral reef messaging into curriculum.
	Develop a campaign targeting local businesses and entrepreneurs about the southeast Florida coral reef ecosystem, and how they may help in preserving their sustainability.	43	This project will focus on the education of businesses on the issues of plastics in the environment and encourage the reduction of plastic wastes.
	Develop a promotional campaign to increase awareness and use of coral safe sunscreen to residents and visitors of south Florida.	44	Project will develop outreach materials describing Avobenzone and Oxybenzone (among other derivatives), chemicals present in many commonly used sunscreens, as well as work with local resource users to promote the use of alternate coral-safe products.
Fishing, Diving, & Other Uses	Coordinate goals, objectives and actions with existing management organizations to maximize resources.	51	To address the collection, analysis, and potential data needed to create an adaptive management approach to coral reef research and monitoring. Specifically, this project will identify and understand trends and gaps in existing data and contribute to coral reef management strategies by assessing current protocols and informing future research and monitoring efforts. Will work closely with current and future CRCP projects.
	Develop an effective, balanced, and comprehensive management strategy for improved resource protection.	52	This project will result in a regional survey to identify what criteria stakeholders want marine fisheries to be managed for within the Southeast Florida region. Project will determine what current condition is needed for the management criteria identified by stakeholders and confirm with the FWC that the data list would be sufficient to conduct the analyses. After collecting necessary data, present FWC with stakeholder-desired fisheries management criteria, current fisheries condition information, and request FWC develop regional fisheries management regulations specific to the southeast Florida region.
		55	Create a coordinated management plan for the Southeast Florida Region incorporating pertinent information and data generated from previous and ongoing SEFCRI LAS Projects.
	Compile existing information on reef condition and user activities for the southeast Florida region.	53	The Marine Planner contains data on Water, Coral, Fish, Habitat, Ecosystem, and People that are useful to inform management recommendations. Project should add data sets collected and compiled in FDOU Projects 11, 51, and 52 to the Marine Planner. Incorporate all reef relevant data in the southeast Florida region into the Marine Planner, similar to other visualization archives.
	Identify, assess, and reduce other indirect boating impacts.	54	Facilitate increased compliance with Florida boating, diving, and fishing regulations in accordance with the Coral Reef Protection Act and all protected marine life. Create a course with information on fishing, diving, and boating regulations that is coordinated with local law enforcement agencies and available to the public.
		56	Define and conduct outreach about linkage between coral reef habitat (including mangroves, seagrass, nearshore hardbottom, etc.) and coral reef fisheries.
Land-Based Sources of Pollution	Assemble existing data to quantify, characterize, and prioritize the land-based sources of pollution that need to be addressed based on identified impacts to the coral reef ecosystem.	33	Identify and categorize by type and size (volume) of major point source inputs/conveyances e.g. storm-water drains and pipes into bays, canals, beaches and estuaries and non-point sources e.g. septic tanks, for identified priority inlets.
	Provide consistent data quantifying pollutant loads from the St. Lucie, Jupiter, Lake Worth, Boynton, Boca Raton, Hillsboro, Port Everglades, Baker's Haulover and Port of Miami inlets.	34	Monitor surface water quality in and around the nine southeast Florida inlets on the ebb tide to determine the types of land-based pollutants exiting inlets and wastewater treatment plant outfalls and potentially reaching nearshore reefs.
Maritime Industry & Coastal Construction	Avoid and minimize impacts on coral reef ecosystems from dredge and fill activities (including but not limited to trawling for marine debris) and infrastructure (pipelines, outfalls, cables) installation on coral reef ecosystems. Reduce the spatial extent of project-related impacts.	28	Identify means of improving the methodology for measuring and monitoring turbidity, suspended sediment concentration, and sedimentation during dredging, beach nourishment and any coastal construction project or activity resulting in altering the sea bed requiring turbidity monitoring. Use information to contribute to efforts to revise the water quality standard for turbidity (Project 29) and support the improvement of turbidity monitoring methods and/or coastal construction practices.
		28b	Test new or existing turbidity and sedimentation monitoring techniques and technology researched and identified for further study in Project 28.
		28c	Develop and/or research the use of hydrodynamic models to improve the methodology for measuring and monitoring turbidity and sedimentation during dredging, beach nourishment and any coastal construction project requiring turbidity monitoring. Use information to contribute to efforts to revise the water quality standard for turbidity (Project 29) and support the improvement of turbidity monitoring methods and/or coastal construction practices.
		29	Determine sand grain size and composition transport implications to plumes generated by beach nourishment and dredging projects. Experimental objectives and results should include the development of or contribution to a water quality standard for turbidity that is more protective of coral reef ecosystems.
		29b	Conduct grain-size and composition dosing experiments on coral recruits and larger colonies of varied southeast Florida species.
	Eliminate vessel anchoring, grounding and other impacts to southeast Florida coral reefs and hard bottoms. Identify anchorages containing reef area for modification and increase in utilization of detailed management practices.	30	Work with the leads of county mooring buoy programs and local stakeholders in the fishing and diving communities to evaluate the effectiveness of current mooring buoy locations and recommend modifications and/or new buoy locations.
Reef Resilience	Quantify, characterize, and prioritize toxic compounds that need to be addressed to manage for resilience.	1	This project is a literature review of available studies and existing legislation on eco-toxicity to assess the impacts of potentially toxic compounds known to affect corals and coral reef systems across the Florida Reef Tract. The project will also investigate any potential interactive/synergistic effects with fresh water, nutrients, sedimentation, or turbidity.
		2	Determine which of the compounds that may be toxic to reef organisms identified in RR Project 1 are reaching the reef. Using this information, design an in-situ sampling project to quantify and characterize the sources of pollution and identify the relative contributions of point and non-point sources.
		3	Determine the toxicity of and threshold limits for toxins identified in RR Projects 1 and 2 for coral reef environments.
	Develop a comprehensive incident response plan to better manage for future issues or outbreaks across the entire Florida Reef Tract.	4	Conduct a literature review and logistical review of partner capacity and resources in the region and identify research gaps for the future creation of an incident response plan.
		5	Work in conjunction with FDOU Project 53 to improve the existing geodatabase portal to store reports and data of incident observations from RR Project 4 as well as an instructional protocol for future data to be added.
	Identify reef resilience indicators appropriate for southeast Florida and relevant datasets that can be collected and analyzed to highlight resilient/non-resilient reefs for targeted management.	6	Conduct a literature review of potential resilience indicators appropriate for the Southeast Florida region, including identifying potential available datasets and information gaps to inform future priority data collection. Determine a baseline criterion and create a model of reef resilience for the region.
		7	Create a compendium of management activities, including those in other Local Action Strategies, that may be implemented to reduce the various stressors and improve reef resilience.
	Develop an effective outreach strategy for resilience materials.	8	Promote greater understanding of the toxins identified in RR Projects 1-3 to raise awareness of their effects on southeast Florida's reef systems, and how stakeholders may assist in the amelioration of their effects.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Awareness and Appreciation

Issue 1: Needs Assessment

Goal: Increase the effectiveness and decrease duplication of coral reef education and outreach efforts in southeast Florida.

Objective 1: Conduct an inventory to compile existing coral reef outreach and education programs, products, and points of contact being utilized in southeast Florida.

Project 39:

Project will update the original needs assessment for Awareness and Appreciation. Outreach messaging will then be evaluated and updated as necessary, specifically to be locally relevant.

Description:

Assessment should include investigating existing educational materials concerning sunscreens, plastics, etc.

Should build heavily on AA LAS Projects 8 and 9 (Inventory Existing Marine Education Programs), to update the initial efforts to modern standards. This may include conducting new studies as with projects 8 and 9 to evaluate the impact of outreach efforts from the past ten years. This update should also include examining new ways to target desired audience, including social media initiatives.

Collaborative work with local planning councils will be necessary.

