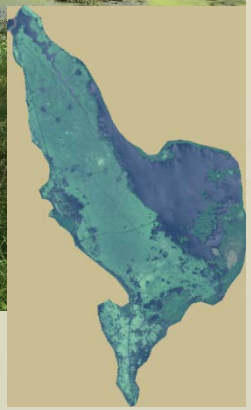
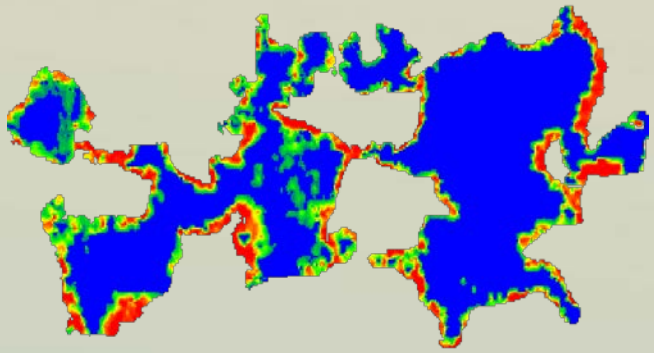
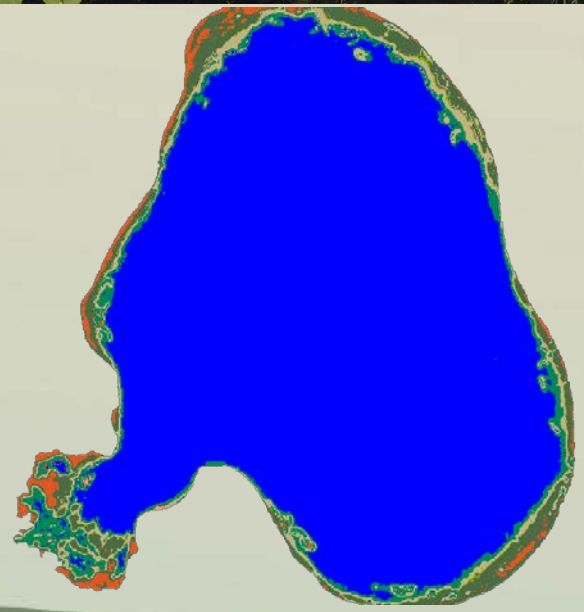
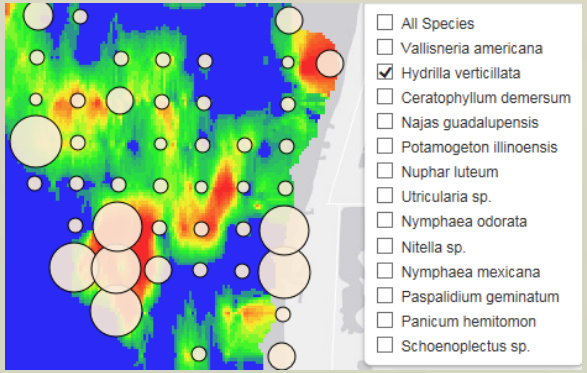
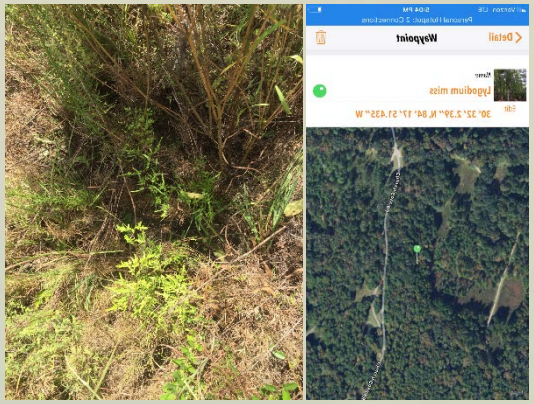
Plant Monitoring in Florida











Alex Dew

Invasive Plant Management

Florida Fish and Wildlife Conservation Commission

Aquatic Plant Monitoring

- Presence/Absence survey
- Spatial Monitoring Data
  - Submersed species
  - Emergent species

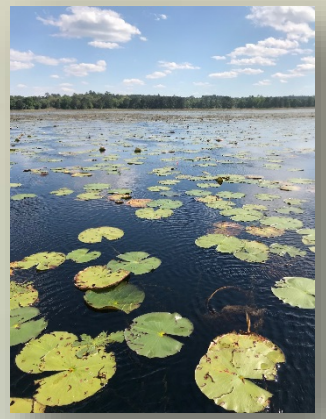
Uplands Invasive Plant Treatment Monitoring

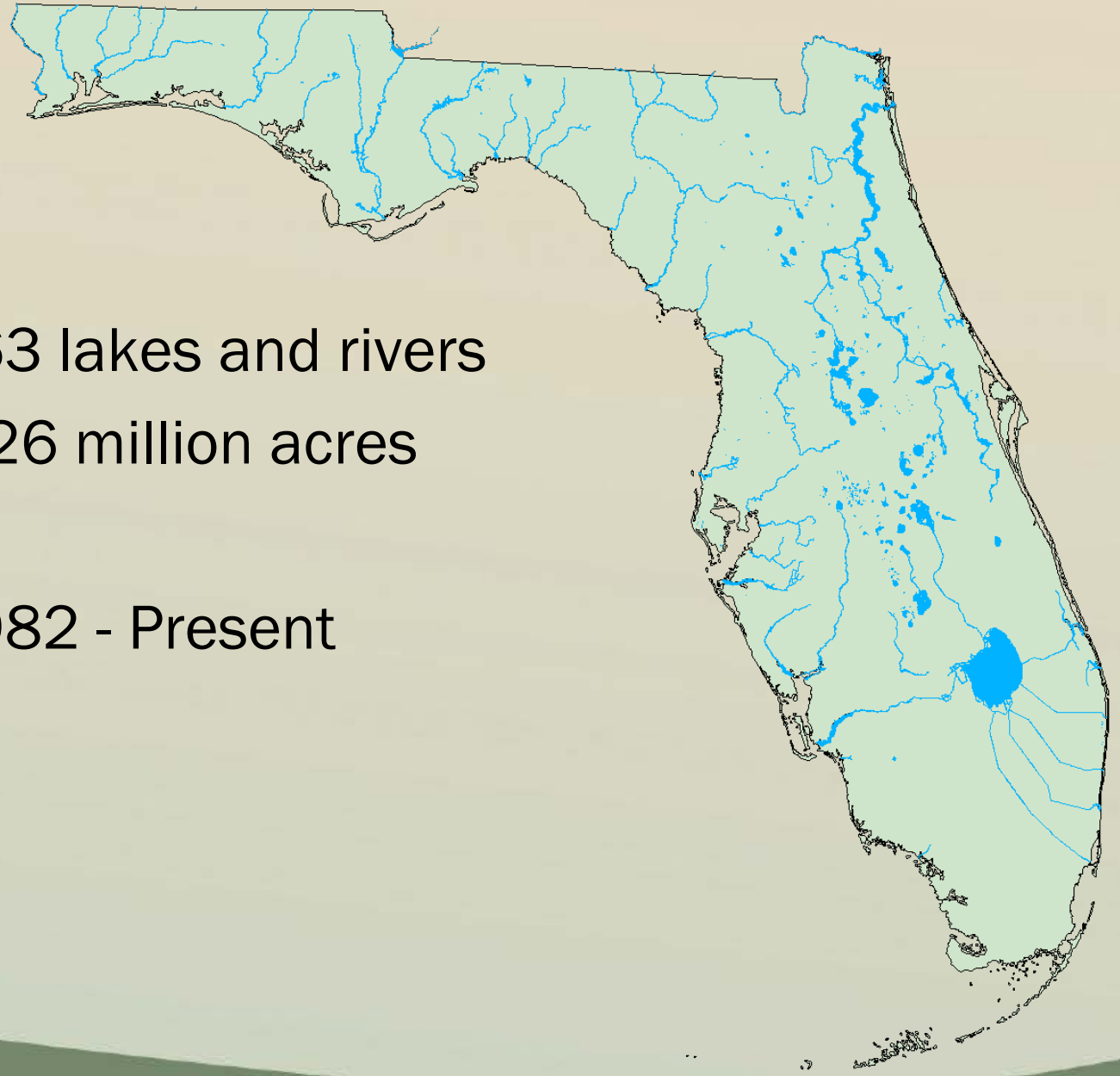
- Compliance Inspections

Making data interactive for public

- What's Happening on my Lake?

Aquatic Plant Survey





463 lakes and rivers

1.26 million acres

1982 - Present

Aquatic Plant Survey

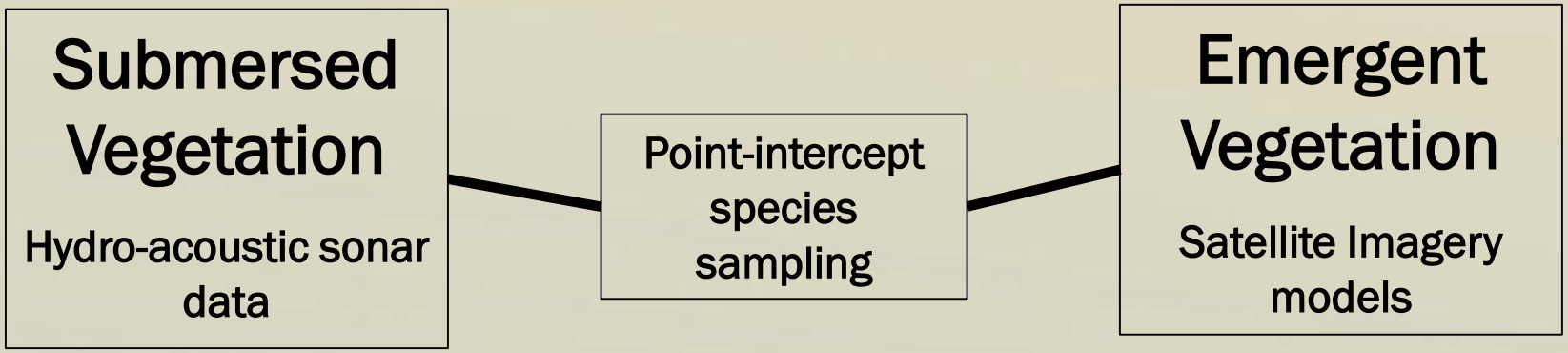
Mostly Presence/absence

~20 species have acreage estimates

~140 species on survey

WaterbodyName	SurveyYear	WaterbodyAcres	County	SpeciesName	SpeciesAcres	Origin	Eppc	Date
Jackson, Lake	2018	4000	Leon	Alternanthera philoxeroides		Exotic	No	2018-09-19
Jackson, Lake	2018	4000	Leon	Azolla caroliniana		Native	No	2018-09-19
Jackson, Lake	2018	4000	Leon	Bidens spp		Native	No	2018-09-19
Jackson, Lake	2018	4000	Leon	Cabomba caroliniana		Native	No	2018-09-19
Jackson, Lake	2018	4000	Leon	Ceratophyllum demersum		Native	No	2018-09-19
Jackson, Lake	2018	4000	Leon	Cephalanthus occidentalis		Native	No	2018-09-19
Jackson, Lake	2018	4000	Leon	Eichhornia crassipes	0.1	Exotic	Yes	2018-09-19
Jackson, Lake	2018	4000	Leon	Filamentous algae		Native	No	2018-09-19
Jackson, Lake	2018	4000	Leon	Hydrilla verticillata	10	Exotic	Yes	2018-09-19
Jackson, Lake	2018	4000	Leon	Hydrocotyle spp		Native	No	2018-09-19
Jackson, Lake	2018	4000	Leon	Leersia hexandra		Native	No	2018-09-19
Jackson, Lake	2018	4000	Leon	Limnobium spongia		Native	No	2018-09-19
Jackson, Lake	2018	4000	Leon	Nelumbo lutea		Native	No	2018-09-19
Jackson, Lake	2018	4000	Leon	Myriophyllum aquaticum		Exotic	No	2018-09-19
Jackson, Lake	2018	4000	Leon	Oxycaryum cubense	5	Exotic	No	2018-09-19
Jackson, Lake	2018	4000	Leon	Ludwigia octovalvis/peruviana		Native	No	2018-09-19
Jackson, Lake	2018	4000	Leon	Nuphar advena		Native	No	2018-09-19
Jackson, Lake	2018	4000	Leon	Polygonum glabrum		Native	No	2018-09-19
Jackson, Lake	2018	4000	Leon	Panicum hemitomon		Native	No	2018-09-19

