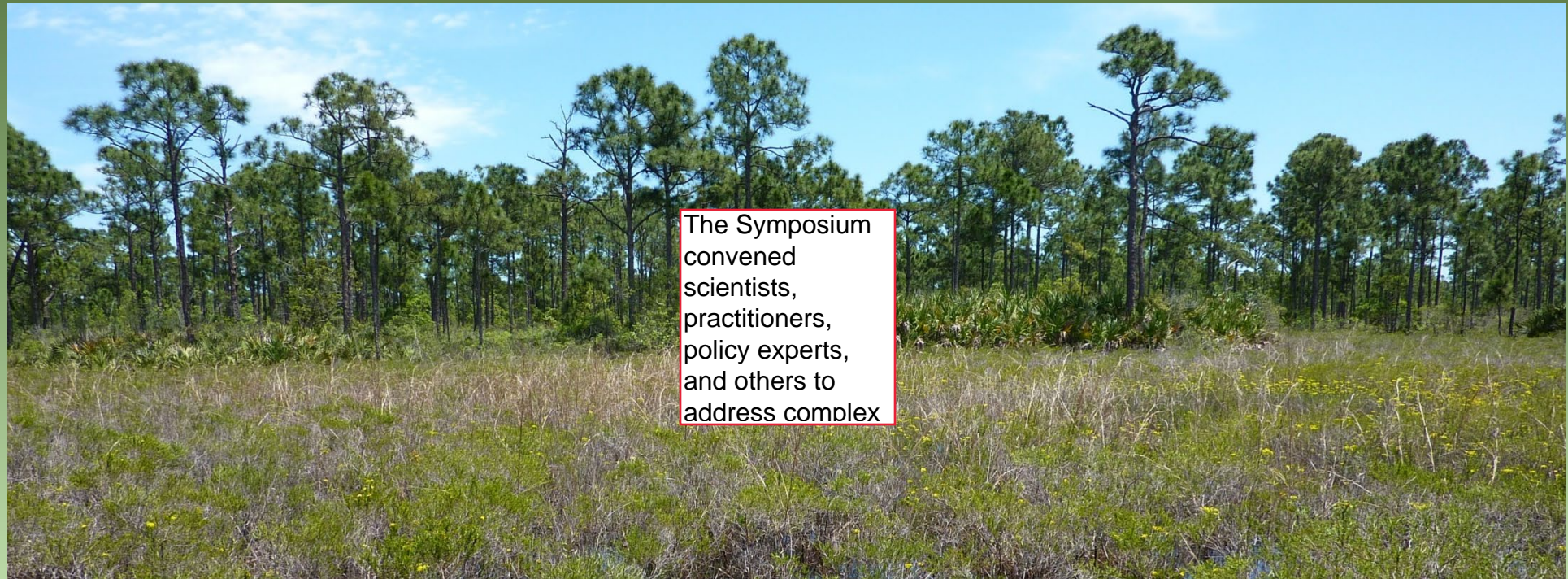


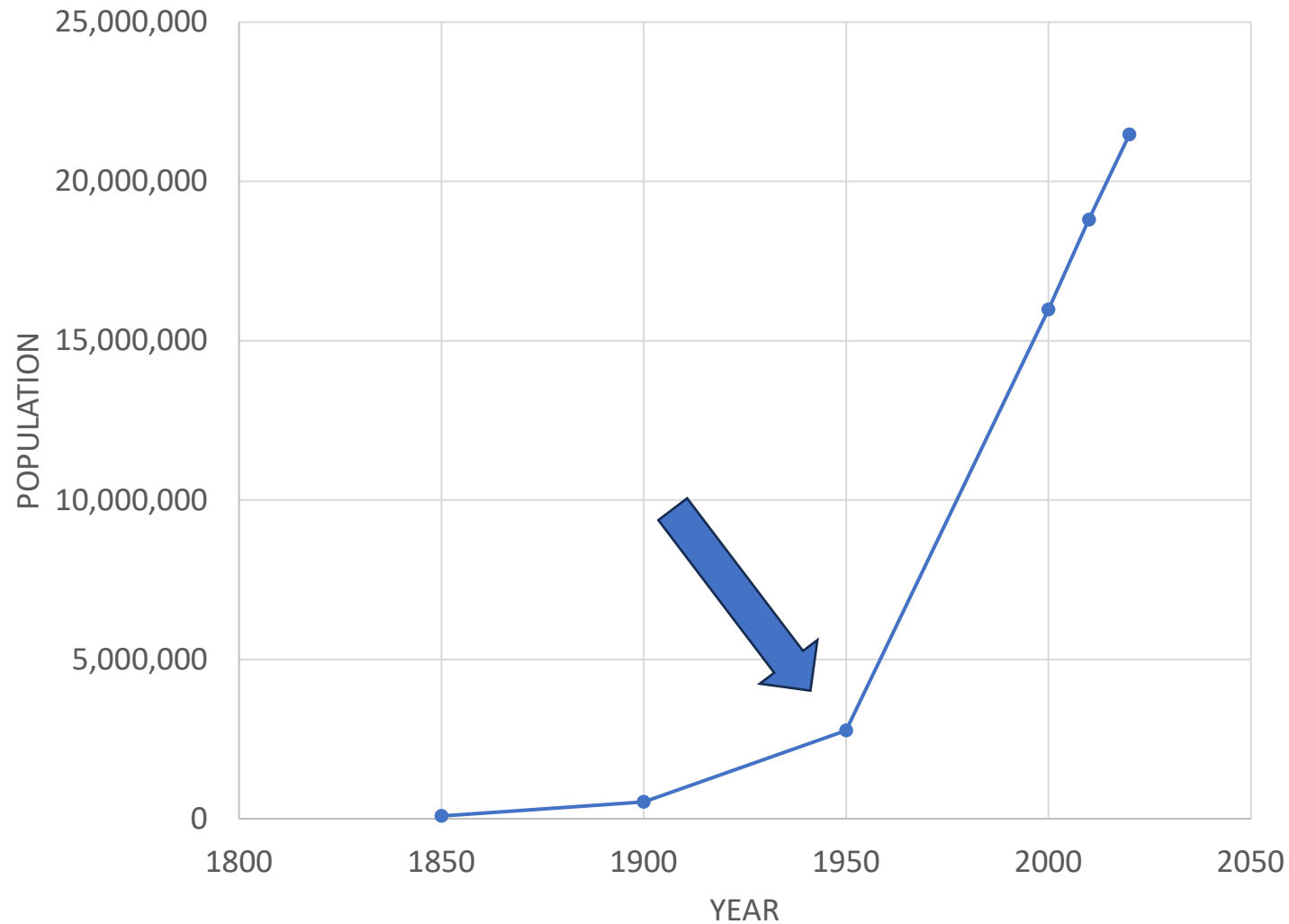
# Tool for Prioritizing Wetland and Water Projects in the Indian River Lagoon Watershed



Kai Rains, Edgar Guerron-Orejuela, Stephanie Lawlor, Shawn Landry, and Mark Rains



# Florida: Land Use Pressures



- Population
  - 1850: 87,445
  - 2020: 21,477,737
- Net Increase
  - 1850-2020: 345/d
  - 1950-2020: 732/d
- Visitors (2022)
  - 137,565,000
- GDP (2022)
  - \$1.3T
  - 4<sup>th</sup> largest by state



# Land Use/Land Cover Change and the Loss of Natural Capital





# Tool Design: Theoretical Framework

- Co-produced with stakeholders
- Key Spatial Information
  - Wetland occurrence (past, present)
  - Current condition (wetlands, landscape)
  - Drainage (natural, built)
  - Conservation lands (partnerships, corridors)
  - Development pressure (going going gone)



# Tool Design: Pragmatic Framework

- Easy to Use, Proven Format
  - Minimal Technical Skills
  - Peer-Reviewed and/or Tested Format
  - Public Hosting
- Geospatial Datasets: Statewide, Documentation
- Objective Grouping of Similar Landscapes
- User-Driven, Flexible Query System
- Spatially Explicit Results, But Not Too Explicit



Ground-Truthing Baseline Datasets



# Prior Experience with Prioritization Provided the Groundwork

Wetlands (2013) 33:949–963  
DOI 10.1007/s13157-013-0455-4

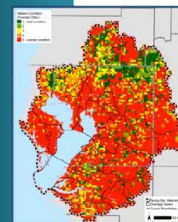
ARTICLE

## Using Net Wetland Loss, Current Wetland Condition, and Planned Future Watershed Condition for Wetland Conservation Planning and Prioritization, Tampa Bay Watershed, Florida

M. C. Rains • S. Landry • K. C. Rains • V. Seidel •  
T. L. Crisman



### Prioritizing Habitat Restoration Goals in the Tampa Bay Watershed



Submitted to  
Tampa Bay Estuary Program

By

Mark Rains, University of South Florida  
Shawn Landry, University of South Florida  
Valerie Seidel, The Balmoral Group  
Thomas Crisman, University of South Florida