SEFCRI Team Lead:

SEFCRI team member and CRCP AA Coordinator

Proposed project team:

Products or Outputs:

An updated needs assessment study of the existing coral reef outreach and education programs in the southeast Florida region. Will result in updated and relevant messaging for the current issues facing local southeast Florida coral reefs.

Product Implementation Success Measures (outcome):

Messaging updates in all current LAS projects, as well as consistency in messaging in future outreach products.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Awareness and Appreciation

Issue 2: Citizen and Visitor Awareness and Appreciation

Goal: Increase awareness and appreciation of the coral reef ecosystem to the residents and visitors of southeast Florida.

Objective 9: Increase the awareness of industry representatives, the public, and other stakeholders on the benefits (monetary and environmental) of compliance with regulations. Develop and deliver a workshop program about the purpose and benefits of regulatory compliance.

Project 40:
Create and promote educational materials and presentations to inform local stakeholders about the impacts of discharges on the southeast Florida reef tract. Educate that reducing discharges will benefit overall reef health and functionality.

Description:

Materials and presentations should present quantitative evidence and current local research in a substantive manner and explain how reducing discharge to local reefs will positively impact the ecosystem and economy. Promote the message that citizens are potentially exposed to water impacted by discharge, and information should focus on water quality. Materials should also include information on the latest advancements and procedures regarding the processes of retrofitting existing discharge facilities, improving wastewater treatment systems, and exploring better options for wastewater reuse and disposal, where applicable. Positive approaches should be used, rather than negative. (IE: Thank the utilities for being prepared and willing to close the outfalls)

Inform of the toxic permitting and landfill leachate.
Project Team should consider link to LBSP Projects 33/34. Projects should also be updated with current and projected population models. Project should include surveys to identify the specific audiences necessary to achieve project goals. Could explore Outfall camera/video for advertising purposes.

Currently, there is a plan in place to close all outfalls by 2025 and ocean outfalls will need to comply with current water quality standards. While there are no known requests to extend this deadline, this project could help inform local stakeholders and utilities on the importance of water quality compliance standards.

Lake Okeechobee discharges should not be included.

SEFCRI Team Lead:

SEFCRI team member and CRCP AA Coordinator

Proposed project team:

CRCP LBSP Coordinator

Products or Outputs:

Products may include educational materials (ie: flyers, posters, brochures, etc.), presentations presented to key stakeholders, and social media.

If the goal is achieved, outcomes may include: improved water quality; elimination of known point sources of pollution; insurances of compliance of sewer outfall operators; improved human and fish health; improved swimming areas along the beaches; and, decreased nutrient loading on coral reefs. Reducing the amount of outfall effluent offshore will also increase the overall functionality of the reef ecosystem.

Product Implementation Success Measures (outcome):

Successful completion of this project will be defined as the reduction of discharge onto our local reefs and improving water quality standards.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Awareness and Appreciation

Issue 2: Citizen and Visitor Awareness and Appreciation

Goal: Increase awareness and appreciation of the coral reef ecosystem to the residents and visitors of southeast Florida.

Objective 8: Develop a campaign targeting youth in the 4-county area about the southeast Florida coral reef ecosystem and the SEFCRI.

Project 41:

Update and modernize the information contained within each Coral Reef Conservation Kit (AA LAS 35).

Description:

Recent interest in our Coral Reef Conservation Kits has made clear that new information and updates must be included in the kits. Further, the SEFCRI team has decided that children are the group that should be most heavily targeted. This update should include novel information from each of the Focus Areas, with lesson plans designed specifically for information on our local reefs, and how students may help.

Phase I of this project should focus on identifying areas in old materials that are most in need of updates, particularly where new science and information are concerned. Surveys should be sent out to collect data on information gaps in the lesson plans and trunks.

Phase II will collect information from necessary sources to fill gaps identified in the outreach materials in Phase I. Trunks should then be made Florida specific.

Phase III will update the lesson plans as necessary, in accordance with the updates in information in prior phases. This Phase will also focus on digitizing as much of the trunk as possible, to allow for more widespread distribution.

Project could also include a "Create-Your-Own-Trunk" events, including a "make your own reef" in which students learn of the important interactions between reef organisms necessary to sustain a healthy reef.

SEFCRI Team Lead:

SEFCRI team member and CRCP AA Coordinator

Proposed project team:

Products or Outputs:

Updated Coral Reef Conservation Kits to share with thousands of students across the southeast Florida region.

Product Implementation Success Measures (outcome):

Improved local stakeholder understanding of current local reef information and data.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Awareness and Appreciation

Issue 2: Citizen and Visitor Awareness and Appreciation

Goal: Increase awareness and appreciation of the coral reef ecosystem to the residents and visitors of southeast Florida.

Objective 8: Develop a campaign targeting youth in the 4-county area about the southeast Florida coral reef ecosystem and the SEFCRI.

Project 42:

Work with local county curriculum coordinators to integrate SEFCRI and local coral reef messaging into curriculum.

Description:

Building upon the FDOU 26b Recommended Management Action 5, project will review what has already been included in the curriculum elsewhere to develop an idea of the key points that are to be included. The Everglades have previously done this, incorporating their information into the curricula of many schools in Southeast Florida. Project team should begin by examining how they did this.

Recognize “above and beyond” teachers and schools. This could be an award by FOFR, perhaps to contribute towards supplies for their classrooms. Could also include SEFCRI members acting as tour guides and reef ambassadors on site visits for students could be presented as an “award” to winning classroom through a contest centered on learning about coral reefs.

Project members should explore any and all options available for funding the development of the local curricula.

SEFCRI Team Lead:

SEFCRI team member and CRCP AA Coordinator

Proposed project team:

Products or Outputs:

Product Implementation Success Measures (outcome):

Recognition of teachers/schools and students via the “SEFCRI awards”.

Locally relevant coral reef curriculum being integrated into southeastern Florida classrooms.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Awareness and Appreciation

Issue 2: Citizen and Visitor Awareness and Appreciation

Goal: Increase awareness and appreciation of the coral reef ecosystem to the residents and visitors of southeast Florida.

Objective 10: Develop a campaign targeting local businesses and entrepreneurs about the southeast Florida coral reef ecosystem, and how they may help in preserving their sustainability.

Project 43:

This project will focus on the education of businesses on the issues of plastics in the environment and encourage the reduction of plastic wastes.

Description:

Project Team can look into the cost effectiveness of using alternate types, perhaps re-usable straws at businesses.

The project will seek to promote the change of service, something as simple as “do you need a straw”. Will focus on the economics, and how cost-effective it will be to use fewer plastic straws over the long term.

Encourage businesses to use fewer plastic bags.

Meetings with business owners are encouraged and could facilitate a more rapid adoption of reduced plastic practices.

Project should seek to assess current plastic reduction programs and coordinate with them to achieve objective. Keys PSA campaign to reduce plastic use may be mirrored in our region.

SEFCRI Team Lead:

SEFCRI team member and CRCP AA Coordinator.

Proposed project team:

Products or Outputs:

The outcome of this project will be to make people think about why/if they need a straw and extrapolate that idea to all aspects of life: “Do I need this plastic bag?”.

Product Implementation Success Measures (outcome):

A reduction in the use of local businesses using disposable plastics.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Awareness and Appreciation

Issue 2: Citizen and Visitor Awareness and Appreciation

Goal: Increase awareness and appreciation of the coral reef ecosystem to the residents and visitors of southeast Florida.

Objective 11: Develop a promotional campaign to increase awareness and use of coral safe sunscreen to residents and visitors of south Florida.

Project 44:

Project will develop outreach materials describing Avobenzone and Oxybenzone (among other derivatives), chemicals present in many commonly used sunscreens, as well as work with local resource users to promote the use of alternate coral-safe products.

Description:

Evaluation Phase will include examining who is already doing this, studying their campaigns, and learning how they draw attention without too much detail. Must use simple terms, but effective.

Phase 1 will include creating educational materials with info on detrimental effects of -benzone compounds to the coral reef ecosystem.

