Lake Okeechobee – Vegetation Mapping and Management

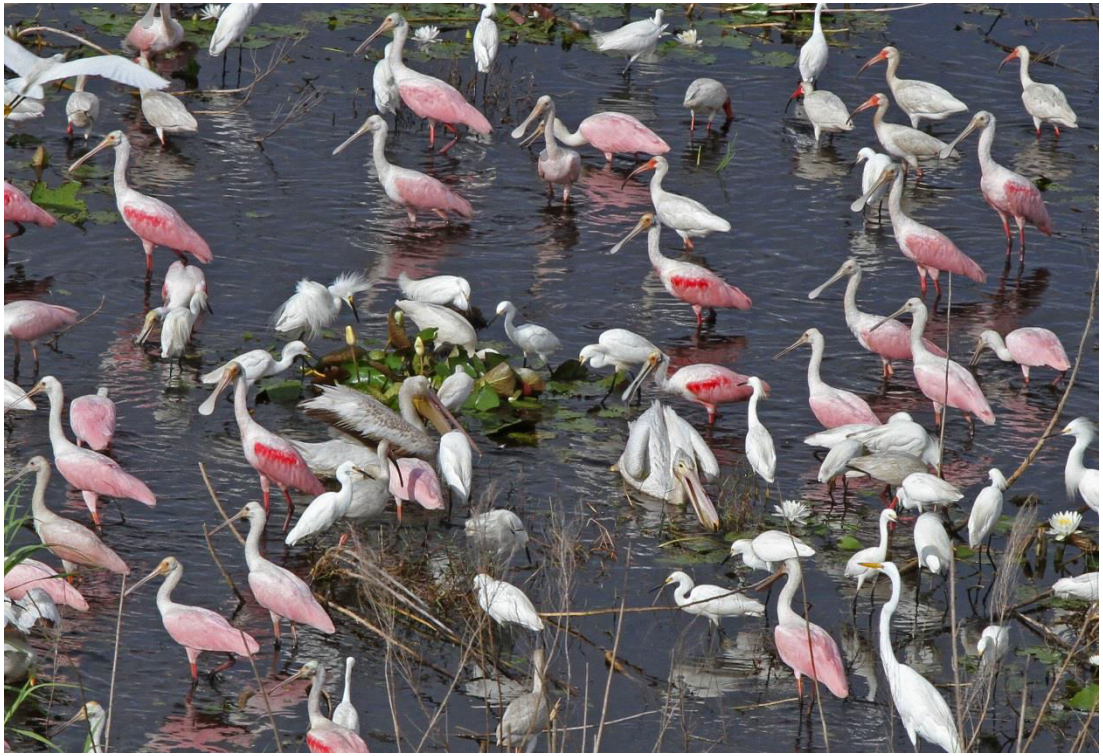
Recover Annual Science Meeting
March1-2, 2016

Chuck Hanlon
Sr. Environmental Scientist
Lake and River Ecosystem Section

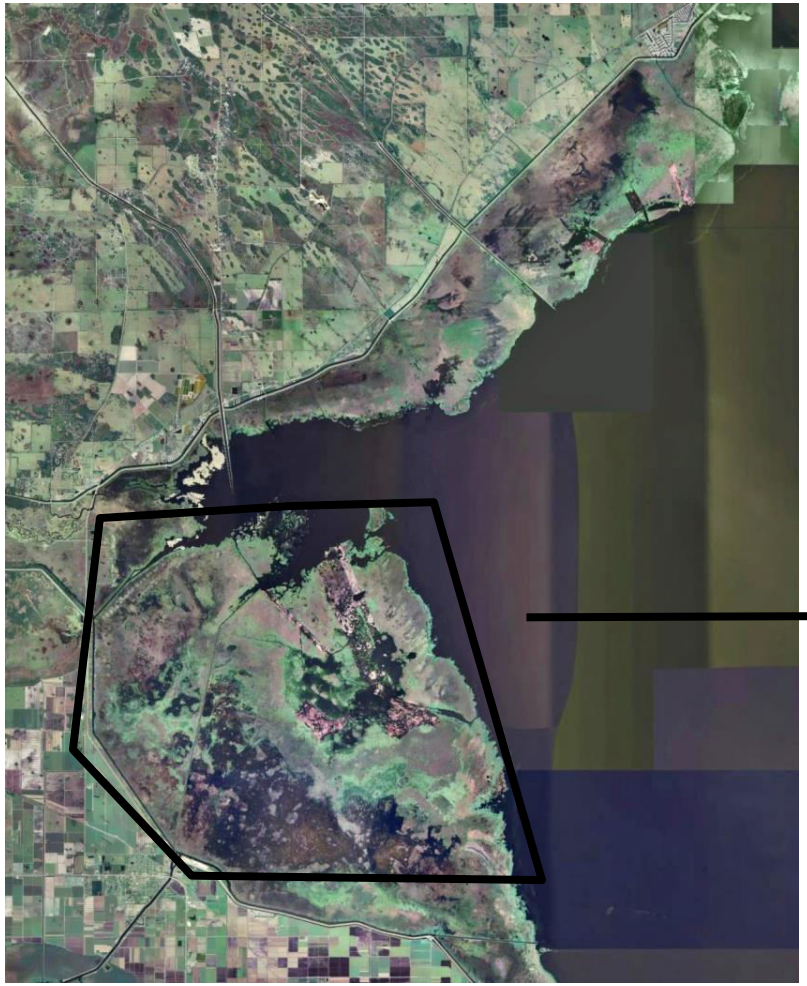
Vegetation Monitoring and Management Objectives

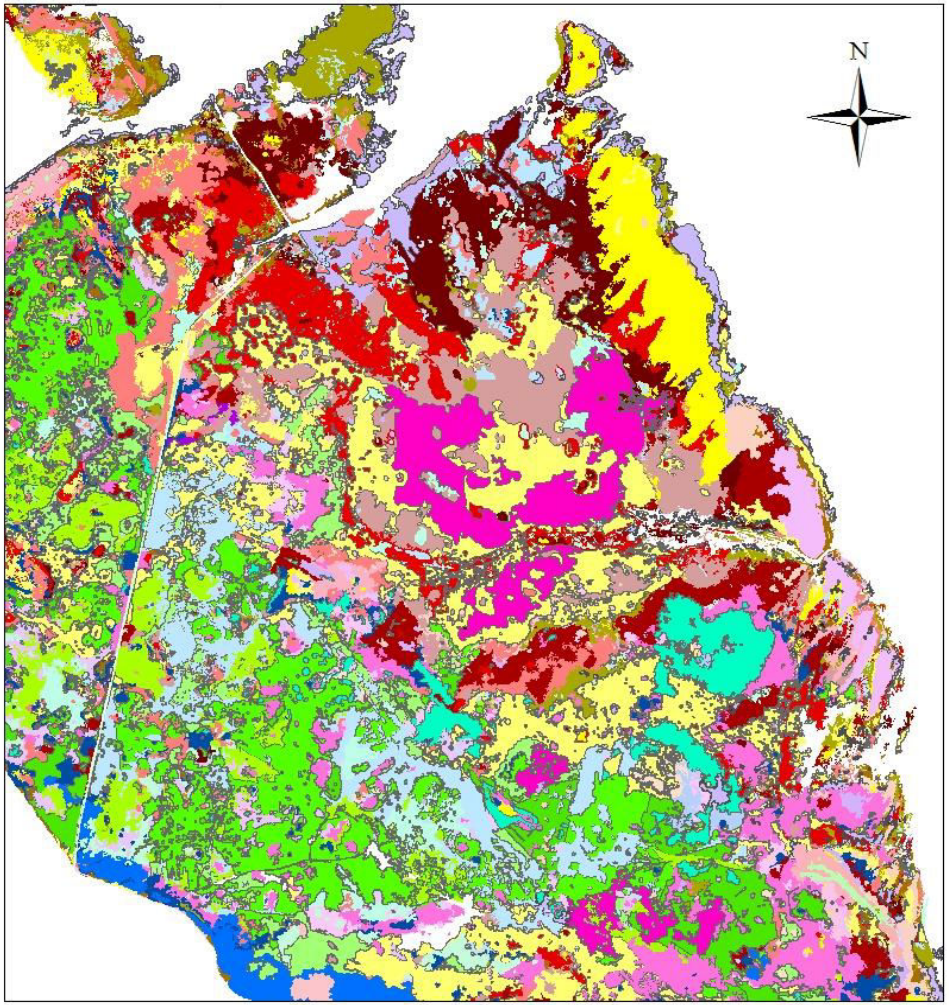
- Quantify the areal coverage and spatial distribution of the dominant emergent and submersed plant communities in Lake Okeechobee
- Improve habitat for fish and wildlife by reducing the coverage of exotic and nuisance native plant species
- Evaluate relationships between marsh and nearshore habitats, hydrologic conditions, management actions and other events

