

Template for Discussing Regional Conceptual Ecosystem Models (CEM) at the 2017 Recover/SCG Science Meeting:

SCS and related CEMs & HCs

Step 1: Introduction

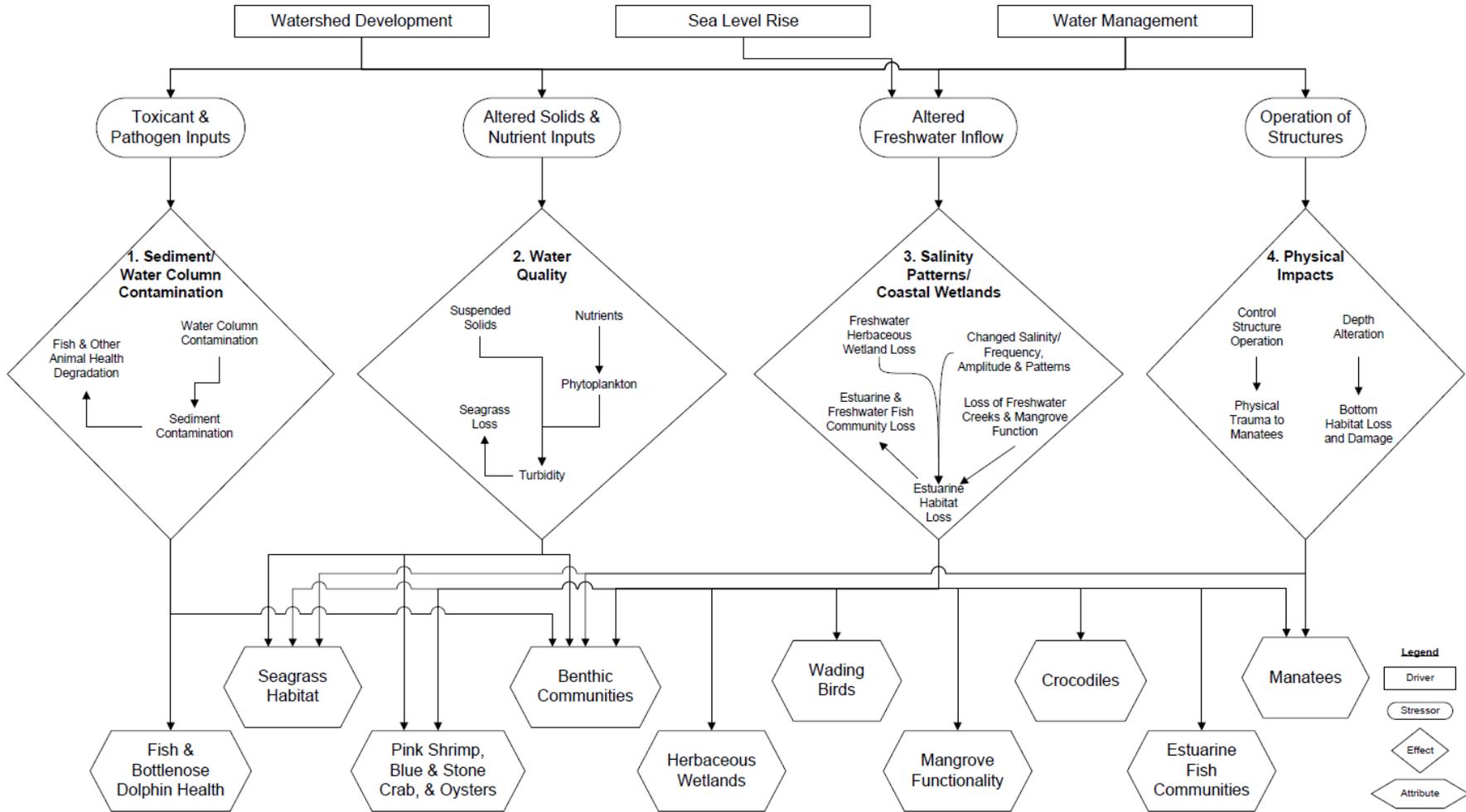
This discussion of the Southern Coastal Regional and Hypothesis Cluster CEMs (and related CEMs & HCs; i.e. Mangrove) is designed to provide logistic guidance to the Regional Coordinators and RECOVER Facilitators in their respective break-out groups. By following the approach used here, you will be able to focus your participants on regional issues of change and vulnerabilities. The tables below that ask questions related to the drivers and stressors associated with the CEM's that were published in Wetlands in 2005 should help organize your thoughts on CEM modifications and hypotheses (without getting trapped by too much detail and word-smithing).

Goals associated with our review of the Total CEM:

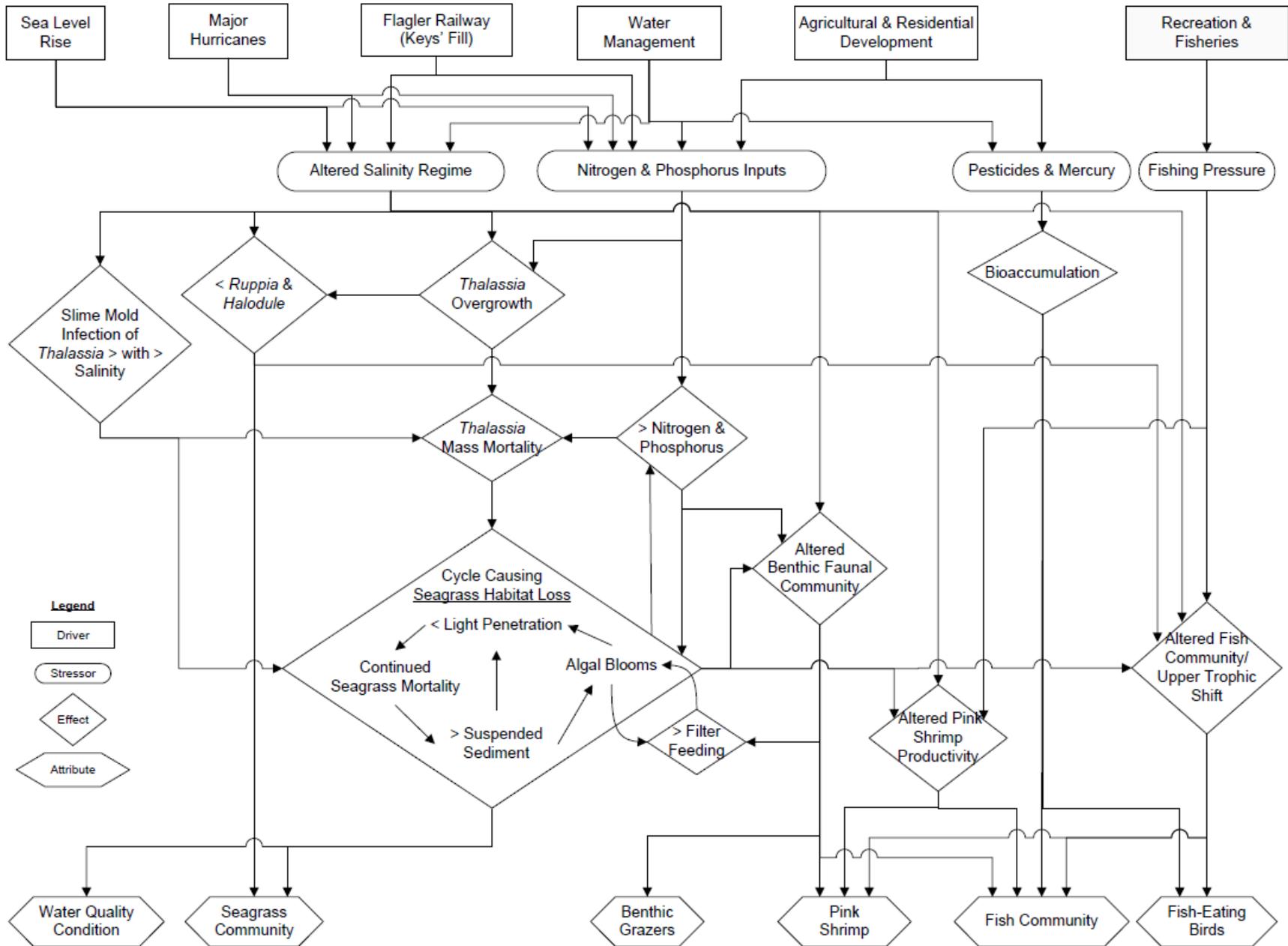
- 1) Provide an overview of the CEMs and describe its salient features, including a description of its defining characteristics.
- 2) Capture the full range of thought associated with how the drivers and stressors have changed since first published and how they are likely to change by 2050.

