Towards developing a strategic approach to evaluating the role of endocrine disrupting chemicals (EDCs) on the south Florida marine environment

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The Outline

ABOUT THE PROJECT

THE APPROACH

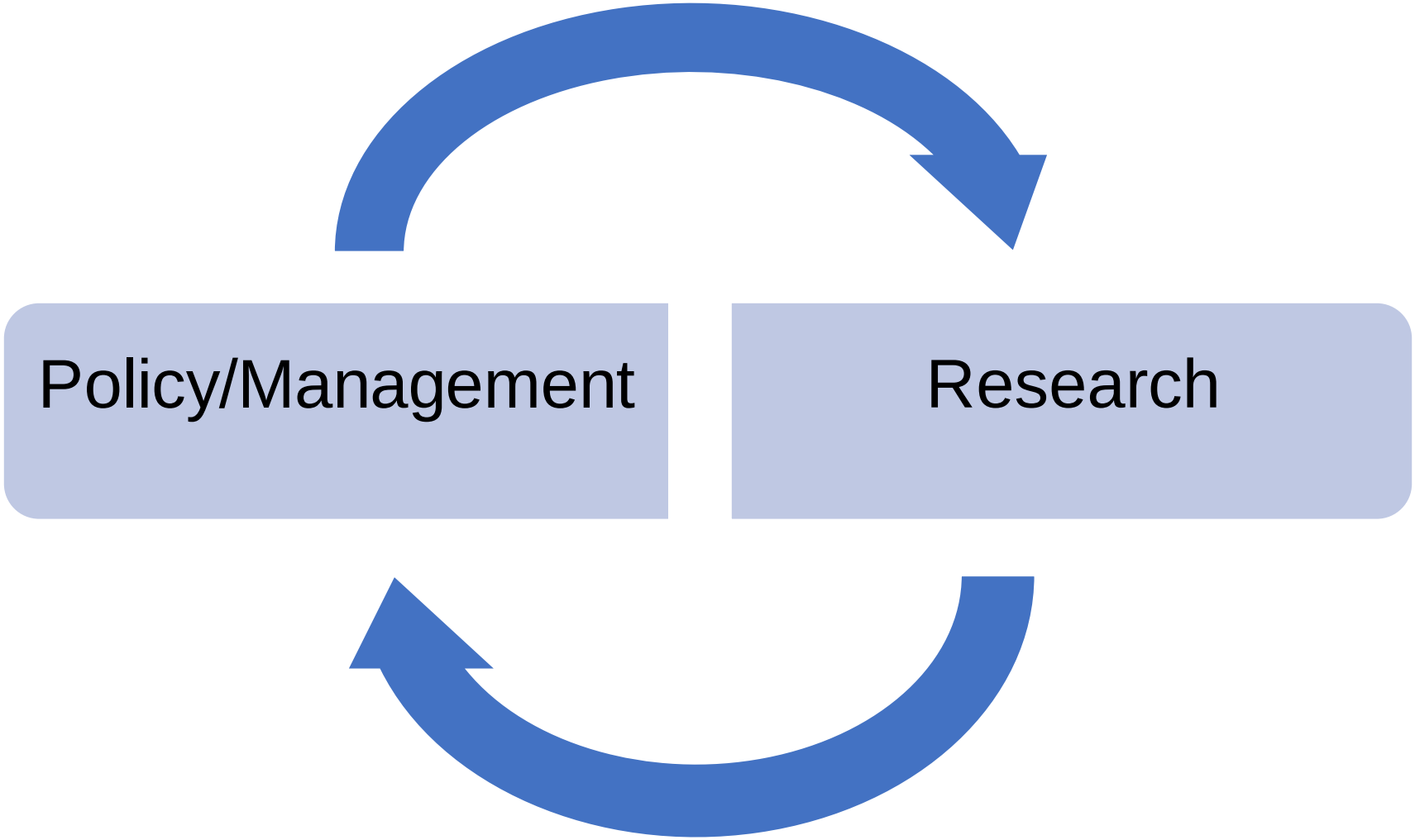