Phase 2 will include working with local fish and dive operators as well as tourism and retail entities to get these materials available on boats, in stores, and promoted to visitors and residents taking part in these activities. Provide a “Star Program” to recognize participation as in AA 42.

Phase 3 involves communication with local fish/dive/retail entities (similar to the Volunteer Speakers Bureau). Should communicate with Coral-List abou the delivery of these products.

SEFCRI Team Lead:

SEFCRI team member and CRCP AA Coordinator

Proposed project team:

Products or Outputs:

Brochures, rack cards, and potentially flyers (from fish and dive boats, tourism operators, retail stores) to promote coral safe sunscreen.

Signage for boats, tourism and retail centers (similar to 2004 LAS Project 23).

“Know before you go” web pages.

Product Implementation Success Measures (outcome):

Reef safe sunscreen informational documents and potentially sunscreen samples available for all SEFCRI education and outreach events.

Coral reef safe sunscreen and informational documents available on fish and dive boats, tourism centers, and retail establishments related to coastal and ocean activities (examples: Divers Direct, bait & tackle, shops, charter boats, hotels, novelty beach shops, Bass Pro, etc…).

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Fishing, Diving & Other Uses

Issue 1: Unknown gaps and trends in fisheries and benthic demographic information (Note: Updated from original 2004 Issue 1).

Goal: Compile existing data sets and perform an evaluation to identify trends and gaps in fisheries and benthic demographic information as they apply to current and future management efforts. (Note: Updated from original 2004 goal).

Objective 4: Coordinate goals, objectives and actions with existing management organizations to maximize resources.

Project 51: To address the collection, analysis, and potential data needed to create an adaptive management approach to coral reef research and monitoring. Specifically, this project will identify and understand trends and gaps in existing data and contribute to coral reef management strategies by assessing current protocols and informing future research and monitoring efforts. Will work closely with current and future CRCP projects.

Description:

Phase 1 would involve advisory meetings among the Florida Fish and Wildlife Conservation Commission (FWC), local coral reef managers, and technical experts to complement and inform contracted efforts to determine research and monitoring protocol needs, with emphasis on immediate and short-term management needs.

Phase 2 of this project would include hiring a contractor to compile previously existing data sets to perform an evaluation to identify trends and gaps and identify which fish and coral species are of priority interest. Projects will identify manager needs as priority.

Phase 3 would be to encourage FWC to take the lead on an advisory panel to include stakeholders (including divers).

SEFCRI Team Lead: FWC Seat will co-lead with CRCP FDOU Coordinator.

Proposed project team: Mason Smith, Kurtis Gregg, Jim Bohnsack, Brian Walker, Alastair Harborne, Sara Thanner, Cristin Krasco

Products or Outputs:

Analysis of trends and gaps in existing data sets that may include but are not limited to CRCP LAS Project 3-B (Southeast Florida Coral Reef Independent Fisheries Baseline Assessment: Reef Visual Census), fisheries-dependent (recreational and commercial landings) data, the SECREMP, and the FRRP Disturbance Response Monitoring (DRM). Species of priority interest will also be identified.

A full-length report or publication will provide recommendations to changes in these protocols or the creation of new protocols to answer management questions.

Funding would support existing work as well as data analysis.

Product Implementation Success Measures (outcome):

A complete list of data sets and protocols evaluated.

Conclusions generated independently from individual data sets and protocols.

Trends or gaps described between and among data sets.

The successful completion of a report with this information including recommendations for changes to existing protocols and/or the creation of new protocols that will inform local coral reef management, which will be distributed to all applicable agencies and entities.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Fishing, Diving & Other Uses

Issue 2: Direct Extractive Impacts

Goal: Balance all fishing and recreational activities within sustainable limits of the reef ecosystem to minimize user conflicts, provide equitable uses, protect the coral reef ecosystem, and ensure optimal benefits to present and future generations.

Objective 6: Develop an effective, balanced, and comprehensive management strategy for improved resource protection.

Project 52: This project will result in a regional survey to identify what criteria stakeholders want marine fisheries to be managed for within the Southeast Florida region. Project will determine what current condition is needed for the management criteria identified by stakeholders and confirm with the FWC that the data list would be sufficient to conduct the analyses. After collecting necessary data, present FWC with stakeholder-desired fisheries management criteria, current fisheries condition information, and request FWC develop regional fisheries management regulations specific to the southeast Florida region.

Description:

1. Stakeholder input to determine fisheries management needs (FWC is lead agency).
2. Conduct a new socioeconomic survey to assess needs rather than compiling historical and current info to assess shifting baselines.
3. Focus on regionally-specific information (local stocks instead of statewide assessments) to inform fisheries management efforts.
4. Review Ault *et al.* study on reef fisheries. Assess prior plans, data sets, and current stock status. Need current local/regional stock status and the what/how fisheries are being managed now.
5. *Alternative option to 1: Instead of surveys, obtain key informant data (rather than polling stakeholder groups). Consider multi-criteria analysis.

SEFCRI Team Lead: FWC Seat and CRCP FDOU Coordinator

Proposed project team: Jim Bohnsack, Kurtis Gregg, Dan Kipnis, Ron Coddington, Mike Dixon, Mason Smith, Alastair Harborne, Lisa Carroll, Angela Smith, Shana Phelan, Cristin Krasco

Products or Outputs:

1) Stakeholder-driven fisheries management criteria are identified.

2) The current condition of marine fisheries within the southeast Florida region have been established based on FWC-acceptable data sets.

3) Report that includes the stakeholder-identified management criteria, the analyses of the applicable data, assessment of the current conditions, and recommendation for regional management if appropriate.

Product Implementation Success Measures (outcome):

The FWC considers developing a regional fisheries management approach for the southeast Florida region.

Determine how much stress the ecosystem can withstand, determine what current conditions vs historical conditions, and determine how much pressure can be expected in the future.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Fishing, Diving & Other Uses

Issue 2: The need to maintain and improve spatial data organizational platform (Note: new "Issue" from 2004 LAS).

Goal: Balance all fishing and recreational activities within sustainable limits of the reef ecosystem to, provide equitable uses, protect the coral reef ecosystem, minimize user conflicts, and ensure optimal benefits to present and future generations.

Objective 1: Compile existing information on reef condition and user activities for the southeast Florida region.

Project 53: The Marine Planner contains data on Water, Coral, Fish, Habitat, Ecosystem, and People that are useful to inform management recommendations. Project should add data sets collected and compiled in FDOU Projects 11, 51, and 52 to the Marine Planner. Incorporate all reef relevant data in the southeast Florida region into the Marine Planner, similar to other visualization archives.

Description:

The SEFCRI Marine Planner will be used as a decision support tool to inform management recommendations related to available data that can be visualized using this tool. Should work closely with FWRI efforts towards the same goal.

Promote proper use of Decision Support Tools to local agencies.

Ongoing updates to the Marine Planner will include all reef-relevant data sets, including meta data, methodology, and sources.

Coordinate Marine Planner designers with FWRI GIS group. Get FWRI training on software coding to be able to build in new data sets, couple data sets, and build them into existing grid for decision support. May be based on the Alaska Ocean Observing System.

SEFCRI Team Lead: SEFCRI Team member will co-lead with CRCP FDOU Coordinator

Proposed project team:

Brian Walker, April Price, Alastair Harborne, Henry Briceño, Stephanie Clark

Products or Outputs:

Maps/images that can be produced to visualize resources, uses, threats, and current management of southeast Florida's coral reef ecosystem as well as new proposed management areas.

A convenient repository for any and all reef-relevant data, to be easily accessible and visualized, with included metadata and methodology.

Product Implementation Success Measures (outcome):

A complete list of data sets and protocols evaluated (metadata).

Continued use of this Decision Support Tool resource to inform management.

New tools generated and integrated into future resource management decision making.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Fishing, Diving & Other Uses

Issue 3: Indirect (unintended) Impacts on Habitat

Goal: Minimize indirect impacts on the reef ecosystem and its living marine resources from recreational and commercial use.