Open marsh habitats in Lake Okeechobee are productive. They support forage and sport fish that serve as a critical link in the energy pathway between primary producers and higher trophic level consumers (birds, reptiles, humans). Protecting these habitats is important.

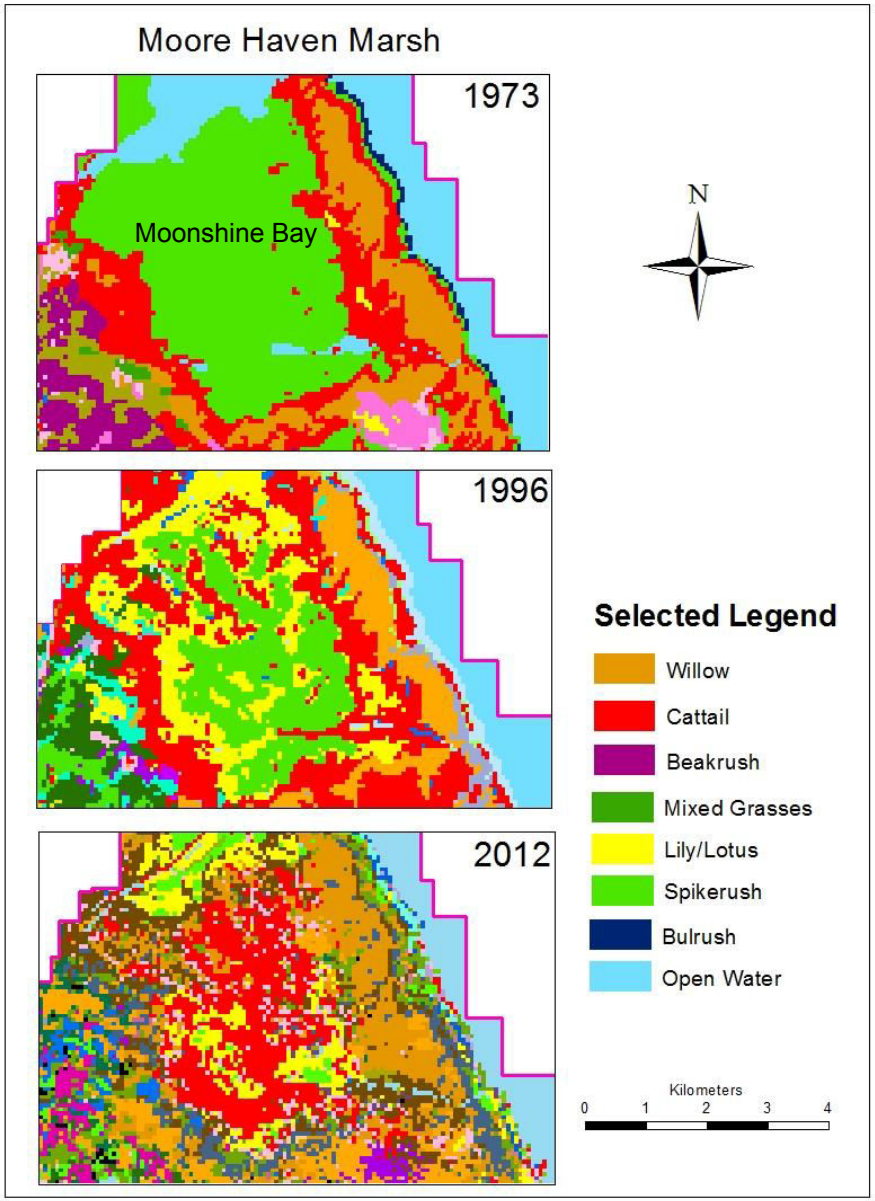


In contrast, dense cattail provides poor or no foraging habitat for wading birds and snail kites and limited habitat for sport fish





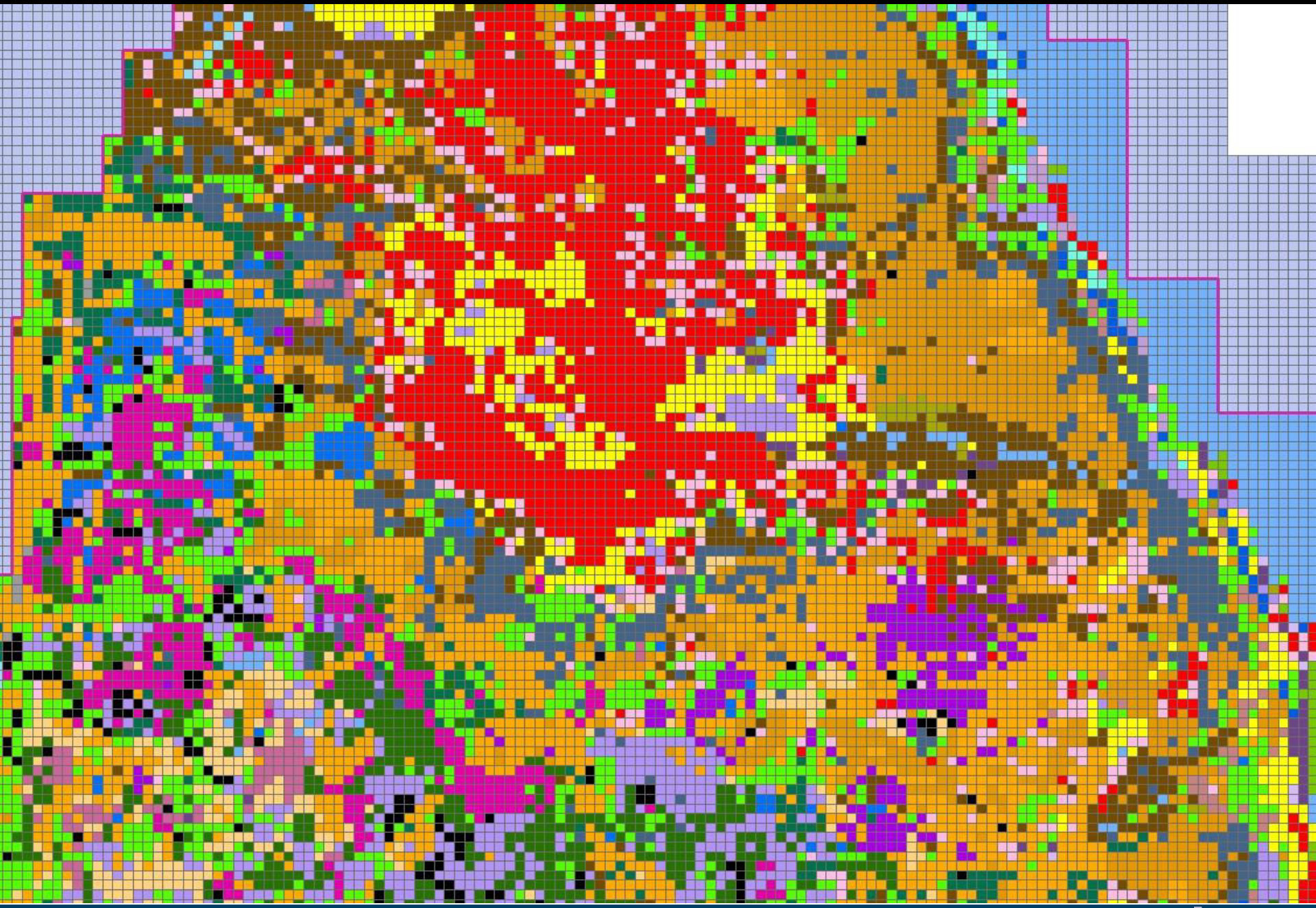
A significant effort is being made to accurately quantify and spatially define the distribution of the dominant emergent species in Lake Okeechobee's marsh