THE FINDINGS

OTHER ELEMENTS IN THE REPORT

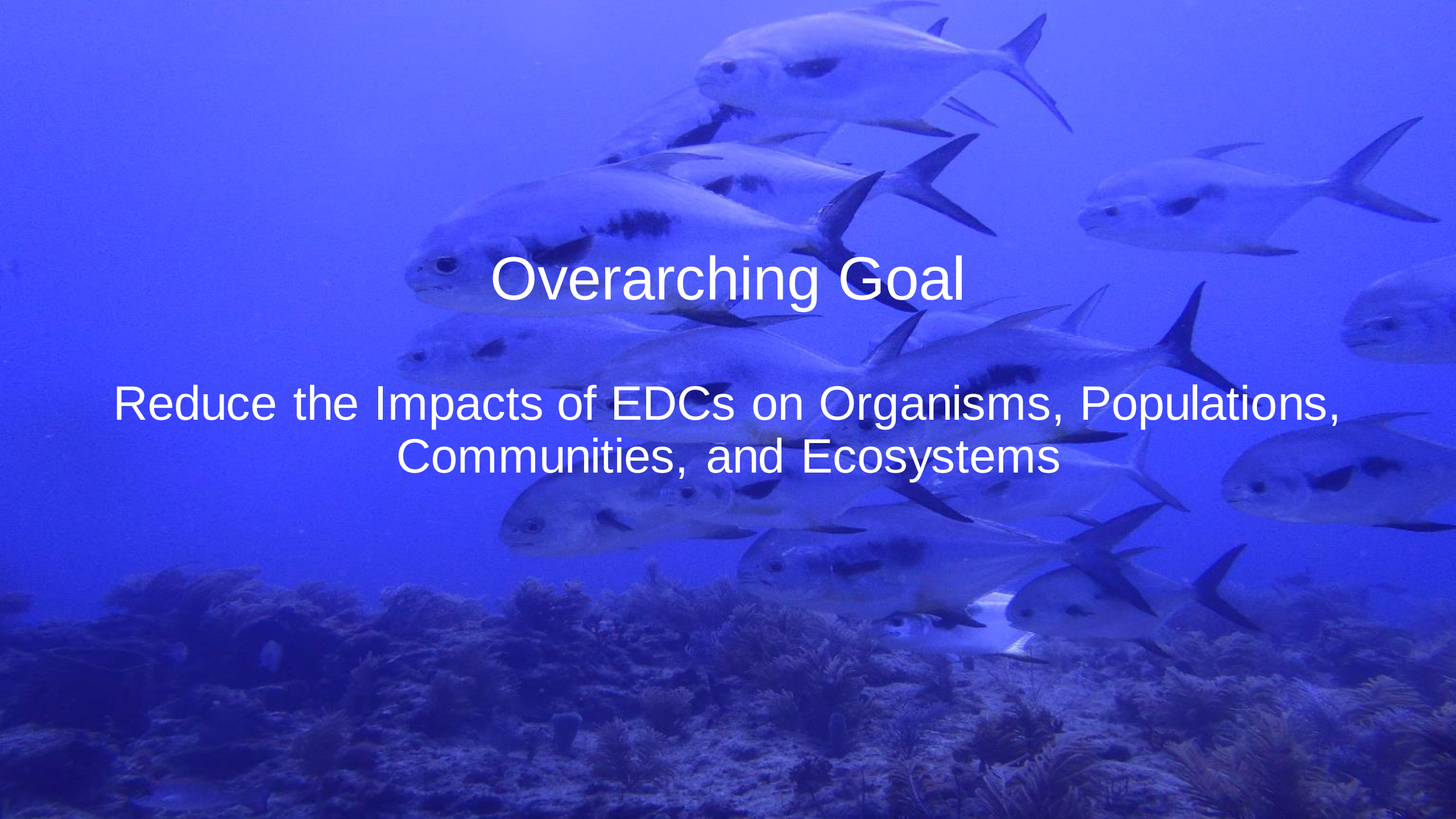
Part 1 About The Project

Overarching Goal

Identify and prioritize the activities necessary to reduce the impacts of EDCs on organisms, populations, communities, and ecosystems