Objective 5: Identify, assess, and reduce other indirect boating impacts.

Project 54: Facilitate increased compliance with Florida boating, diving, and fishing regulations in accordance with the Coral Reef Protection Act and all protected marine life. Create a course with information on fishing, diving, and boating regulations that is coordinated with local law enforcement agencies and available to the public.

Description:
This project will build upon LAS 2004 FDOU Projects 2, 5, 6, & 7.

Phase 1: Includes creating revising and updating existing educational courses with information on current fishing, diving and boating regulations and where to find current regulations. Note: It would be useful to use Biscayne National Park's pilot program, the FKNMS's Team Ocean Program, and potentially FWC training materials to begin this effort. Coordinate with marine/boating industry to implement and beta test course.

Phase 2: (ongoing/underway via BBAP and RIPR) Consistently disseminating updated information by continued training and coordinating local law enforcement agencies with the information in this course. This may require that a champion from each agency/branch/office be trained and pass the information along among their enforcement officers and authorities.

Phase 3: Involves disseminating course information to the public. This course would be voluntary for those who would like more information on the topic. A concise version of the course could be incorporated into the SEFCRI outreach presentation as well. Course materials will include FWC app training and dissemination through education.

SEFCRI Team Lead: A SEFCRI team member will co-lead with CRCP FDOU Coordinator.

Proposed project team:

April Price, Mike Dixon, Tom Carpenter, Laura Eldredge (phase 2), Lisa Carroll, Don Vacin

Products or Outputs:

An educational course with information regarding current fishing, diving, and boating protocols as well as where the information will be found.

Information from law enforcement agencies will be incorporated into printed materials distributed during the course.

The course is given to local law enforcement agencies to educate the officers to facilitate increased effectiveness in the field.

Course would be available online with exam for voluntary participation.

Product Implementation Success Measures (outcome):

The successful development of a marine regulations course and informational materials on FRT resources, uses, threats, and compliance, which will be distributed to applicable enforcement agencies and entities.

Enforcement officers and the public are exposed to this information. Officers become more effective at recognizing and penalizing noncompliance. The public becomes more aware of the resources and threats of non-compliance and alters behavior accordingly.

Enforcement compliance increases as the public becomes more aware of current regulations, how to find them, and why they are important to preserve the southeast Florida coral reef ecosystem.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Fishing, Diving, and Other Uses

Issue 6: Coordination of Reef Management Plan

Goal: Ensure that all work encompassed within the SEFCRI LAS is incorporated within our management plan.

Objective 1: Develop an effective, balanced, and comprehensive management plan for improved resource protection.

Project 55:
Create a coordinated management plan for the Southeast Florida Region incorporating pertinent information and data generated from previous and ongoing SEFCRI LAS Projects.

Description:

Phase 1:

A. Education and outreach to stakeholders on the importance of defining an area to manage.
B. Education and outreach to relevant officials on why it's important to define an area to manage.
C. Incorporate new FDOU LAS Project 56, involving the linkage of reef habitat and associated fish communities, into educational efforts.

Phase 2: Draft a management plan for southeast Florida based on issues, goals, previous SEFCRI efforts, and objectives for the Southeast Florida Region.

1. Create a vision statement outlining the desired outcome of the plan, including what the end result and resources of the plan should be.
2. Situation Analysis- natural resources and human interests.
3. Develop objectives and strategies to achieve project goals, including a potential spatial plan framework for the Southeast Florida Region.
4. Develop recommendations for implementation and monitoring success.
5. Submit management plan for adoption. Share info with relevant parties.

*Phases 1 & 2 should occur simultaneously.

SEFCRI Team Lead:
FDOU Coordinator and SEFCRI Team Member

Proposed project team:
Nick Morrell, Don Vacin, Sara Thanner, Jamie Monty, Jane Fawcett, Ed Tichenor, Caroline McLaughlin, Capt. Dan Kipnis, Mike Dixon, April Price, Shana Phelan, Jena McNeal, DD Halpern, Angela Smith, Chuck Collins, Ray Rosher, Henry Briceño, Stephanie Clark, Cristin Krasco, Jim Bohnsack, Scott Skeckman
*Followed by review by the full SEFCRI Team

Products or Outputs:

Outreach and educational materials on the importance of managed areas for sustainable resource use, emphasizing locally important information.

SEFCRI Team Management plan for the Southeast Florida Region containing coral reefs.

Product Implementation Success Measures (outcome):

A comprehensive, adaptive management plan for southeast Florida's coral reef ecosystem to better balance the use and protection of the coral reef ecosystem in Southeast Florida Region.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Fishing, Diving & Other Uses

Issue 3: Indirect (unintended) Impacts on Habitat

Goal: Minimize indirect impacts on the reef ecosystem and its living marine resources from recreational and commercial use.

Objective 5: Identify, assess, and reduce other indirect boating impacts.

Project 56: Define and conduct outreach about linkage between coral reef habitat (including mangroves, seagrass, nearshore hardbottom, etc.) and coral reef fisheries.

Description:

Phase 1: Conduct a literature review documenting linkage between coral reef habitat and fisheries health. Supporting info does not need to be restricted to local examples.

Phase 2: Through research, local data review, and other methods, establish the linkage of coral reef habitat and reef fish in southeast Florida. Use RVC baseline data to supplement (Shideler et al 2017, Kilfoyle et al 2018).

Phase 3: Conduct targeted outreach about the linkage between coral reef habitat and reef fish health in southeast Florida. This would require defining "health" in terms of density, diversity, population sustainability, size distributions, etc. This information should be incorporated into current DEP and FWC outreach materials.

1. Coordinate with FWC on existing messaging.
2. Define audience- children, resource users, the public, etc.
3. Research and education on how the health of reef fish assemblages can affect benthic conditions.
4. Link to improve mangrove shorelines.

SEFCRI Team Lead: A SEFCRI team member will co-lead with CRCP FDOU Coordinator.

Proposed project team:

FWC Seat, Jim Bohnsack, CRCP AA Coordinator, April Price, Angela Smith, Mike Dixon, Cristin Krasco

Products or Outputs:

A literature review report (full document and executive summary) of the linkage between coral reef habitat condition and reef fish health associated with that habitat. This will be general and may include local and global examples.

A full report and executive summary documenting the linkage between reef habitat condition and reef fish health associated with that habitat in southeast Florida.

A targeted outreach campaign to disseminate this information/incorporate this info into outreach materials.

Product Implementation Success Measures (outcome):

The successful development of an outreach campaign that will educate the general public as well as policy makers about the linkage between coral reef habitat condition and reef fish health.

Awareness of this information will engender local ownership of the resource and greater stakeholder buy in for adaptive fisheries management in southeast Florida.

Establish local evidence of reef fish populations on reef and associated habitats and communicate that healthy habitats= healthy fish populations.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Land Based Sources of Pollution

Issue 2: Determining the Sources and Extent of Pollution

Goal: Quantify, characterize, and prioritize the land-based sources of pollution that need to be addressed based on identified impacts to the coral reef ecosystem.

Objective 1: Assemble existing data to quantify, characterize, and prioritize the land-based sources of pollution that need to be addressed based on identified impacts to the coral reef ecosystem.

Project 33: Identify and categorize by type and size (volume) of major point source inputs/conveyances e.g. storm-water drains and pipes into bays, canals, beaches and estuaries and non-point sources e.g. septic tanks, for identified priority inlets.

Description:

Phase I: Project will begin by identifying the priority watersheds for these efforts. Project will build upon work from LBSP Projects 1, 13, 32, and 33 to create an itemized list of major point and non-point source inputs and conveyances in the prioritized Inlet watershed.

Phase II: Conduct water quality data mining exercise for the prioritized point and non-point sources.

Phase III. Following analysis of water quality dataset, create prioritized list of conveyances with respect to potential for impact on waterbodies and, by extension, reefs.