April 2012



### Master Plan for the Protection and Restoration of Freshwater Wetlands in the Tampa Bay Watershed, Florida

October 2014

Prepared for  
The Tampa Bay Estuary Program

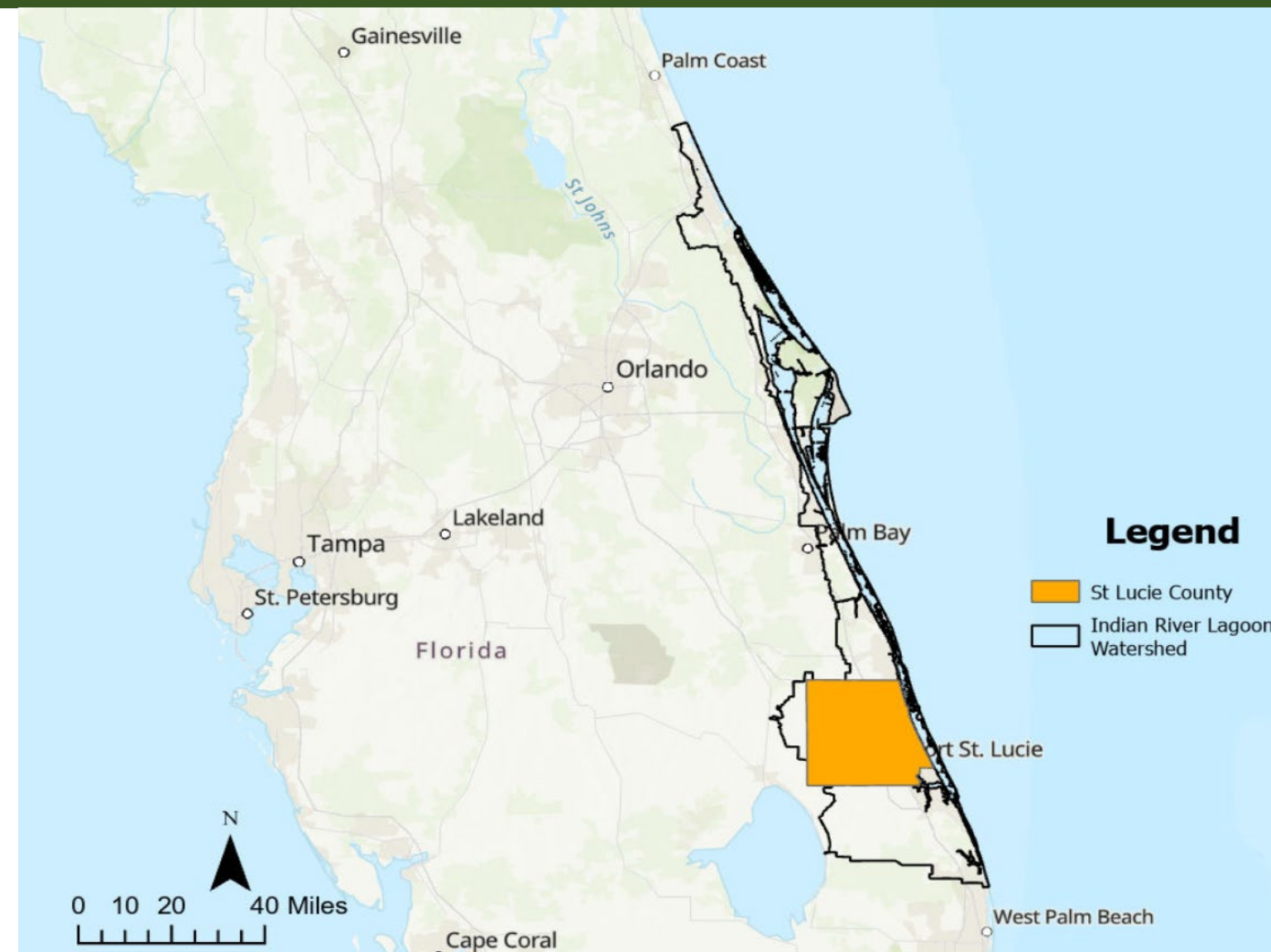
NATURAL RESOURCES / THE ENVIRONMENT

*First Place*



23<sup>rd</sup> Annual  
*Future Region Awards*

# Study Area: St Lucie County



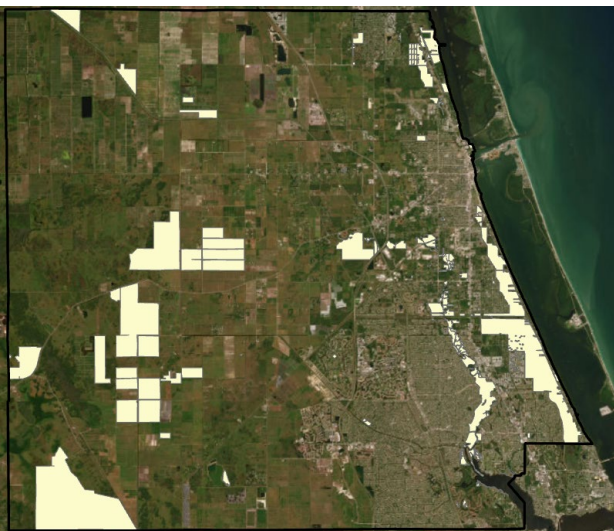
Historical Land Change