Policy/Management
Research

Part 2 The Approach



Overarching Goal

Reduce the Impacts of EDCs on Organisms, Populations, Communities, and Ecosystems

Goal

- Reduce the Impacts of EDCs on Organisms, Populations, Communities, and Ecosystems

Gap analysis

Identify missing information in our state of knowledge that will help achieve the Goal

Prioritization analysis

Determine which gaps are highest priorities

The Five Themes

Science

Governance

Communications

Monitoring

Economics

Gap Analysis

R

Reports

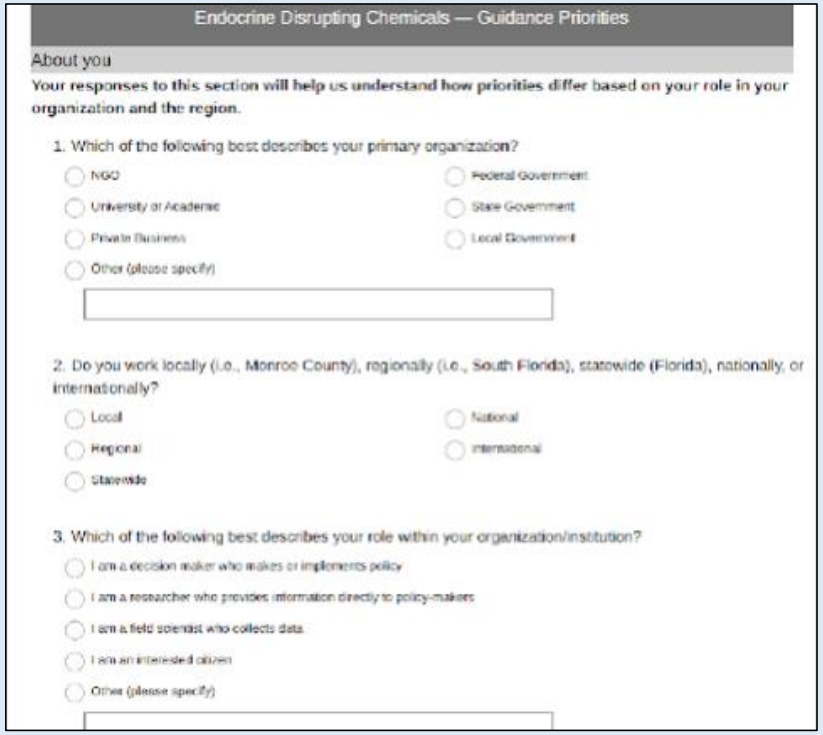
Workshop

Literature Review

Face 2 Face consultations

Prioritization Analysis

Demographic Data


Endocrine Disrupting Chemicals — Guidance Priorities

About you

Your responses to this section will help us understand how priorities differ based on your role in your organization and the region.

1. Which of the following best describes your primary organization?

- NGO
- Federal Government
- University or Academic
- State Government
- Private Business
- Local Government
- Other (please specify)

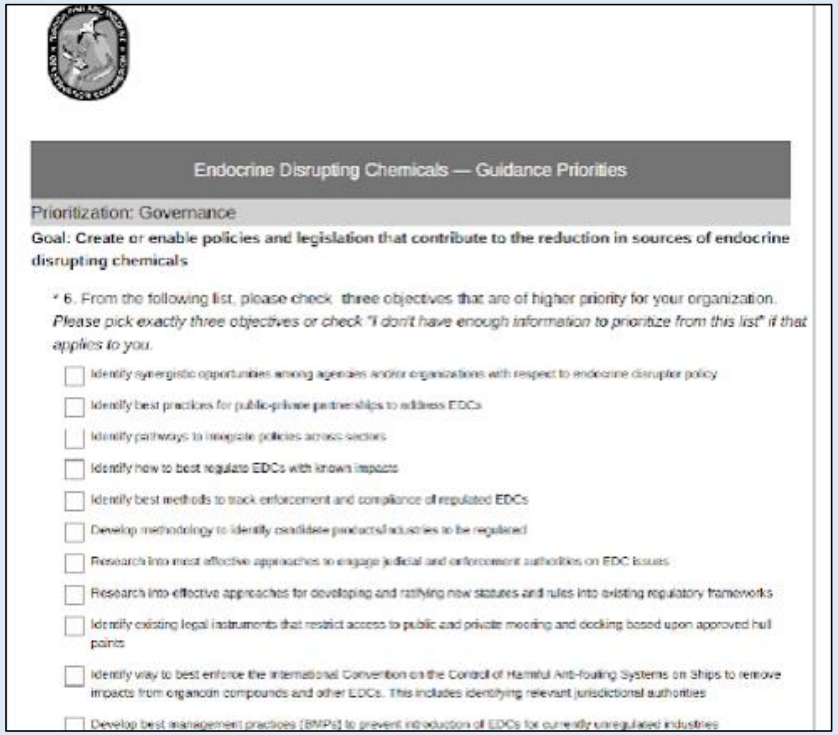
2. Do you work locally (i.e., Monroe County), regionally (i.e., South Florida), statewide (Florida), nationally, or internationally?