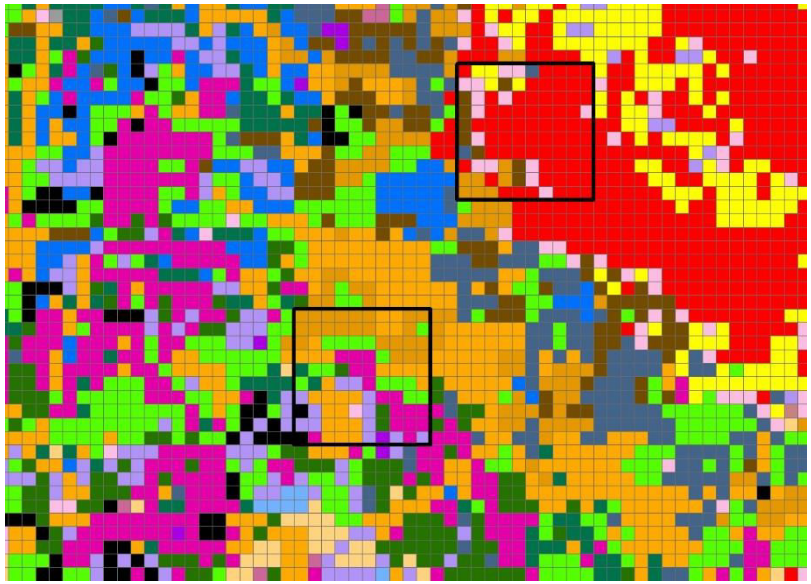
In 1973 the area known as Moonshine Bay was dominated by spikerush (bright green)

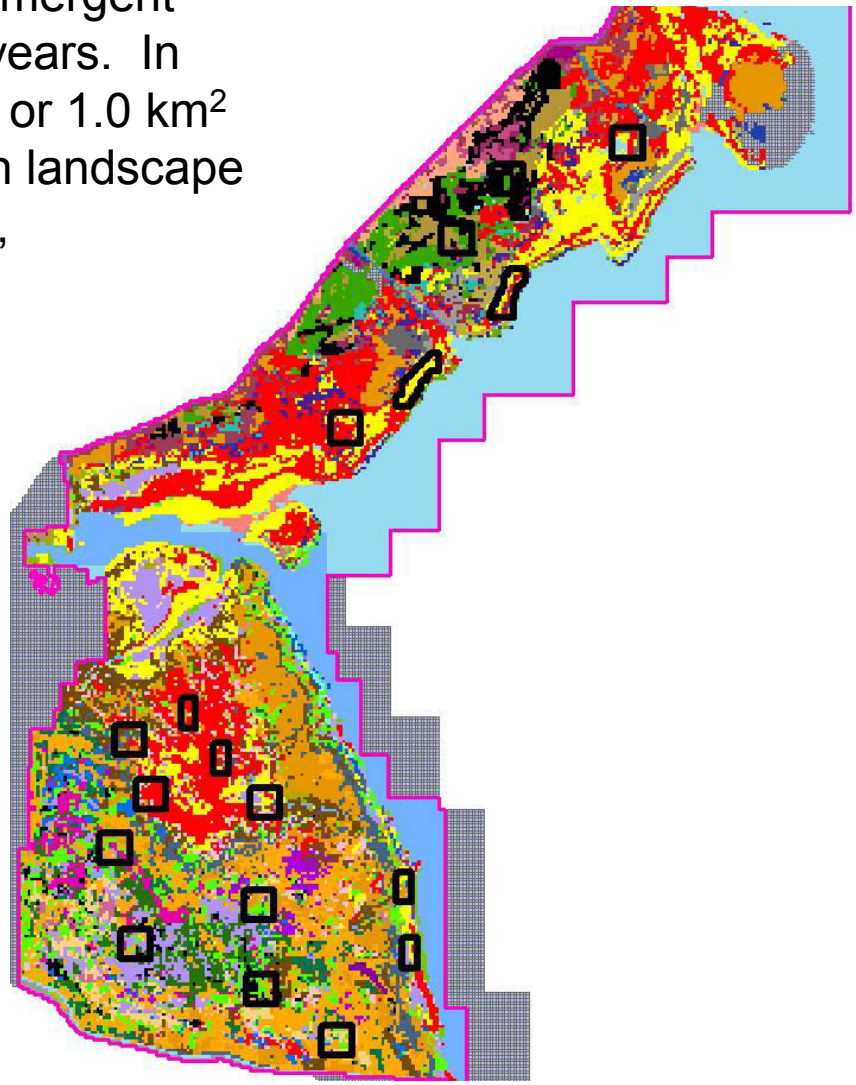
In 1996 nearly half of the spikerush in Moonshine Bay was replaced by cattail and water lily