This is a three-part project to identify sources of LBSP to local waterbodies and identify potential actions to reduce their impact on coral reef ecosystem. The development of Best Management Practices aimed at reducing storm-water runoff into canals, bays and estuaries connected to coral reefs could form follow-up projects. For example, a southeast Florida effort to reduce impacts from fertilizers and pesticides on local waterbodies and coral reef ecosystems.

SEFCRI Team Lead: SEFCRI Team member and CRCP LBSP Coordinator.

Proposed project team:

Products or Outputs:

Identification of LBSP hotpots in the prioritized inlet.

Compilation of water quality data from identified hotspots.

Prioritization of hotspots for LBSP treatment or reduction.

Product Implementation Success Measures (outcome):

List of freshwater conveyances, whether point or non-point source, into prioritized inlet.

Compilation of existing inlet water quality monitoring data, if any exist.

LBSP hotspots determined from analysis of data mining phase.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Land Based Sources of Pollution

Issue 2: Determining the Sources and Extent of Pollution

Goal: Quantify, characterize, and prioritize the land-based sources of pollution that need to be addressed based on identified impacts to the coral reef ecosystem.

Objective 3: Provide consistent data quantifying pollutant loads from the St. Lucie, Jupiter, Lake Worth, Boynton, Boca Raton, Hillsboro, Port Everglades, Baker's Haulover and Port of Miami inlets.

Project 34: Monitor surface water quality in and around the nine southeast Florida inlets on the ebb tide to determine the types of land-based pollutants exiting inlets and wastewater treatment plant outfalls and potentially reaching nearshore reefs.

Description:

Phase I: Conduct water quality data mining exercise as precursor to data analysis in Phase II.

Phase II. Analyze current water quality monitoring dataset and data mined in Phase I to (1) determine analytes that should be targeted by water quality monitoring and (2) create prioritized list of inlets for targeted or additional monitoring if warranted.

Phase III. Implement water quality monitoring based on results of Phases I and II.

Phase IV. Secure long-term funding to support continued monitoring efforts.

SEFCRI Team Lead: SEFCRI Team member and CRCP LBSP Coordinator

Proposed project team:

Products or Outputs:

Compilation of water quality data from local sources.

Analysis of relevant water quality datasets.

Prioritization of analytes and/or monitoring sites and inlets.

Product Implementation Success Measures (outcome):

Prioritized list of analytes (pollutants) from analysis of data collected during data mining phase.

Prioritized list of inlets and/or monitoring sites as determined from analysis of data collected during data mining and ongoing water quality monitoring.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Marine Industries and Coastal Construction Impacts

Issue 1: Projects and Activities that Threaten Coral Systems

Goal: Protect coral systems from impacts associated with projects and activities in and around the reef tracts of southeast Florida

Objective 2: Avoid and minimize impacts on coral reef ecosystems from dredge and fill activities (including but not limited to trawling for marine debris) and infrastructure (pipelines, outfalls, cables) installation on coral reef ecosystems. Reduce the spatial extent of project-related impacts.

Project 28:
Identify means of improving the methodology for measuring and monitoring turbidity, suspended sediment concentration, and sedimentation during dredging, beach nourishment and any coastal construction project or activity resulting in altering the sea bed requiring turbidity monitoring. Use information to contribute to efforts to revise the water quality standard for turbidity (Project 29) and support the improvement of turbidity monitoring methods and/or coastal construction practices.

Description:

Extensive research on the impacts of coastal construction-related sedimentation and turbidity on coral reefs has been conducted in Australia. This LAS would research those efforts and produce a report on recommendations to improve local turbidity and sedimentation monitoring efficacy and, in turn, reduce detrimental impacts of such construction on reefs. The focus of this LAS would be the review of turbidity monitoring practices during dredging and beach nourishment projects.

A literature review could have multiple targets: (1) improved turbidity and sedimentation monitoring practices and technology for dredging and beach nourishment projects; (2) identify the variety of sediment stressors specific to southeast Florida; (3) examine sediment toxicity to corals; (4) determine specific species' tolerances to stressors; (5) determine appropriate lab experiments to develop South Florida specific thresholds and tolerances; and (6) review the results of the USCRTF Sedimentation and Turbidity workshop and 2015 DEP Turbidity Working Group results and methodology.

SEFCRI Team Lead: SEFCRI Team member and CRCP MICCI Coordinator

Proposed project team: Mike Jenkins, Kathy Fitzpatrick, Cheryl Miller (MS), Sara Thanner, Ed Tichenor, Ivana Kenny Carmola, Terri Jordan-Sellers, Kelly Egan, Erik Neugaard, Jocelyn Karazsia, Ron Coddington

Products or Outputs:

Report of recommendations on how to improve turbidity and sedimentation monitoring practices, i.e. use of new and emerging technology, frequency of monitoring, measurement locations, equipment (drones, optical sensors), etc.

Improved understanding of grain-size transport and impact of grain size on corals.

Assess use of satellite imagery for turbidity measurements. Ground truthing of satellite imagery.
Improvised understanding of local currents' effects on plumes.
Meta-analysis of current literature and white papers should also be included.

Product Implementation Success Measures (outcome):

Results used to modify turbidity monitoring practices during dredging or beach (re)nourishment projects, including project modification or monitoring adaptation in relation to grain size.

Results may be used to consider modifying industry practices (dredging, beach nourishment, and any coastal construction project requiring turbidity monitoring) and/or the equipment or technology used for turbidity monitoring.

Grain transport results may be used for the reevaluation of the state's current turbidity standard or the creation of new metrics regarding water clarity.

A quantifiable correlation between turbidity and grain size and the subsequent impact on corals could be developed and implemented into the state turbidity standard.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Marine Industries and Coastal Construction Impacts

Issue 1: Projects and Activities that Threaten Coral Systems

Goal: Protect coral systems from impacts associated with projects and activities in and around the reef tracts of southeast Florida.

Objective 2: Avoid and minimize impacts on coral reef ecosystems from dredge and fill activities (including but not limited to trawling for marine debris) and infrastructure (pipelines, outfalls, cables) installation on coral reef ecosystems. Reduce the spatial extent of project-related impacts.

Project 28 (b):

Test new or existing turbidity and sedimentation monitoring techniques and technology researched and identified for further study in Project 28.

Description:

This project would test turbidity and sedimentation monitoring techniques and/or technology identified as potential improvements to existing methods in Project 28.

This project is part of a broader effort to improve the efficacy of turbidity monitoring and, in turn, reduce detrimental impacts of turbidity and sedimentation on reefs.

Project suggestions include coordinating with BP-funded CARTHE & RSMAS project(s) (e.g. GPS equipped drifters), as well as those with expertise for hydrodynamic engineering, and exploring new monitoring techniques for plumes.

SEFCRI Team Lead: SEFCRI member will co-lead with MICCI coordinator.

Proposed project team:
Mike Jenkins, Kathy Fitzpatrick, Sara Thanner, Ivana Kenny Carmola, Ed Tichenor, Terri Jordan-Sellers, Kelly Egan, Erik Neugaard, Jocelyn Karazsia

Products or Outputs:

Test results of new monitoring techniques and/or technology.

Development of improved monitoring protocols.

Improved understanding of sediment transport during coastal construction activities.

Product Implementation Success Measures (outcome):

Results used to modify turbidity monitoring practices during dredging or beach (re)nourishment projects, including project modification or monitoring adaptation in relation to grain size of dredge or fill material.

Results may be used to consider modifying industry practices (dredging, beach nourishment, and any coastal construction project requiring turbidity monitoring) and/or the equipment used for turbidity monitoring.

Results may be applicable to research of grain transport studies in Project 28 and, thus, may be used for the reevaluation of the state's current turbidity standard or the creation of new metrics regarding water clarity.