- Local
- National
- Regional
- International
- Statewide

3. Which of the following best describes your role within your organization/institution?

- I am a decision maker who makes or implements policy
- I am a researcher who provides information directly to policy-makers
- I am a field scientist who collects data
- I am an interested citizen
- Other (please specify)

Prioritization Identification


Endocrine Disrupting Chemicals — Guidance Priorities

Prioritization: Governance

Goal: Create or enable policies and legislation that contribute to the reduction in sources of endocrine disrupting chemicals

* 6. From the following list, please check three objectives that are of higher priority for your organization. *Please pick exactly three objectives or check "I don't have enough information to prioritize from this list" if that applies to you.*

- Identify synergistic opportunities among agencies and/or organizations with respect to endocrine disrupter policy
- Identify best practices for public-private partnerships to address EDCs
- Identify pathways to integrate policies across sectors
- Identify how to best regulate EDCs with known impacts
- Identify best methods to track enforcement and compliance of regulated EDCs
- Develop methodology to identify candidate products/industries to be regulated
- Research into most effective approaches to engage judicial and enforcement authorities on EDC issues
- Research into effective approaches for developing and ratifying new statutes and rules into existing regulatory frameworks
- Identify existing legal instruments that restrict access to public and private mooring and docking based upon approved hull paints
- Identify way to best enforce the International Convention on the Control of Harmful Anti-fouling Systems on Ships to remove impacts from organotin compounds and other EDCs. This includes identifying relevant jurisdictional authorities
- Develop best management practices (BMPs) to prevent introduction of EDCs for currently unregulated industries

Rank score$_{objective}$= 3*n_1+ 2*n_2+ 1*n_3

- where n_1= number of respondents who ranked the item as first priority
- n_2= number of respondents who ranked the item as second priority
- n_3= number of respondents who ranked the item as third priority

Part 3 The Findings

Gap Analysis

N=8

Number	Objective	Intended Outcomes
1.	Identify best existing technologies including their associated costs to detect and reduce/eliminate EDCs from FKNMS	A list of technologies that could be employed to reduce EDCs by supporting mitigation and intervention
2.	Research into developing new technologies focused on detection and reduction of EDCs in the S Florida marine environment	List of possible technologies that can address EDCs in S Florida and a priority list of candidate approaches.
3.	Develop technological solutions that eliminate EDCs from wastewater	Reduction of EDCs introduced through wastewater
4.	Survey of marine-debris focused organizations to identify source areas of EDCs via plastic and runoff	Increase in clean beaches and reduction of litter sources, resulting in a reduction of EDCs associated with debris
5.	Identification of existing debris collection programs as tools to address EDCs originating from marine litter	Compiled list of local marine and terrestrial debris collection programs
6.	Identify best practices for reducing EDCs entering the marine environment	Implementation of best practices that reduce the input of EDCs to the S Florida marine environment.