Spatial Data for vegetation monitoring



Hydro-acoustic mapping

Invasive Plant Mgmt Section (IPM) in early 2000's began gathering data to monitor changes in vegetation

- Hydro-acoustic
- Point-intercept

Florida Fish & Wildlife Research Institute (FWRI) incorporated these monitoring techniques in 2015 into their Long-Term Management Program

ciBiobase created automated system to upload and process hydro-acoustic data

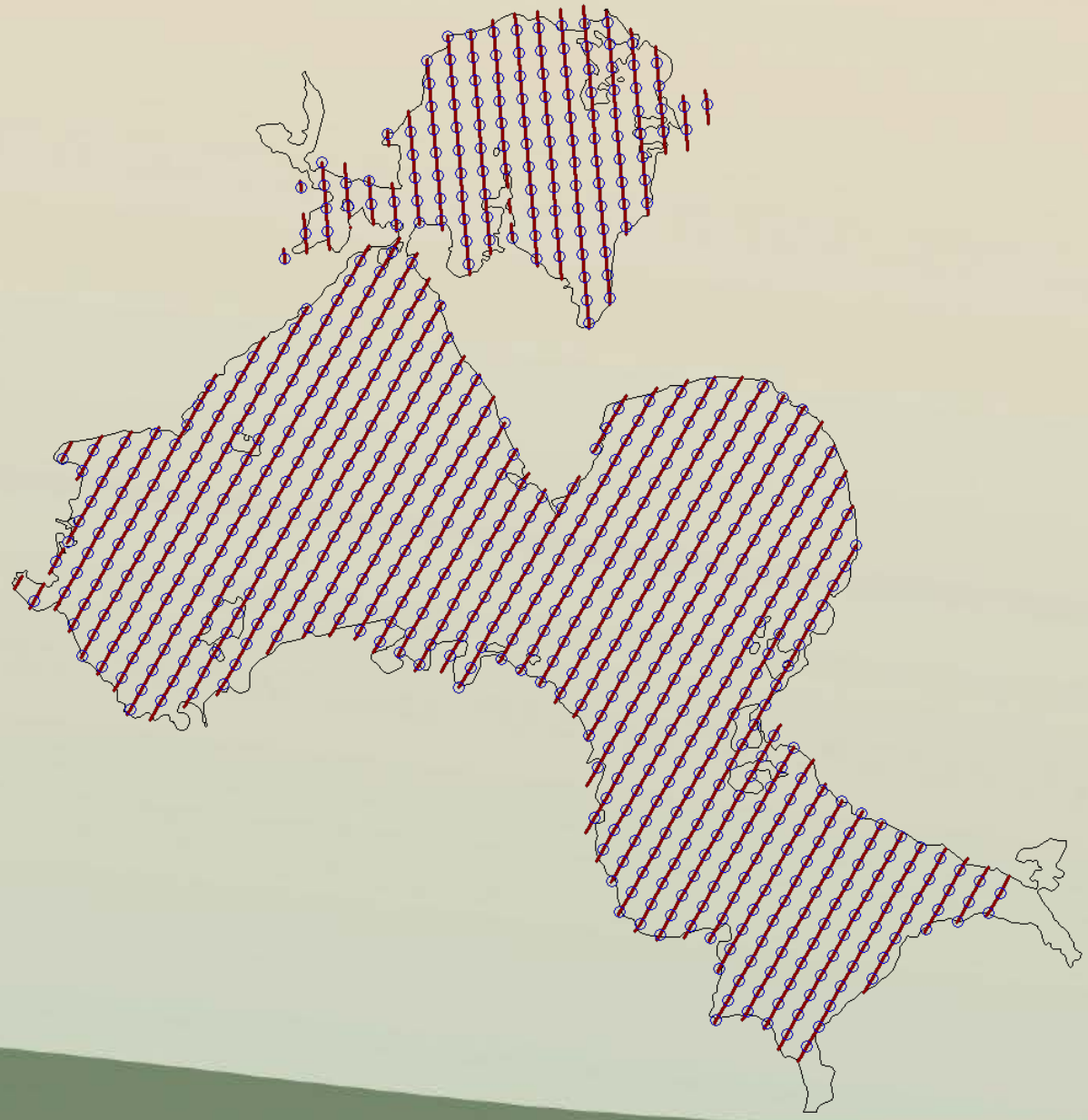
BIOBASE by CIMAP

ECOSOUND

Lake Jackson

Point-intercept sampling grid

Sonar transects



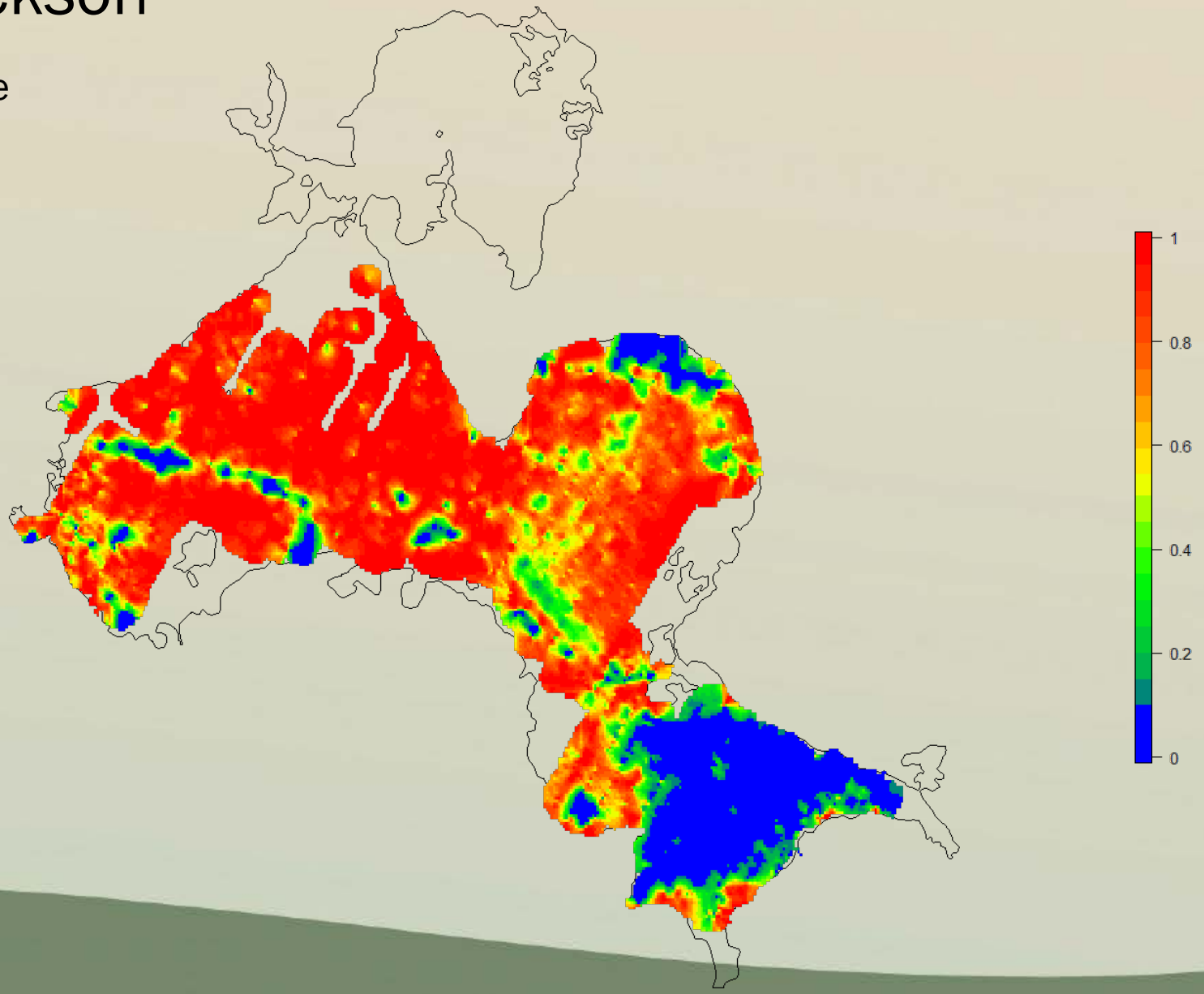
Point-intercept:

submersed – frotus

emergent – visual

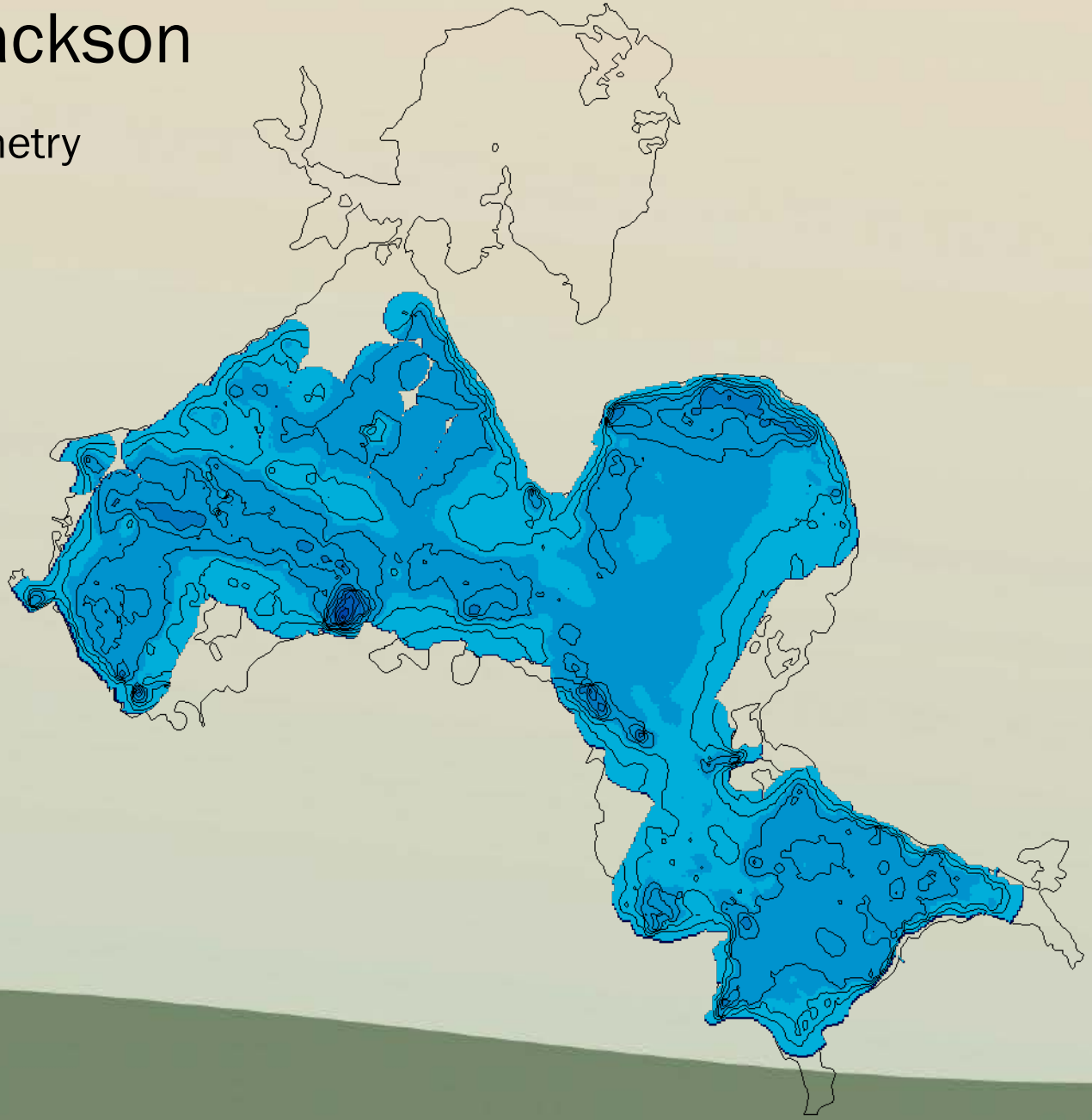
Lake Jackson

BioVolume



Lake Jackson

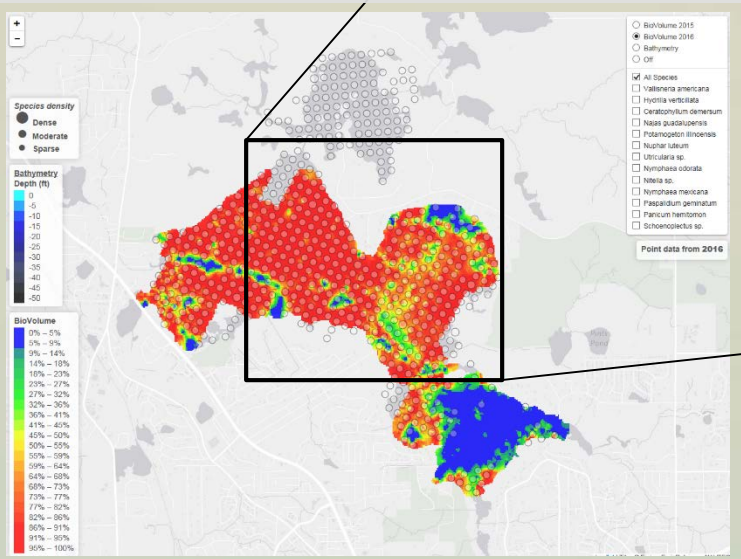
Bathymetry

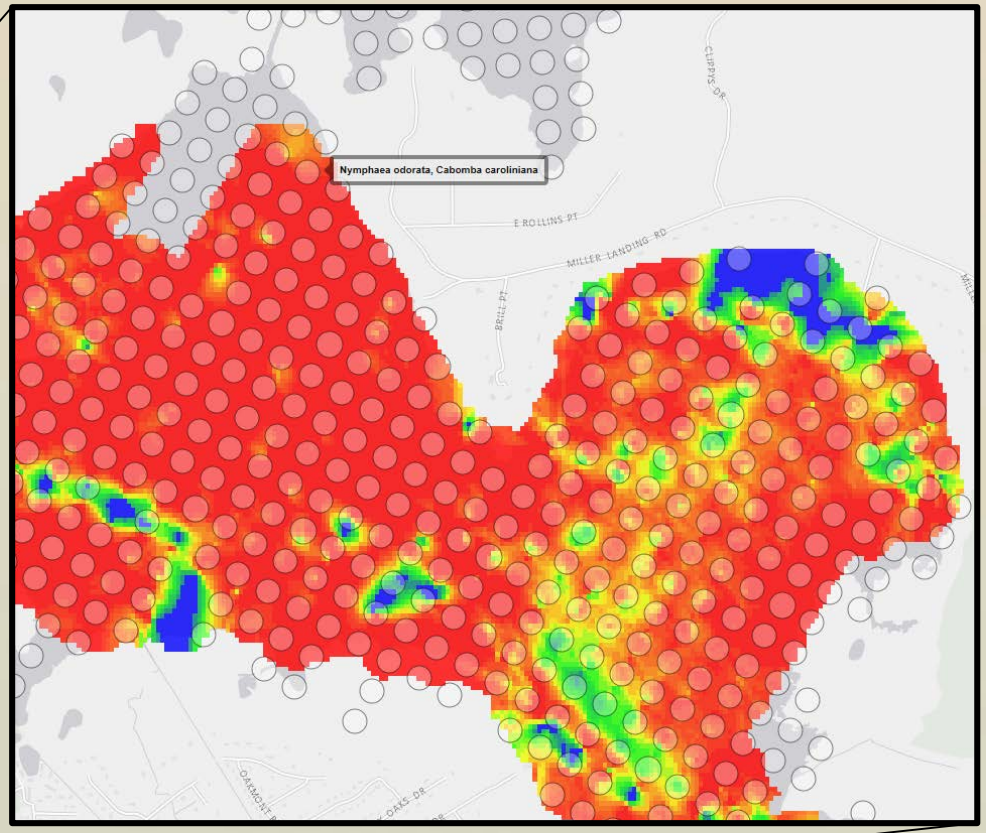


Lake Jackson

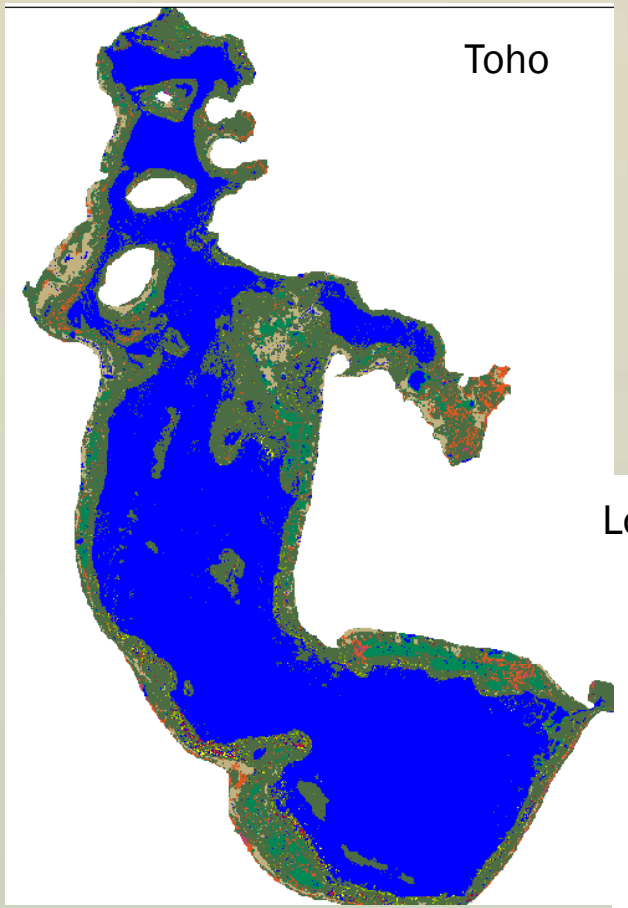
BioVolume + Point-intercept gives a good overview of submersed vegetation volume and information of species present.

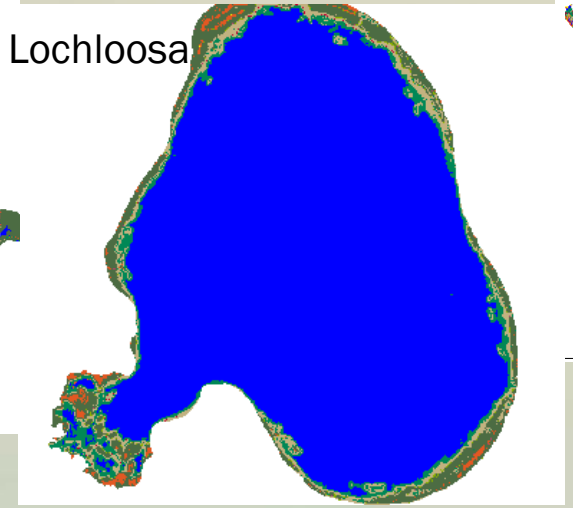
Information of dominant species and emergent vegetation cover is lacking, however.