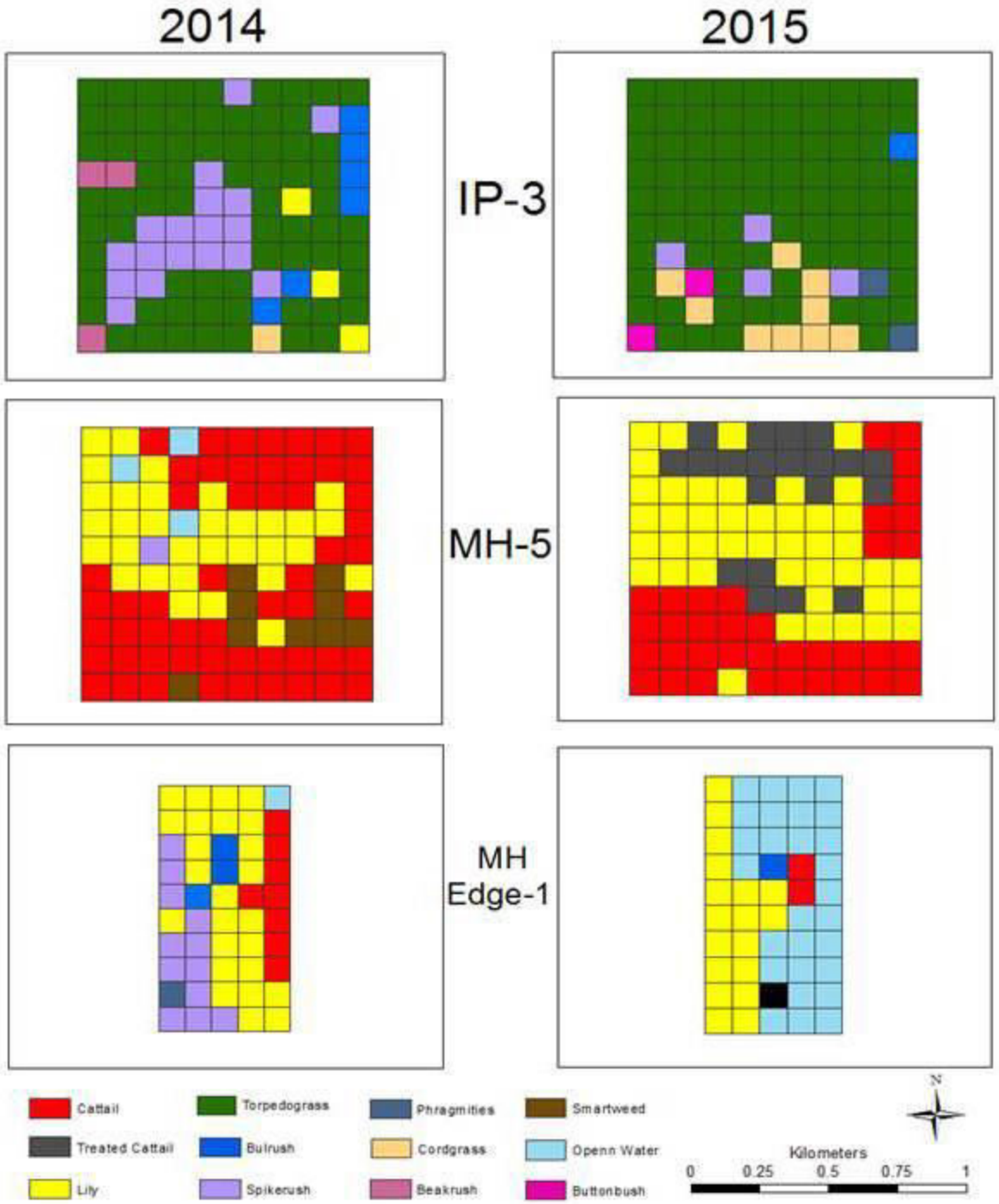
In 2012 dense stands cattail covered most of Moonshine Bay. Elimination of the open spikerush community will have a negative impact on fish and other wildlife.



Currently maps quantifying the distribution of emergent species in the marsh are created every 4 to 5 years. In other years sentinel sites consisting of 0.5 km^2 or 1.0 km^2 grids are used to monitor changes in the marsh landscape that occur in response to hydrologic conditions, management actions or other events







Plant dominance (# of 1 ha grids)

Selected Species	2014	2015
Cattail	229	309
Torpedograss	199	246
Spikerush	108	74
Woody Shrubs	115	107
Pontedaria and Sagitteria	73	40
Open Water	34	71

Once a decision is made to treat cattail, boundaries for the treatment area are established.

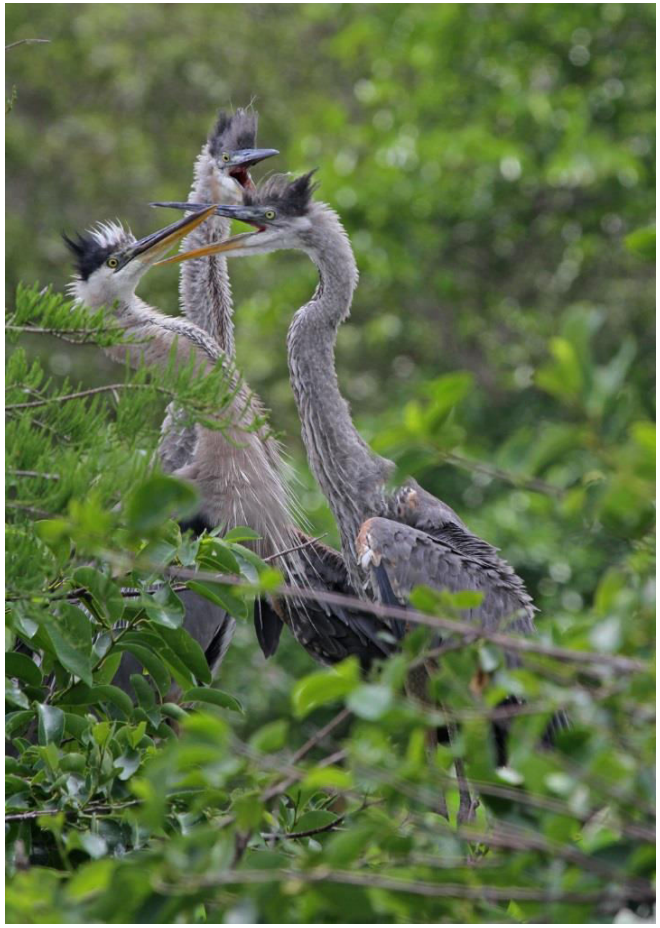
Moonshine Bay Prescribed Burn - November 2015

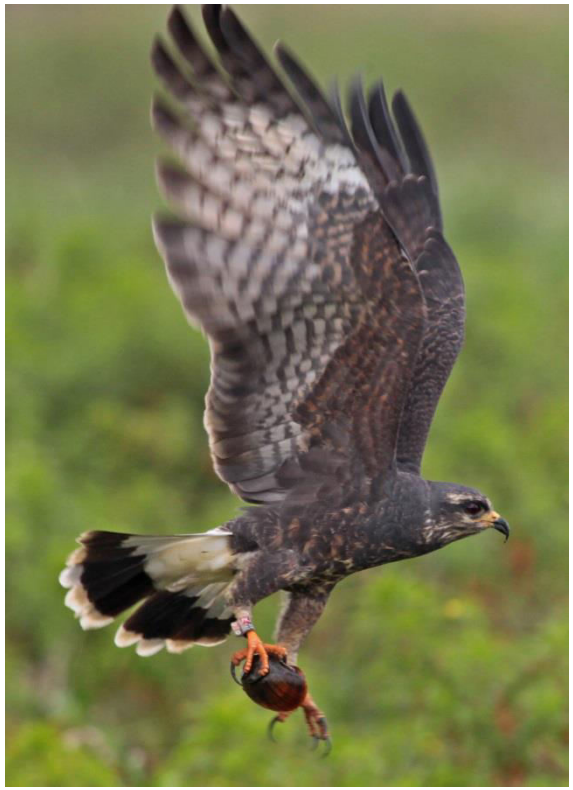
With Aerial Photography Mosaic

Large areas of cattail are treated aerially

If field conditions are favorable the dead plant material is burned 4 to 6 months post treatment.