The Regional CEMs (2005) and HCs (2009) are presented throughout this document for reference.

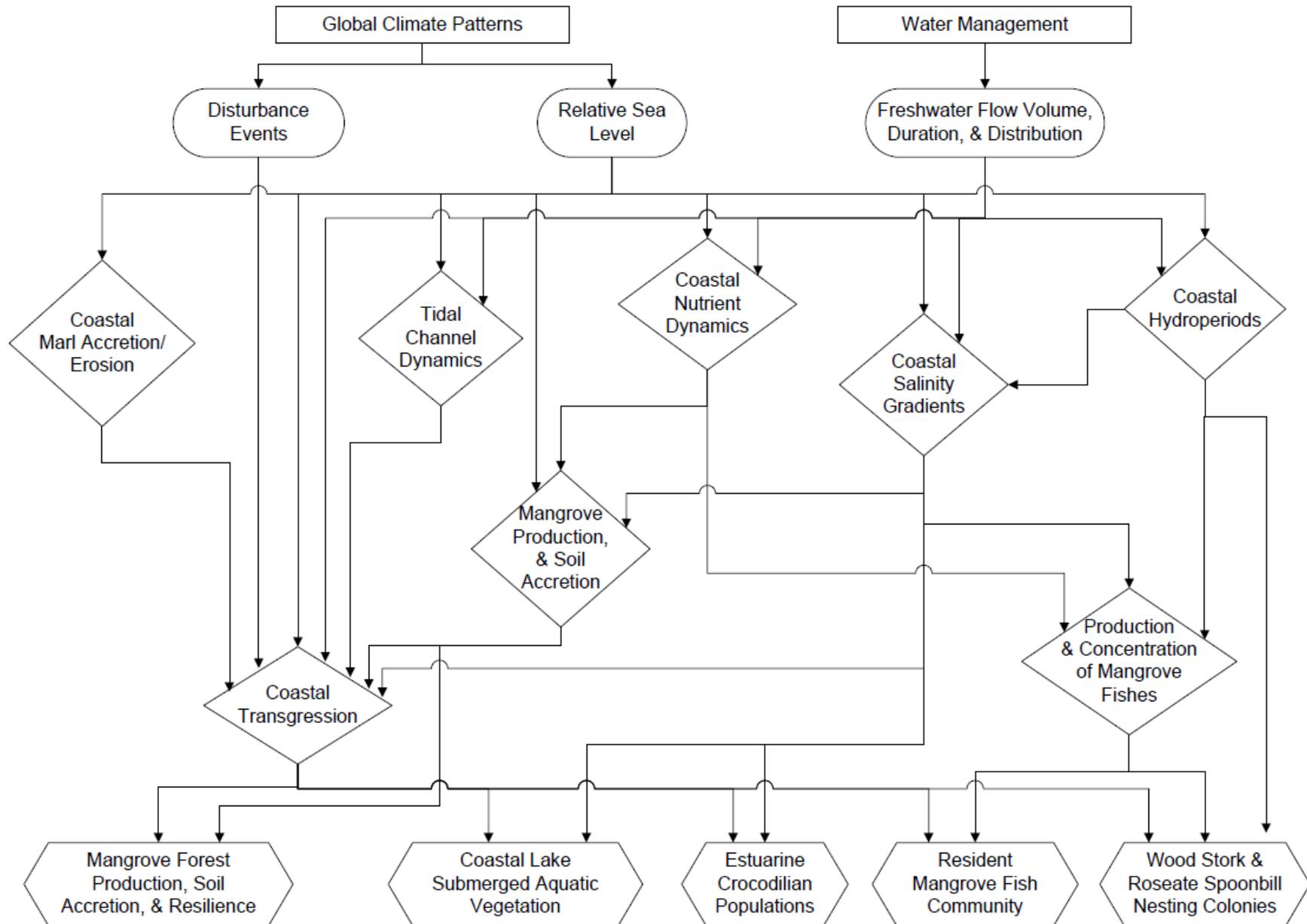
Biscayne Bay Conceptual Ecological Model



Florida Bay Conceptual Ecological Model



Everglades Mangrove Estuaries Conceptual Ecological Model



Step 2: Definitions

Driver

Driving forces that occur outside the natural system, which have large-scale influences on natural systems. Drivers are natural forces (e.g., sea-level rise) or anthropogenic (e.g., water management).

Stressor

Physical or chemical changes that occur within natural systems that are brought about by drivers, causing significant changes in biological components, patterns and relationships in natural systems.

Ecological Effects

Physical, chemical, and biological responses caused by stressors

Attributes

A parsimonious subset of all potential biological elements or components of natural systems that are representative of overall ecological conditions of the system. Attributes typically are populations, species, guilds, communities, or processes. Attributes, also known as indicators or endpoints, are selected to represent known or hypothesized effects of stressors (e.g., nesting wading bird numbers) and elements of systems that have important human values (e.g., endangered species, sports fishing).

Defining Characteristics of the Total CEM

“Defining characteristics of the ecosystem are 1) abundant large vertebrates and aquatic prey bases, 2) animals with large spatial requirements, 3) healthy, dynamically sustainable estuaries, 4) oligotrophic freshwater wetlands, and 5) complex landscape mosaics and interactions.”

Step 3: Updating the Drivers

Each participant should get a copy of the CEM and the attached Table 1. The facilitator will ask that each participant take 2-3 minutes to address, in writing, each Driver. It is recommended that the facilitator address and discuss each driver, one-driver-at-a-time. Notice that the table has empty rows after each Driver. This allows you to delve a little deeper into the exact nature of the driver.

Step 4: Updating the Stressors

Each participant should get a copy of the CEM and the attached Table 2. The facilitator will ask that each participant take 2-3 minutes to address, in writing, each Stressor. It is recommended that the facilitator address and discuss each stressor, one-stressor-at-a-time. Notice that the table has empty rows after each Stressor. This allows you to delve a little deeper into the exact nature of the Stressor.

Step 5: Wrap-up, Conclusions and Action Items

Summarize the final product. Identify where there was agreement and disagreement. Ask everyone to hand in their written comments. Ask people what they think should be the next steps in this RECOVER CEM update. Identify people to work on hypotheses.

SOUTHERN COASTAL SYSTEMS REGIONAL CEM UPDATES

Table 1. SCS Regional Drivers. Question 1 – Given what we now know, compared to 2005, have the influences of the Drivers changed? If so, how? Question 2 – In the next 30 years, without Restoration, will the influences of the Drivers change? If so, how?

No Change = 0; Increasing Influence = (+) or (++); Decreasing Influence = (-) or (--); Unsure = (?).

Contact: Name, Title, Affiliation, email, Phone _____

DRIVER	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Climate Change & Sea-Level Rise (all CEMs)				
Additional Notes/Comments:				
Water Management (all CEMs)				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS REGIONAL CEM UPDATES CON'T

DRIVER	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Watershed Development (Biscayne Bay CEM)				
Additional Notes/Comments:				
Major Hurricanes (Florida Bay CEM)				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS REGIONAL CEM UPDATES CON'T

DRIVER	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Flagler Railway (Florida Bay CEM)				
Additional Notes/Comments:				
Agricultural & Residential Development (Florida Bay CEM)				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS REGIONAL CEM UPDATES CON'T

DRIVER	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Recreation & Fisheries (Florida Bay CEM)				
Additional Notes/Comments:				
New Drivers for consideration? (all CEMs)				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS REGIONAL CEM UPDATES CON'T

DRIVER	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
New Drivers for consideration? (all estuaries)				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS REGIONAL CEM UPDATES CON'T

Table 2. SCS Regional CEM Stressors. Question 1 – Given what we now know, compared to 2005, have the threats from the stressor changed? If so, how? Question 2 – In the next 30 years, without Restoration, will the threats from the stressor change? If so, how?

