The Everglades National Park & Big Cypress National Preserve Vegetation Mapping Project

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Introduction

- **Cooperative Effort Between**
  - South Florida Water Management District
  - United States Army Corps of Engineers
  - National Park Service:
    - National Vegetation Inventory Program
    - South Florida/Caribbean Network Inventory & Monitoring Program
Project Goal

- Provide resource managers and policy makers with a tool to assess the success of the CERP.
- Provide baseline vegetation and land-cover information to NPS park managers and scientists for use in park management, resource management, and conservation.
Project Rationale

- A complete system-wide vegetation map would provide:
  - A effective statistical method of monitoring landscape level vegetation change resulting from restoration efforts.
  - A effective way to monitor exotic species as well as willow and cattail expansion.
  - A tool for monitoring the effects of climate change and sea level rise.
  - A scaling up tool for other RECOVER projects.
Project Extent: Greater Everglades

- RECOVER/SFWMD Mapping
  - Water Conservation Areas
  - Rotenberger WMA
  - Northeast Shark River Slough
  - Southeast Dade Wetlands

- NPS Mapping
  - Biscayne National Park
  - Western Big Cypress
  - Panther Refuge
  - Everglades City, NW EVER.

~40 of the GE has been mapped
Project Extent: EVER & BICY

- Six regions totaling 630,922 Ha. (~1.6 million acres):
Methodology

- Landscape-wide 50 x 50 m grid base vegetation mapping:
  - Lacks true topology (community boundaries lost due to grid geometry).
  - More accurate than traditional vector method.
  - Ideal for change detection.
  - Majority rule classification.

¹Rutchevy, K. and J. Godin, 2009. Determining an appropriate scale in vegetation mapping for ecosystem restoration: a case study from the Everglades, USA. Landscape Ecology
Methodology

- Cell partitioned into discrete homogenous units.
Classification System

- Vegetation Classification for South Florida Natural Areas

- Hierarchical classification system.
- Finer classes nested within broader groupings based on:
  - Height
  - Cover
  - Species composition
Methodology: Grid Cell Attributes

Grid Cell Attributes:
- Photo-interpreter.
- VegCode.
- Disturbance (Anthropogenic, Fire, Freeze, Windstorm).
- Density of cattails and exotics as Sparse, Dominant or Monotypic.
Data Collected

- **Everglades National Park (EVER)**
  - 2,572 Training Points
  - 2,072 Verification Points
  - 1,021 Accuracy Assessment Points
  - 16,004 Geotagged Photos

- **Big Cypress National Preserve (BICY)**
  - 18 Training points
  - 480 Accuracy Assessment Points
  - 2,561 Geotagged Photos
Accuracy Assessment

- Final map accuracy will be assessed by verification of approximately 210 randomly selected cells per region.
- Internal firewall between AA data collection and photo-interpretation.
- Final project accuracy is expected to be greater than 80% with 90% confidence.
Progress to Date:

- **Region 1**: ~33% Complete
- **Region 2**: 100% Complete
  QA/QC Ongoing
- **Region 3**: 57% Complete
- **Region 4**: 17% Complete

**230 unique vegetation classes**
Application: Vegetation Maps

What are they, what do they tell us...

- They are an inventory of plant communities.
- They are landscape models that delineate, group, classify, and describe vegetation communities within a specific area of interest at a given time.
- They reveal the relationship between plants, the environment (soil type or substrate, hydrology, climate, disturbance history, etc.), and man.
- They provide economic information about the landscape.
- They are management and restoration tool.
Application:

- Habitat Delineation
  - Endemic and endangered flora and fauna
    - Cape Sable Seaside Sparrow
    - Roseate Spoonbill (roosting and foraging)
    - Cape Sable false thoroughwort

- Species/Community Distribution
  - Red Mangrove (scrub)
  - Thatch Palm Hammocks
  - Coastal Hammocks
  - Water Lily Sloughs
Application: Cattail Management
Application: Brazilian Pepper

Region 2, EVER

Legend
Schinus (Brazilian Pepper) Density
- Dominant
- Sparse

[Map showing distribution of Brazilian Pepper in Region 2, EVER]
Application: Dataset (AA & TP)

- Legacy Points (1,501 randomly AA selected points)
- Provides structural and species specific absolute cover data.
Acknowledgements

SFWMD:
Fred Sklar & Susan Honher (workstations)

USACE:
April Patterson, Rebecca Lee-Duffell, Melissa Nasuti

NPS:
EVER: Agnes McLean & David Rudnick
NPS-VIP: Karl Brown & Tammy Cook
SFCN: Brooke Shamblin, Michelle Prats, Craig Perry, Michael Foguer, Alejandro Arteaga, Joe Ingram, Mary-Jo Hernandez, Judd Paterson, & Kevin R. T. Whelan
SFLAP: Fred Goodwin, Michael O’Leary, Gary Carnall, Henry DelValle, Andrew Gill, Robert Katz, Adam Kunce, Jessica Sherwood, & Clayton Camblin