

# SYSTEM-WIDE SCIENCE COORDINATION AND REPORTING

April Patterson, Project Manager  
U.S. Army Corps of Engineers

National Conference on Ecosystem Restoration  
April 20, 2016



# Overview

- REstoration COordination and VERification (RECOVER) Science Organization
- Regions and Science Missions
  - ▶ Planning
  - ▶ Evaluation
  - ▶ Assessment
- Coordination
- Reporting



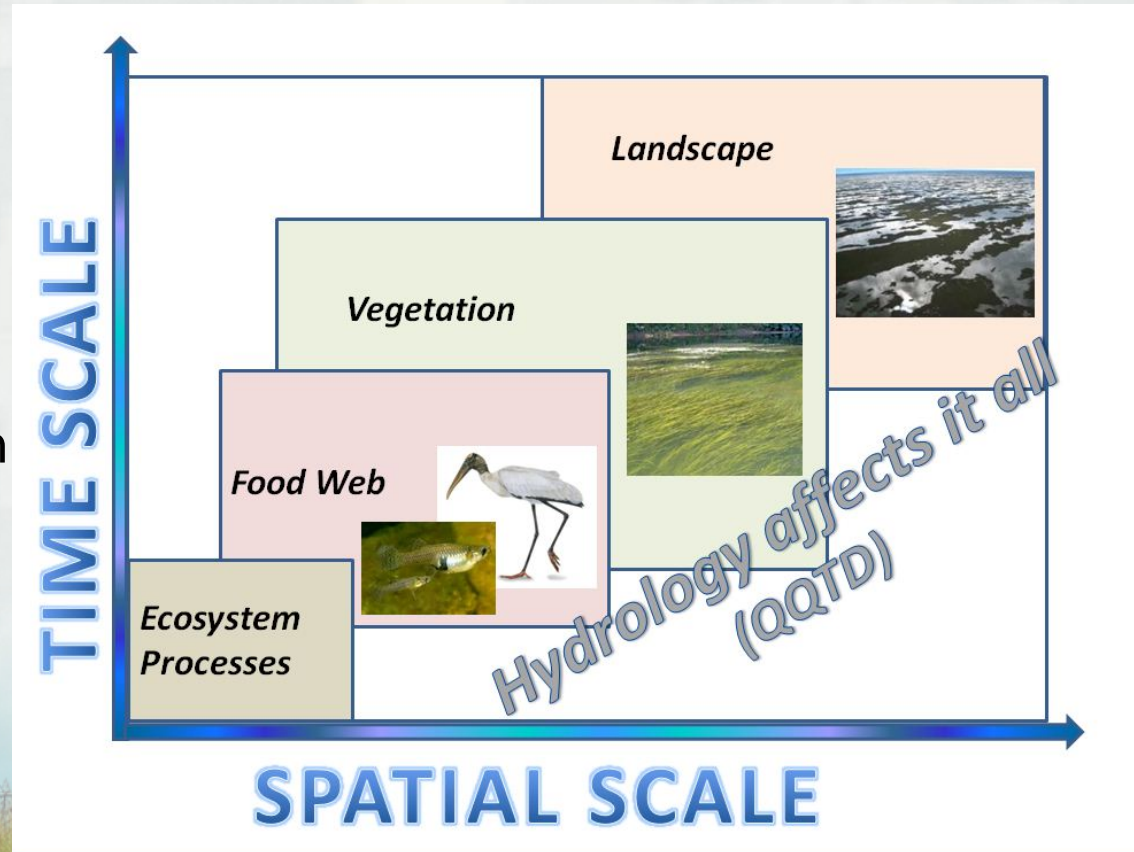
# Comprehensive Everglades Restoration Plan Vision and Goals

## ■ Vision

- ▶ Get the Water Right (Quality, Quantity, Timing, and Distribution)
- ▶ Good Ecosystem Response, Restoration Success

## ■ Goals

- ▶ Enhance Ecologic Values
- ▶ Enhance Economic Values and Social Well Being



# RECOVER Mission

REstoration  
COordination and  
VERification



- *Science Behind CERP*
  - ▶ *Planning (System-wide)*
  - ▶ *Evaluation*
  - ▶ *Assessment*
- *Communicates and coordinates the results of these evaluations and assessments*
- *Scientific support for decision-making*

*“Science will be the foundation of restoration.”*  
– 2003 Programmatic Regulations