No Change = 0; Increasing Influence = (+) or (++); Decreasing Influence = (-) or (--); Unsure = (?).

Contact: Name, Title, Affiliation, email, Phone _____

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Toxicant & Pathogen Inputs (Biscayne Bay CEM)				
Additional Notes/Comments:				
Altered Solids & Nutrient Inputs (Biscayne Bay CEM)				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS REGIONAL CEM UPDATES CON'T

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Altered Freshwater Inflow (Biscayne Bay CEM)				
Additional Notes/Comments:				
Operation of Structures (Biscayne Bay CEM)				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS REGIONAL CEM UPDATES CON'T

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Altered Salinity Regime (Florida Bay CEM)				
Additional Notes/Comments:				
Nitrogen & Phosphorus Inputs (Florida Bay CEM)				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS REGIONAL CEM UPDATES CON'T

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Pesticides & Mercury (Florida Bay CEM)				
Additional Notes/Comments:				
Fishing Pressure (Florida Bay CEM)				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS REGIONAL CEM UPDATES CON'T

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Altered Salinity Regime (Florida Bay CEM)				
Additional Notes/Comments:				
Disturbance Events (Mangrove CEM)				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS REGIONAL CEM UPDATES CON'T

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Relative Sea Level Rise (Mangrove CEM)				
Additional Notes/Comments:				
Freshwater Flow Volume, Duration, Distribution (Mangrove CEM)				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS REGIONAL CEM UPDATES CON'T

DRIVER	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
New Stressors for consideration? (all estuaries)				
Additional Notes/Comments:				

HYPOTHESIS CLUSTER CONCEPTUAL ECOLOGICAL MODELS (CEMs) FOR THE SOUTHERN COASTAL SYSTEMS AND ASSOCIATED AREAS

[FROM THE 2009 CERP RECOVER MONITORING AND ASSESSMENT PLAN \(MAP\)](#)

Supporting document in preparation for the 2017 SCG Science Meeting (January 23-24, 2017)

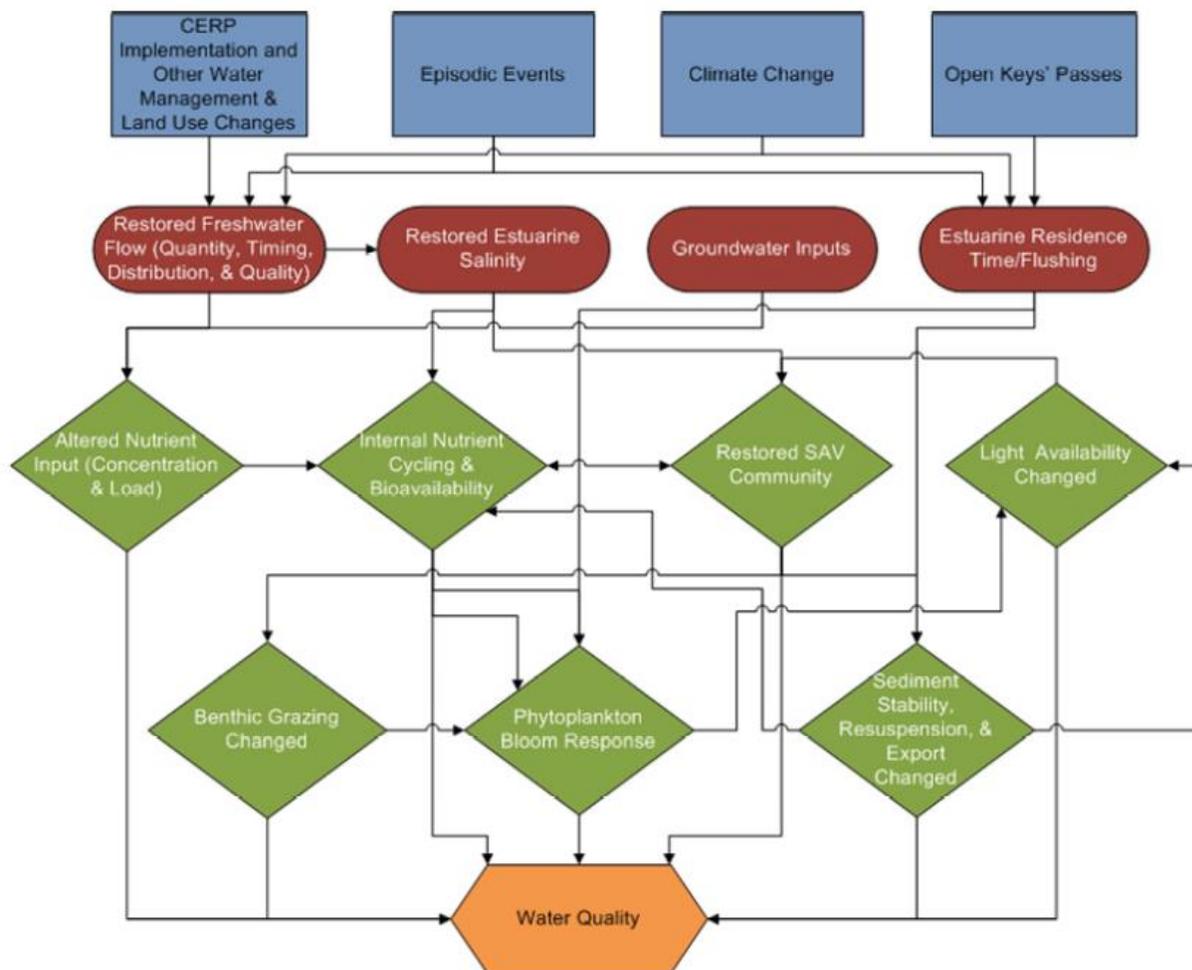


FIGURE 3-34: SOUTHERN COASTAL SYSTEMS WATER QUALITY AND PHYTOPLANKTON HYPOTHESIS CLUSTER DIAGRAM

Key: blue squares=drivers, red ovals=stressors, green diamonds=ecological effects, orange hexagons=attributes

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – WATER QUALITY AND PHYTOPLANKTON

Table 3. SCS WQ & PHYTOPLANKTON Drivers. Question 1 – Given what we now know, compared to 2005, have the influences of the Drivers changed? If so, how? Question 2 – In the next 30 years, without Restoration, will the influences of the Drivers change? If so, how?

No Change = 0; Increasing Influence = (+) or (++); Decreasing Influence = (-) or (--); Unsure = (?).

Contact: Name, Title, Affiliation, email, Phone _____

DRIVER	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
CERP Implementation and Other Water Management & Land Use Changes				
Additional Notes/Comments:				
Episodic Events				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – WATER QUALITY AND PHYTOPLANKTON CON'T

Driver	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Climate Change				
Additional Notes/Comments:				
Open Key's Passes				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – WATER QUALITY AND PHYTOPLANKTON CON'T

Driver	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
New Drivers for consideration?				
Additional Notes/Comments:				
New Drivers for consideration?				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – WATER QUALITY AND PHYTOPLANKTON

Table 4. SCS WQ & PHYTOPLANKTON Stressors. Question 1 – Given what we now know, compared to 2005, have the threats from the stressor changed? If so, how? Question 2 – In the next 30 years, without Restoration, will the threats from the stressor change? If so, how?

No Change = 0; Increasing Influence = (+) or (++); Decreasing Influence = (-) or (--); Unsure = (?).