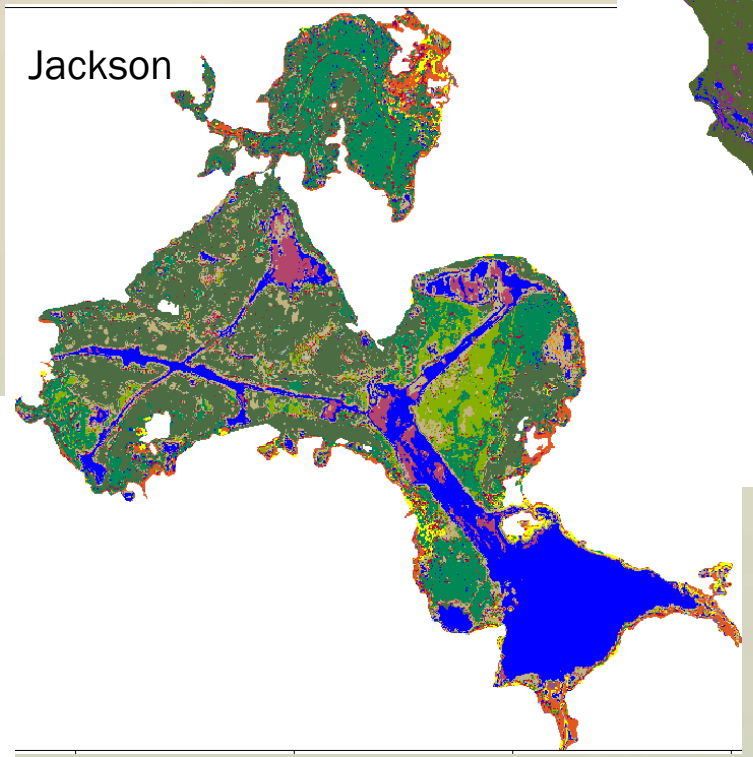


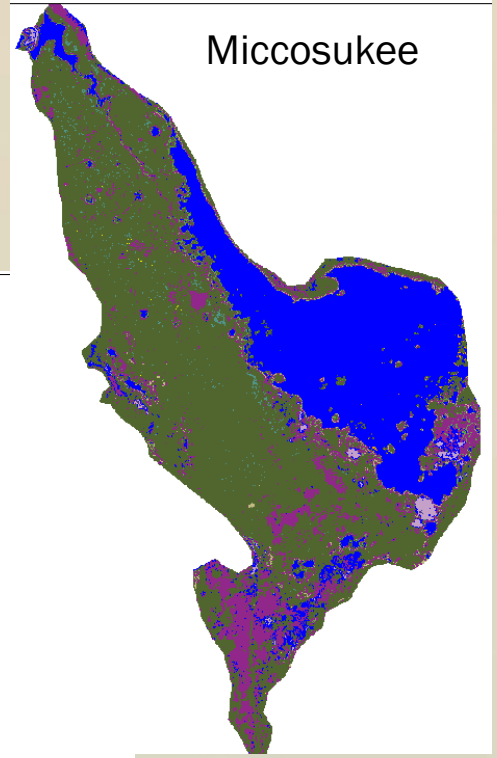


Emergent Vegetation Modelling





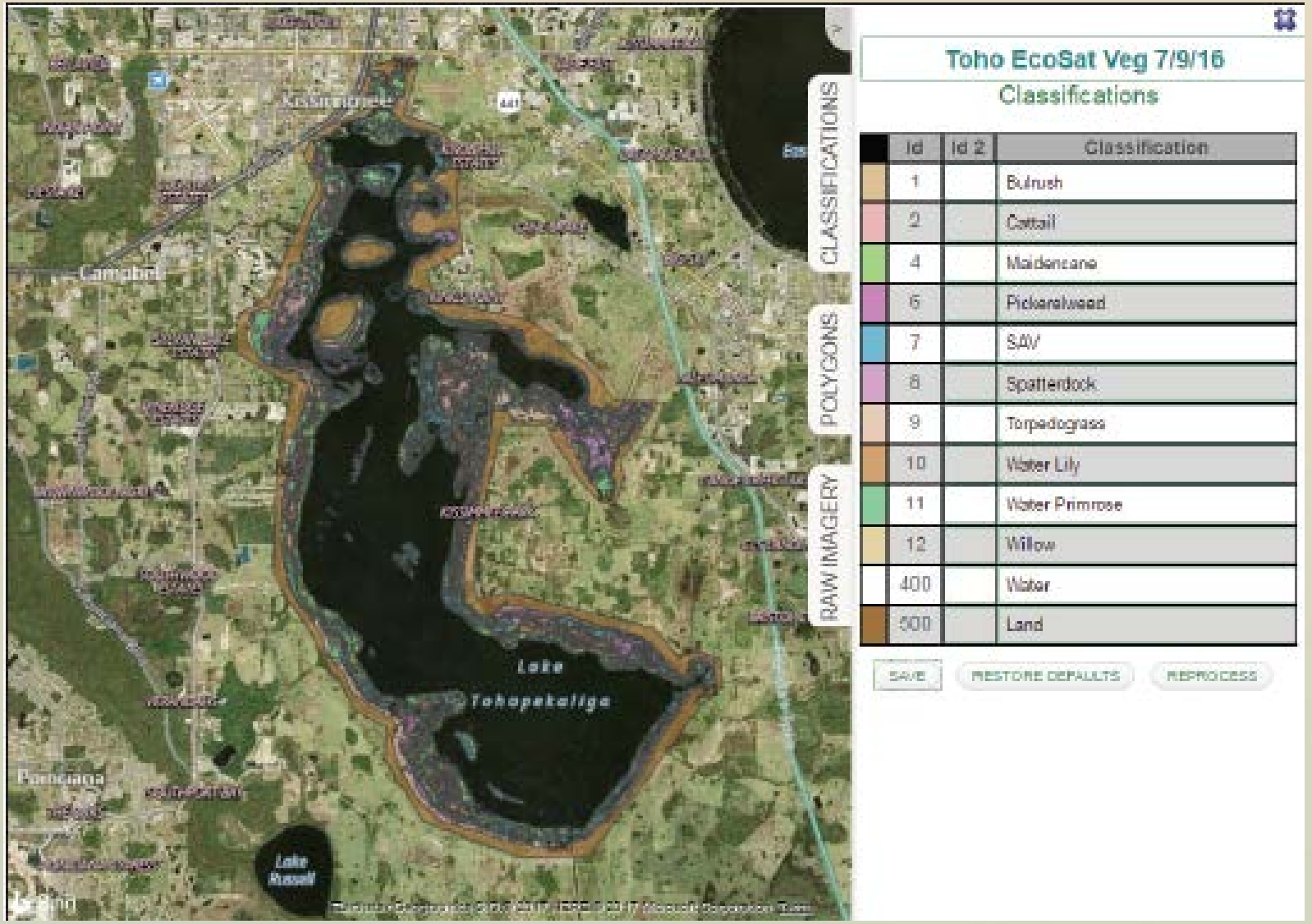




Lake Jackson

BIOBASE by OMAP

ECOSAT



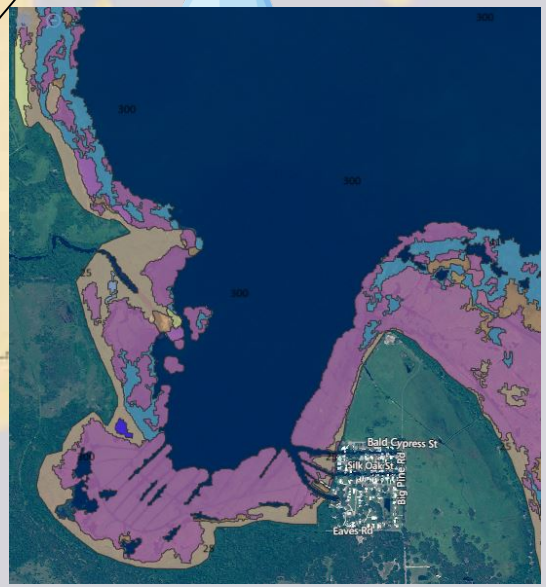
FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

- Collect GPS points
  - Dominant vegetation species classes
  - Large monotypic stands
    - Moderate–Dense
  - Representative mix-classes

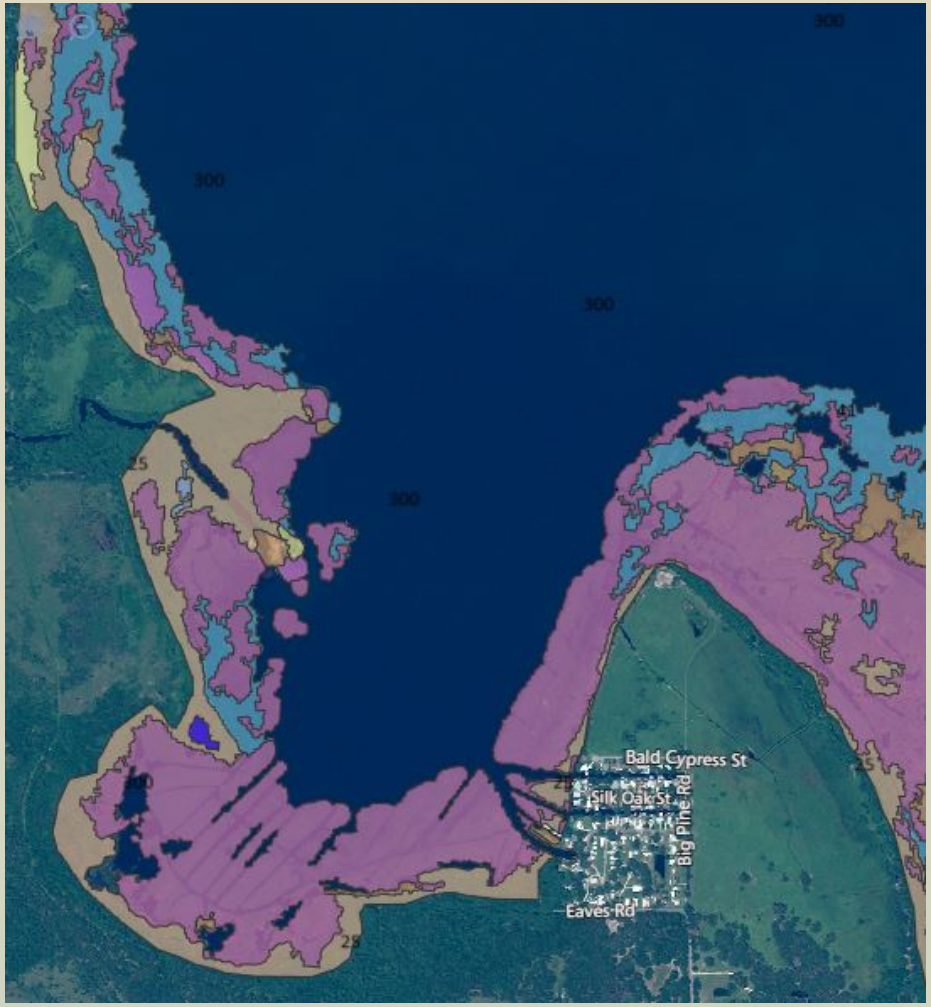
**5 Days per lake with airboat*

+/– 1 month of June imagery capture

Bald Cypress St
Eaves Rd


Bald Cypress St
Big Pine Rd
Eaves Rd

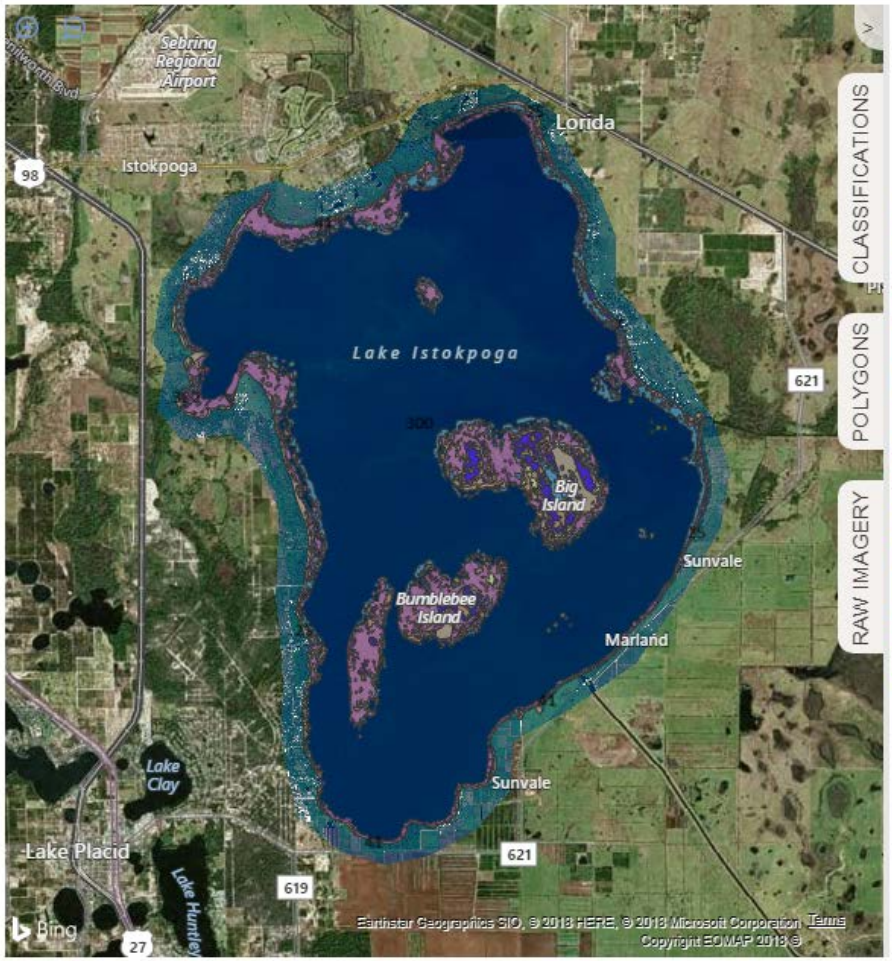
Bald Cypress St
Silk Oak St
Big Pine Rd
Eaves Rd


300
300
300
Bald Cypress St
Silk Oak St
Big Pine Rd
Eaves Rd

EcoSat Survey

NOW VIEWING: Istokpoga 2018 Emergent Vegetation MMU ▾ | VIEW REPORT | DOWNLOAD REPORT | DOWNLOAD FILES | ASK THE EXPERTS

