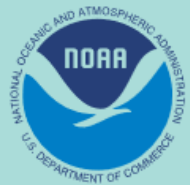


01/17/24



#FSGsymp24

@FloridaSeaGrant

FLORIDA SEA GRANT'S 2024 SYMPOSIUM: SPOTLIGHTING UF'S ROLE

# Keynote Address

---

**Dr. Mark Rains**

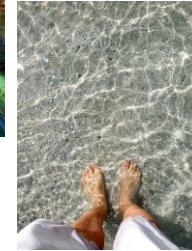
Chief Science Officer,  
Florida DEP



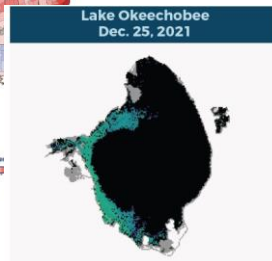
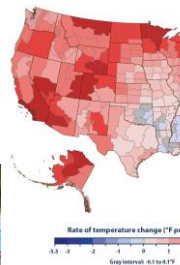
# Protecting FLORIDA Together

We've Never Solved a Problem We Didn't First Understand

## Water-Quality Challenges



## Global Change: Climate



## Global Change: Land Use-Land Cover

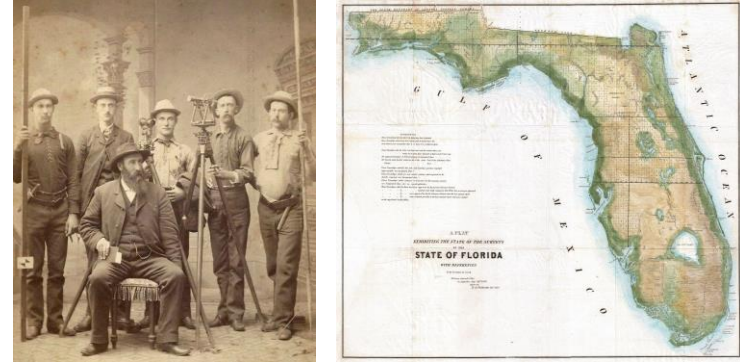


### What Was It Like?



William Henry Jackson, ca. 1900

### What Was It Like?



### What Was It Like?



3rd mile East on S. Bdry Sec. 33  
45.00 To round pond surrounded  
by bay and cypress swamp,  
impracticable. Pond full of  
monstrous alligators. Counted  
fifty and stopped.  
Relinquished line.

Field Notes Vol. 220, Page 51  
South boundary of Section 33, 47 South, 26 East  
Unnamd Pond  
Lee County  
1872

### What Was It Like?

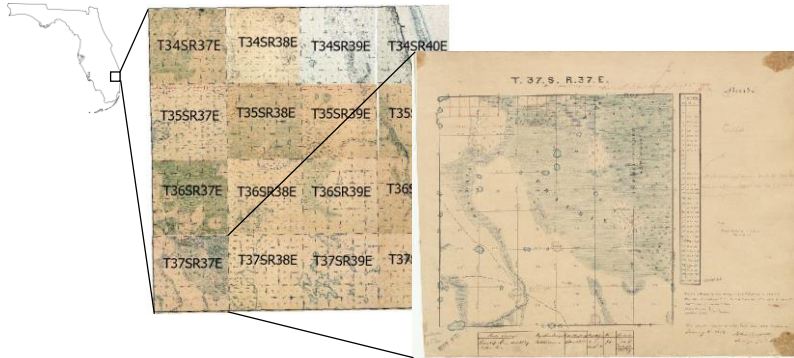


The warter is badd and soe is the bred  
In this here rechid swampe  
Of the Choctawhatchee  
Whar louse and murskeeters  
And rats and Allegeatours  
Abounde all arounde  
So you cant pull off yore brichez.  
J. W. (Joseph Wright)

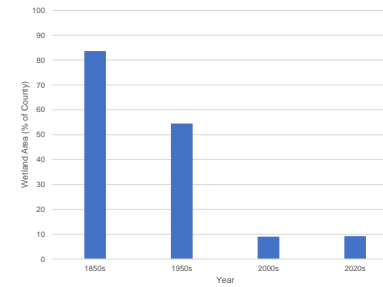
Field Notes Vol. 87, Page 204  
Subdivisions 3 North, 16 West  
Choctawhatchee River  
Washington County  
1825



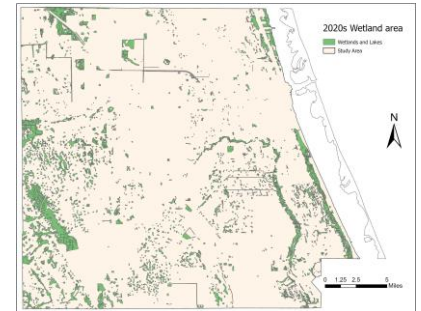
### What Was It Like?



### How Has it Changed?

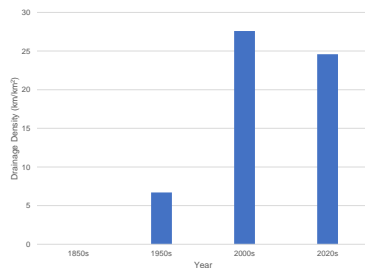


Wetland loss >85% between the 1850s-2020s!!

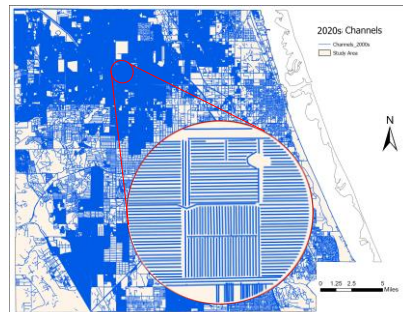


Lawlor et al. 2023; K Rains et al., In Preparation

### How Has It Changed?



Drainage density increased 30,000% between the 1850s-2020s!!