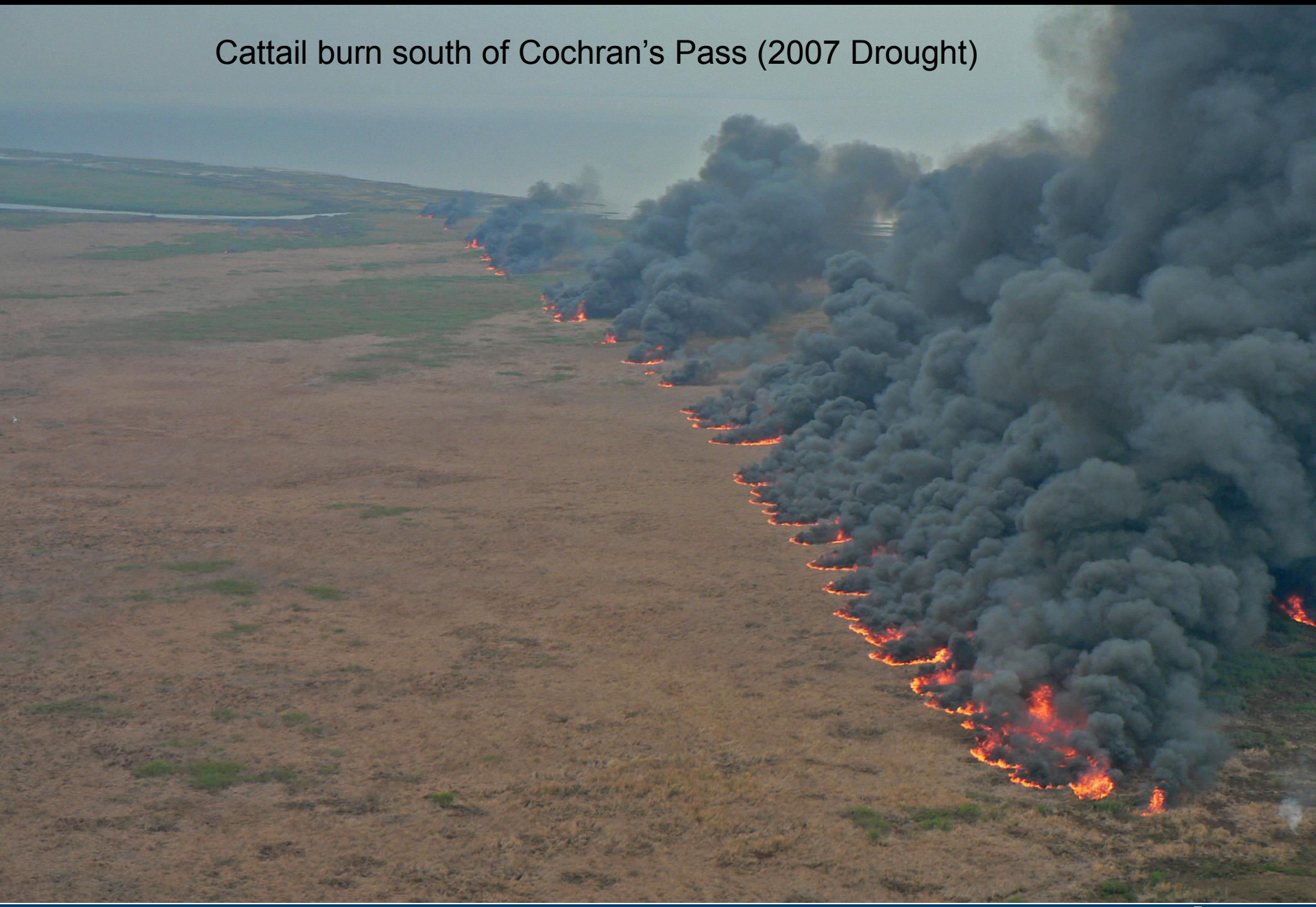
Prior to conducting a prescribed burn, impacts of burning on wildlife and people are considered – frequency, timing and location are important

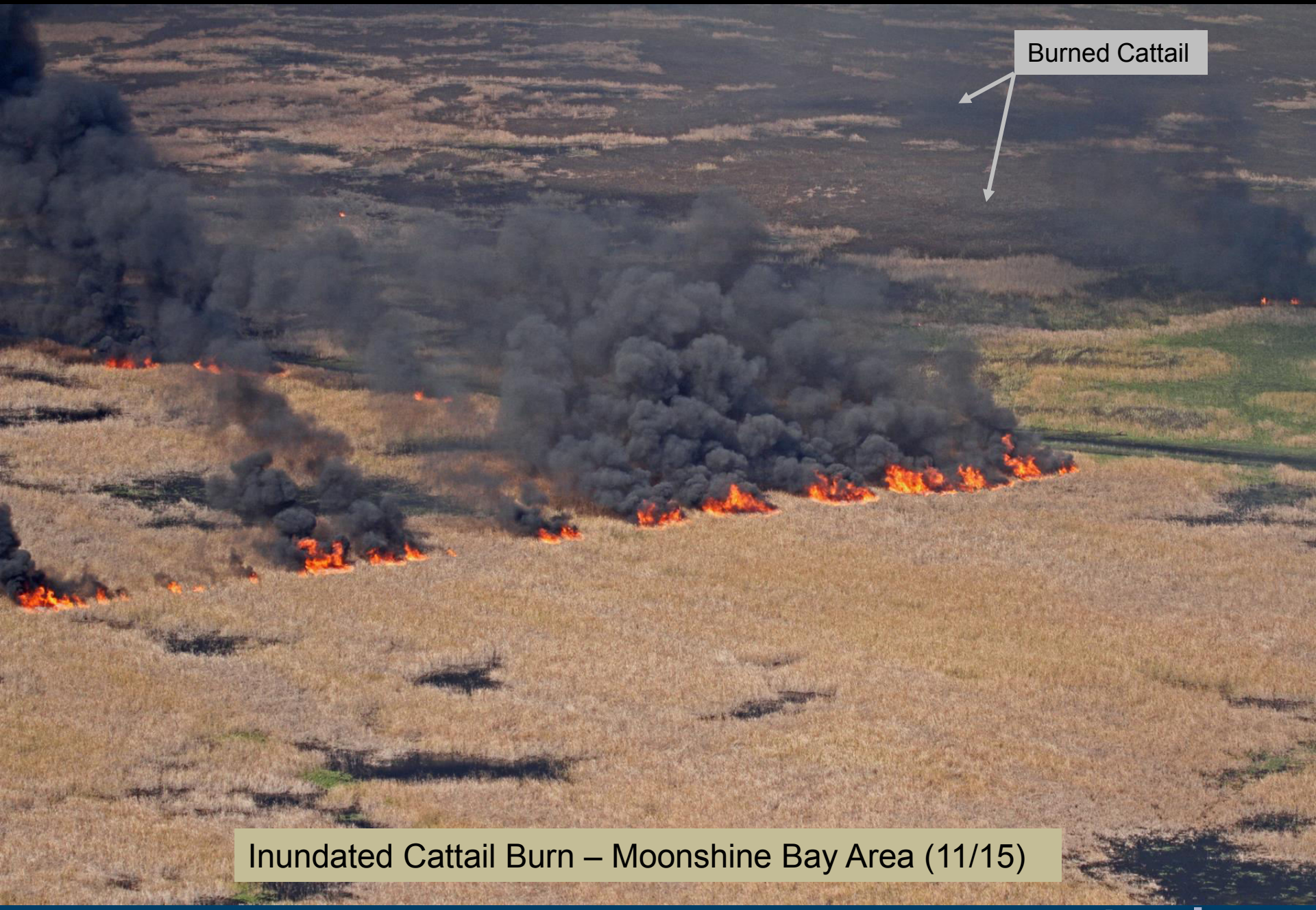




Burning after a treatment is beneficial because it limits or prevents the accumulation of organic sediments (dead vegetation) in the marsh. Burning also suppresses the expansion of woody species, reduces hazardous fuel loads and can enhance fish, wading bird and other wildlife habitat.