Map



Edit

Istokpoga 2018 Emergent Vegetation MMU1000

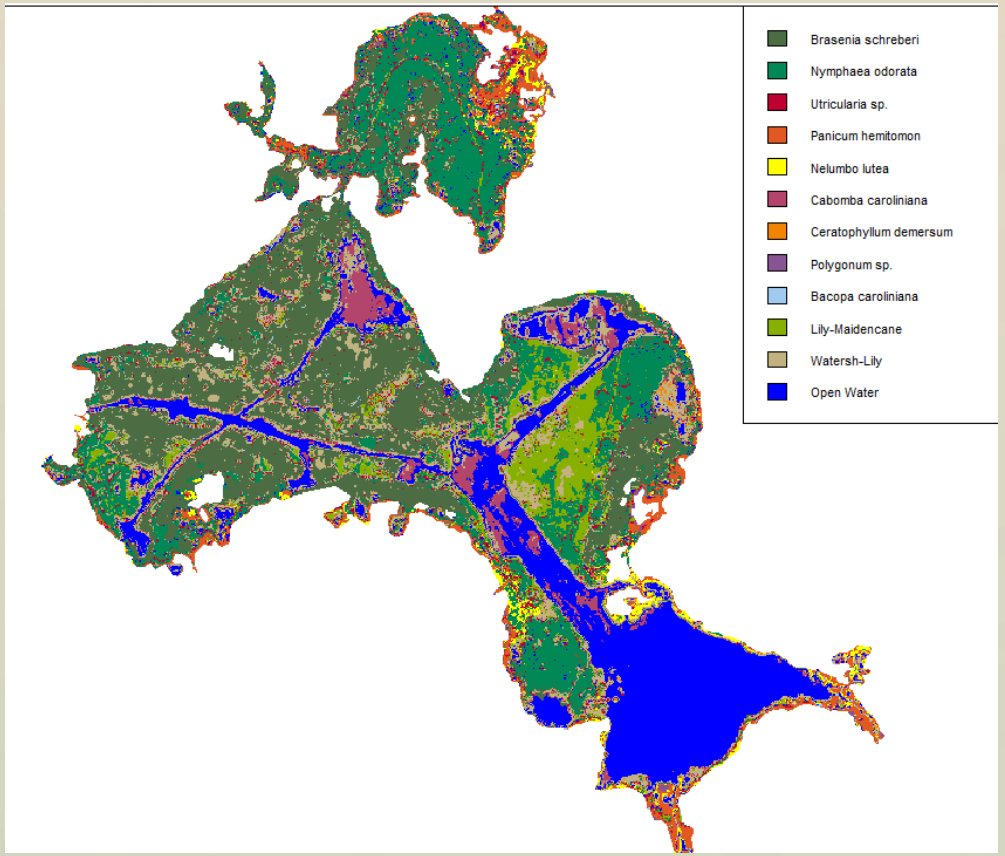
Classifications

	Id	Id 2	Classification
	3	3	Torpedograss
	4	4	Maidencane
	5	5	Egyptian paspalidium
	6	6	Spikerush
	7	7	Bulrush
	10	10	Cattail
	23	23	American Cupscale Grass
	25	25	Other wetland forest
	41	41	Spatterdock
	208	208	Unknown 8
	209	209	Unknown 9
	210	210	Unknown 10
	211	211	Unknown 11
	290	290	Cloud / cloud shadow
	300	300	Open Water

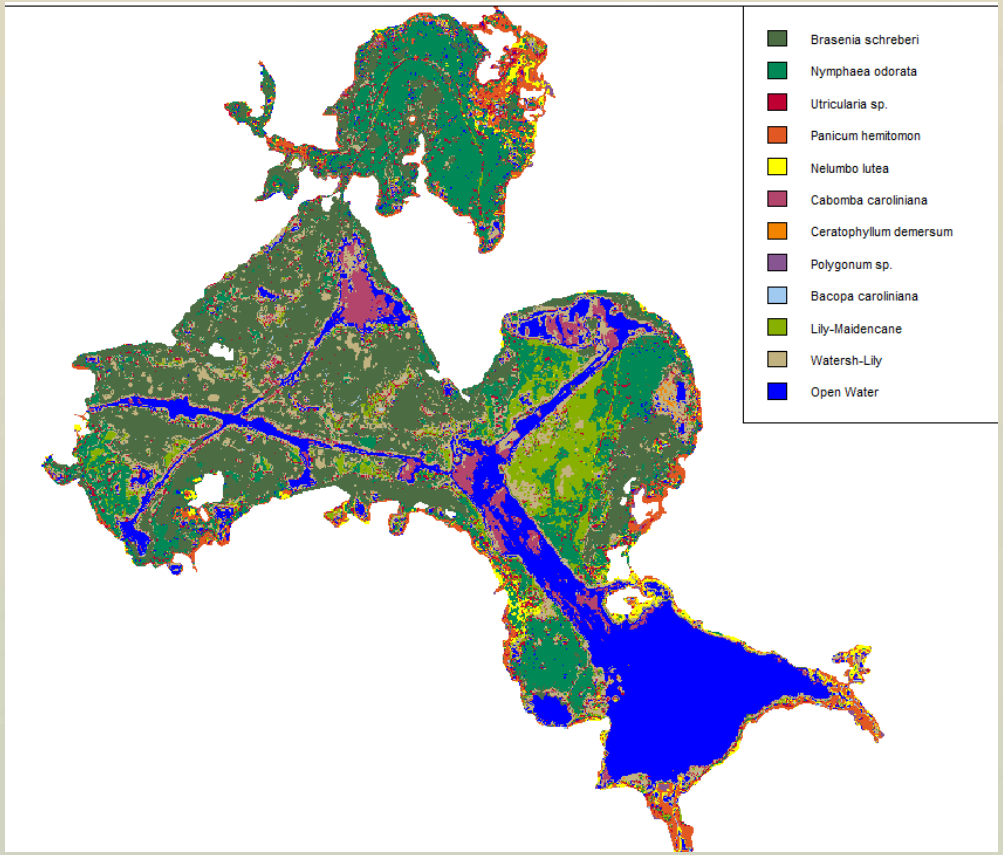
All Major Class Ids & Colors

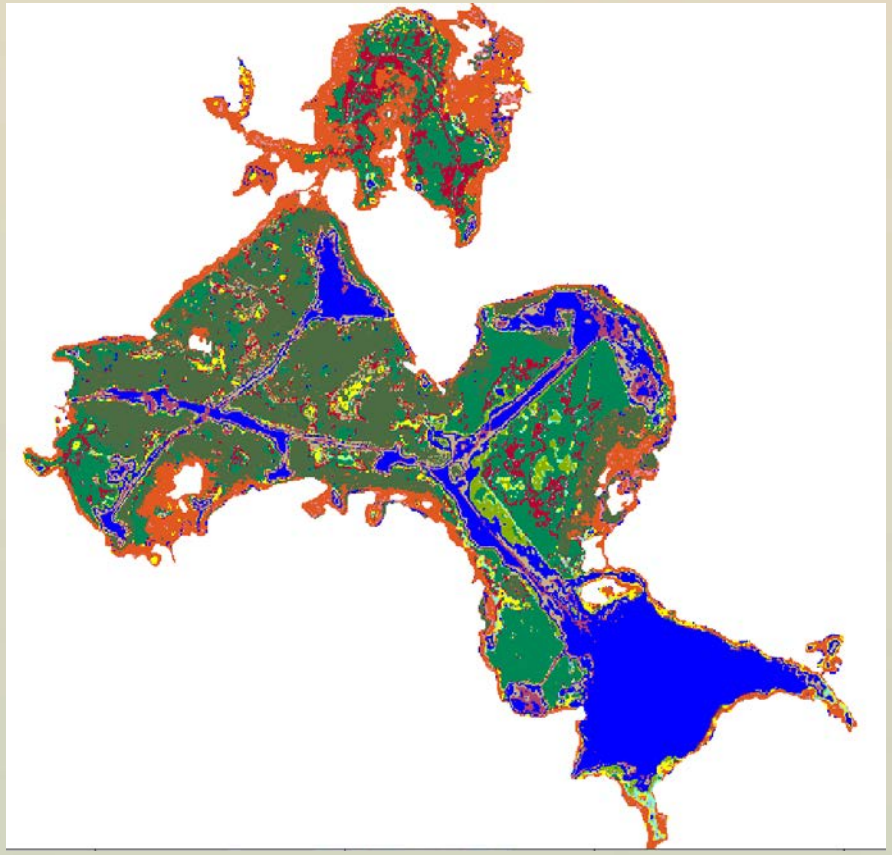
- **ID/Class**: Original Classification ID
- **ID2/Override**: New user-entered classification ID.
  - User can lump any classes together
  - Enter a zero to delete a classification. This will

