National Research Council
CISRERP Update
5th Biennial Report

Working Group & Science Coordination Group Joint Meeting

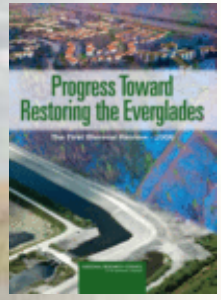
September 16, 2014

Committee on the Independent Scientific Review of Everglades Restoration Progress (CISRERP)

Independent Scientific Review: WRDA 2000, Section 601 (j)

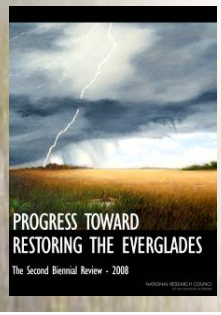
Establish an independent scientific review panel convened by a body, such as the National Academy of Sciences, to review the Plan's progress toward achieving the natural system restoration goals.

Produce a biennial report to Congress, the Secretary of the Army and Interior, and the Governor that includes an assessment of ecological indicators and other measures of progress in restoring the ecology of the natural system.



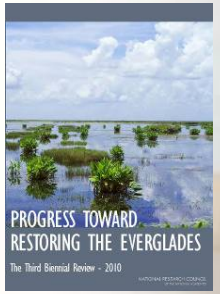
Progress Toward Restoring the Everglades: The First Biennial Review (2006).

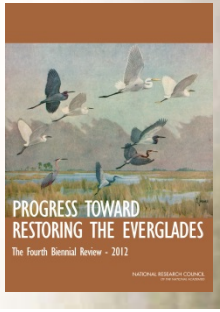
Progress Toward Restoring the Everglades: The Second Biennial Review (2008).



Progress Toward Restoring the Everglades: The Third Biennial Review (2010).

Progress Toward Restoring the Everglades: The Fourth Biennial Review (2012).





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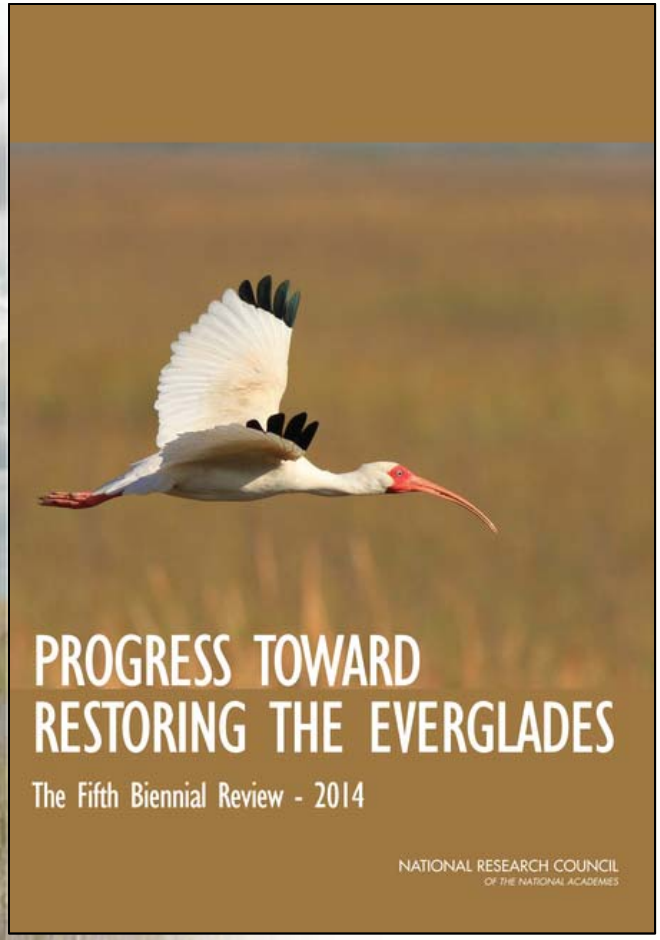


<u>Fifth Biennial Review Topical Areas</u>:

- **The Restoration Plan in Context**
- ✓ **The Central Everglades Planning Project (CEPP)**
- **Implementation Progress**
- ✓ **Climate Change and Sea-Level Rise: Implications For Everglades Restoration**
- ✓ **Biological Invasions and Everglades Restoration**
- **Use of Science in Decision Making**

CISRERP Recommendations
The Restoration Plan In Context

Background on Ecosystem Decline

The Everglades ecosystem is one of the world's ecological treasures. Water management changes over the last century to support agricultural and urban development have had profound effects on regional hydrology, vegetation, and wildlife populations.

