Central Everglades Planning Project: Invasive Species in the “Heart” of Everglades Restoration

Presented by Angie Huebner
8 May 2014
Overview

- Authorities, Policy and Guidance
- Central Everglades Planning Project
- Problems & Opportunities
- Existing Conditions
- Plan Formulation
- Measures to be Implemented
Policy & Guidance

- Rivers and Harbors Act of 1899
- Executive Order 13112
- CW Policy Memo, Invasive Species, June 2009
- CW Policy Memo, PIR’s & Other Implementation Documents, May 2010
- CGM 62 Invasive Species, July 2012
Policy and Guidance

- Rivers and Harbors Act of 1899
- Federal navigation
- Removal of Aquatic Growths
- Control of waterhyacinth
- Louisiana & Florida
- As amended
Executive Order 13112

- EO 13112 – Invasive Species
  - Signed in 1999
- Definitions
- Federal Agency Duties
- Invasive Species Council
- National Invasive Species Management Plan
Executive Order 13112

- Invasive species are species that are:
  - non-native to the ecosystem under consideration and
  - whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

- Plants and Animals

Burmese python
Policy & Guidance

- **Executive Order 13112** — Federal agencies shall **not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the US or elsewhere...”

- **Federal Agency Duties**
  - Prevent
  - Detect and respond rapidly
  - Monitor
  - Research and develop new technologies
  - Promote public education
Invasive Species

- 50,000+ non-native species in US
  - 32,000 - introduced to Florida
  - ~25,000 plants & 7,000 animals
  - ~4000-5000 native species
- Estimated 90% of species enter through Port of Miami
- Threaten restoration, navigation, recreation, water supply, agriculture and public health
Invasive Species

- USDA - $138 Billion in losses
  - GAO – estimated in 2000 – Florida spends $94 - $124M per year – plants alone
- 49% of T&E species at risk
- 80% of endangered species could suffer losses
- Second-leading threat to imperiled species
- Threat to native plants & animals
- Degrade natural areas & impact wildlife habitat
Policy & Guidance

- CW Policy Memo, June 2009, Invasive Species
  - Applicable to all aspects of CW
  - Measures to prevent or reduce invasive species
  - O&M, CW project implementation, Planning Documents
- CW Policy Memo, 27 May 2010, PIR’s and other Implementation Documents
  - Specific to CERP projects
  - Address management and potential impacts
  - Reduce OMRR&R costs by managing during construction
Policy & Guidance

- Implementation of CW Policy Memo - PIR’s & other Implementation Documents
  - PDT formed
  - Site visits
  - Planning process – CERP
  - Draft guidance developed
  - Coordination, review & input from other divisions, agencies and stakeholders
  - Final – CGM 62 – Invasive Species
Policy & Guidance
CGM 62 Invasive Species

- CGM 62 Invasive Species - 11 July 2012
- Guidance for assessing invasive species
- Benefits to be realized:
  - Decreased OMRR&R Phase cost
  - Overall project cost decreased
  - Increased ecological benefits
  - Aids in project success
Policy & Guidance

- Prior to the guidance memo there was no requirement to incorporate invasive species into projects
- Depended on PDT
- Inconsistently addressed in projects
- Projects that included a VMP:
  - IRL-South
  - Picayune Strand Restoration Project
  - Biscayne Bay Coastal Wetlands
  - Broward County Water Preserve Areas
  - Site 1
CGM 62 Invasive Species

- CERP Projects should:
  - Describe species, distribution and potential impacts
  - Identify current management activities
  - Assess for future management
  - Provide plans & cost estimates
  - Include management in construction or service contracts
  - Include management details in OMRR&R Phase and manual
CGM 62 Invasive Species

- Planning Phase – Identify existing conditions, evaluate effects of alternatives, develop INSMP

- Design and Construction Phases – design/construct to minimize invasive species, treat prior to construction, minimize ground disturbance, manage during construction, include preventative measures in specifications, Project Partnership Agreement & Construction Phasing Transfer and Warranty Plan.
Design & Construction Phases

- Specification #01 57 20
  Environmental Protection – Include “Prevention of Invasive and Native Nuisance Species Transfer” language
CGM 62 Invasive Species

- OMRR&R Phase
- Implement the INSM Plan
- Manage during entire phase
- Incorporate biological Controls

- Implement measures for Early Detection & Rapid Response
- Include Prevention of Invasive & Nuisance Species Transfer language
Central Everglades Planning Project

- First CERP project to incorporate CGM-62 and develop an Invasive and Nuisance Species Management Plan
- Includes cost for Construction and O&M phases
- Includes management during all phases
Central Everglades Planning Project

- Focus – restore more natural water flow, depth, and durations into and within the central Everglades by:
  - Increasing storage, treatment and conveyance of water south of Lake Okeechobee
  - Removing canals and levees within the central Everglades
  - Retaining water within ENP and protecting urban and agricultural areas to the east from flooding
**Problems**
- System altered - compartmentalization
- Disturbance to landscape
- Existing species expansion, new introductions

**Opportunities**
- Minimize new introductions
- Manage both plants and animals

**OPPORTUNITY:**
TO CONSTRUCT THE NEXT INCREMENT OF THE COMPREHENSIVE EVERGLADES RESTORATION PLAN (CERP)
New Species in Everglades National Park Since CERP