Lake Jackson



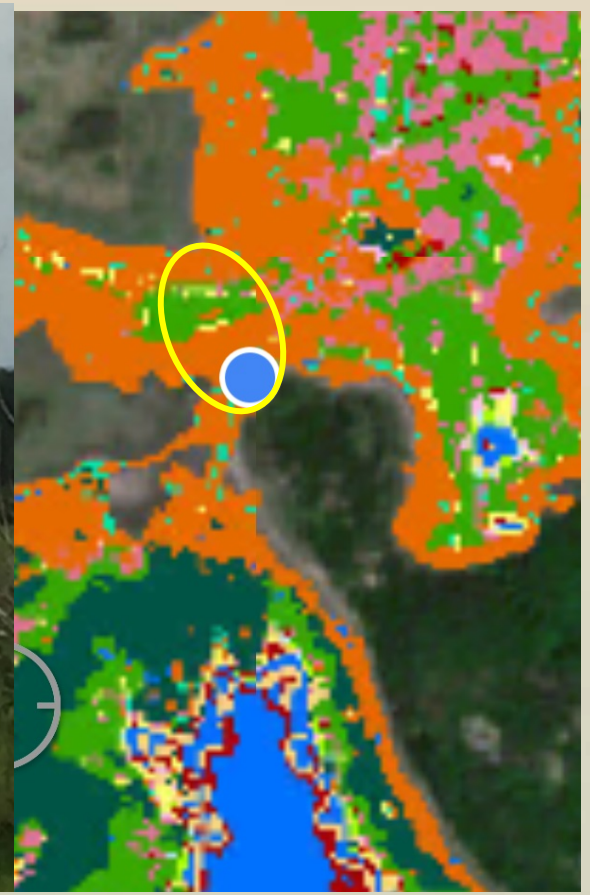
Lake Jackson





May 2016 → May 2017

Lake Jackson



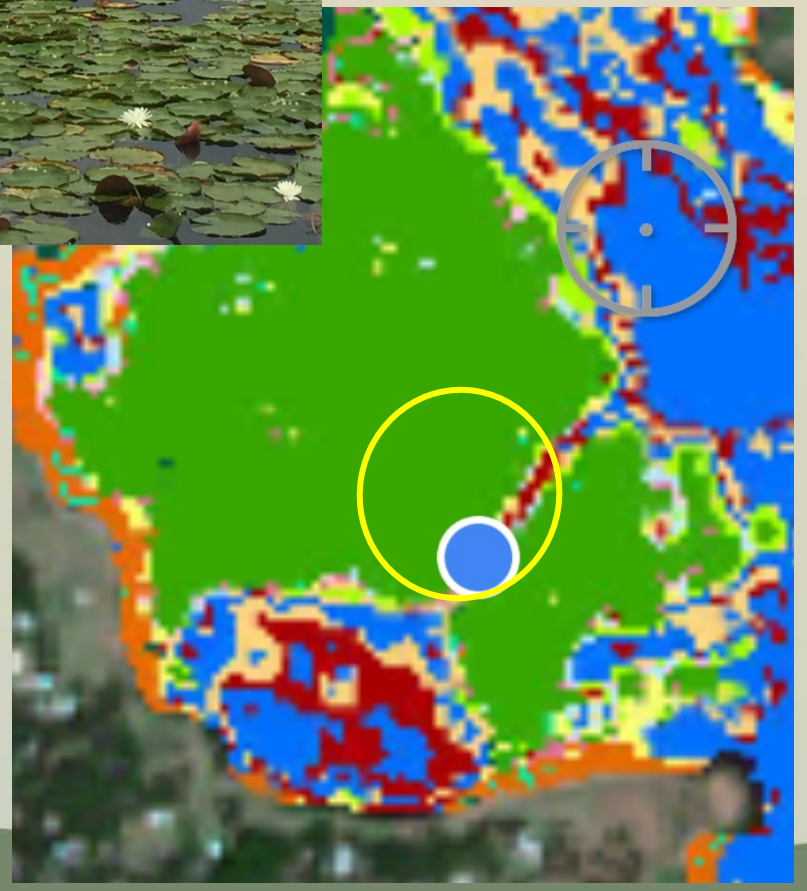
Visual bearing: 330° NW

Orange: Panicum hemitomon

Yellow: Nelumbo lutea

Green: Nymphaea odorata

Lake Jackson



Visual bearing: 340° NNW & 320° NW

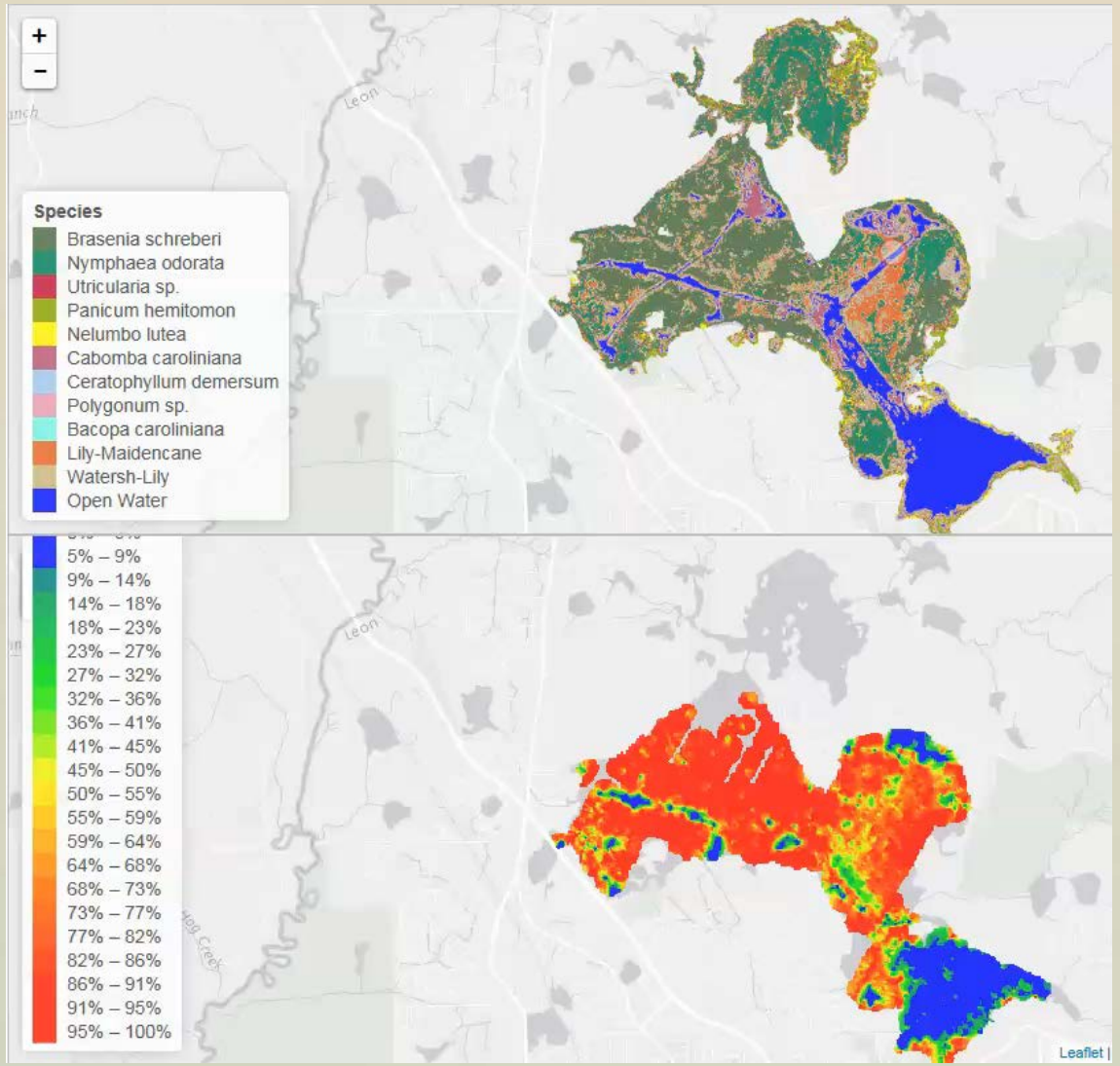
Dark Red: Cabomba caroliniana

Green: Nymphaea odorata

Completing the picture

Emergent

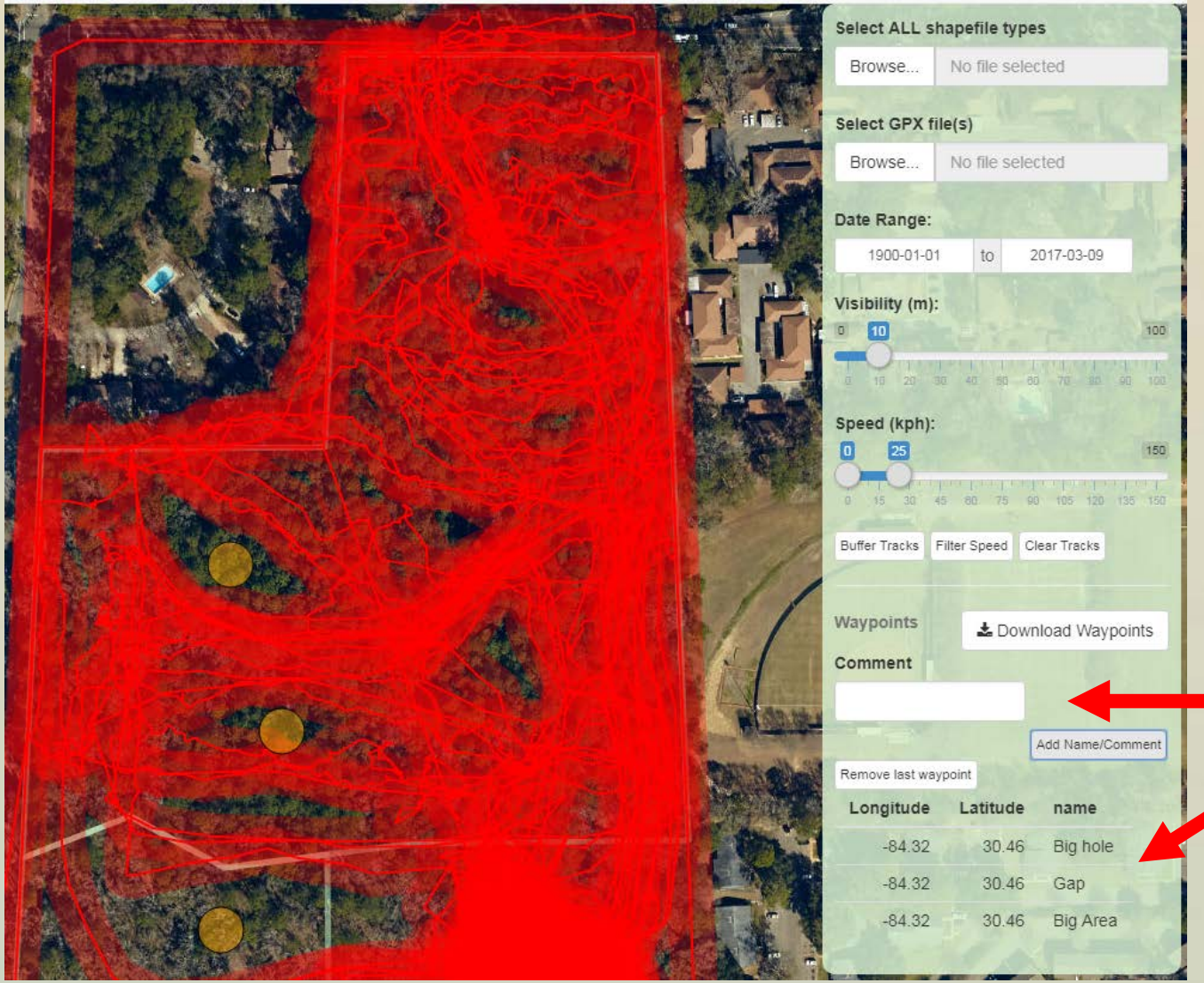
Submersed



Uplands Invasive Plant Treatment Compliance Monitoring

Inspect contractor's tracks