Restoration Goals for the Everglades

SFERTF three broad strategic goals (WRDA 1996) : (1) "get the water right," (2) "restore, preserve, and protect natural habitats and species," and (3) "foster compatibility of the built and natural systems."

CERP goals (WRDA 2000): "restoration, preservation, and protection of the South Florida Ecosystem while providing for other water-related needs of the region, including water supply and flood protection."

Context of CERP and Related Restoration Projects

The CERP and related non-CERP projects seek to reverse the general decline of the ecosystem. Since 2000, the CERP and other major Everglades restoration efforts have adapted to changing budgets, refinements in scientific understanding, and an evolving legal context, particularly as it relates to water quality.

CISRERP Recommendations
Central Everglades Planning Project

Why Focus on the Central Everglades

The Central Everglades Planning Project effort was responsive to the need to expedite restoration in the central Everglades via increments of restoration, to avert further declines that could take many decades or longer to recover.

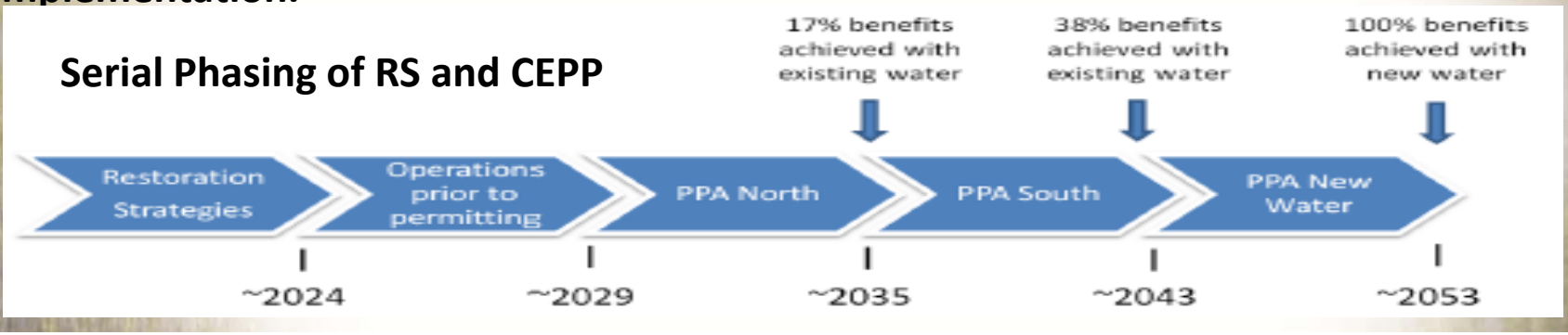
A New Planning Approach and Lessons Learned

The enhanced stakeholder and public engagement process should serve as a model for future planning processes. But the intensity of the 22-month process was extremely challenging for staff and stakeholders. This level of attention works for high-priority initiatives , but is unlikely to be sustainable for future CERP planning.

Requirements for Expedited Implementation

There are many hurdles to expedited implementation: Congressional authorization, project dependencies, project funding issues, and water quality permitting constraints currently appear to be the largest barriers to timely project implementation.

Serial Phasing of RS and CEPP



CISRERP Recommendations Implementation Progress

Federal/State Cost Sharing

The delay in WRDA authorization tied up the State's crediting for land acquisition and accelerated project implementation for many years. More recently, State CERP expenditures have declined, because of reduced SFWMD revenues and the need to fund non-CERP water quality projects to meet a 2012 Consent Order.

Revisiting CERP Restoration Priorities (IDS)

The Integrated Delivery Schedule needs to be revisited to advance projects with the greatest potential to avert ongoing ecosystem degradation and those that promise the largest restoration benefits. We need to balance implementation on the four 2nd Generation CERP projects and CEPP, with the prior approved 1st Generation projects.