Loss in Wetland Area  
Since 1950s: >80%

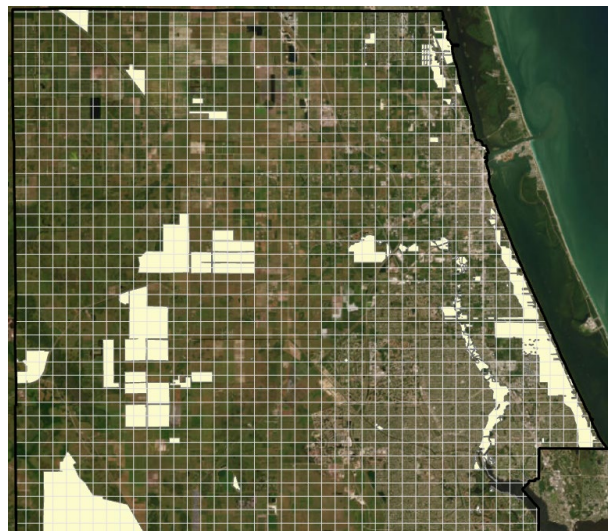
Increased Channel Density  
1950s: 7 km/km<sup>2</sup>  
2020s: 25 km/km<sup>2</sup>



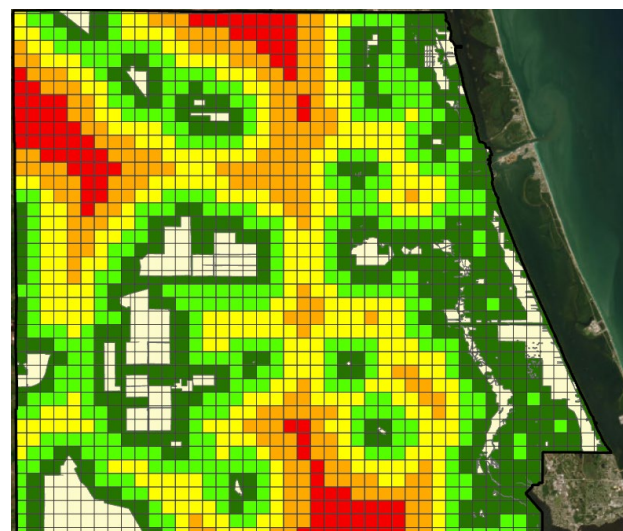
# Fundamental Component of the Tool: Screening Layers



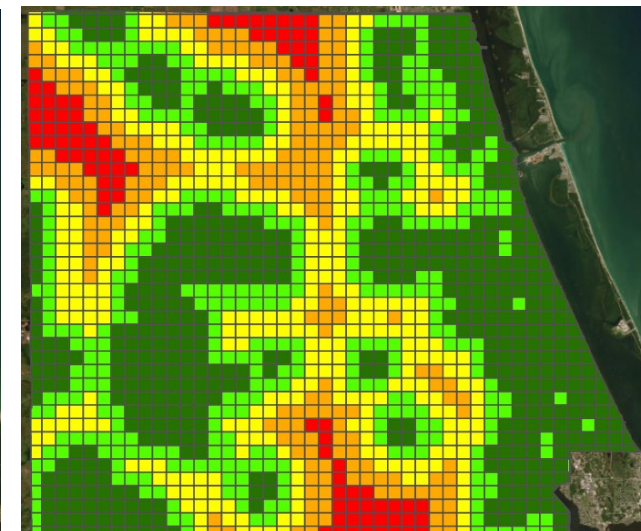
Identify Metric &  
Geospatial Dataset  
(*Proximity to  
Conservation Lands,  
FNAI & CLEAR*)