Make waypoints of areas to check



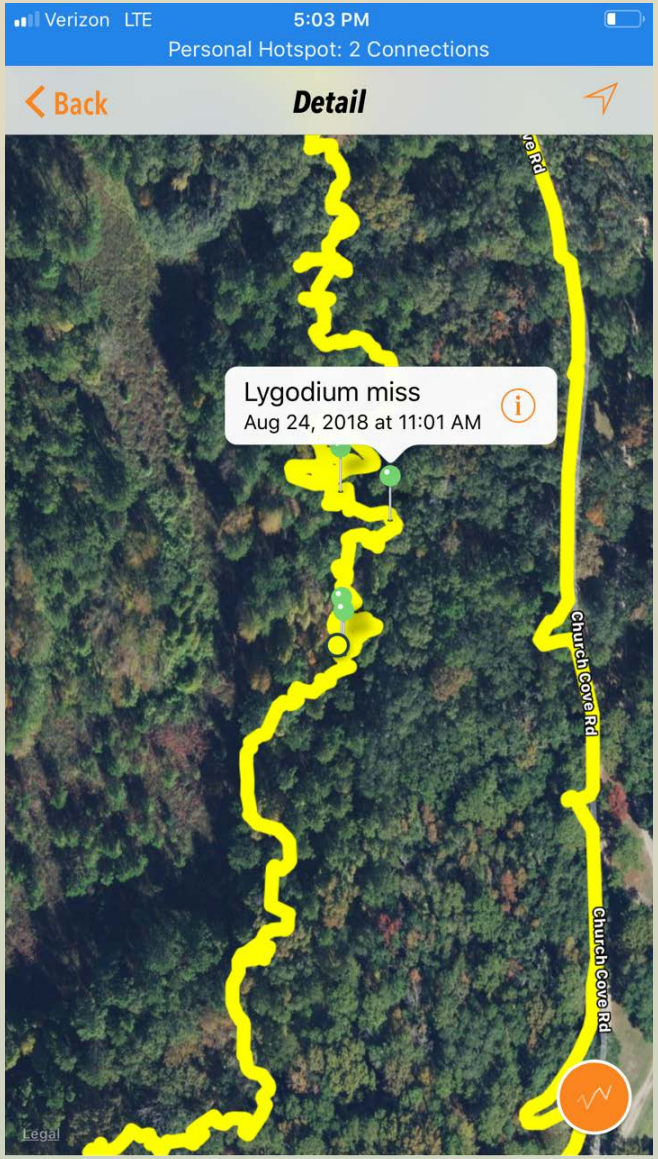
Compliance inspection

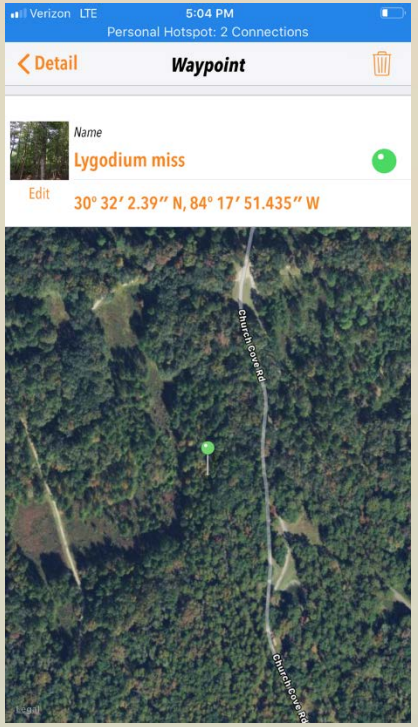
Smartphone GPS apps

Trails

Avenza

Gaia

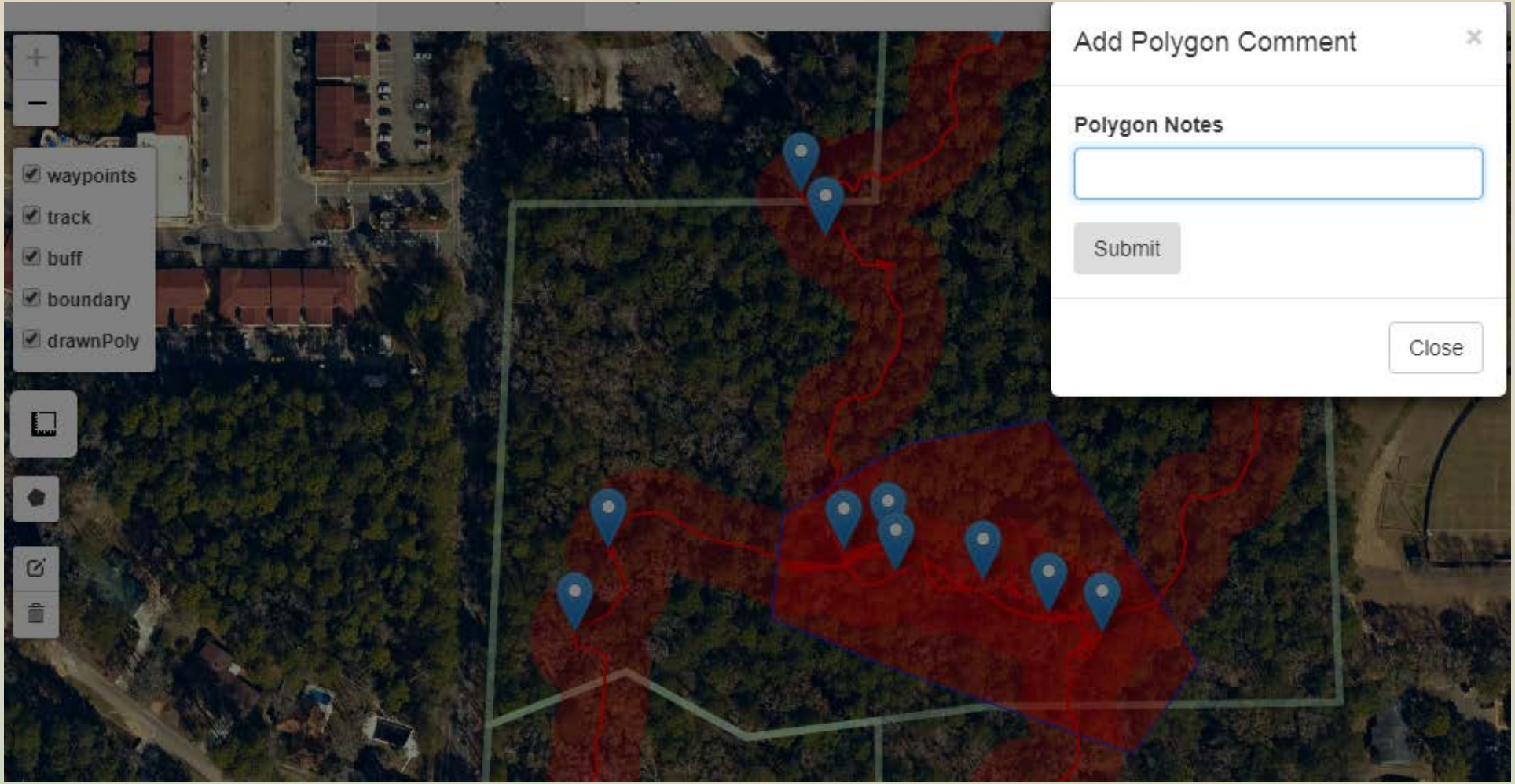




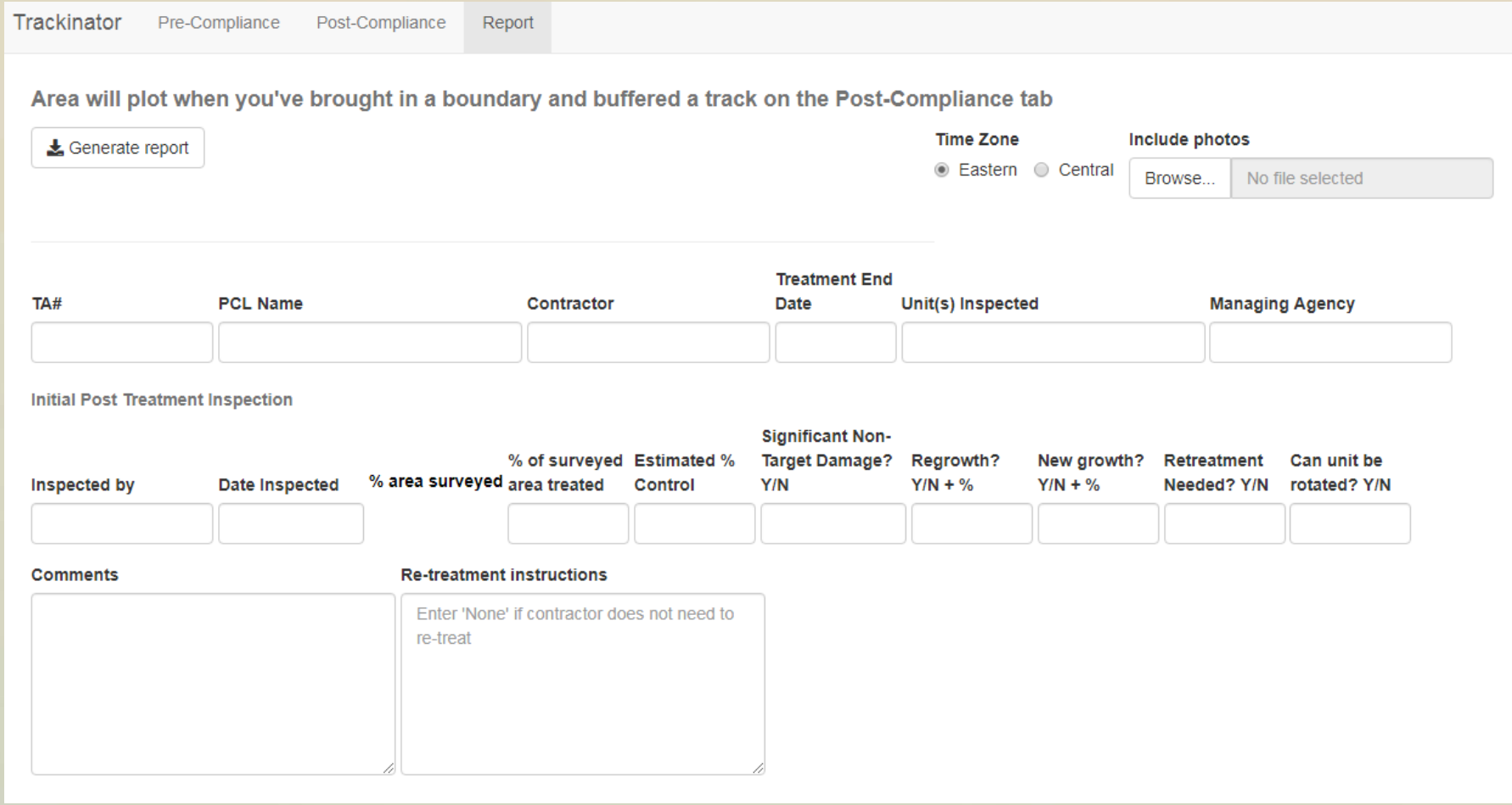
Bring in compliance inspection tracks and waypoints

Contractor can see what area was checked and where misses were found.

Polygon can be drawn with instructions to return to an area.



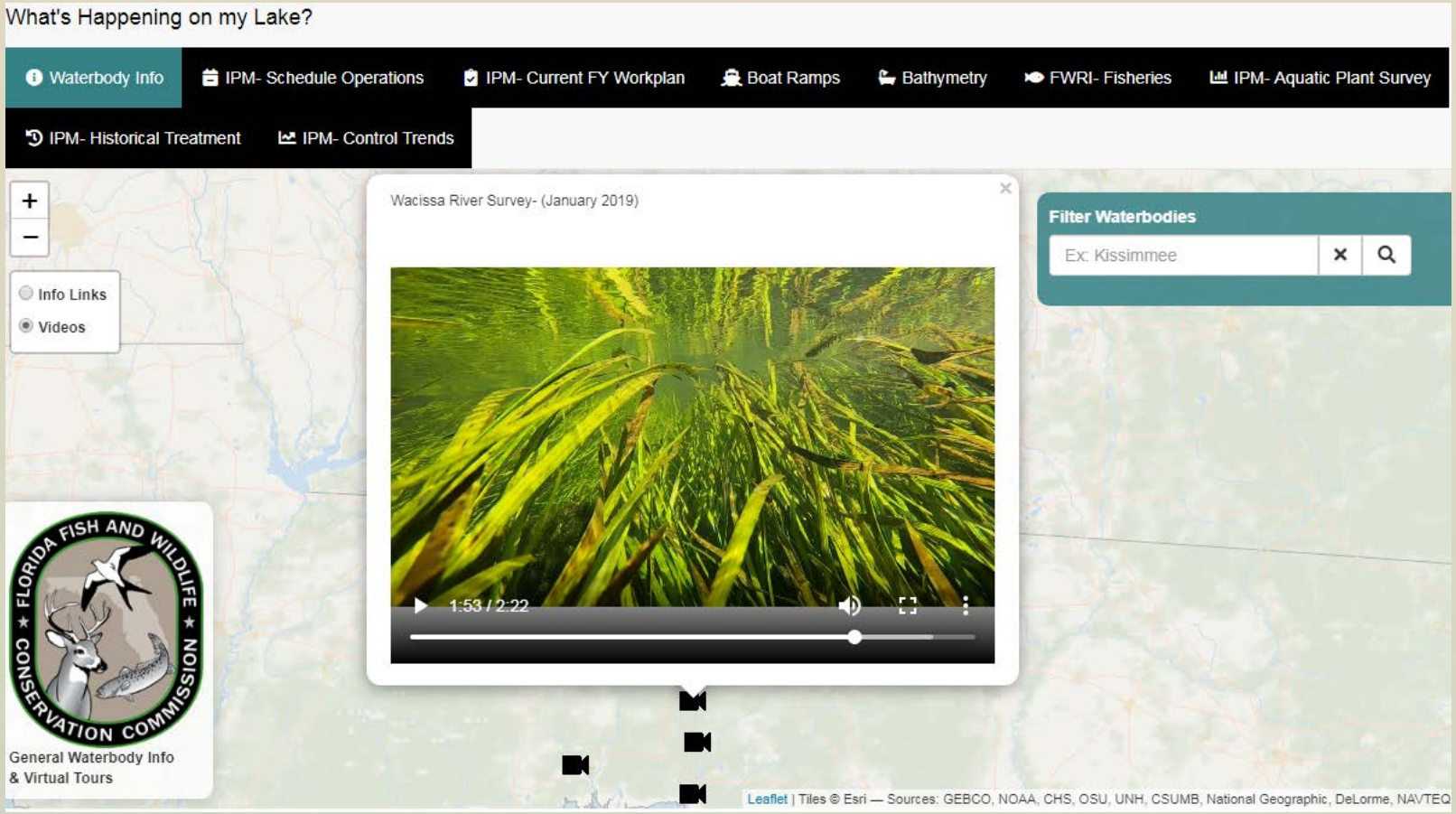
Fill out details and generate report



Making monitoring data accessible (...and fun?)