In the absence of lightening, certified burn managers can initiate a prescribed burn


Cattail burn south of Cochran's Pass (2007 Drought)

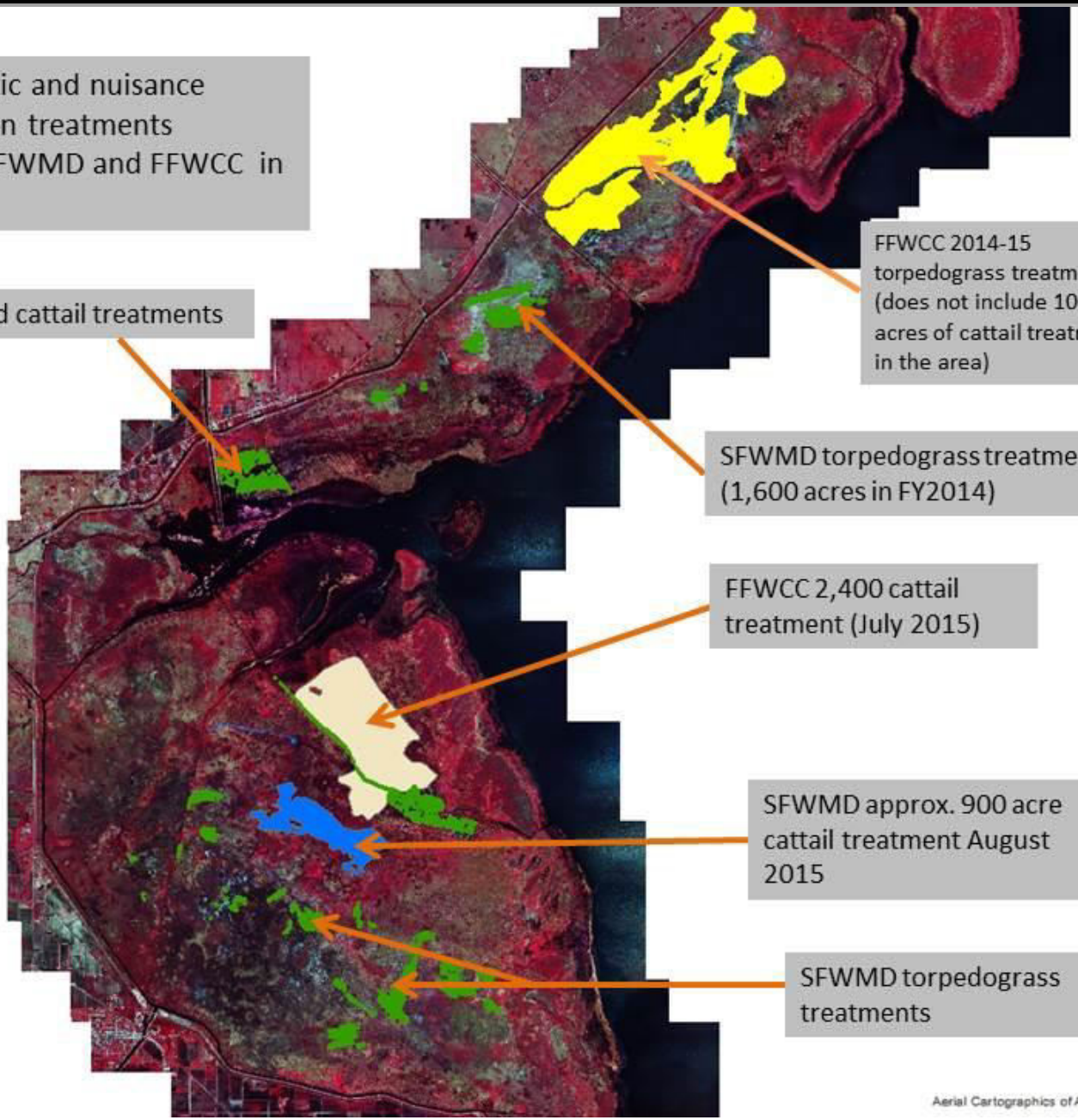


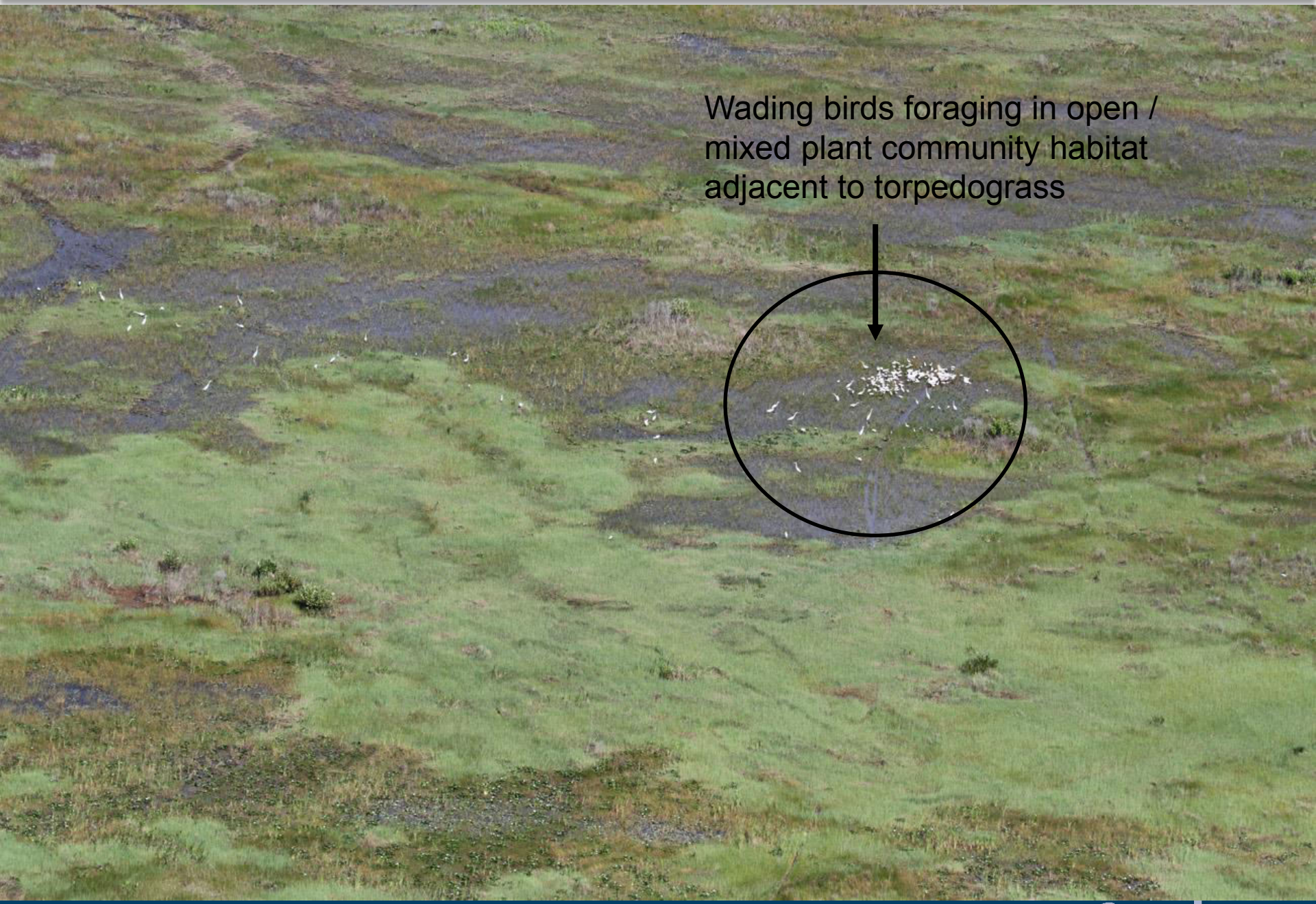
Inundated Cattail Burn – Moonshine Bay Area (11/15)

Torpedograss (invasive exotic)