Assessment Unit: Grid  
Cell (1 km<sup>2</sup>)  
Conduct Geospatial  
Analysis, Aggregate  
Results by Grid Cell



Establish 5 Grid Cell  
Groups to Facilitate  
Queries (*Jenks Natural  
Breaks Algorithm*)  
Rank Groups



Screening Layer

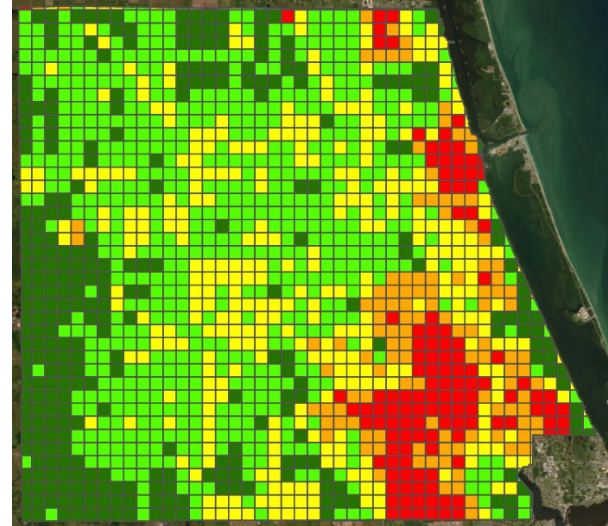
1	Dark Green
2	Light Green
3	Yellow
4	Orange
5	Red



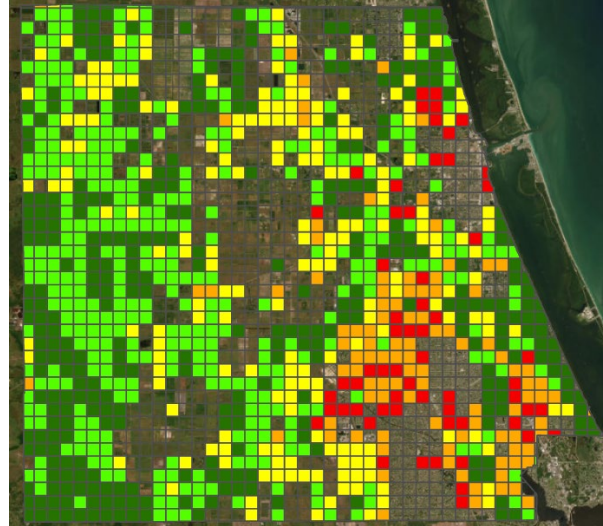


Proximity to Conservation Lands (FNAI, CLEAR)

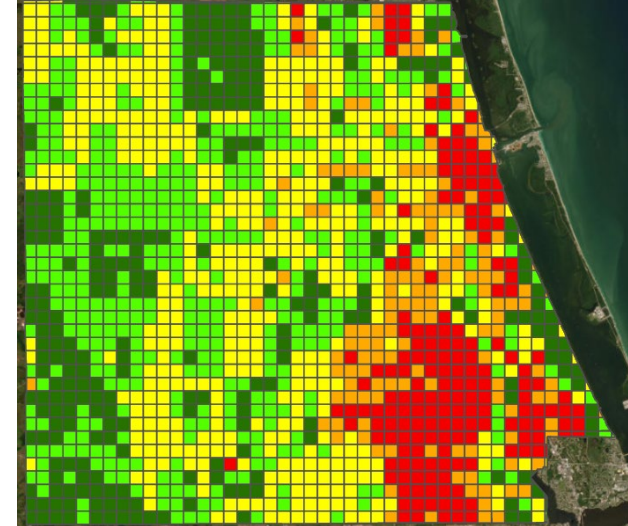
Green	1 - best
Light Green	2
Yellow	3
Orange	4
Red	5



Channel Density (NHD & USGS Roads)



