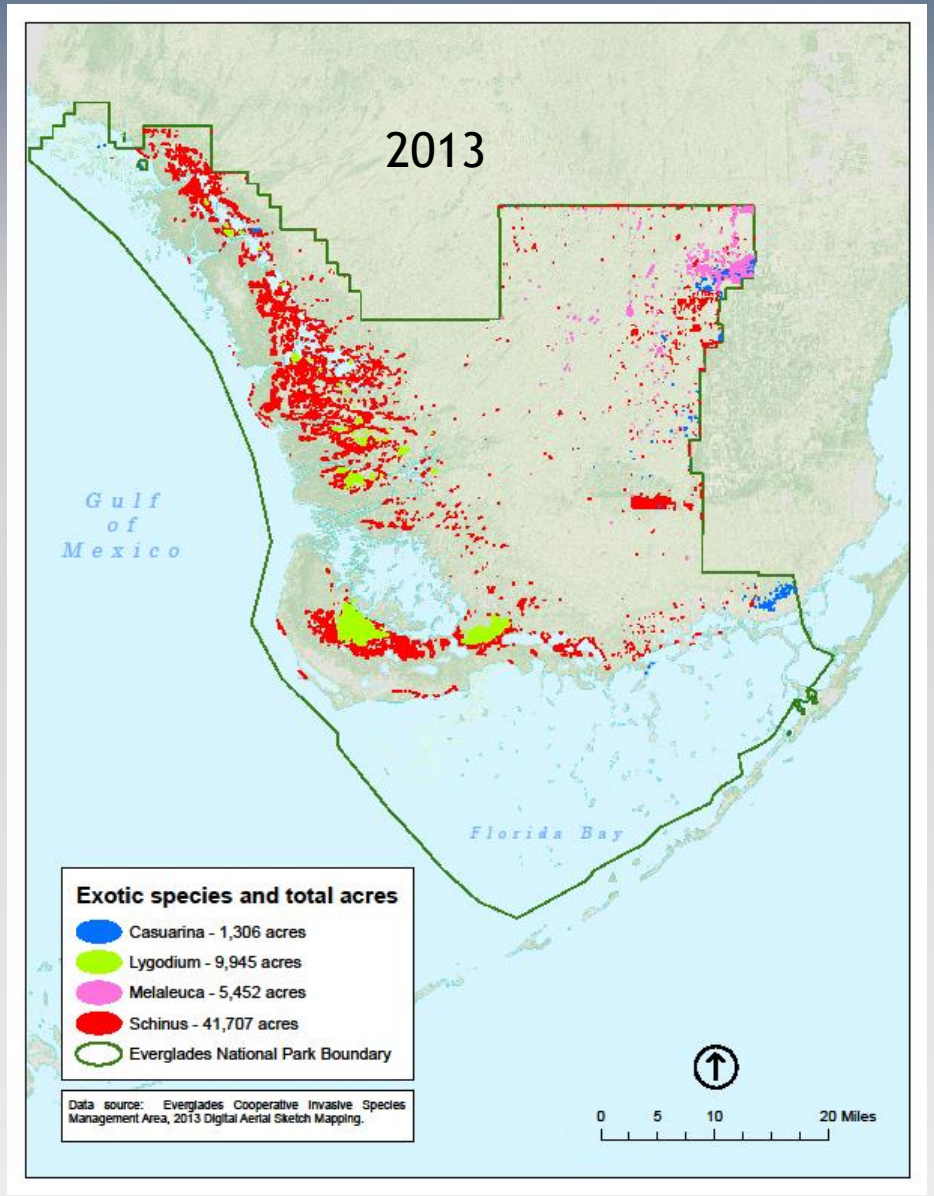
2014 Everglades Invasive Species Summit