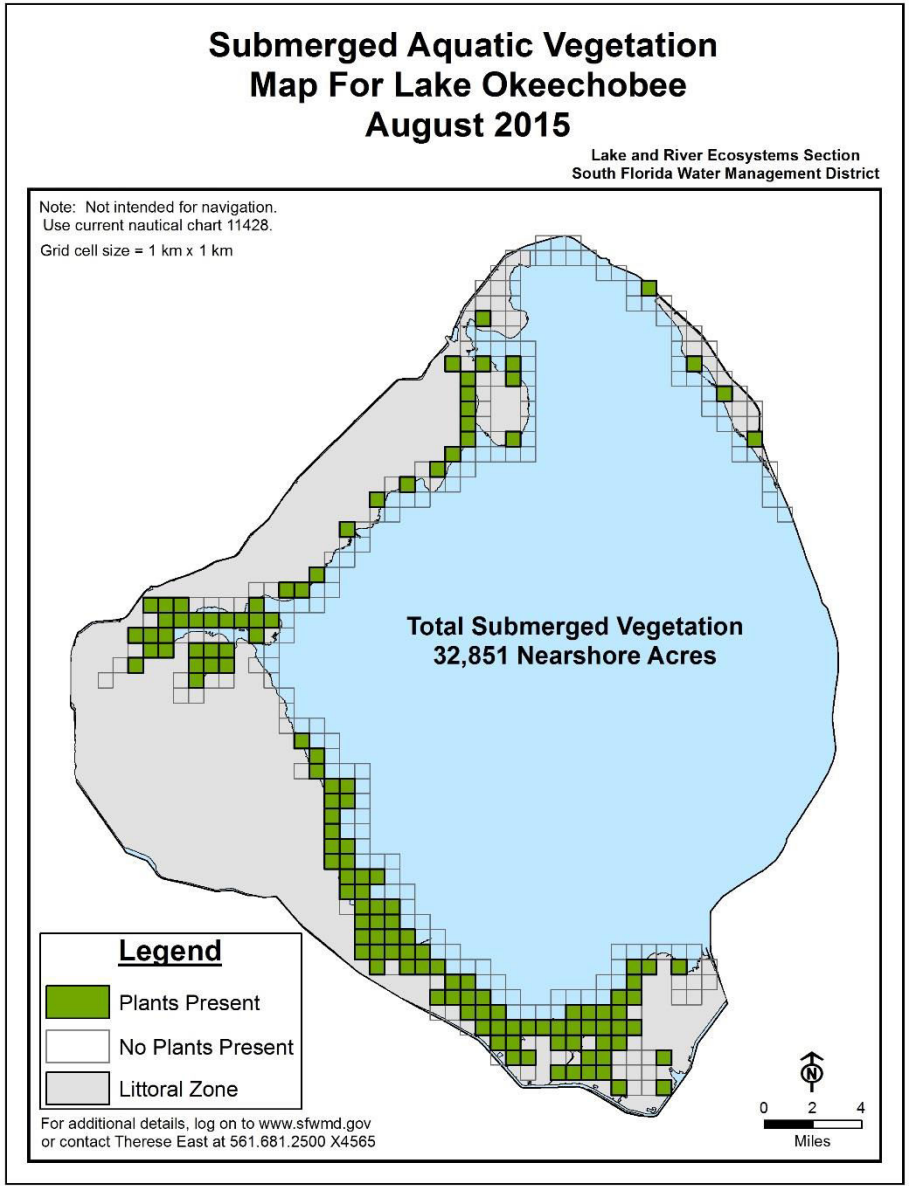
Like cattail, dense monotypic stands of torpedograss provide poor foraging habitat for wading birds and snail kites and offer limited habitat for sport fish, alligators and other animals.

Location of exotic and nuisance native vegetation treatments conducted by SFWMD and FFWCC in 2014-2015

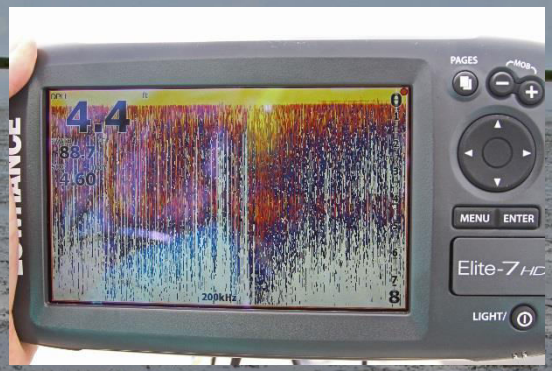



Wading birds foraging in open / mixed plant community habitat adjacent to torpedograss

What's below the surface?


Submerged Aquatic Vegetation
Map For Lake Okeechobee
August 2015
Lake and River Ecosystems Section
South Florida Water Management District
Note: Not intended for navigation.
Use current nautical chart 11428.
Grid cell size = 1 km x 1 km
Total Submerged Vegetation
32,851 Nearshore Acres
Legend
Plants Present
No Plants Present
Littoral Zone
For additional details, log on to www.sfwmd.gov
or contact Therese East at 561.681.2500 X4565
0 2 4
Miles

Mapping Submerged Aquatic Vegetation (SAV) with Sonar



75 meter buffer

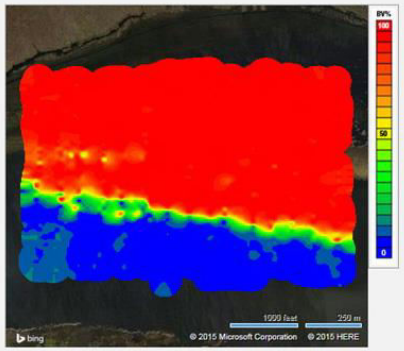
Survey Summary

	Type	PAC	Avg BVp	SD BVp	Avg BVw	SD BVw	Depth Range	Avg Depth	Distance	No. Points
Full Survey	Point	85.1%	82.4%	±33.6%	70.1%	±42.7%	0.31-2.36 m	1.18 m	17.84 km	5,998
	Grid	78.6%	83.9%	±29.9%	66%	±43.4%	0.37-2.24 m	1.21 m	-	5,658

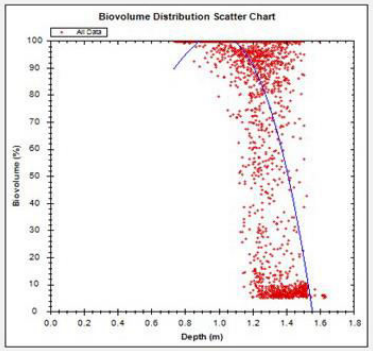
Area of Interest Summary

AOI	Type	PAC	Avg BVp	SD BVp	Avg BVw	SD BVw	Depth Range	Avg Depth	Distance	No. Points
1	Point	85.3%	90.3%	±25.5%	77%	±39.8%	0.31-1.7 m	1.12 m	5.84 km	1,990
	Grid	79.2%	89.7%	±24%	71.1%	±42.2%	0.37-1.96 m	1.18 m	-	2,847
2	Point	83%	87.9%	±29%	72.9%	±42.3%	0.31-2.36 m	1.16 m	6.19 km	2,077
	Grid	77.9%	89.6%	±24.7%	69.8%	±43.1%	0.37-2.24 m	1.19 m	-	2,937
3	Point	87.2%	68.8%	±40.3%	60%	±44.1%	0.55-1.77 m	1.28 m	5.81 km	1,931
	Grid	79%	73.7%	±35.2%	58.2%	±43.4%	0.67-1.67 m	1.26 m	-	1,972