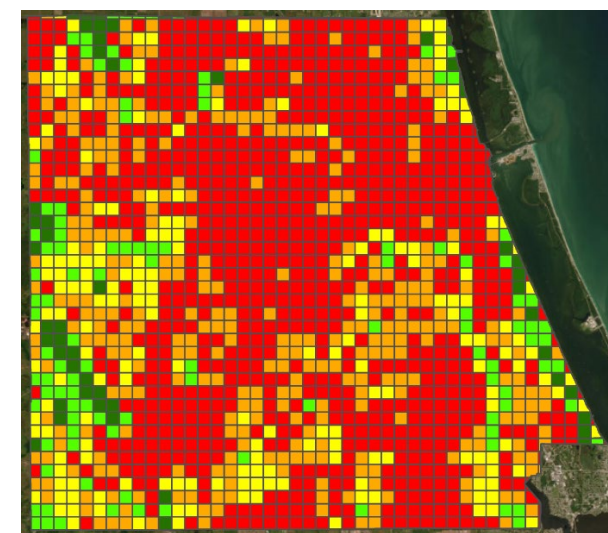
Wetland Condition (LDI)



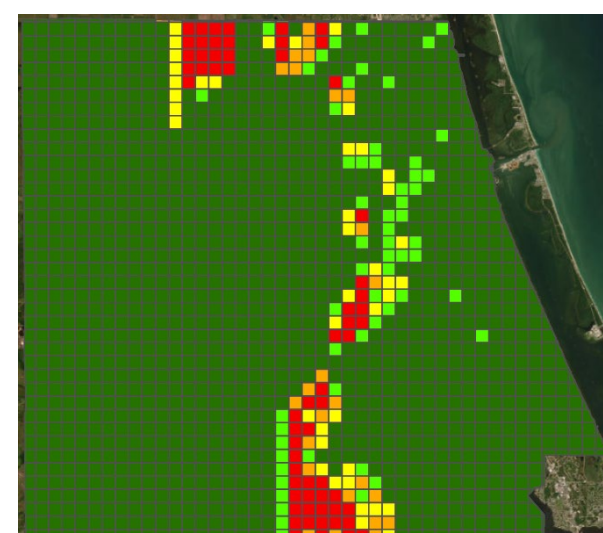
Landscape Condition (LDI)



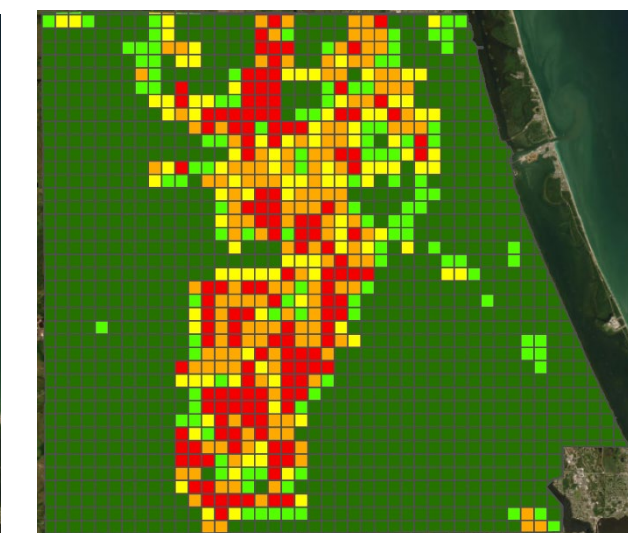
Wetland Loss - Since 1950s (USF-ERG, WMD LULC)



Wetland Area (WMD LULC)



Development Hotspots (2040) (UFGeoPlan & 1000Friends)