Science

Goal 1: Reduce the impacts of EDCs on organisms and ecological communities in the south Florida marine environment

N=9

Number	Objective	Intended Outcomes
1.	Identify the sources and fate of EDCs from pharmaceuticals in the S Florida marine environment	Understanding of how medicinal products enter the system and impact marine organisms
2.	Create list of all known impacts of EDCs on marine diversity, species fecundity and survivability, and human health and identify gaps in knowledge.	Reference guide for agency offices and stakeholders
3.	Identify existing test indicator organisms most relevant to south Florida. When appropriate, convene experts to identify new, more ecosystem-relevant organisms	Development of a database of relevant indicator species
4.	Research aimed at Identifying how EDCs alter marine ecosystem function(s)	An understanding of direct and indirect consequences to the marine ecosystem from EDCs
5.	Identify strategic targets to reduce and/or restore marine ecosystem functions altered by EDCs	Proposed actions to restore or maintain function to altered systems

Science

Goal 2: Identify needed scientific information to better understand effects and needed actions related to EDCs in South Florida

N=16

Number	Objective	Intended Outcomes
1.	Create a list of relevant indicators for EDC monitoring in south Florida marine waters	A comprehensive list of indicators that can provide an assessment of the state of the environment with respect to EDCs, and progress on reducing EDCs and their impacts
2.	Monitoring to quantify EDCs in the south Florida marine environment	Baseline of EDCs in south Florida understood, and continually built upon
3.	Identify what constitutes sufficient monitoring to examine EDC sources to south Florida	Appropriately-scaled and efficient monitoring programs
4.	Further development of EDC detection and monitoring techniques	New or existing technologies identified and employed that can be adapted to EDC monitoring
5.	Identify target species that have a sufficiently long timeline which can provide a baseline for long-term monitoring. If baselines do not exist for a target species, begin monitoring to establish baselines. These species would potentially already be impacted from EDCs, but still provides a basis to inform decision making.	Identify impacts to sentinel species from EDC exposure.
6.	Create a list of all water quality monitoring (WQM) sites	Development state-wide, curated WQM database
7.	Prioritize which indicators of EDC disruption to monitor for in populations	List of biologically and ecosystem relevant indicators
8.	Determine which habitat, species, and ecological communities are most vulnerable to EDC exposure and determine what needs to be monitored to achieve their protection (e.g. water, sediments, tissue, larval development, etc.).	Habitats, species, and ecological communities at highest risk from EDCs established and best monitoring approaches determined

Monitoring

Ensure sufficient knowledge and capacity to effectively monitor the south Florida marine environment to identify significant changes to the environment, identify when strategies should be implemented (triggerpoints), or evaluate the effectiveness of management efforts

N=10

Number	Objective	Intended Outcomes
1.	Identify synergistic opportunities among agencies and/or organizations with respect to endocrine disruptor policy	Integration of multi-agency/organization endocrine disruption programs into local and regional government policies and programs
2.	Identify best practices for public-private partnerships to address EDCs	Development of programs that are based on the best practices for endocrine disruption research programs in multi-agency/organization frameworks.
3.	Identify pathways to integrating policies across sectors	Integration of endocrine disruption programs into local and regional government policies and programs
4.	Identify how to best regulate EDCs with known impacts	Comprehensive understanding of existing regulations and gaps in the regulatory framework.
5.	Identify best methods to track enforcement and compliance of regulated EDCs	Processes and procedures that integrate the various enforcement and regulatory agencies Clear definition of function and administrative roles of all the stakeholders involved
6.	Develop methodology to identify candidate products/industries to be regulated	Best practices established for proposing candidate EDCs for regulation
7.	Research into most effective approaches to engage judicial and enforcement authorities on EDC issues	Ensuring adequate institutional, policy, and legal arrangements and support

Governance

Create or strengthen policies and/or legislation that contribute to the reduction of endocrine disrupting chemicals and their effects