Vegetation Biovolume Heat Map

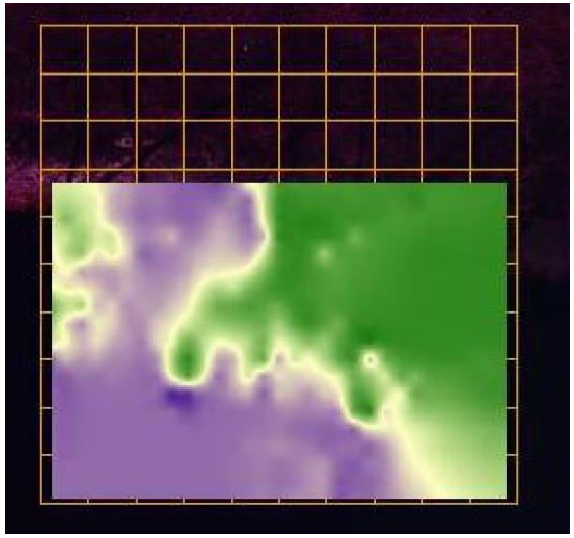


Biovolume Distribution Scatter Chart



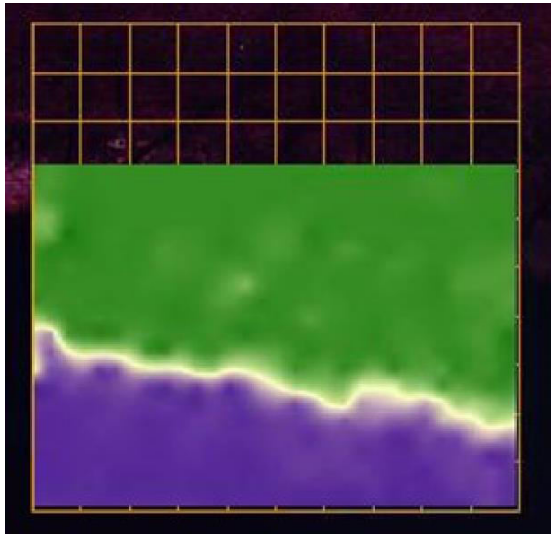
Bio-Base Sonar Output

Grid #287 Fisheating Bay - 2013



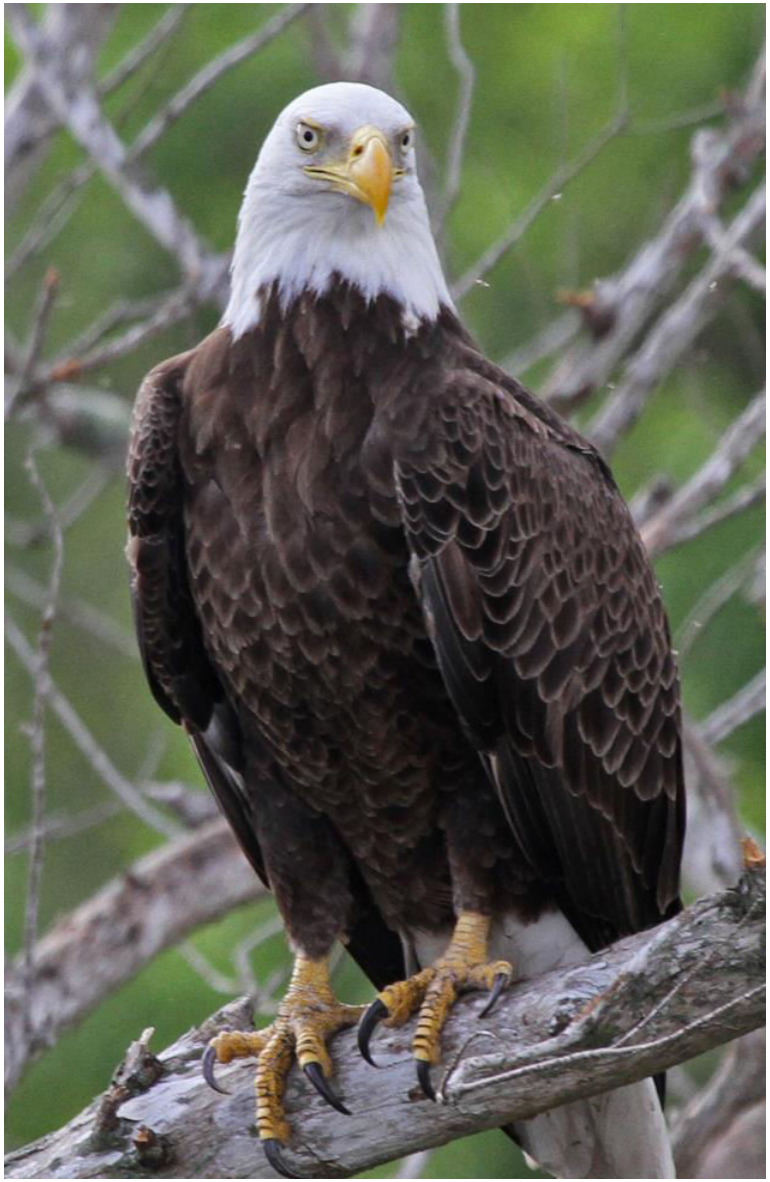
1 km^2

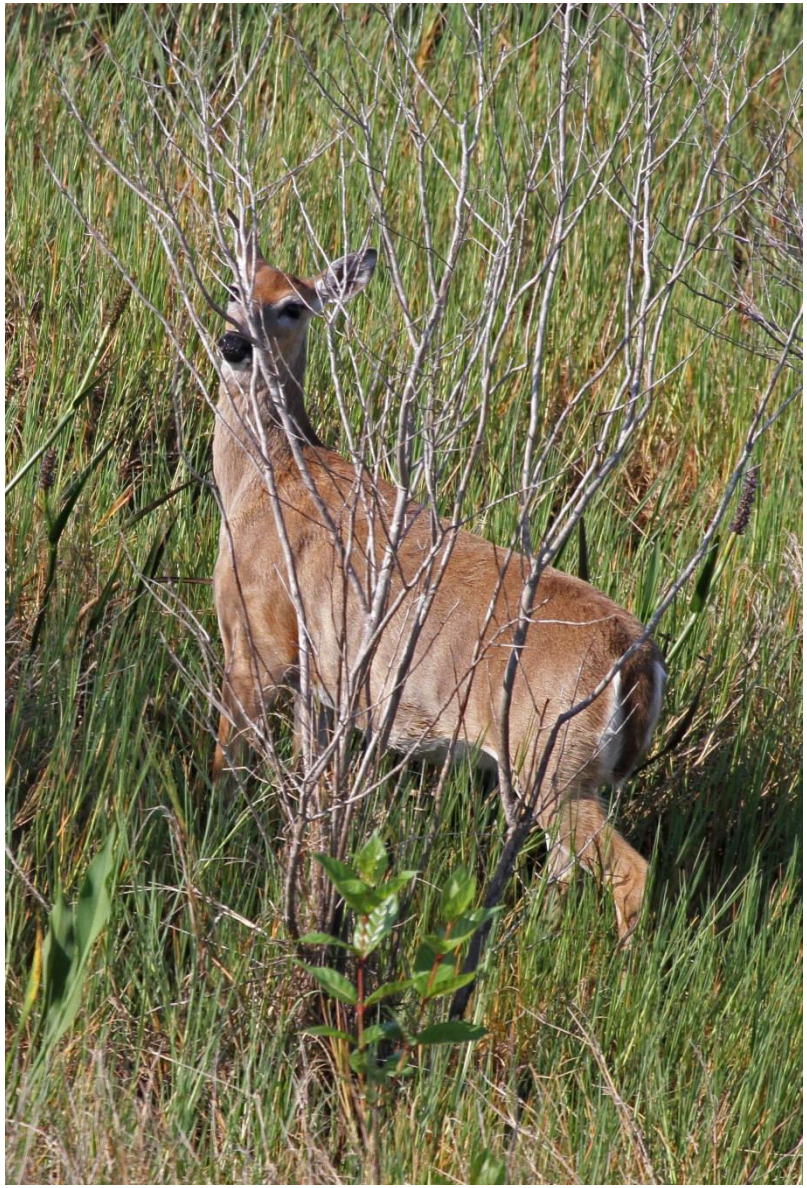
Grid #287 Fisheating Bay - 2015



1 km^2

Green = SAV
White = Transition (low density SAV)
Purple = Open Water (No SAV)





Questions?