Contact: Name, Title, Affiliation, email, Phone _____

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Restored Freshwater Flow				
Additional Notes/Comments:				
Restored Estuarine Salinity				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – WATER QUALITY AND PHYTOPLANKTON CON'T

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Groundwater Inputs				
Additional Notes/Comments:				
Estuarine Residence Time/Flushing				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – WATER QUALITY AND PHYTOPLANKTON CON'T

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
New Stressors for consideration?				
Additional Notes/Comments:				
New Stressors for consideration?				
Additional Notes/Comments:				

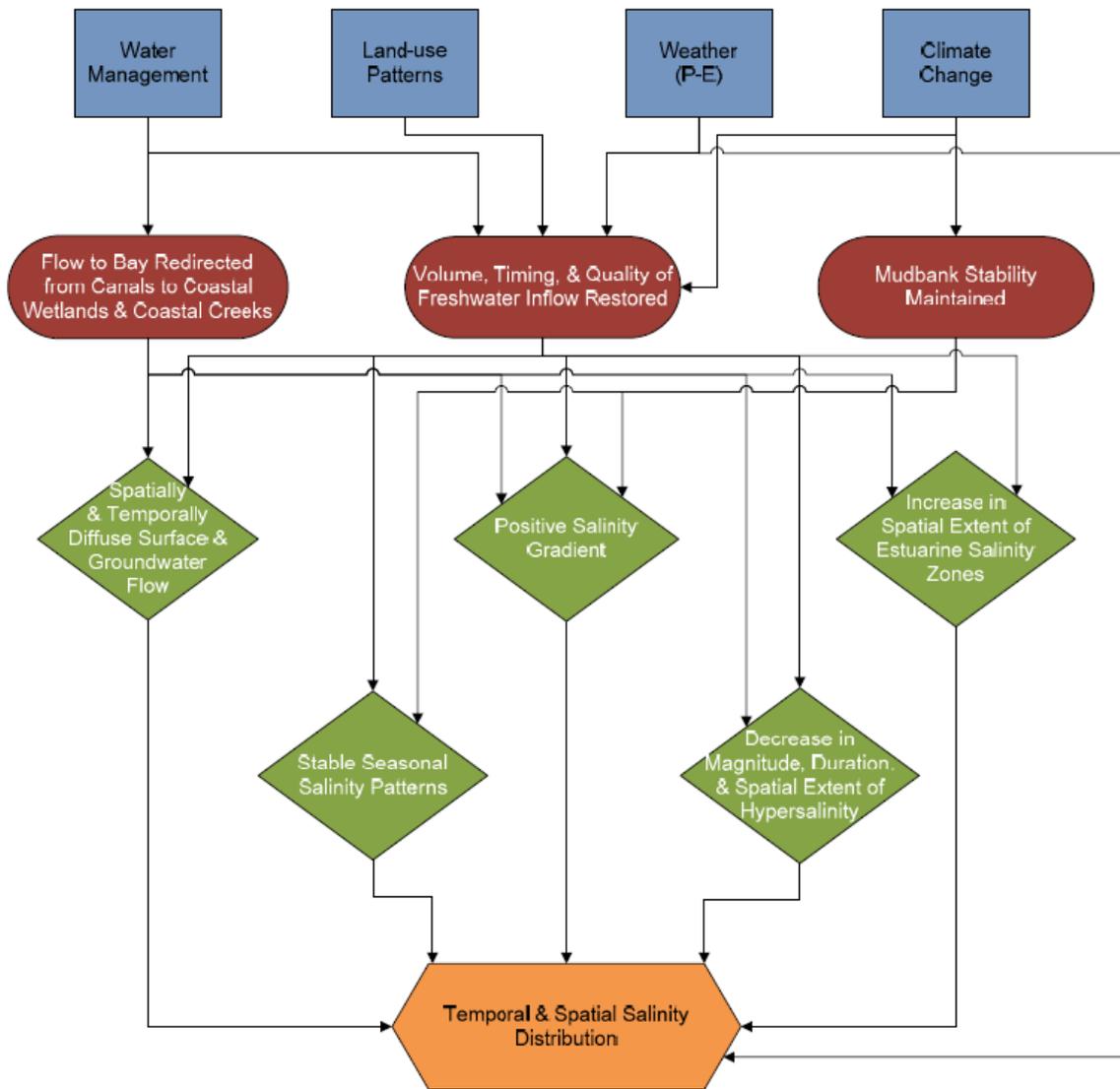


FIGURE 3-35. SOUTHERN COASTAL SYSTEMS SALINITY DISTRIBUTIONS HYPOTHESIS CLUSTER DIAGRAM

Key: blue squares=drivers, red ovals=stressors, green diamonds=ecological effects, orange hexagons=attributes

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – SALINITY DISTRIBUTIONS

Table 5. SCS SALINITY Drivers. Question 1 – Given what we now know, compared to 2005, have the influences of the Drivers changed? If so, how? Question 2 – In the next 30 years, without Restoration, will the influences of the Drivers change? If so, how?
No Change = 0; Increasing Influence = (+) or (++); Decreasing Influence = (-) or (--); Unsure = (?).

Contact: Name, Title, Affiliation, email, Phone _____

DRIVER	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Water Management				
Additional Notes/Comments:				
Land-use Patterns				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – SALINITY DISTRIBUTIONS CON'T

Driver	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Weather (P-E)				
Additional Notes/Comments:				
Climate Change				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – SALINITY DISTRIBUTIONS CON'T

Driver	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
New Drivers for consideration?				
Additional Notes/Comments:				
New Drivers for consideration?				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – SALINITY DISTRIBUTIONS

Table 6. SCS SALINITY Stressors. Question 1 – Given what we now know, compared to 2005, have the threats from the stressor changed? If so, how? Question 2 – In the next 30 years, without Restoration, will the threats from the stressor change? If so, how?
No Change = 0; Increasing Influence = (+) or (++); Decreasing Influence = (-) or (--); Unsure = (?).

Contact: Name, Title, Affiliation, email, Phone _____

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Flow to Bay Redirected from Canals to Coastal Wetlands & Coastal Creeks				
Additional Notes/Comments:				
Volume, Timing, & Quality of Freshwater Inflow Restored				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – SALINITY DISTRIBUTIONS CON'T

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Mudbank Stability Maintained				
Additional Notes/Comments:				
New Stressors for consideration?				
Additional Notes/Comments:				