# Interagency and Interdisciplinary Scientific Coordination



- Multi-agency team of scientists, modelers, planners and resource specialists
- Interagency Teams collaborate on all projects and all levels of coordination
- RECOVER Leadership Group – 10 Agencies and 2 Tribes
- RECOVER Executive Committee, Regional Coordinators, Task Leads, Principal Investigators
- Supports Science Coordination Group (Task Force)
- Science Used in Independent Science Review (CISRERP)
- Science used in decision making



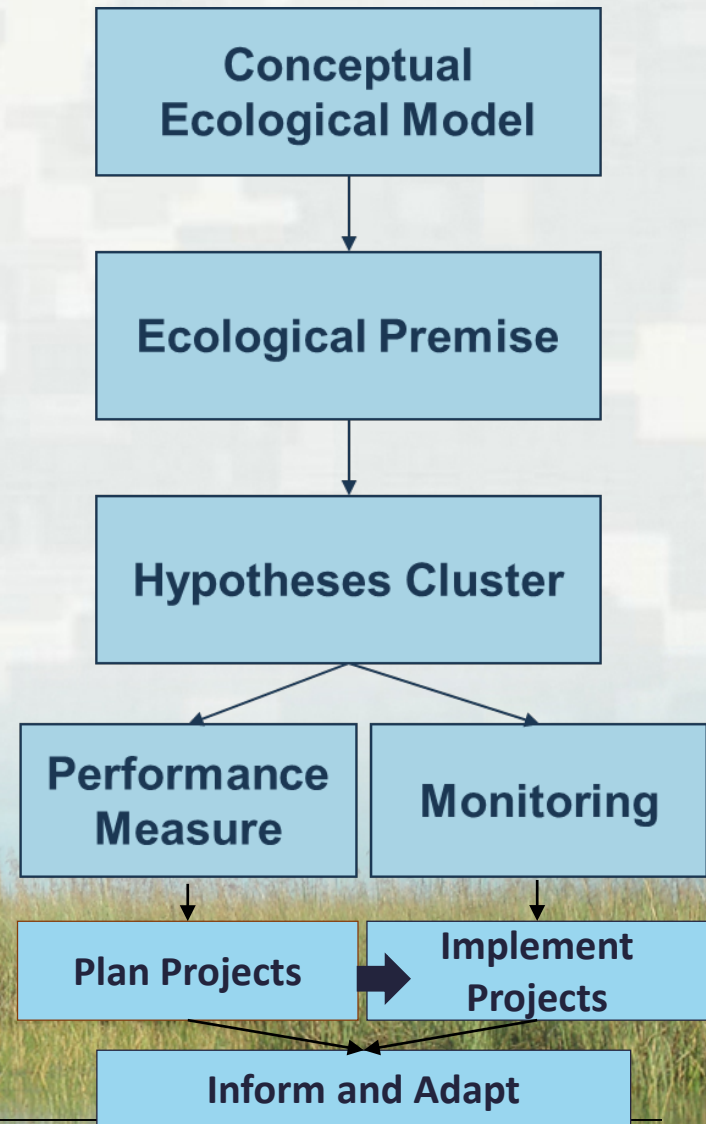
# Coordination and Collaboration

- Supports Science Coordination Group's Ecological Indicator Report - Provide Monitoring and reporting through PI's
- Independent Science Review (CISRERP)
- Works closely with and leverages other SF science and monitoring such as LTER, USGS, ENP, SFWMD and counties