Bureaucratic and Policy Issues have Caused Delays

Agency disagreements about non-CERP cost-sharing arrangements and legal requirements affected progress on the Kissimmee River Restoration and the C-111 South Dade project by delaying them for almost 2 years, but these differences appear to be resolved.

CERP Restoration Progress Remains Fairly Modest

Positive ecosystem responses have been detected after phased implementation in the Picayune Strand, Biscayne Bay Coastal Wetlands, and C-111 Spreader Canal projects, although many of these improvements are limited.

CISRERP Recommendations
Climate Change and Sea Level Rise

Accelerating Sea Level Rise is Already a Problem
Current impacts of rising sea levels are a harbinger of future climate change effects on the structure/function of the Everglades ecosystem, and the ecosystem services on which South Florida depends.

Temperature and Precipitation Changes will Impact Water Management
Expected increases in agricultural water demands, and anticipated population growth highlight the regional water supply challenges in South Florida.

Need to Integrate Climate Change into CERP
Climate change and sea level rise needs to be integrated into future CERP planning, analysis and monitoring. CERP project designs are based on historical hydrology, not on future SLR, precipitation, and evapotranspiration scenarios.

High Priority Research Needs
- **Rates of peat/sediment accretion and subsidence in coastal and inland freshwater wetlands in the context of sea-level rise;**
- **Assess the effects of projected sea-level rise on groundwater supplies and coastal ecosystem functioning;**
- **Improve, refine, and evaluate downscaled climate model projections;**
- **Better understand the factors that maintain the diverse mosaic of Everglades habitats and increase their resilience to changes in climate and sea level;**
- **Reevaluate Everglades restoration goals in light of Climate Change and Sea Level Rise, and revise as appropriate.**

CISRERP Recommendations Invasive Exotic Species

Lack of coordination at a strategic level-Optimistic that the TF's *IES Strategic Action Framework* will be a major step toward achieving these goals of high-level Coordination.

EDRR system that addresses all areas, habitats and species is needed-More monitoring -quick access to resources and capacity to rapidly respond

No system-wide mechanism for prioritizing research on management of invasive species. Such knowledge would help inform management actions.

Research is lacking on nonnative species and their impacts to adequately inform prioritization efforts.

If eradication proves impossible, maintenance management and long-term control at acceptable levels should be explicitly recognized as a goal in some cases.

CERP Planning should considerer implications of restoration activities for nonnative species and their impacts. CERP guidance has recently been developed that requires that the potential spread of invasive species is considered in project planning and implementation.

Long-term monitoring and research are needed to understand the potential impacts of climate change on Everglades nonnative species management.

CISRERP Recommendations
Use of Science in Decision Making

Long-Term System-Wide Monitoring is Critical
Long-term monitoring is critical to tracking changes in the structure and function of ecosystems, and data collected prior to or after a funding gap could lose their value.

Dedicated Science Funding is Needed
Dedicated funding for long-term system-wide monitoring and assessment are critical to achieving restoration objectives, ensuring that public resources are spent wisely, and adaptively managing restoration efforts.

A Comprehensive Reevaluation of Restoration-Related Monitoring is Needed
Increasing budget pressures, extended CERP implementation time frames, and the impacts of CC/SLR create the risk that useful long-term data may not be available to assess the effects of restoration projects when they are implemented. A re-evaluation is needed to clearly articulate the value of the highest priority monitoring to future restoration decision making and the risks of ceasing such monitoring.

Renewed Attention to Science Coordination is Warranted
Effective scientific research and monitoring requires regular coordination and communication between scientists and decision makers, but this has waned. For the Science Coordination Group to contribute significantly to better science coordination, it would need to have adequate funding and staffing and a clear charge to address critical science needs from a restoration-wide perspective.

Questions

The NRC is currently Seeking Input on Review Topics and Nominations for the Sixth CISRERP Committee that will begin in the fall.

To download a PDF of the CISRERP V report go to

http://www.nap.edu/catalog.php?record_id=18809