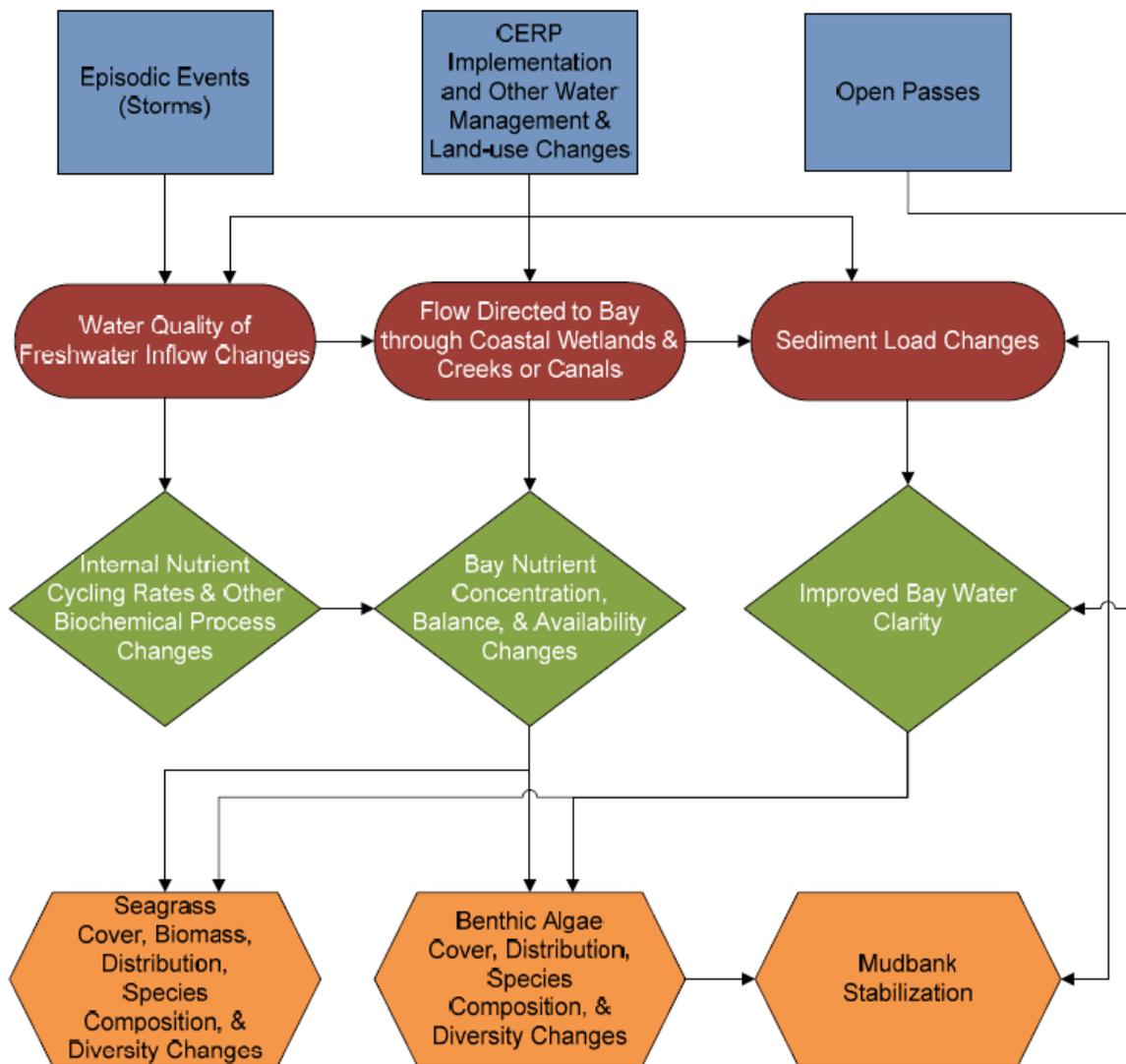


FIGURE 3-36. SOUTHERN COASTAL SYSTEMS SUBMERGED AQUATIC VEGETATION HYPOTHESIS CLUSTER DIAGRAM

Key: blue squares=drivers, red ovals=stressors, green diamonds=ecological effects, orange hexagons=attributes

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – SUBMERGED AQUATIC VEGETATION

Table 7. SCS SAV Drivers. Question 1 – Given what we now know, compared to 2005, have the influences of the Drivers changed? If so, how? Question 2 – In the next 30 years, without Restoration, will the influences of the Drivers change? If so, how?

No Change = 0; Increasing Influence = (+) or (++); Decreasing Influence = (-) or (--); Unsure = (?).

Contact: Name, Title, Affiliation, email, Phone _____

DRIVER	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Episodic Events (Storms)				
Additional Notes/Comments:				
CERP Implementation and Other Water Management & Land-use Changes				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – SUBMERGED AQUATIC VEGETATION CON'T

Driver	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Open Passes				
Additional Notes/Comments:				
New Drivers for consideration?				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – SUBMERGED AQUATIC VEGETATION

Table 8. SCS SAV Stressors. Question 1 – Given what we now know, compared to 2005, have the threats from the stressor changed? If so, how? Question 2 – In the next 30 years, without Restoration, will the threats from the stressor change? If so, how?

No Change = 0; Increasing Influence = (+) or (++); Decreasing Influence = (-) or (--); Unsure = (?).

Contact: Name, Title, Affiliation, email, Phone _____

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Water Quality of Freshwater Inflow Changes				
Additional Notes/Comments:				
Flow Directed to Bay through Coastal Wetlands & Creeks or Canals				
Additional Notes/Comments:				

**SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES –
SUBMERGED AQUATIC VEGETATION CON'T**

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Sediment Load Changes				
Additional Notes/Comments:				
New Stressors for Consideration?				
Additional Notes/Comments:				

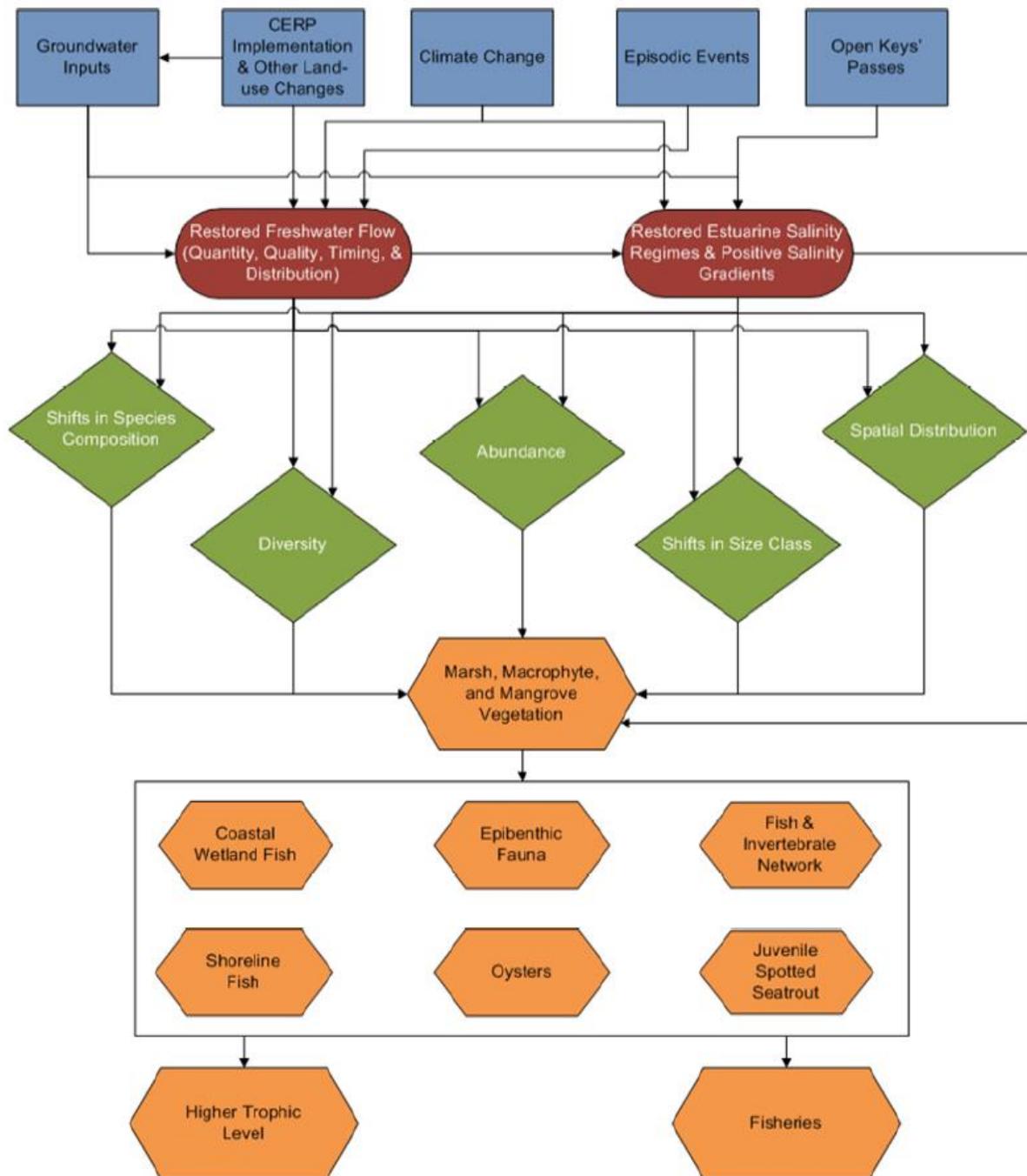


FIGURE 3-37. SOUTHERN COASTAL SYSTEMS ESTUARINE NURSERY HABITAT HYPOTHESIS CLUSTER DIAGRAM

Key: blue squares=drivers, red ovals=stressors, green diamonds=ecological effects, orange hexagons=attributes

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – ESTUARINE NURSERY HABITAT

Table 9. SCS ESTUARINE NURSERY HABITAT Drivers. Question 1 – Given what we now know, compared to 2005, have the influences of the Drivers changed? If so, how? Question 2 – In the next 30 years, without Restoration, will the influences of the Drivers change? If so, how?

No Change = 0; Increasing Influence = (+) or (++); Decreasing Influence = (-) or (--); Unsure = (?).