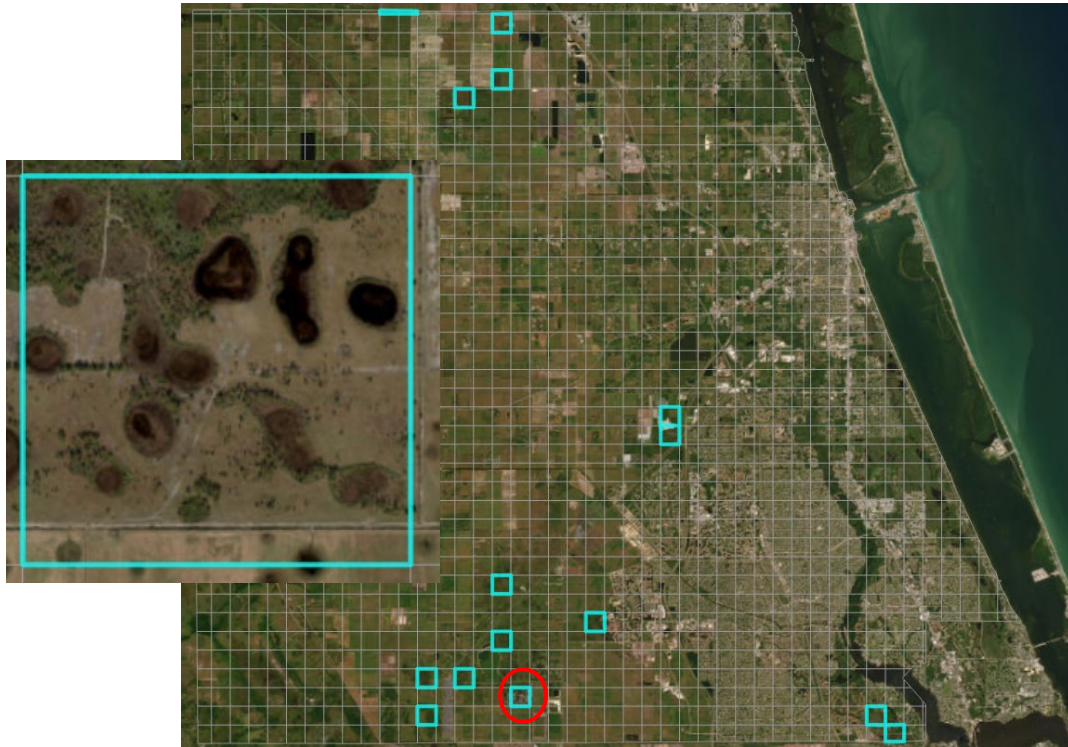


Development Hotspots (2040-2070)



## Preservation Query

- Wetland Condition = 1
- Landscape Condition = 1
- Wetland Area < 3
- Development Hotspot (2040-70)  $\geq 3$
- Conservation Lands > 1



## Restoration Query

- Wetland Loss  $\geq 3$
- Wetland Condition  $\geq 3$
- Wetland Area < 4
- Landscape Condition  $\leq 3$