N=15

Number	Objective	Intended Outcomes
1.	Identify best constructs for multiorganizational agreements that coordinate unified messaging campaigns that address the priority endocrine disrupting chemicals/products (e.g. heavy metals, sunscreens, medications, or specific chemicals)	Unified messaging on EDCs, increasing focus and efficacy of messaging. More voices = higher chance of success. Establish an end target for all communications. (i.e. why are we doing this?)
2.	Create a list of simplified terms for communication to the public.	A list of simple terms and language to communicate endocrine disruption itself, and information about endocrine disrupting chemicals to public
3.	Develop and implement easy take-home messages by identifying topics of local importance and engaging with the public and children for localized messaging.	Create a sense of local ownership, pride, and awareness spurring local action
4.	Identify ideal local venues for messaging (e.g., dive shops, hospitals Dr. offices).	List of local venues to share materials related to EDCs
5.	Identify local champions that can disseminate the messaging.	High profile local celebrities/champions identified to share materials and messaging related to EDCs.
6.	Identify important local focal species to assist in messaging.	Prioritized list of high-profile charismatic local species of significance for effective messaging on EDC impacts
7.	Develop local demonstration projects that address EDCs including citizen-science projects.	Public informed about local impacts and exposure. Show the public how EDCs appear in their area to convey changes that need to be made.

Communications

Develop effective communications tools and approaches to communicate information to stakeholder groups related to science and policies in order to provide effective framework for addressing EDCs in south Florida

N=3

Number	Research Objective(s)	Intended Outcomes
1.	Identify and quantify economic impacts from EDCs to multiple sectors	Economic impacts to various sectors (e.g., commercial and recreational fishing, tourism) from EDCs for coastal and marine areas
2.	Develop social science study and funding support to quantify the effects of EDCs on the social and well-being of different classes of society including the fishing sector	Evidence of socio-behavioral tolerances and strategy development to address it
3.	Examine the costs to treat sewage to remove all EDCs from effluent	Support decision making through report of potential costs in sewage treatment to remove EDCs.

Economic Impact

Reduce the impacts of EDCs on economies and social condition of communities associated with the south Florida marine environment

Prioritization Analysis

Highest priority by theme

Research Theme	Top Priority
Science *Goal 1 (Reduce the impacts of EDCs on organisms and ecological communities in the south Florida marine environment)*	Identify best practices for reducing EDCs entering the marine environment
Science *Goal 2 (Identify needed scientific information to better understand effects and needed actions related to EDCs in South Florida)*	Identify how EDCs alter marine ecosystem function(s)
Monitoring	Determine which habitat, species, and ecological communities are most vulnerable to EDC exposure and determine what needs to be monitored to achieve their protection (e.g., water, sediments, tissue, larval development)
Governance	Develop methodology to identify candidate products/industries to be regulated
Communications	Provide public with examples on how they can reduce EDC sources
Economic Impacts	Identify and quantify economic impacts from EDCs to multiple sectors

Priorities by stakeholder group – Science Goal 1

Objective	% of respondents			
	Decision maker	Principal Investigator	Field scientist	Educator/ citizen
Identify best existing technologies including their associated costs to detect and reduce/eliminate EDCs from Florida Keys National Marine Sanctuary (FKNMS)	36	17	22	17
Research to find new technologies focused on detection and reduction of EDCs in the S Florida marine environment	27	33	28	33
Develop technological solutions that eliminate EDCs from wastewater	18	17	6	33
Survey of marine-debris focused organizations to identify source areas of EDCs via plastic and runoff	0	17	17	0
Identify existing debris collection programs as tools to address EDCs originating from marine litter	0	8	17	0
Identify best practices for reducing EDCs entering the marine environment	46	38	17	67
Develop and implement local or regional stakeholder EDC detection and reduction	18	17	6	17
Identify and quantify the impacts to human health from EDCs in the marine environment of south Florida	18	13	6	33
I don't have enough information to prioritize from this list	9	8	17	33

Part 4 Other Elements in the Report

Chapter 1: Intro

Chapter 2: Current State of Knowledge

Case study 1 – TBT and imposex

Chapter 3: Emerging Contaminants

Case study 1 – Sunscreen and impacts on coral larvae

Chapter 4: EDC Mitigation in Discharges

Technologies

Statutes, Regulations, Policies

Chapter 5: Methods Gaps and Priorities

Chapter 6: Results

Chapter 7: EDCs and Climate Change

Chapter 8: Discussion

TOWARDS DEVELOPING A STRATEGIC APPROACH TO EVALUATING THE ROLE OF ENDOCRINE DISRUPTING CHEMICALS ON THE SOUTH FLORIDA MARINE ENVIRONMENT

How to use this report

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Thank You

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