Contact: Name, Title, Affiliation, email, Phone _____

DRIVER	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Groundwater Inputs				
Additional Notes/Comments:				
CERP Implementation and Other Water Management & Land-use Changes				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – ESTUARINE NURSERY HABITAT CON'T

Driver	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Climate Change				
Additional Notes/Comments:				
Episodic Events				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – ESTUARINE NURSERY HABITAT CON'T

Driver	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Open Keys' Passes				
Additional Notes/Comments:				
New Drivers for consideration?				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – ESTUARINE NURSERY HABITAT

Table 10. SCS ESTUARINE NURSERY HABITAT Stressors. Question 1 – Given what we now know, compared to 2005, have the threats from the stressor changed? If so, how? Question 2 – In the next 30 years, without Restoration, will the threats from the stressor change? If so, how?

No Change = 0; Increasing Influence = (+) or (++); Decreasing Influence = (-) or (--); Unsure = (?).

Contact: Name, Title, Affiliation, email, Phone _____

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Restored Freshwater Flow				
Additional Notes/Comments:				
Restored Estuarine Salinity Regimes & Positive Salinity Gradients				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – ESTUARINE NURSERY HABITAT CON'T

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
New Stressors for consideration?				
Additional Notes/Comments:				
New Stressors for consideration?				
Additional Notes/Comments:				

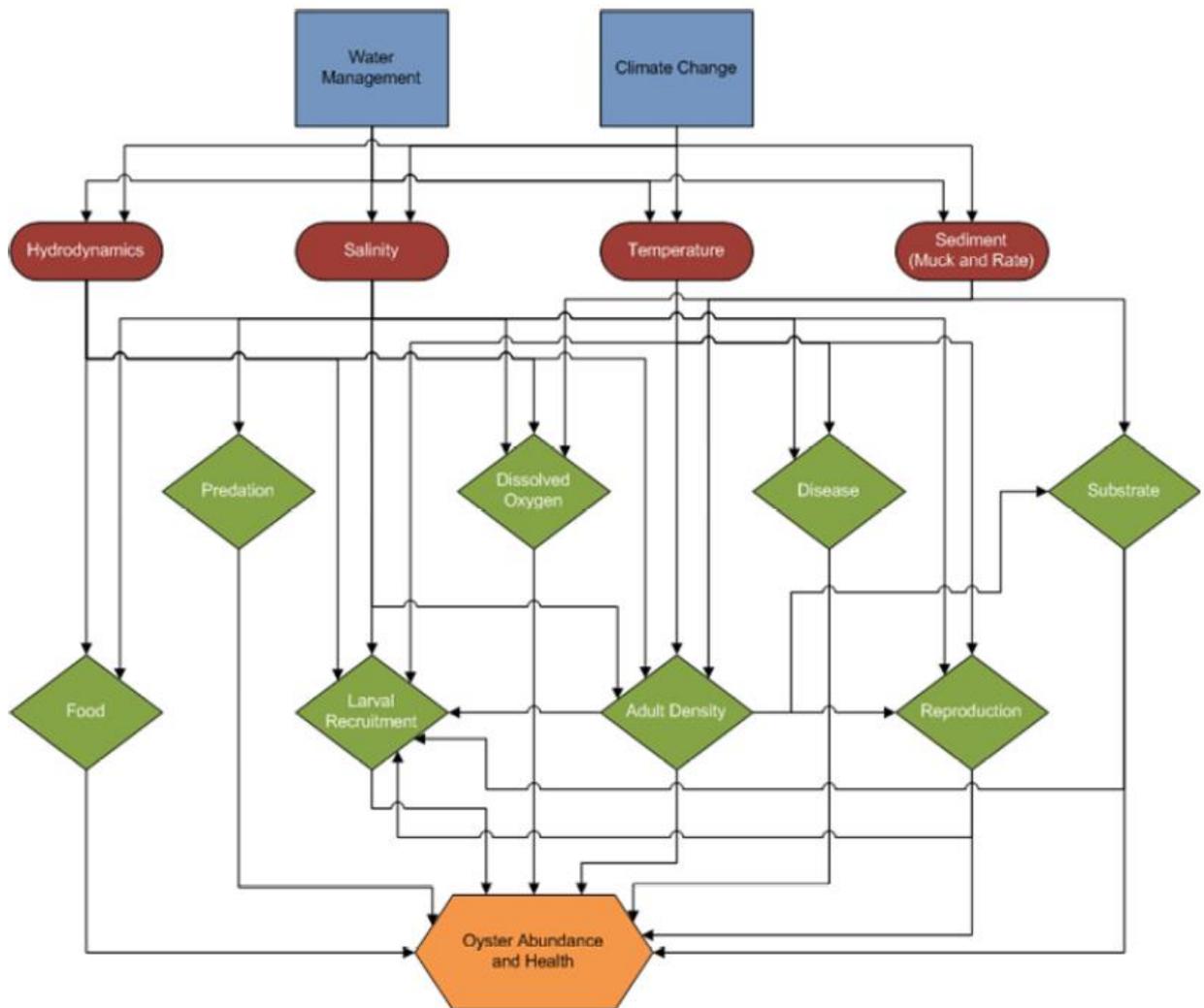


FIGURE 3-38: SOUTHERN COASTAL SYSTEMS OYSTERS HYPOTHESIS CLUSTER DIAGRAM

Key: blue squares=drivers, red ovals=stressors, green diamonds=ecological effects, orange hexagons=attributes

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – OYSTERS

Table 11. SCS OYSTERS Drivers. Question 1 – Given what we now know, compared to 2005, have the influences of the Drivers changed? If so, how? Question 2 – In the next 30 years, without Restoration, will the influences of the Drivers change? If so, how?
No Change = 0; Increasing Influence = (+) or (++); **Decreasing Influence = (-) or (--)**; **Unsure = (?)**.

Contact: Name, Title, Affiliation, email, Phone _____

DRIVER	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Water Managment				
Additional Notes/Comments:				
Climate Change				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – OYSTERS CON'T

Driver	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
New Drivers for consideration?				
Additional Notes/Comments:				
New Drivers for consideration?				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – OYSTERS

Table 12. SCS OYSTERS Stressors. Question 1 – Given what we now know, compared to 2005, have the threats from the stressor changed? If so, how? Question 2 – In the next 30 years, without Restoration, will the threats from the stressor change? If so, how?
No Change = 0; Increasing Influence = (+) or (++); Decreasing Influence = (-) or (--); Unsure = (?).

Contact: Name, Title, Affiliation, email, Phone _____

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Hydrodynamics				
Additional Notes/Comments:				
Salinity				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – OYSTERS CON'T

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Temperature				
Additional Notes/Comments:				
Sediment (Muck and Rate)				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – OYSTERS CON'T

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
New Stressors for consideration?				
Additional Notes/Comments:				
New Stressors for consideration?				
Additional Notes/Comments:				