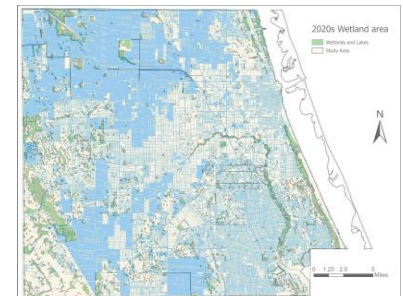


Lawlor et al. 2023; K Rains et al., In Preparation

### Reorganized Waterscape



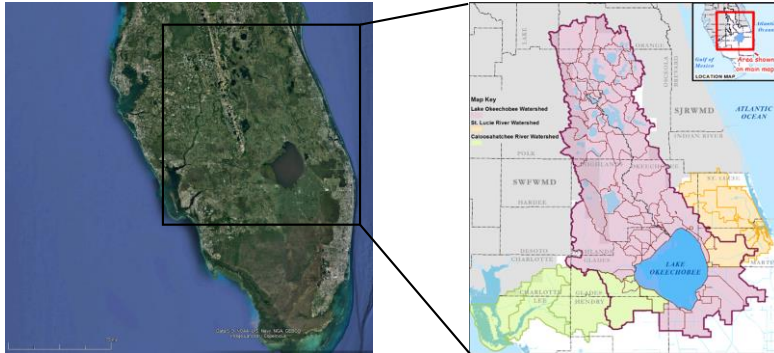
2% within 100m of a channel  
85% of this wetland



85% within 100m of a channel  
9% of this wetland

Lawlor et al. 2023; K Rains et al., In Preparation

### The Broader Context



### It Starts With Understanding...



*Dr. Karl E. Havens  
1957-2019*

Seasonal and Spatial Variation in Algal Bloom  
Frequencies in Lake Okeechobee, Florida, U.S.A.

Karl E. Havens,  
South Florida Water Management

The Phosphorus Mass Balance of Lake Okeechobee,  
Florida: Implications for Eutrophication Management

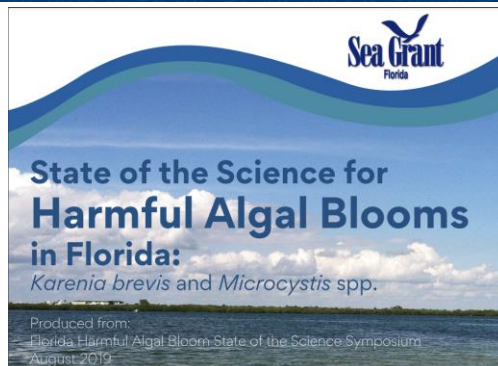
Karl E. Havens  
University of Florida  
Department of Fisheries and Aquatic Sciences  
7922 NW 71st Street  
Gainesville, FL 32654  
khavens@ifas.ufl.edu

R. Thomas James  
South Florida Water Management District  
1301 Gun Club Road

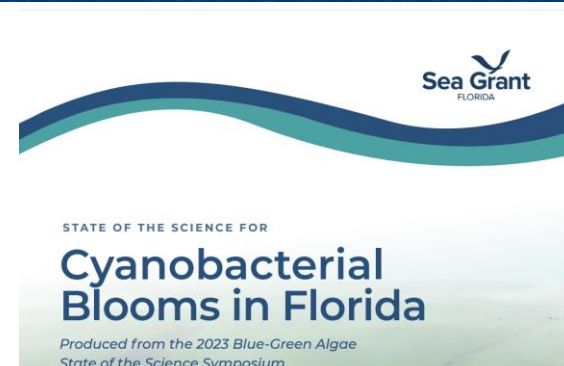
Ecological Responses of a Large Shallow Lake (Okeechobee,  
Florida) to Climate Change and Potential Future Hydrologic  
Regimes

Karl E. Havens · Alan D. Steinman

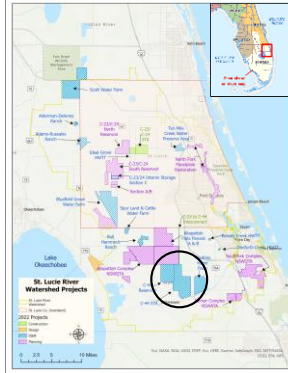
### It Starts With Understanding...



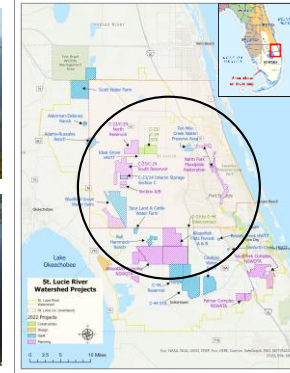
### It Starts With Understanding...



### ...and Ends With Solving Problems

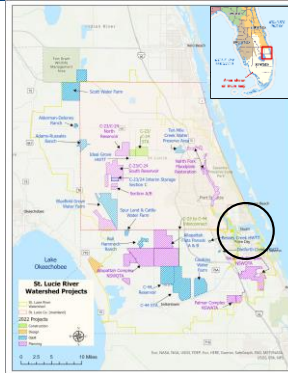


### ...and Ends With Solving Problems



- Known Conversions in St. Lucie Watershed (since 2000)
  - >\$150M committed
  - >21K conversions

### ...and Ends With Solving Problems



# PROTECTING TOGETHER

Mark Rains, Chief Science Officer,  
[mark.rains@floridadep.gov](mailto:mark.rains@floridadep.gov)  
 Sara Davis, Director-OEAT,  
[sara.c.davis@floridadep.gov](mailto:sara.c.davis@floridadep.gov)