A quantifiable correlation between turbidity and grain size and the subsequent impact on corals could be developed and implemented into the state turbidity standard.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Marine Industries and Coastal Construction Impacts

Issue 1: Projects and Activities that Threaten Coral Systems

Goal: Protect coral systems from impacts associated with projects and activities in and around the reef tracts of southeast Florida

Objective 2: Avoid and minimize impacts on coral reef ecosystems from dredge and fill activities (including but not limited to trawling for marine debris) and infrastructure (pipelines, outfalls, cables) installation on coral reef ecosystems. Reduce the spatial extent of project-related impacts.

Project 28 (c):

Develop and/or research the use of hydrodynamic models to improve the methodology for measuring and monitoring turbidity and sedimentation during dredging, beach nourishment and any coastal construction project requiring turbidity monitoring. Use information to contribute to efforts to revise the water quality standard for turbidity (Project 29) and support the improvement of turbidity monitoring methods and/or coastal construction practices.

Description:

Extensive research on the impacts of coastal construction-related sedimentation and turbidity on coral reefs has been conducted in Australia. This LAS would research those efforts focused on hydrodynamic modeling and produce a report on recommendations to improve local turbidity and sedimentation monitoring efficacy and, in turn, reduce detrimental impacts of such construction on reefs. The objective and/or focus of this LAS would be the review of turbidity monitoring practices during dredging and beach nourishment projects.

SEFCRI Team Lead: SEFCRI member will co-lead with MICCI coordinator.

Proposed project team: Mike Jenkins, Kathy Fitzpatrick, Terri Jordan-Sellers, Kelly Egan, Erik Neugaard, Jocelyn Karazsia

Products or Outputs:

Report of recommendations on how to improve turbidity and sedimentation monitoring practices, i.e. use of new and emerging technology, frequency of monitoring, measurement locations, equipment (drones, optical sensors), etc.

Hydrodynamic models that will provide better understanding of plume fates.

Assess use of satellite imagery for turbidity measurements. Ground truthing of satellite imagery.

Improvised understanding of local currents' effects on plumes. Meta-analysis of current literature and white papers should also be included.

Product Implementation Success Measures (outcome):

Results used to modify turbidity monitoring practices during dredging or beach (re)nourishment projects, including project modification or monitoring adaptation in relation to grain size.

Results may be used to consider modifying industry practices (dredging, beach nourishment, and any coastal construction project requiring turbidity monitoring) and/or the equipment or technology used for turbidity monitoring.

Grain transport results may be used for the reevaluation of the state's current turbidity standard or the creation of new metrics regarding water clarity and monitoring techniques and/or practices.

Results contribute to relationship between turbidity and sediment grain size, plume tracking and sediment transport and, subsequently, impacts on coral developed in MICCI projects 29, 29 (b), 28 (b) and 28.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Marine Industries and Coastal Construction Impacts

Issue 1: Projects and Activities that Threaten Coral Systems

Goal: Protect coral systems from impacts associated with projects and activities in and around the reef tracts of southeast Florida.

Objective 2: Avoid and minimize impacts on coral reef ecosystems from dredge and fill activities (including but not limited to trawling for marine debris) and infrastructure (pipelines, outfalls, cables) installation on coral reef ecosystems. Reduce the spatial extent of project-related impacts.

Project 29:

Determine sand grain size and composition transport implications to plumes generated by beach nourishment and dredging projects. Experimental objectives and results should include the development of or contribution to a water quality standard for turbidity that is more protective of coral reef ecosystems.

Description:

Studies have indicated that different sediment grain sizes negatively impact corals differently. Specifically, research suggests finer grain sizes are more detrimental to corals.

This project would establish a series of laboratory experiments to examine, in addition to physical and chemical analyses, (a) the transport/fate of different sand grain sizes, (b) the composition and durability of transported material, and (c) consideration of potential disease pathogens on transported materials Should include a field component to cover variables unable to be addressed in lab experiments.

Experiments should focus on different dredge/fill/sediment material present in southeast Florida, taking into consideration (a) grain size type; and (b) hydrodynamics of local reefs.

SEFCRI Team Lead: SEFCRI member will co-lead with MICCI Coordinator.

Proposed Project Team: Cheryl Miller (MS), Sara Thanner, Mike Jenkins, Ed Tichenor, Terri Jordan Sellers, Kelly Egan, Erik Neugaard, Jocelyn Karazsia, Nick Morrell, Ron Coddington

Products or Outputs:

- Quantifiable correlation between turbidity and sand/dredge material grain sizes.
- Contribution to development of a water quality standard for turbidity that is more protective of coral reefs.
- Contribution to improved sedimentation monitoring and an improved understanding of the impacts of sedimentation on corals.
- A full-length report or publication showing results of the turbidity testing.
- Meta-analysis of current literature and white papers should also be included and used to develop recommendations for adapting turbidity monitoring plans and MICCI-type project scopes of work accordingly.

Product Implementation Success Measures (outcome):

Improved understanding of grain size impacts on coral reef ecosystems.

Decreased impacts of beach nourishment, coastal construction projects and dredging on coral reef ecosystems by adapting project practices/scopes of work using project results of sand and dredge material grain size, and results of MICCI Project 28.

Improved understanding of fate and transport of dredge and nourishment material.

Provide results and recommendations to FDEP Water Quality Standards and Beaches, Inlets & Ports divisions' efforts to reevaluate the water quality standard for turbidity and/or methods for measuring impacts to water clarity.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Marine Industries and Coastal Construction Impacts

Issue 1: Projects and Activities that Threaten Coral Systems

Goal: Protect coral systems from impacts associated with projects and activities in and around the reef tracts of southeast Florida.

Objective 2: Avoid and minimize impacts on coral reef ecosystems from dredge and fill activities (including but not limited to trawling for marine debris) and infrastructure (pipelines, outfalls, cables) installation on coral reef ecosystems. Reduce the spatial extent of project-related impacts.

Project 29 (b):
Conduct grain-size and composition dosing experiments on coral recruits and larger colonies of varied southeast Florida species.

Description:

Studies have indicated that different sediment grain sizes negatively impact corals differently. Specifically, research suggests finer grain sizes are more detrimental to corals.

This project would establish a series of laboratory experiments to examine, in addition to physical and chemical analyses of sediment, (a) the subsequent impact of the different grain sizes and composition on different species of corals; (b) the impact of fine grains on both recruit survival and the health of larger colonies; (c) consideration of potential disease pathogens on transported materials. Measures of stress may include survivability, growth rate, and mortality as a function of varying levels of grain size and composition.

Should include a field component to cover variables unable to be addressed in lab experiments.

Experiments should focus on several species and take into consideration (a) species prevalence and importance in South Florida; (b) species morphology; (c) listed species i.e. Endangered Species; and (d) varied stages of the coral life cycle. New recruit susceptibility is of particular importance, thus this stage of the coral life cycle should be targeted, given the inability of coral reefs to regenerate their populations without successful recruiting.

SEFCRI Team Lead: SEFCRI Team member and CRCP MICCI Coordinator

Proposed Project Team: Sara Thanner, Joana Figueiredo, Terri Jordan-Sellers, Kelly Egan, Erik Neugaard, Jocelyn Karazsia

Products or Outputs:

- Quantified stress effects on corals of the current turbidity standards; development of new turbidity standard.
- Quantifiable correlation between turbidity and sand/dredge material grain sizes.
- Contribution to development of a water quality standard for turbidity that is more protective of coral reefs.
- Contribution to improved sedimentation monitoring and an improved understanding of the impacts of sedimentation on corals.
- A full-length report or publication showing results of the turbidity testing.
- Meta-analysis of current literature and white papers should also be included and used to develop recommendations for adapting turbidity monitoring plans and MICCI-type project scopes of work accordingly.
- Decreased impacts of beach nourishment, coastal construction projects and dredging on coral reef ecosystems by adapting project practices/scopes of work using project results of sand and dredge material grain size, and results of MICCI Projects 28 and 29.