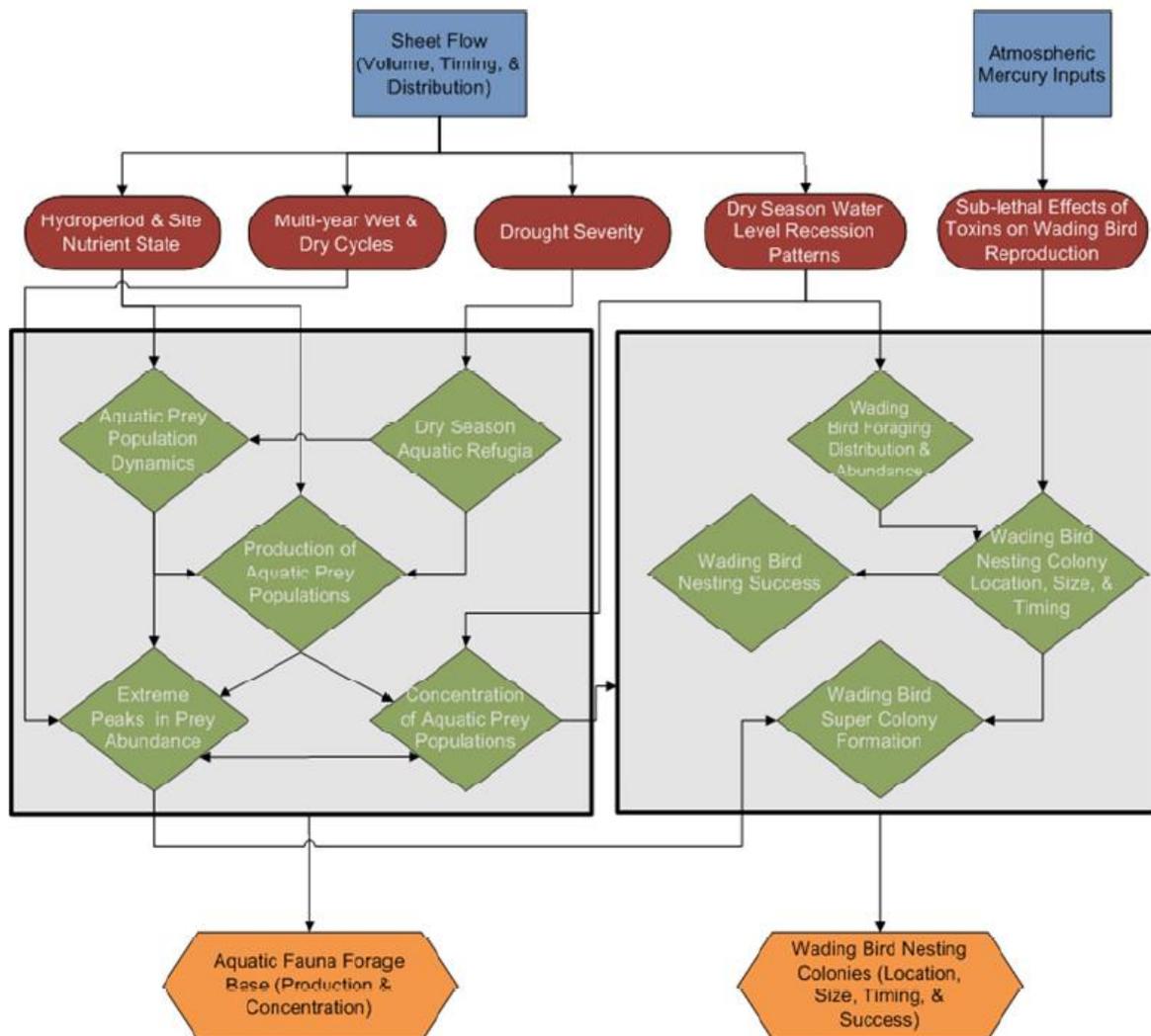


FIGURE 3-39. SOUTHERN COASTAL SYSTEMS PREDATOR-PREY INTERACTION OF WADING BIRDS AND AQUATIC FAUNA BASE HYPOTHESIS CLUSTER DIAGRAM

Key: blue squares=drivers, red ovals=stressors, green diamonds=ecological effects, orange hexagons=attributes

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – PREDATOR-PREY INTERACTION OF WADING BIRDS AND AQUATIC FAUNA

Table 13. SCS PREDATOR-PREY INTERACTION Drivers. Question 1 – Given what we now know, compared to 2005, have the influences of the Drivers changed? If so, how? Question 2 – In the next 30 years, without Restoration, will the influences of the Drivers change? If so, how?

No Change = 0; Increasing Influence = (+) or (++); Decreasing Influence = (-) or (--); Unsure = (?).

Contact: Name, Title, Affiliation, email, Phone _____

DRIVER	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Sheet Flow				
Additional Notes/Comments:				
Atmospheric Mercury Inputs				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – PREDATOR-PREY INTERACTIONS CON'T

Driver	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
New Drivers for consideration?				
Additional Notes/Comments:				
New Drivers for consideration?				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – PREDATOR-PREY INTERACTION OF WADING BIRDS AND AQUATIC FAUNA

Table 14. SCS PREDATOR-PREY INTERACTIONS Stressors. Question 1 – Given what we now know, compared to 2005, have the threats from the stressor changed? If so, how? Question 2 – In the next 30 years, without Restoration, will the threats from the stressor change? If so, how?

No Change = 0; Increasing Influence = (+) or (++); Decreasing Influence = (-) or (--); Unsure = (?).

Contact: Name, Title, Affiliation, email, Phone _____

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Hydroperiod & Site Nutrient State				
Additional Notes/Comments:				
Multi-year Wet & Dry Cycles				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – PREDATOR-PREY INTERACTIONS CON'T

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Drought Severity				
Additional Notes/Comments:				
Dry Season Water Level Recession Patterns				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – PREDATOR-PREY INTERACTIONS CON'T

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Sub-lethal Effects of Toxins on Wading Bird Reproduction				
Additional Notes/Comments:				
New Stressors for consideration?				
Additional Notes/Comments:				

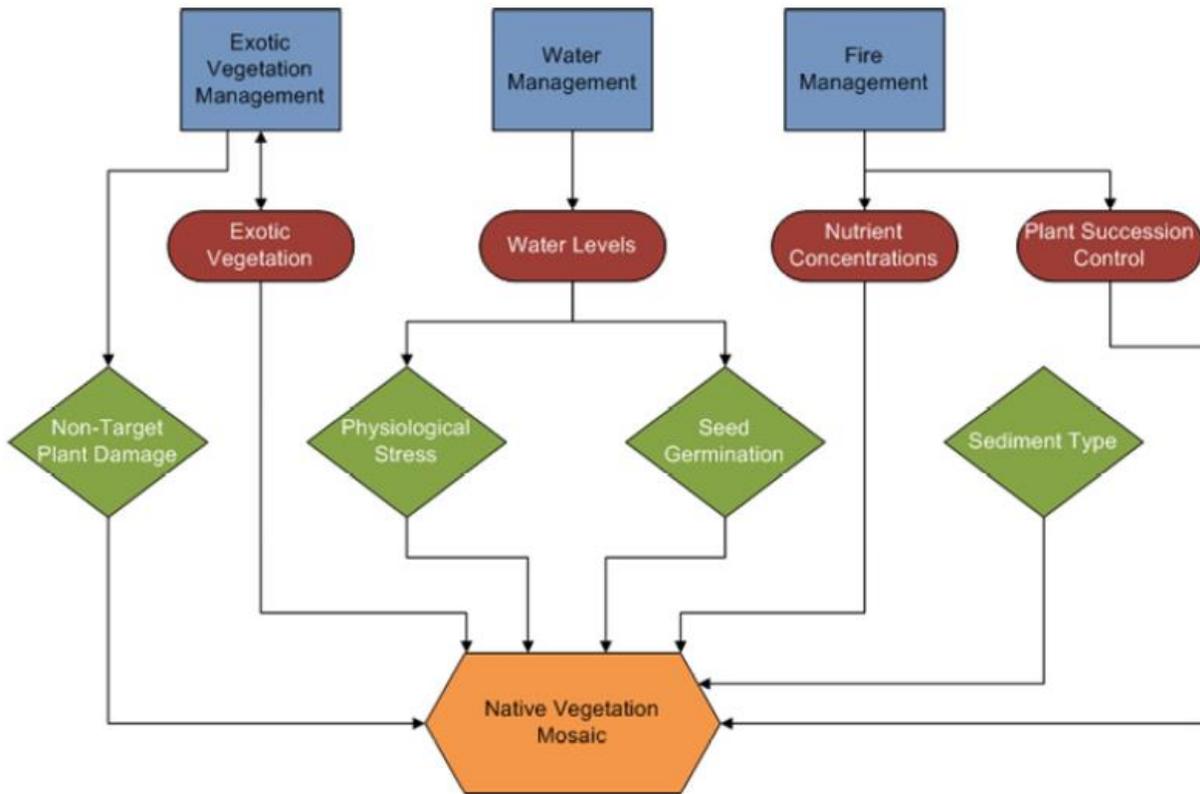


FIGURE 3-40. SOUTHERN COASTAL SYSTEMS NATIVE VEGETATION MOSAIC HYPOTHESIS CLUSTER DIAGRAM

Key: blue squares=drivers, red ovals=stressors, green diamonds=ecological effects, orange hexagons=attributes

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – NATIVE VEGETATION MOSAIC

Table 15. SCS NATIVE VEGETATION MOSAIC Drivers. Question 1 – Given what we now know, compared to 2005, have the influences of the Drivers changed? If so, how? Question 2 – In the next 30 years, without Restoration, will the influences of the Drivers change? If so, how?

No Change = 0; Increasing Influence = (+) or (++); Decreasing Influence = (-) or (--); Unsure = (?).