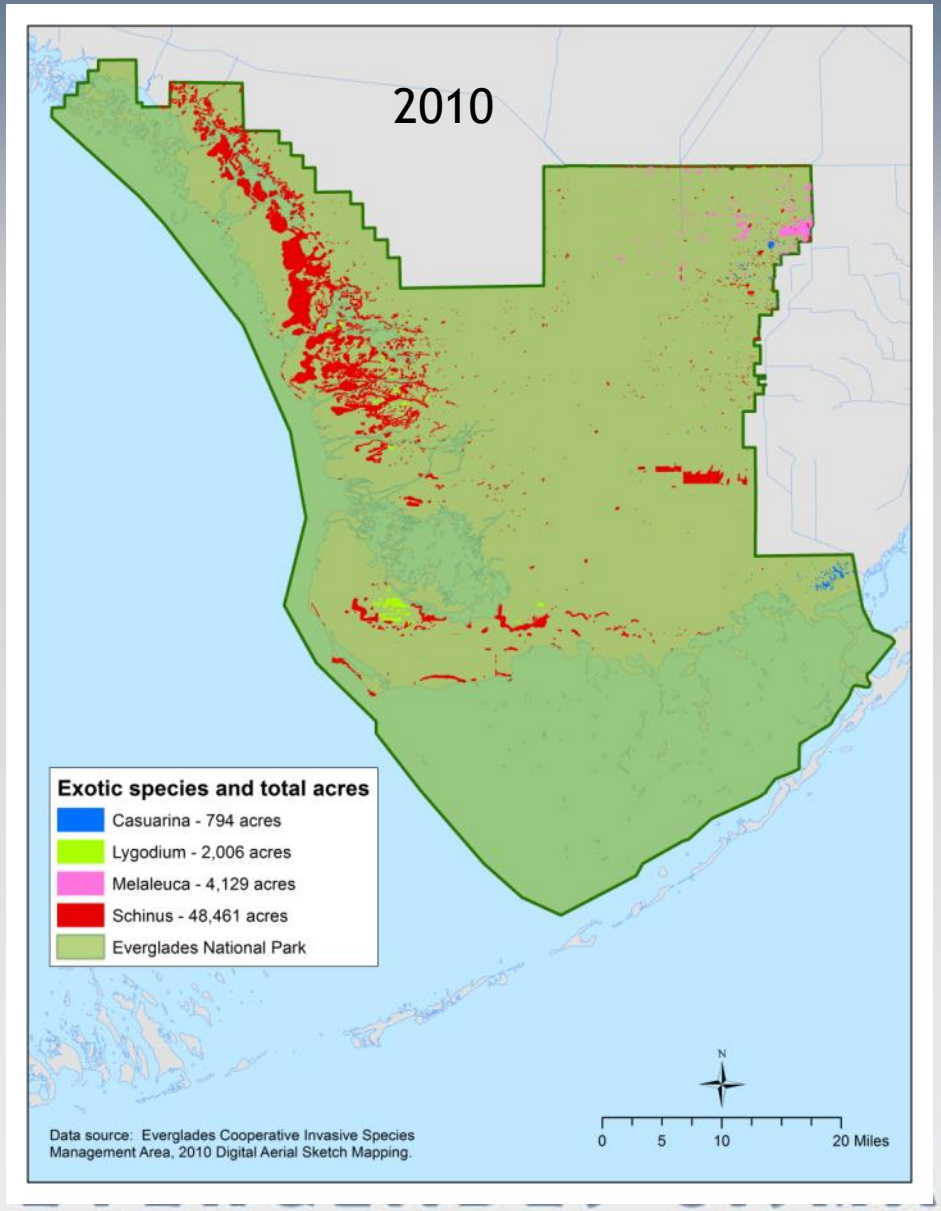
Hillary Cooley (ENP) and Jed Redwine (USNPS)