Product Implementation Success Measures (outcome):

Improved understanding of grain size impacts on coral reef ecosystem.

Improved understanding of impacts of sediment and turbidity on new coral recruits and colonies of varied sizes.

Results may be used to consider modifying industry practices i.e. limiting dredging during larval settlement and early recruit life cycle.

Results may be used to consider the adoption of new metric or turbidity standard to protect coral reefs by the appropriate regulatory agency.

Provide results and recommendations to FDEP Water Quality Standards & Beaches, Inlets & Ports divisions.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Maritime Industry and Coastal Construction Impacts

Issue 1: Projects and Activities that Threaten Coral Systems

Goal: Protect coral systems from impacts associated with projects and activities in and around the reef tracts of southeast Florida.

Objective 3: Eliminate vessel anchoring, grounding and other impacts to southeast Florida coral reefs and hard bottoms. Identify anchorages containing reef area for modification and increase in utilization of detailed management practices.

Project 30:

Work with the leads of county mooring buoy programs and local stakeholders in the fishing and diving communities to evaluate the effectiveness of current mooring buoy locations and recommend modifications and/or new buoy locations.

Description:

This project would facilitate coordination among the county mooring buoy programs to brainstorm cost-saving methods and efficiencies and identify additional funding sources, such as potential buoy sponsorships, to help fill funding gaps where needed, an adopt-a-buoy program, and the possibility of employing SMART buoy technology, as in the Keys. Consult the FDOU Project 53 marine planner tool, current research, and public comments to aid in making these location recommendations. With these recommendations, reduce anchoring impacts to coral reefs by placing mooring buoys in desirable and effective locations along the southeast Florida reef tracts.

SEFCRI Team Lead:

TBD
Co-lead with RIPR Coordinator and SEFCRI team member.

Proposed project team: Mara Brown, Jena McNeal, Pat Quinn, Sara Thanner, Kelly Egan, Mike Dixon, Cristin Krasco, Nick Morrell

Products or Outputs:

Products from this project will include recommended mooring buoy locations.

The outcome of this project will be reduced anchor damage to reefs through better buoy location planning, multi-County program coordination, and sustainable funding sources.

Product Implementation Success Measures:

Success of this project can be measured by the total number of available mooring buoys for use in the southeast Florida reef tract, and how long they can sustain funding for maintenance.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Reef Resilience

Issue 1: Lack of Information Needed to Promote and Manage for Resilience

Goal: Promote greater understanding of the impacts of land-based sources of pollution, coral disease, climate change and other local and global threats to coral reefs and associated systems in southeast Florida, to help managers improve reef resilience through restoration, and other priority management activities.

Objective 1: Quantify, characterize, and prioritize toxic compounds that need to be addressed to manage for resilience.

Project 1:

This project is a literature review of available studies and existing legislation on eco-toxicity to assess the impacts of potentially toxic compounds known to affect corals and coral reef systems across the Florida Reef Tract. The project will also investigate any potential interactive/synergistic effects with fresh water, nutrients, sedimentation, or turbidity.

Description:

Literature review of available eco-toxicity literature relevant to the designated classes of potentially toxic compounds known to be present and affect corals in the southeast Florida region, including pharmaceutical, pesticide, heavy metal, herbicide, endocrine disruptor, fungicide, and hydrocarbon. These toxins should be relevant to the corals of southeast Florida and the local marine environment and should include a specific definition of the stressor to highlight differences between the toxin and toxicants.

Other important considerations include bioaccumulation and biomagnification of these toxins, particularly in the binding properties to sediment and particulate matter. Understanding the detection limits of chemical classes will help to determine if monitoring is reasonable.

This literature review should also identify any research gaps and baseline concentrations. Based on those, the review would provide recommendations for RR Project 2. May build off old or current SEFCRI LAS Projects and items.

SEFCRI Team Lead:

SEFCRI Team member and CRCP RR coordinator

Proposed project team:

Local researchers knowledgeable in the subject.

Products or Outputs:

Updated synoptic literature review on potential toxins and substances that reach our reefs. A management-relevant priority list of compounds broken into relevant classes including their concentrations and temporal variability in the region.

An additional outreach product that can be presented to the south Florida community and relevant stakeholders.

Product Implementation Success Measures (outcome):

Results used to inform management planning to consider the adoption of new metric or pollutant standard to protect coral reefs by the appropriate regulatory agency.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Reef Resilience

Issue 1: Lack of Information Needed to Promote and Manage for Resilience

Goal: Promote greater understanding of the impacts of land-based sources of pollution, coral disease, climate change and other local and global threats to coral reefs and associated systems in southeast Florida, to help managers improve reef resilience through restoration, and other priority management activities.

Objective 1: Quantify, characterize, and prioritize toxic compounds that need to be addressed to manage for resilience.

Project 2:

Determine which of the compounds that may be toxic to reef organisms identified in RR Project 1 are reaching the reef. Using this information, design an in-situ sampling project to quantify and characterize the sources of pollution and identify the relative contributions of point and non-point sources.

Description:

Based on RR Project 1, which dealt with literature/legislation review and data gaps, this project should include two parts: a) locate potentially toxic compounds found in the watershed, and b) identifying those potentially toxic compounds reaching the reef through active data collection.

Project should include natural substances from living organisms, indirect sources and hormone-related inputs. Proposed chemical classes include pharmaceutical, pesticide, heavy metal, herbicide, endocrine disruptor, fungicide, and hydrocarbon. Project should also investigate the cumulative effects of such compounds and identifying which of those are regulated.

Can build on existing Water Quality monitoring program to collect samples for this project.

SEFCRI Team Lead:

SEFCRI Team member and CRCP RR coordinator

Proposed project team:

Products or Outputs:

Report should include the most prevalent substances present from each class including an analysis.

Final report should also include management implications and recommendations as well as provide suggestions for safer alternatives.

An additional outreach product that can be presented to the southeast Florida community.

Better understanding of *how* these toxins reach the reefs (e.g. runoff, sewage, rainfall, submarine discharge, etc.)

Product Implementation Success Measures (outcome):

Results used to inform RR Projects 3 and 4, in the support of potential new pollutant standards to protect local corals.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Reef Resilience

Issue 1: Lack of Information Needed to Promote and Manage for Resilience

Goal: Promote greater understanding of the impacts of land-based sources of pollution, coral disease, climate change and other local and global threats to coral reefs and associated systems in southeast Florida, to help managers improve reef resilience through restoration, and other priority management activities.

Objective 1: Quantify, characterize, and prioritize toxic compounds that need to be addressed to manage for resilience.

Project 3:

Determine the toxicity of and threshold limits for toxins identified in RR Projects 1 and 2 for coral reef environments.

Description:

Based on RR Projects 1 and 2, evaluate how these potentially toxic compounds specifically affect the coral organisms. Utilize relevant endpoints (coral and symbiont health) and determine which organisms and life-stages are used to test for thresholds, which may vary from substance to substance.

It is important to also consider the cumulative aspect of chronic exposure to toxins when identifying thresholds. If possible, conduct a risk assessment of these identified toxins.

Once we know what the gaps are, determine through analysis which species to investigate in this study (based on RR Projects 1 and 2) because different assemblages and different species may react differently.

SEFCRI Team Lead:

SEFCRI Team member and CRCP RR coordinator

Proposed project team:

Products or Outputs:

A report showing results of the selected contaminant and the threshold limits to local reef ecosystems and better understanding of *how* these toxins specifically affect the coral organisms (e.g. disruption, etc.).

An additional outreach product (e.g. an infographic, video PSA, etc.) that can be presented to legislative officials and the south Florida community.

Product Implementation Success Measures (outcome):

Results used to inform management planning to consider the adoption of new metric or pollutant standard to protect coral reefs by the appropriate regulatory agency.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Reef Resilience

Issue 1: Lack of Information Needed to Promote and Manage for Resilience

Goal: Promote greater understanding of the impacts of land-based sources of pollution, coral disease, climate change and other local and global threats to coral reefs and associated systems in southeast Florida, to help managers improve reef resilience through restoration, and other priority management activities.