- Restudy – 1996
- CERP Authorized – 1999
- 10 new organisms/year (10-15% become invasive)
Invasive Plant Species

- **156 non-native plants documented to occur in project area**
- **76 FLEPPC Category I and 38 Category II, 28 State of Florida Noxious Weeds**
- **Widely Distributed Species – more than 144,770 acres**
  - Brazilian pepper
  - melaleuca
  - Australian Pine
  - Old World Climbing Fern
- **Native species – one of major concern, cattail**
Invasive Plant Species
Localized EDRR

- torpedo grass
- tropical American water grass
- Rotala
- cogon grass
Invasive Plant Species
Other Species of Concern

- napier grass (*Pennisetum purpureum*)
- water hyacinth (*Eichhornia crassipes*)
- climbing cassia (*Senna pendula var. glabrata*)
- lakeshore nutrush (*Scleria lacustris*)
- castor bean (*Ricinus communis*)
- crested floating heart (*Nymphoides cristata*)
- hydrilla (*Hydrilla verticillata*)
- West Indian marsh grass (*Hymenachne amplexicaulis*)
- para grass (*Urochloa mutica*)
Invasive Animal Species

- 89 non-native species known to occur
- 4 key carnivorous reptiles (Prey upon T&E species & domestic pets & out-compete natives)
  - Burmese python
  - Northern African python
  - Black and white tegu
  - Nile monitor
Invasive Animal Species
Wide spread

- redbay ambrosia beetle & associated fungus (laurel wilt)
- Cuban treefrog
- Burmese python
- feral pig
Invasive Animal Species
Localized EDRR Species

- Asian swamp eel
- island apple snail
- purple swamphen
- Argentine black and white tegu
- Nile monitor
- northern African python
MEASURES CONSIDERED

**STORAGE/TREATMENT**
- Quantity and Quality
  - Stormwater Treatment Areas (STAs)
  - Flowage Equalization Basins (FEBs)
  - Deep Storage (various depths)

**CONVEYANCE/DISTRIBUTION**
- Distribution, Directionality, Timing
  - Spreader Canals
  - Pumps
  - Canal Filling
  - Levee Removal and Gaps
  - Culverts/Gated Structures

**SEEPAGE MANAGEMENT**
- Keeping Water in the Natural System
  - Walls
  - Pumps
  - Step Down Levees
CENTRAL EVERGLADES
RESTORING THE HEART OF THE EVERGLADES

TENTATIVELY SELECTED PLAN (Alt 4R2)

- Construct A-2 FEB and integrate with A-1 FEB operations
- Lake Okeechobee operation refinements within LORS

DISTRIBUTION/CONVEYANCE

- Diversion of L-6 flows, Infrastructure and L-5 canal improvements
- Remove western ~2.9 miles of L-4 levee (west of S-8 3,000 cfs capacity)
- 360 cfs pump station at western terminus of L-4 levee removal
- Backfill Miami Canal and Spoil Mound Removal ~1.5 miles south of S-8 to I-75

DISTRIBUTION/CONVEYANCE

- Increase S-333 capacity to 2,500 cfs
- Two 500 cfs gated structures in L-67A, 0.5 mile spoil removal west of L-67A canal north and south of structures
- Construct ~8.5 mile levee in WCA 3B, connecting L-67A to L-29
- Remove ~8 miles of L-67C levee in Blue Shanty flowway (no canal back fill)
- One 500 cfs gated structure north of Blue Shanty levee and 6,000-ft gap in L-67C levee
- Remove ~4.3 miles of L-29 levee in Blue Shanty flowway, divide structure east of Blue Shanty levee at terminus of western bridge
- Tamiami Trail western 2.6 mile bridge and L-29 canal max stage at 9.7 ft (FUTURE WORK BY OTHERS)
- Remove entire 5.5 miles L-67 Extension levee, backfill L-67 Extension canal
- Remove ~6 mile Old Tamiami Trail road (from L-67 Ext to Tram Rd)

SEEPAGE MANAGEMENT

- Increase S-356 pump station to ~1,000 cfs
- Partial depth seepage barrier south of Tamiami Trail (along L-31N)
- G-211 operational refinements; use coastal canals to convey seepage

Note: System wide operational changes and adaptive management considerations will be included in project
Invasive and Nuisance Species Management Plan

- Lake Okeechobee and the Northern Estuaries
- A-2 Flow Equalization Basin
- Diversion of L-6 Flows and L-5 Improvements
- L-4 / L-5 – Spreader Canal and Levee Degradation
- Miami Canal Backfill – S-8 to I-75
- L-28 Levee Degradation / Backfill
- Increase Capacity of S-333
- L-67A Gated Structures / Spoil Removal
- L-67C Levee Degradation
- Build North-South Levee in WCA 3B
- L-67 Extension – Levee Degradation / Backfill
- L-29 Levee Degradation
- Divide Structure on L-29
- Increase S-356 Capacity to 1,000 cfs
- Extension to Tram Road
- G-211 Operational Modifications / Coastal Canals
- Conveyance Seepage Barrier
- Remove 6 miles of Old Tamiami Trail roadway from L-67 to Tram Road
Measures to Be Implemented

- Management prior to Construction, during Construction and OMRR&R Phases
- Treatment & Removal – plants and animals
- Specifications for Equipment Cleaning
- Monitoring – fish and expansion of cattail
- Education/Training/Reporting
- Outreach
Questions?