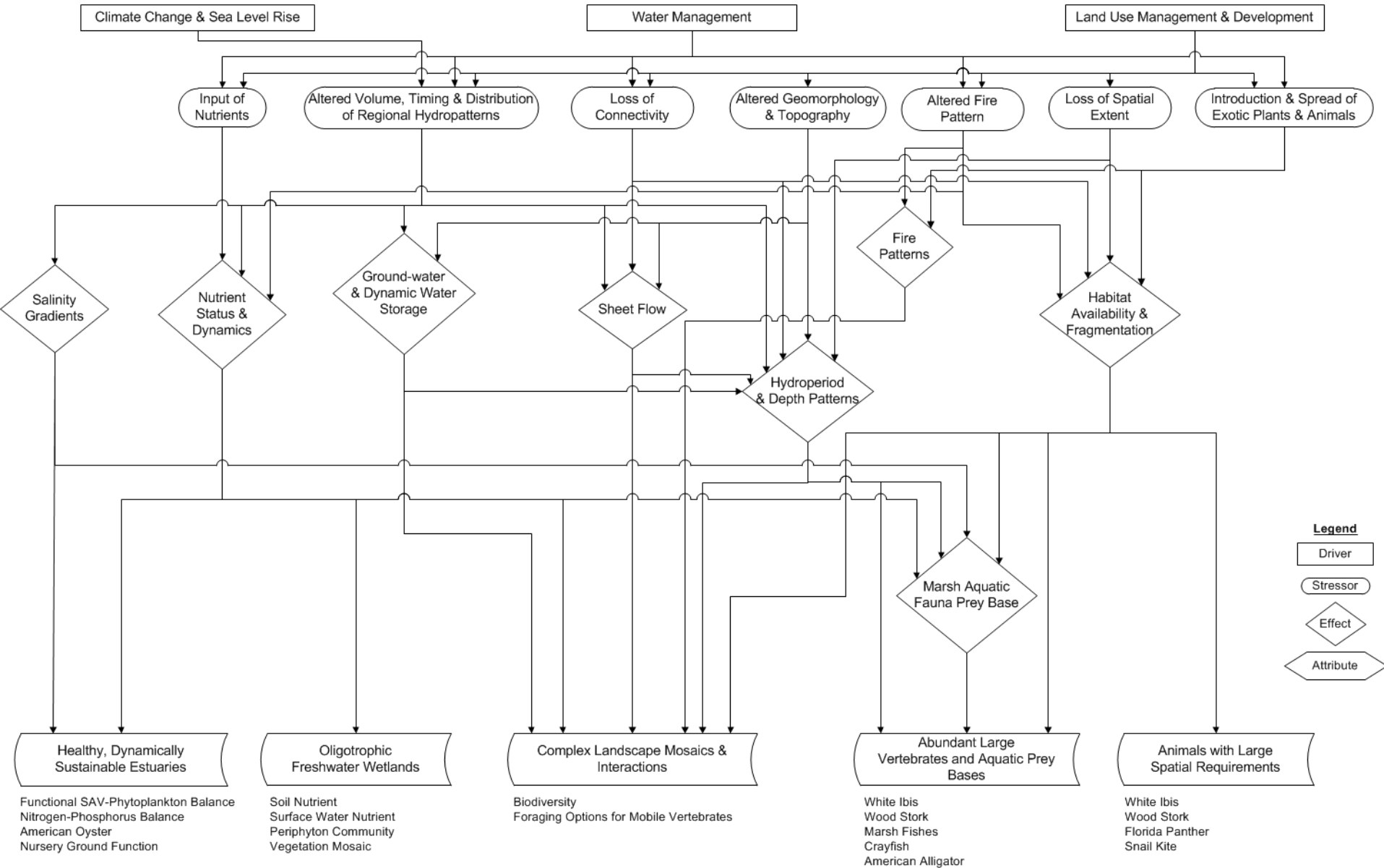
# Science Framework

- **The Science Behind CERP**
- **The Monitoring and Assessment Plan (MAP)**
  - ▶ Organized around Conceptual Ecological Models (CEM's)
  - ▶ Hypothesis Clusters
  - ▶ Indicator Species
  - ▶ Performance Measures
- **Adaptive Management**
  - ▶ Feedback Loop



# Total System CEM

Total System Conceptual Ecological Model





# RECOVER Regions

- Organized by geographic area

- ▶ Lake Okeechobee
- ▶ Northern Estuaries
- ▶ Greater Everglades
- ▶ Southern Coastal Systems



# CERP System-wide Monitoring

## Monitoring and Assessment Plan (MAP)

- Holistic description of the status of the Everglades ecosystem
- ~35 monitoring components
  - ▶ Ecological, biological, water quality
  - ▶ Linked to Performance Measures
  - ▶ Within and cross-regional monitoring
  - ▶ Leverages monitoring from other agencies
- Heart of the CERP Adaptive Management (AM) Program
- Summary of ecosystem changes as they relate to CERP goals and objectives
- Identification of major unanticipated findings



# What is the System Status Report?

An in-depth, system-wide assessment of monitoring data (physical, chemical and biological) from:

- ▶ RECOVER Monitoring & Assessment Plan (MAP)
- ▶ Historical sources
- ▶ Non-MAP sources



# System Status Report

- **Synthesize and assess technical data of the Everglades and South Florida Ecosystem**
  - ▶ System-wide hypotheses
  - ▶ Performance Measures
  - ▶ Interim Goals
  - ▶ CERP goals and objectives
- **Status, condition, and trends of hydrological, water quality, and biological data critical to Everglades restoration**
- **Identify unanticipated results and potential remedies for consideration**
- **Adaptive Management Feedback**
  - ▶ Update science (MAP, CEMs, Performance Measures, Tools)
  - ▶ Inform Project planning, design, operations, CERP schedule
  - ▶ Used in decision-making