Scale

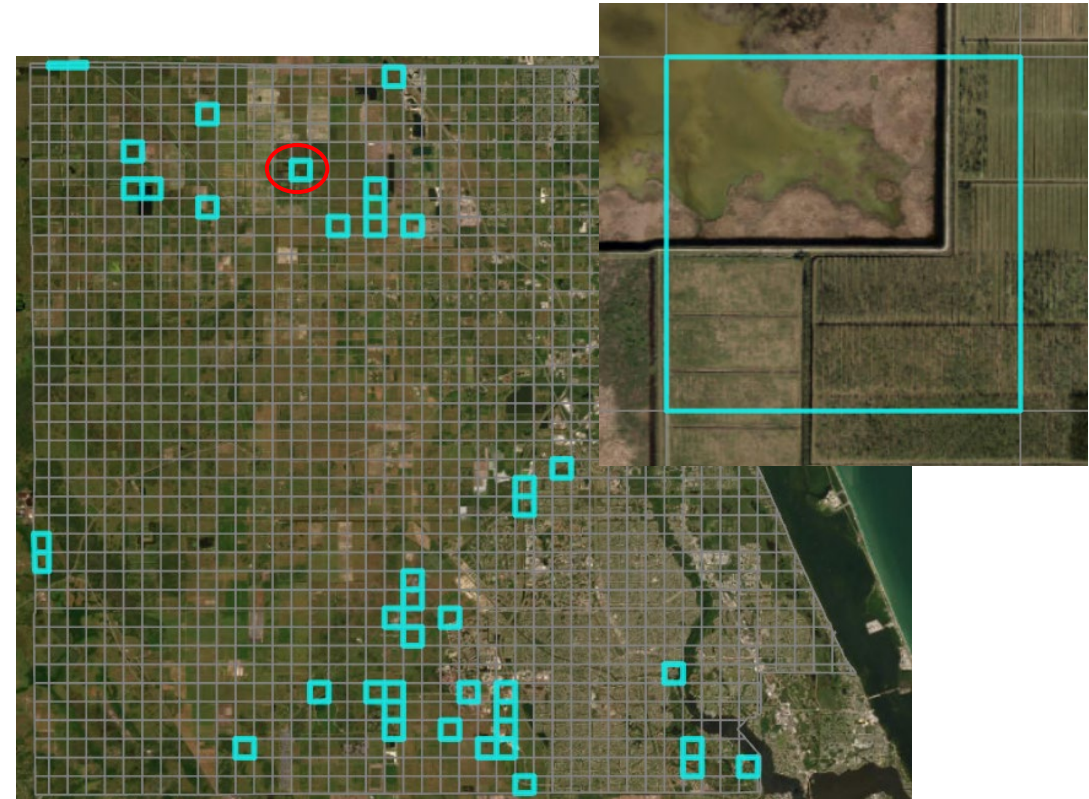
1 - best

2

3

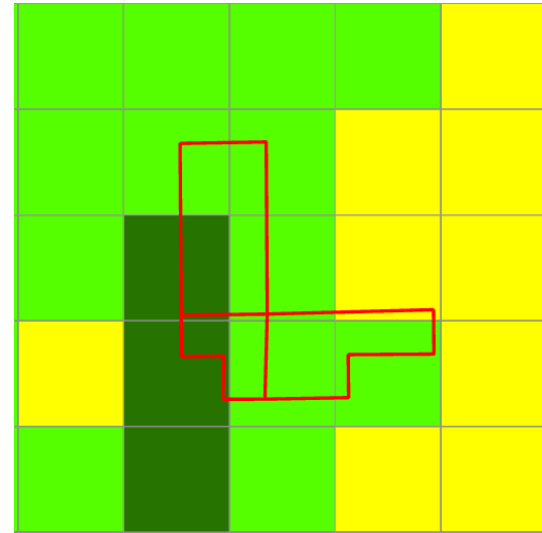
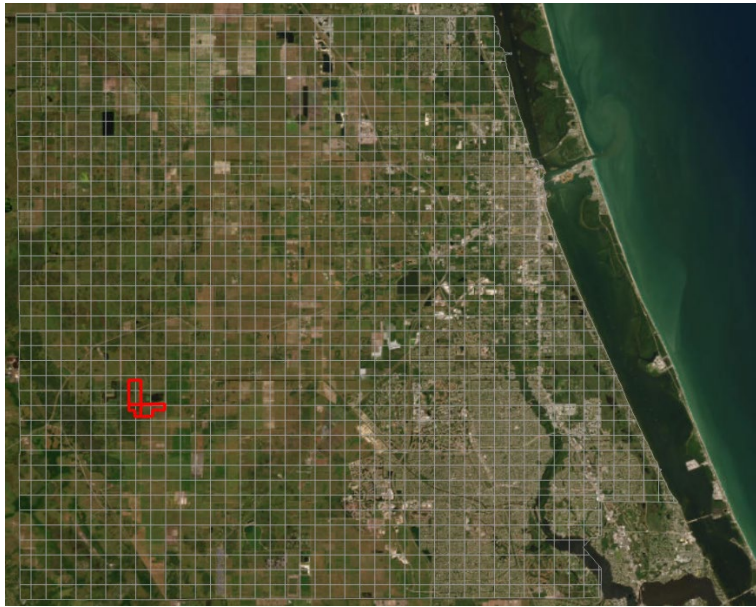
4

5

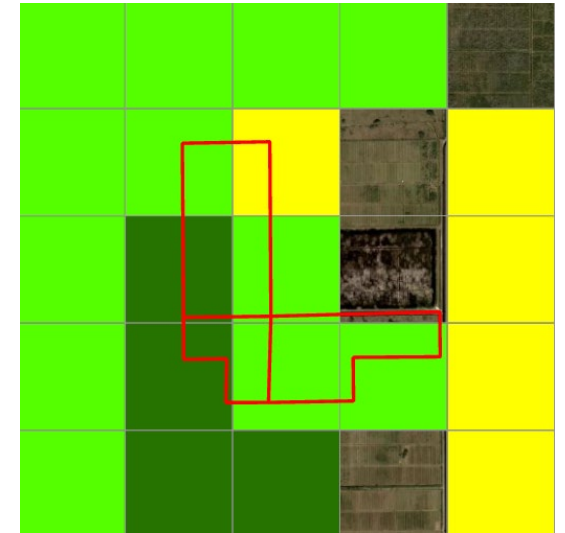
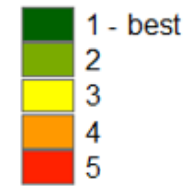




# Targeted Insights: Preservation & Restoration – County Env Resources Dept, Florida Forever Application



Landscape Condition



Wetland Condition

*“Current condition of supporting landscape and wetlands is amongst the best in the county, indicating a high potential for successful wetland preservation and restoration activities”*

# Current Status – Testing, St Lucie County ERD

- Project Prioritization
- Facilitate Dialogue and Public Outreach

## Next Steps- Expansion & Refinement

- South: Preliminary mapping, EPA Grant to Martin County
- IRL Watershed: Seeking funding

Thank you to our partners: SLC-ERD, IRLNEP, FDEP

Thank You to our Funding Agencies!