Objective 2: Develop a comprehensive incident response plan to better manage for future issues or outbreaks across the entire Florida Reef Tract.

Project 4:

Conduct a literature review and logistical review of partner capacity and resources in the region and identify research gaps for the future creation of an incident response plan.

Description:

An extensive literature review of existing disease related studies as well as other disease and rapid response plans to provide recommendations for future implementation of an incident response plan. This would include an organized, systematic approach for understanding disease outbreaks (and other reef issues and outbreaks) in other regions to apply lessons learned to southeast Florida. All compiled literature shall be stored in a database accessible to partners in the region. Compiled literature from this project will be available for use in writing a peer-reviewed publication, or full-length report.

The other component to this project is to understand partner capacity and resources in the region to better coordinate efforts in a future outbreak. It's important that this report lays out the various response tiers that can be implemented. It should also account for adaptive monitoring to determine the most effective response activity at the time.

This project along with RR Project 5 will feed into the ultimate objective of developing a comprehensive incident response plan.

SEFCRI Team Lead:

SEFCRI Team Member, Disease Response Coordinator, NOAA Coral Management Fellow

Proposed project team:

Products or Outputs:

Meta-analysis of current literature should also be included. To be written into a full-length report, and potential publication.

Product Implementation Success Measures (outcome):

Supplemental information and incorporation into an overall disease response plan for the Florida Reef Tract.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Reef Resilience

Issue 1: Lack of Information Needed to Promote and Manage for Resilience

Goal: Promote greater understanding of the impacts of land-based sources of pollution, coral disease, climate change and other local and global threats to coral reefs and associated systems in southeast Florida, to help managers improve reef resilience through restoration, and other priority management activities.

Objective 1: Develop a comprehensive incident response plan to better manage for future issues or outbreaks across the entire Florida Reef Tract.

Project 5:

Work in conjunction with FDOU Project 53 to improve the existing geodatabase portal to store reports and data of incident observations from RR Project 4 as well as an instructional protocol for future data to be added.

Description:

Use outcomes from RR Project 4 to develop a database of disease information, including all relevant epidemiological, environmental, physical, and sample data for retrospective and prospective investigations. Additionally, it's important to develop data standards for inclusion including metadata and a tiered level of confidence (i.e. citizen observation vs. peer reviewed research).

This should include working with FDOU Project 53 to design of an "informational dashboard" that will allow data to be viewed, analyzed, and displayed in spatially relevant maps, and provide decision support for identifying the most appropriate management actions. This will also include the development of a protocol for data to be delivered and assimilated into the database on an annual basis.

SEFCRI Team Lead:

SEFCRI Team Member and the CRCP RR Coordinator

Proposed project team:

Products or Outputs:

An online, open-access database including a mapping feature to locate sites.

Templates and protocols for annual updates of the database.

Product Implementation Success Measures (outcome):

Improved understanding of data collection efforts by region/site and by type of data. This will help to make more informed management decisions.

Improved use of citizen science databases such as SEAFAN/BleachWatch.

Scientists and researchers can upload data into this dashboard and will be included as a component of a specific disease response plan.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Reef Resilience

Issue 1: Lack of Information Needed to Promote and Manage for Resilience

Goal: Promote greater understanding of the impacts of land-based sources of pollution, coral disease, climate change and other local and global threats to coral reefs and associated systems in southeast Florida, to help managers improve reef resilience through restoration, and other priority management activities.

Objective 3: Identify reef resilience indicators appropriate for southeast Florida and relevant datasets that can be collected and analyzed to highlight resilient/non-resilient reefs for targeted management.

Project 6:

Conduct a literature review of potential resilience indicators appropriate for the Southeast Florida region, including identifying potential available datasets and information gaps to inform future priority data collection. Determine a baseline criterion and create a model of reef resilience for the region.

Description:

There is growing interest in reef resilience indicators, such as grazing intensity, coral recruitment and good water quality.

Conduct a literature review to determine which resilience indicators may be appropriate for the southeast Florida region, as well as identify any information gaps. This project also includes collating information on what the 'natural' state or baseline conditions of the reefs in region were, to provide a context for interpreting resilience metrics. Based on the literature review, this project will aim towards developing a model of reef resilience (given the 'natural' context outlined above). This model of benthic dynamics could be used to examine the probability of recovery, identifying the key variables controlling that recovery, and the potential impacts of different management activities.

Establishing this baseline for reefs in the region would also help to direct/inform future data collection for existing or new monitoring programs. Need to consider the factors that make a reef resilience and prioritize efforts from a triage standpoint.

SEFCRI Team Lead:

SEFCRI Team member and CRCP RR Coordinator

Proposed project team:

Products or Outputs:

Conduct a literature review to identify a list of appropriate resilience indicators for the southeast Florida region and determine 'natural' baseline conditions.

Create a parameterized model for reef resilience throughout the region

Product Implementation Success Measures (outcome):

Documentation of spatial variation in resilience within SEFCRI region

Documentation of temporal changes in resilience.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Reef Resilience

Issue 1: Lack of Information Needed to Promote and Manage for Resilience

Goal: Promote greater understanding of the impacts of land-based sources of pollution, coral disease, climate change and other local and global threats to coral reefs and associated systems in southeast Florida, to help managers improve reef resilience through restoration, and other priority management activities.

Objective 3: Identify reef resilience indicators appropriate for southeast Florida and relevant datasets that can be collected and analyzed to highlight resilient/non-resilient reefs for targeted management.

Project 7:

Create a compendium of management activities, including those in other Local Action Strategies, that may be implemented to reduce the various stressors and improve reef resilience.

Description:

Based on RR Project 6 which defines the resilience framework and indicators, this project would evaluate existing monitoring programs (i.e. CREMP, SECREMP, FRRP, etc.) or other Local Action Strategies and recommend changes/modifications to better manage for reef resilience. It would build off the Florida Reef Resilience Program to identify and define specific management objectives and how the data could be used.

SEFCRI Team Lead:

SEFCRI Team member and CRCP RR Coordinator

Proposed project team:

Products or Outputs:

A recommended list of management activities or changes to current programs that would improve reef resilience in southeast Florida.

Product Implementation Success Measures (outcome):

Recommendations of this project would result in changes to current monitoring programs or the establishment of a new management activity that can track changes in resilience.

Worksheet: Local Action Strategy Project Development

Fill out a different Worksheet for each project

Focus Area: Reef Resilience

Issue 2: Public Awareness of Reef Resilience

Goal: Increase public awareness and understanding of the meaning of reef resilience, and the information that is available to help in managing for resilience.

Objective 1: Develop an effective outreach strategy for resilience materials.

Project 8:

Promote greater understanding of the toxins identified in RR Projects 1-3 to raise awareness of their effects on southeast Florida's reef systems, and how stakeholders may assist in the amelioration of their effects.

Description:

Develop an effective outreach strategy to educate and inform stakeholders of the specific chemicals identified in projects 1-3. It would be strategic to link to human health issues in the outreach messaging.

Two separate products should be generated; one for the public and another for managers within the regulatory agencies/policy makers. Delivery and implementation of these products shall also be included in this.

Other notable items: restoration and recovery are easier for the public to understand than resilience, so consider using easier terminology.

One target audience to include is the utilities sector (not just public outreach).

SEFCRI Team Lead:

SEFCRI Team member, CRCP RR coordinator, CRCP AA Coordinator

Proposed project team:

Products or Outputs:

Outreach materials to be used at outreach events, meetings, conferences, and SEFCRI team member venues.

Materials can include fact sheets, infographics, signs, and other ways to advertise the findings of the chemicals affecting our local reefs.

Product Implementation Success Measures (outcome):

Results used to inform management planning to consider the adoption of new metric or pollutant standard to protect coral reefs by the appropriate regulatory agency.