Contact: Name, Title, Affiliation, email, Phone _____

DRIVER	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Exotic Vegetation Management				
Additional Notes/Comments:				
Water Management				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – NATIVE VEGETATION MOSAIC CON'T

Driver	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Fire Management				
Additional Notes/Comments:				
New Drivers for consideration?				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – NATIVE VEGETATION MOSAIC

Table 16. SCS NATIVE VEGETATION MOSAIC Stressors. Question 1 – Given what we now know, compared to 2005, have the threats from the stressor changed? If so, how? Question 2 – In the next 30 years, without Restoration, will the threats from the stressor change? If so, how?

No Change = 0; Increasing Influence = (+) or (++); Decreasing Influence = (-) or (--); Unsure = (?).

Contact: Name, Title, Affiliation, email, Phone _____

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Exotic Vegetation				
Additional Notes/Comments:				
Water Levels				
Additional Notes/Comments:				

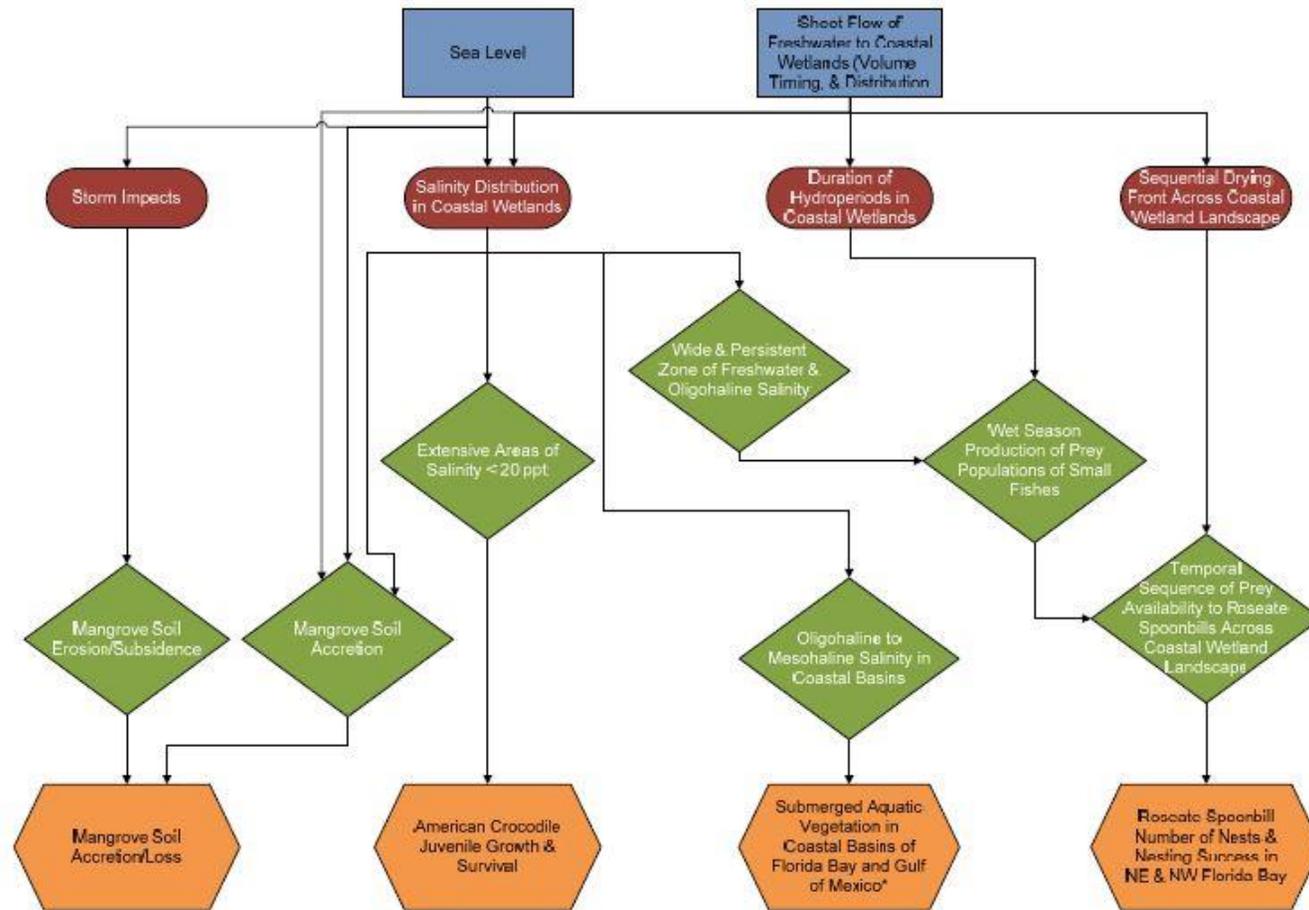
SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – NATIVE VEGETATION MOSAIC CON'T

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Nutrient Concentrations				
Additional Notes/Comments:				
Plant Succession Control				
Additional Notes/Comments:				

SOUTHERN COASTAL SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – NATIVE VEGETATION MOSAIC CON'T

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
New Stressors for consideration?				
Additional Notes/Comments:				
New Stressors for consideration?				
Additional Notes/Comments:				

HYPOTHESIS CLUSTER CEM UPDATES – RELATED TO SOUTHERN COASTAL SYSTEMS



* Submerged Aquatic Vegetation Covered in Southern Estuaries Module

FIGURE 3-31: GREATER EVERGLADES ECOSYSTEM CHARACTERISTICS OF EVERGLADES COASTAL WETLANDS PRIOR TO DRAINAGE HYPOTHESIS CLUSTER DIAGRAM

Key: blue squares=drivers, red ovals=stressors, green diamonds=ecological effects, orange hexagons=attributes

GREATER EVERGLADES HYPOTHESIS CLUSTER CEM UPDATES – ECOSYSTEM CHARACTERISTICS OF EVERGLADES COASTAL WETLANDS

Table 17. GE COASTAL WETLANDS Drivers. Question 1 – Given what we now know, compared to 2005, have the influences of the Drivers changed? If so, how? Question 2 – In the next 30 years, without Restoration, will the influences of the Drivers change? If so, how?

No Change = 0; Increasing Influence = (+) or (++); Decreasing Influence = (-) or (--); Unsure = (?).

Contact: Name, Title, Affiliation, email, Phone _____

DRIVER	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Sea Level				
Additional Notes/Comments:				
Sheet Flow of Freshwater Coastal Wetlands				
Additional Notes/Comments:				

GREATER EVERGLADES HYPOTHESIS CLUSTER CEM UPDATES – COASTAL WETLANDS CON'T

Driver	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
New Drivers for consideration?				
Additional Notes/Comments:				
New Drivers for consideration?				
Additional Notes/Comments:				

GREATER EVERGLADES SYSTEMS HYPOTHESIS CLUSTER CEM UPDATES – ECOSYSTEM CHARACTERISTICS OF EVERGLADES COASTAL WETLANDS

Table 18. GE COASTAL WETLANDS Stressors. Question 1 – Given what we now know, compared to 2005, have the threats from the stressor changed? If so, how? Question 2 – In the next 30 years, without Restoration, will the threats from the stressor change? If so, how?

No Change = 0; Increasing Influence = (+) or (++); Decreasing Influence = (-) or (--); Unsure = (?).

Contact: Name, Title, Affiliation, email, Phone _____

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Storm Impacts				
Additional Notes/Comments:				
Salinity Distribution				
Additional Notes/Comments:				

GREATER EVERGLADES HYPOTHESIS CLUSTER CEM UPDATES – COASTAL WETLANDS CON'T

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
Duration of Hydroperiods				
Additional Notes/Comments:				
Sequential Drying Front Across Coastal Wetland Landscape				
Additional Notes/Comments:				

GREATER EVERGLADES HYPOTHESIS CLUSTER CEM UPDATES – COASTAL WETLANDS CON'T

STRESSOR	CHANGED SINCE 2005?	HOW HAS IT CHANGED?	PREDICTED CHANGES FOR 2057?	HOW WILL THINGS CHANGE BY 2057?
New Stressors for consideration?				
Additional Notes/Comments:				
New Stressors for consideration?				
Additional Notes/Comments:				