Compiling and combining data sets

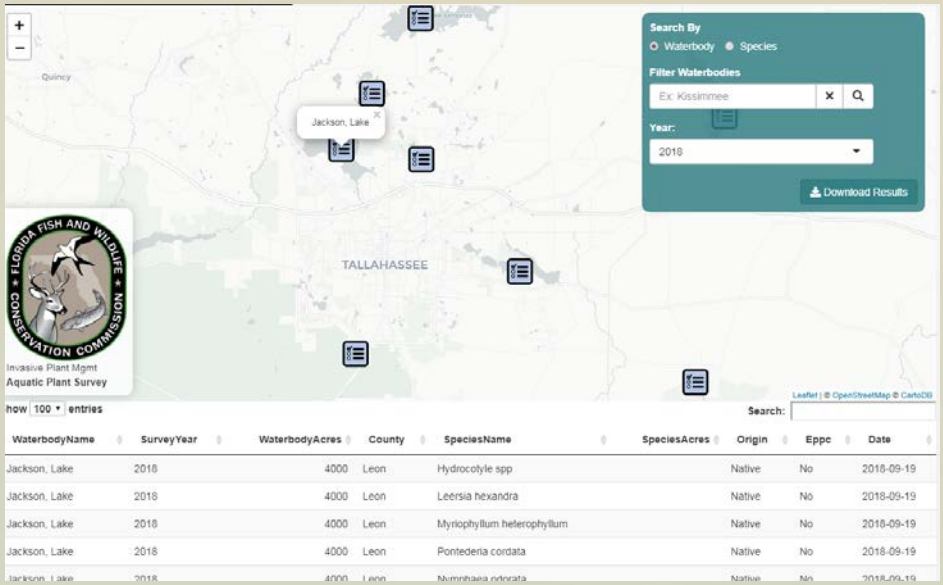
Interactive display

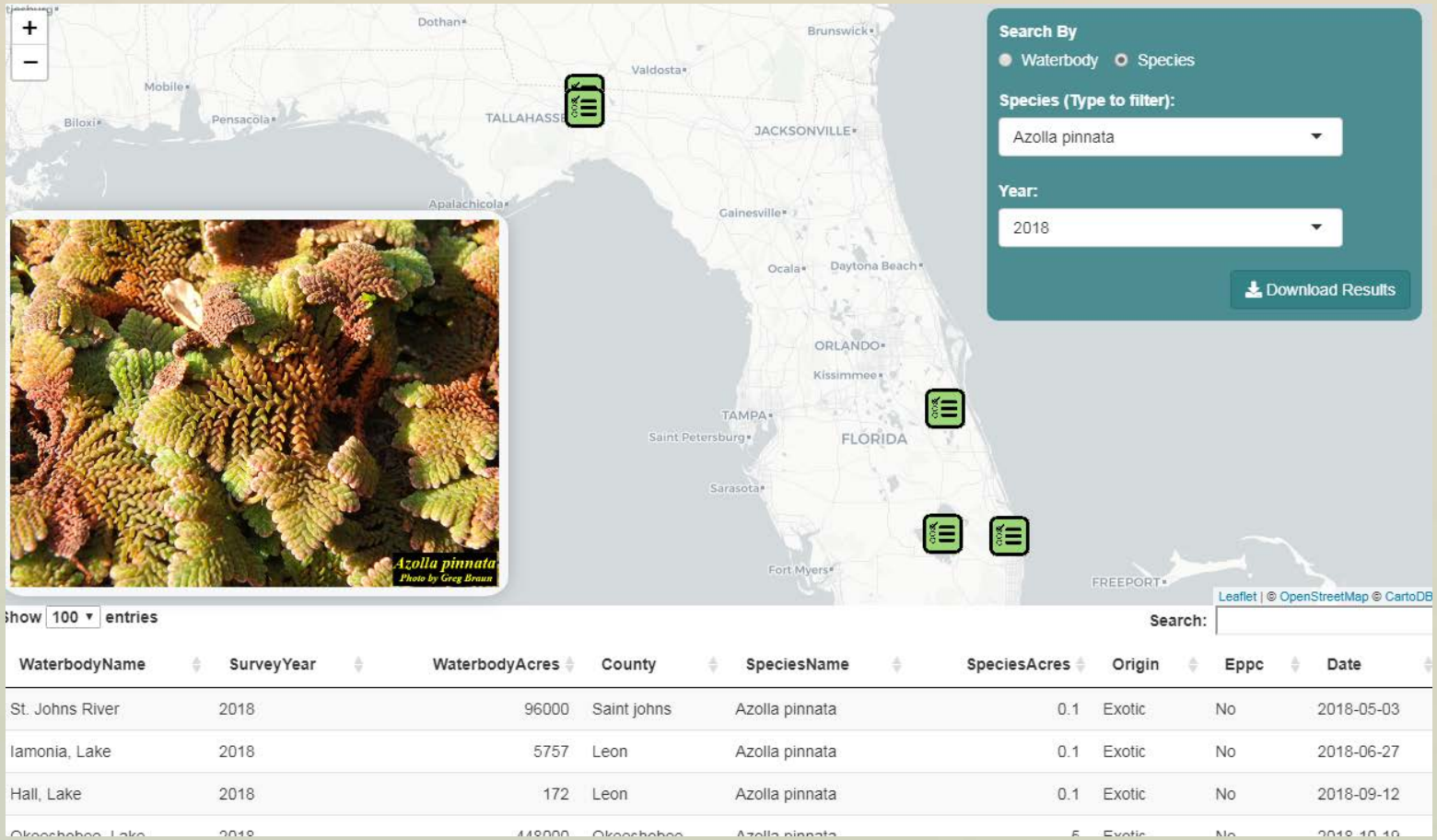


Link to map:
https://ipm-myfwc.shinyapps.io/whoml/

Making monitoring data accessible (...and fun?)

Aquatic Plant Survey

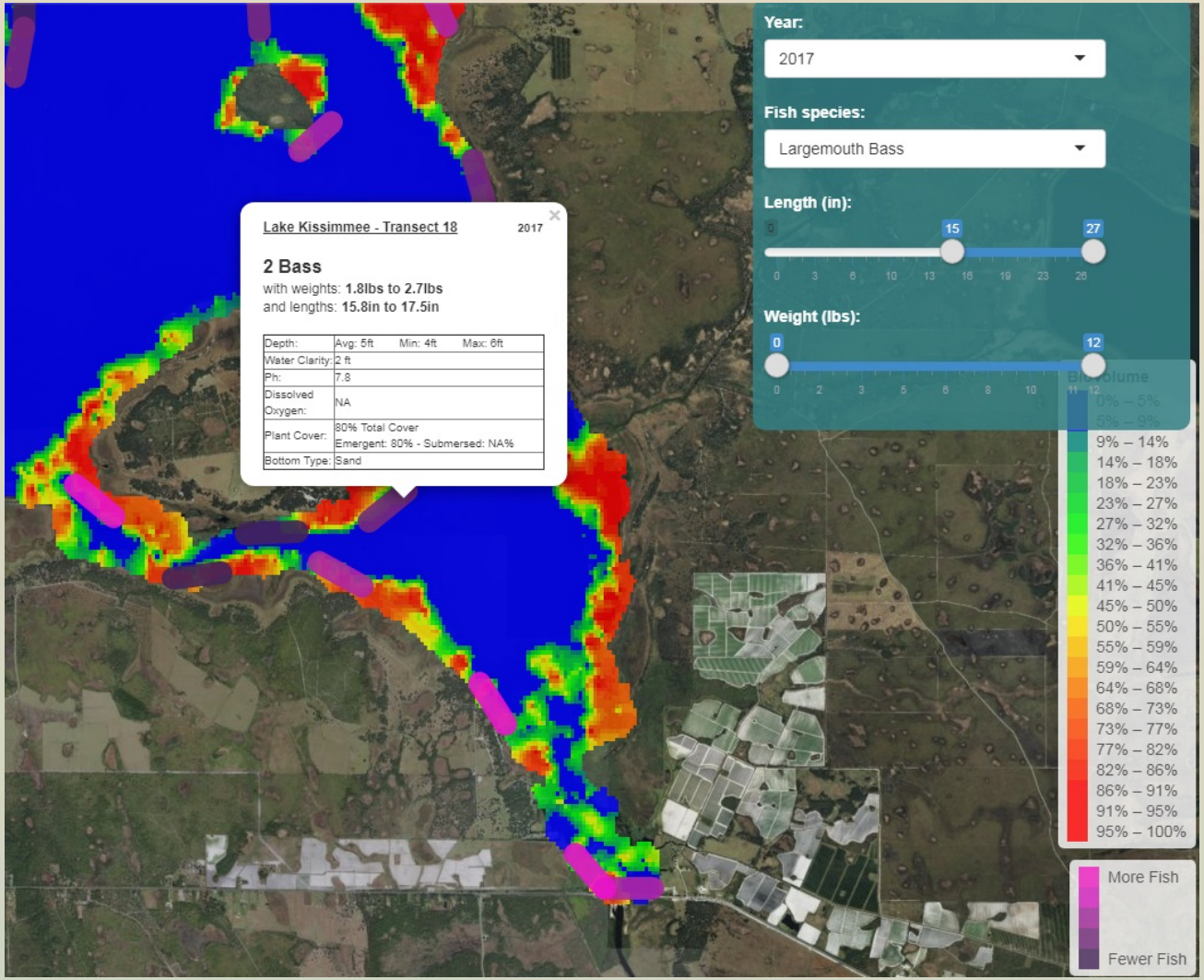




Link to map:
https://ipm-myfwc.shinyapps.io/whoml/

Making monitoring data accessible (...and fun?)

Combining plant monitoring data
with fish transect electrofishing data



Link to map:
https://ipm-myfwc.shinyapps.io/whoml/

Answering questions with monitoring data

UF | IFAS
UNIVERSITY of FLORIDA

PURDUE
UNIVERSITY

Link to map:
https://ipm-myfwc.shinyapps.io/whoml/

Questions?