Introduction – Tampa Bay Region

- Conservation priority by regional and local governments
  - Salt marsh and coastal hammock
- Large losses due to extensive coastal land use conversion
Introduction – Manatee County, Florida

- Manatee County, Florida
- 29,000 acres within 12 public preserves
Introduction

- 180.5± acres along Manatee River
- Designated a “Remarkable Coastal Place” by FDEP
- Acquired 2003

- Uplands: improved pasture, excavated surface waters, and tidal wetlands surrounded by mesic hammock
- Historical agricultural use, highly infested with exotic vegetation.
Site Assessment – Physical

- 7 soil map units
- Shallow limestone in some areas
- Historically exposed to intense agricultural production
Site Assessment – Hydrologic Site Conditions

- Elevations ranged from 2’ to 11’
- Drainage generally from the SE to NW via existing conveyances
- Off-site flow needs to be maintained through site
- Lower Manatee River watershed - within limits of an impaired water body for nutrients
- 100-year flood elevation for the Manatee River is 4.8’
- Surficial ground water seasonal high from 1.3’ to 2.2’ below surface
Site Assessment – Ecology

Land Cover (Acres)

- Fallow cropland/disturbed land: 94 acres
- Brazilian pepper: 17.3 acres
- Live Oak and other hardwoods: 14.5 acres
- Cabbage Palm: 5.3 acres
- Streams & Waterways: 1.7 acres
- Reservoirs: 0.7 acres
- Forested and shrub wetlands: 9.1 acres
- Salt marsh: 0.7 acres
Site Assessment – Wildlife Survey

- Low wildlife utilization during onsite surveys of listed species
- Potential for several species based on habitat types, soils present, and known occurrences in similar habitat.
- 3 active waterbird colonies within 10 miles
  - little blue heron
  - snowy egret
  - brown pelican
  - wood stork
  - roseate spoonbill
  - white ibis
- 5 bald eagle nests within 5 miles
Recommendations

- Improve hydrology of saltmarsh habitats
- Control exotic vegetation
- Remove agricultural debris
Project Goals

- Restore and create a mosaic of high quality native habitats
- Reduce invasive and nuisance plants
- Provide opportunities for nesting, denning, breeding, and foraging for threatened and endangered species
- Offer educational opportunities for users to learn about regional ecosystems
- Offer opportunities for passive recreation
Project Goals

- **Restoration**
  - 25 acres of wetlands (12.3 ac freshwater/15.5 ac saltwater)
  - 50.8 acres of Uplands (restored and enhanced habitats)
    - Coastal Palm Hammock 19.3 ac
    - Oak/Pine 9 ac
    - Pine Flatwoods 17.4 ac
    - Dry Prairie 5.1 ac
  - Remainder used for active and passive recreational facilities

- **Rookery Creation**
Planning

- Disturbed uplands (pastures, Brazilian pepper)
  - Buffers/ecotones to adjacent salt marsh
  - Reverse decline of coastal hammock
  - Nesting and denning habitat
  - Shelter for wildlife
  - Reduce seed source of nuisance plants

- Methods
  - Mechanical control
  - Chemical treatment
  - Revegetate
Planning

- Forested uplands (Cabbage palm hammock, Oak/Pine)
  - Foraging for migrating/wintering birds
  - Nesting and denning habitat for Sherman’s fox squirrel
  - Shelter for wildlife
  - Reduce seed source of nuisance plants
Planning

- Methods
  - Hand removal
  - Chemical treatment
  - Allow natural recruitment
Design

- **Create/Restore Freshwater Marsh**
  - In pastures and degraded marsh
  - Create/restore breeding and foraging habitat for listed wading birds
  - Multispecies management/varying water depths and regimes
  - Improve water quality in Manatee River/Tampa Bay
  - Target wood stork, sandhill crane, roseate spoonbill, ibis

- **Methods**
  - Excavate at gentle slopes to 3’ depth at SHWL
  - Mulch/Replant
  - Provide island and nesting platforms/trees
Design

- Create/Restore Salt Marsh
  - In pastures and degraded marsh
  - Nursery for inverts, larval/juvenile fish
  - Shelter for fish, birds, wildlife
  - Improve water quality in Manatee River/Tampa Bay
  - Target wood stork, roseate spoonbill, ibis

Methods

- Divide from freshwater marsh with an overflow structure set at MHWL
- Excavate at gentle slopes to 2’ depth at MHWL
- Replant with saltmarsh cordgrass and black needlerush
- Provide mangrove recruitment opportunity
Design
Construction

- Excavation
Construction

- Cypress installation with nesting poles
Construction – Revisions

- Revisions to SM-3 tidal connection
Construction – Plant Installation

- Saltmarsh cordgrass
- Black needlerush
Construction – Plant Installation

- Installed plant mortality (requiring replacement)
  SM-1
Construction – Plant Installation

- Plant installation
  PF-2 in progress
Construction – Direct Seeding

- Direct seeded plants emerging
Construction – Plant Installation

- Nuisance herbaceous species cover and installed plants
- *Celtis laevigata* requires replacement
Project Costs

Assessment & Planning $ 82,515.00
Design $ 49,927.00
Construction $700,096.82

Total: $832,538.82

Cost per acre (75 ac) $ 11,100.52
Lessons Learned - Successes

- Foraging and Nesting Habitat
- Emergent Freshwater Marsh
- Saltmarsh/Intertidal Habitat
- Nesting Structures
Lessons Learned – Challenges

- Environmentally Sensitive Mechanical Removal
- Topsoil Excavation
- Seeding/Plant Material Sourcing
- Timing of Direct Seeding
- Tropical Storm Debby
- Plant material quality/sizing/installation
- Maintenance
- Contractor Qualifications
Lessons Learned

- Existing conditions, restoration design, and weather must dictate the schedule
- Experienced Contractor is essential; even with good oversight
- Schedule must allow sufficient time for eradication of existing nuisance plants and seed stock
Questions?
Lessons Learned – Project Schedule

- Project Inception (February 2009)
- Kickoff (April 2009)
- Site assessment and conditions (May 2009)
- Conceptual Plan (February 2010)
- Habitat restoration grant (February 2010)
- Final Design, Construction Documents and Permitting (May 2010-May 2011)
- Construction (May 2011-November 2012)
- Project Completion (November 2012)
- Final Certification (January 2013)