# Why Develop the SSR?

- To establish pre-CERP reference conditions
- To determine whether the goals and objectives of CERP are being met
- To provide the best available science to decision-makers (through adaptive management) in order to improve restoration success



# What are the implications for CERP?



- Provides scientific information on the ecosystem's response to CERP implementation
- Reaffirms key CERP hypotheses
- Provides scientific information throughout project planning, design, construction, operation, and maintenance
- Reduces risk and uncertainty
- Contributes to CERP reports including the 5-Year Report to Congress
- Allows managers and decision-makers to use the best available science during implementation of the CERP

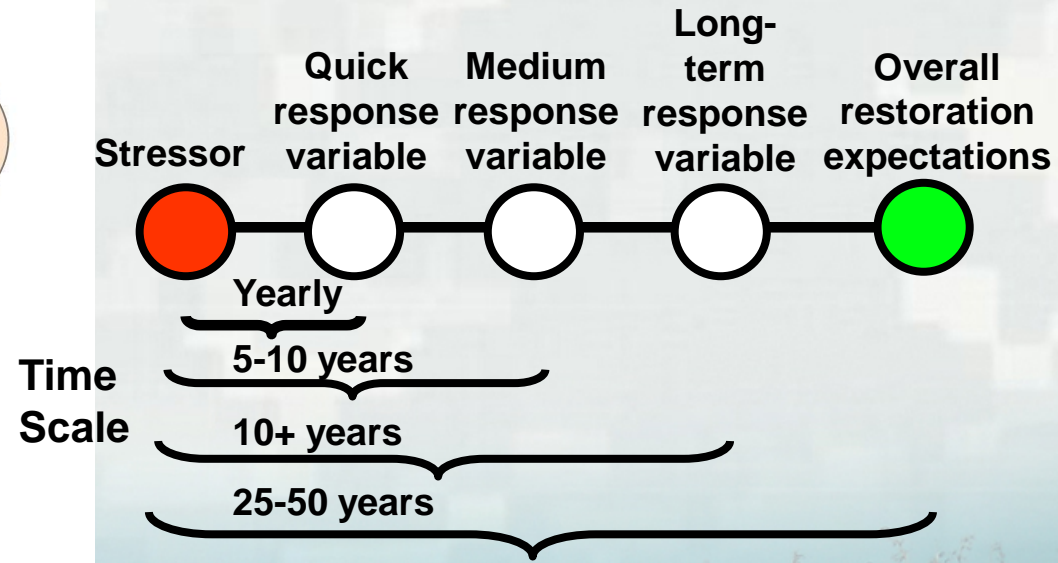
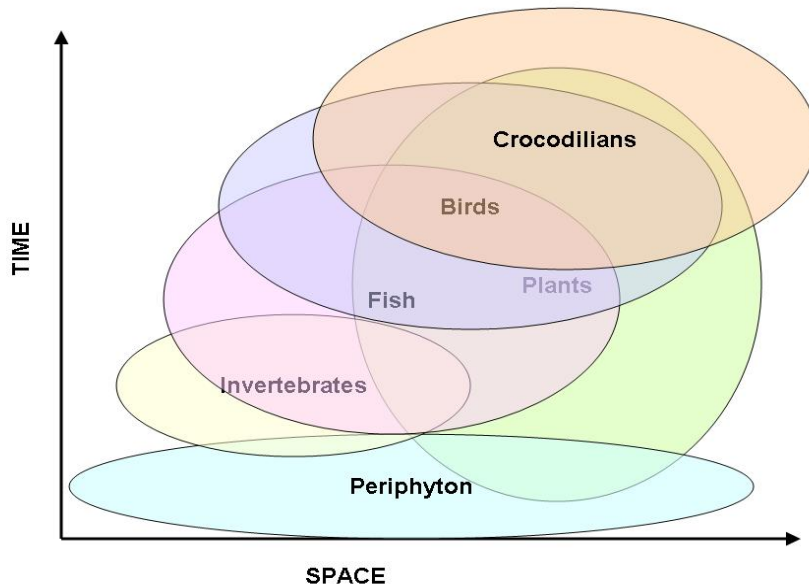


# Importance of System-wide Science

## Broad Spatial & Temporal Scales

Recognizing that the ecosystem responds over difference scales...

## Ecosystem Response



...creates opportunity to best leverage monitoring efforts



# Questions