EVERGLADES CISMA

Digital Area Sketch Mapping
Conducted by SFWMD and NPS Every 2 Years





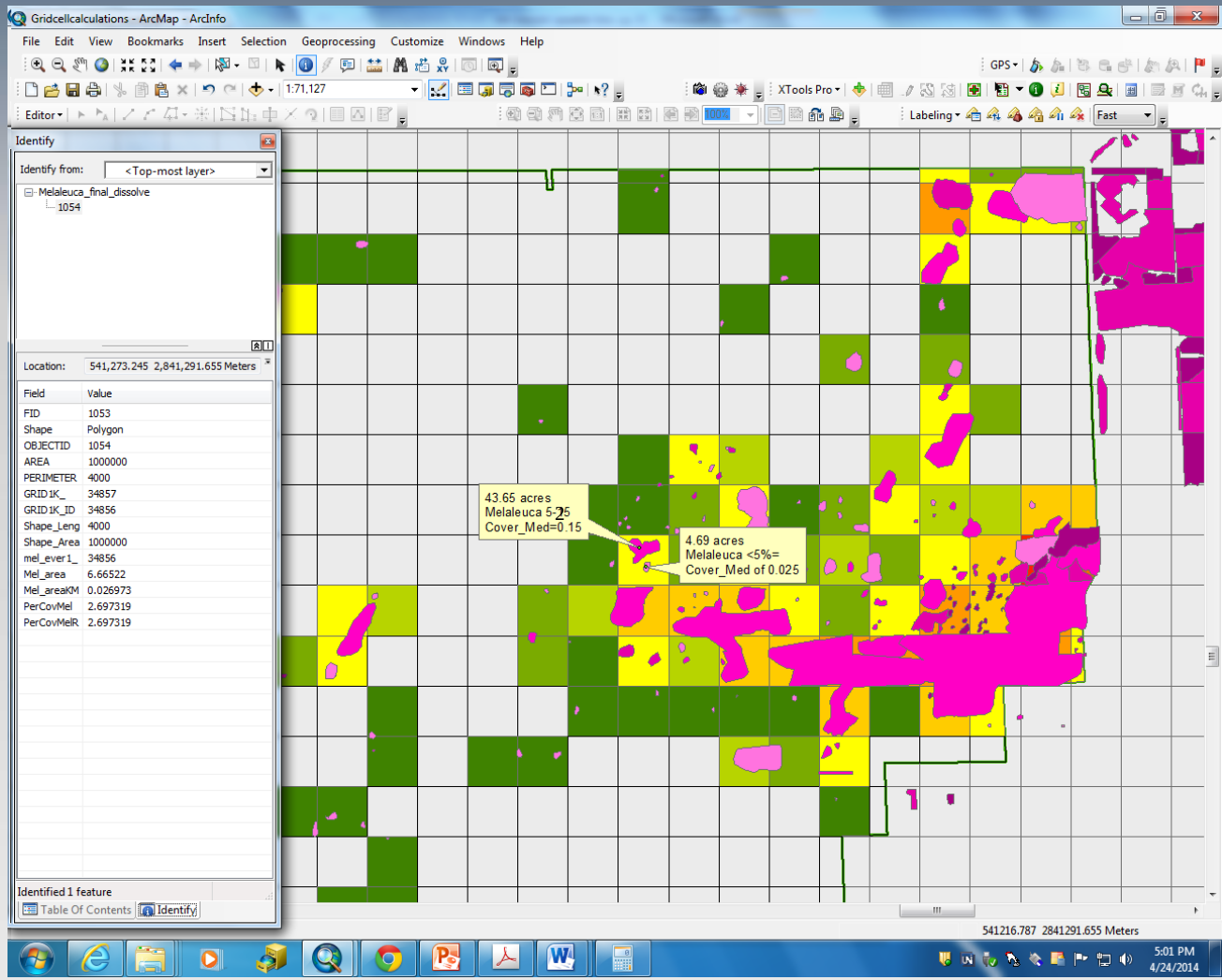
How we did the calculations

Canopy Cover=

$$\frac{((43.65 \text{ acres} \times 0.15)+(4.69 \text{ acres} \times 0.025))}{247.105 \text{ acres}} \times 100$$

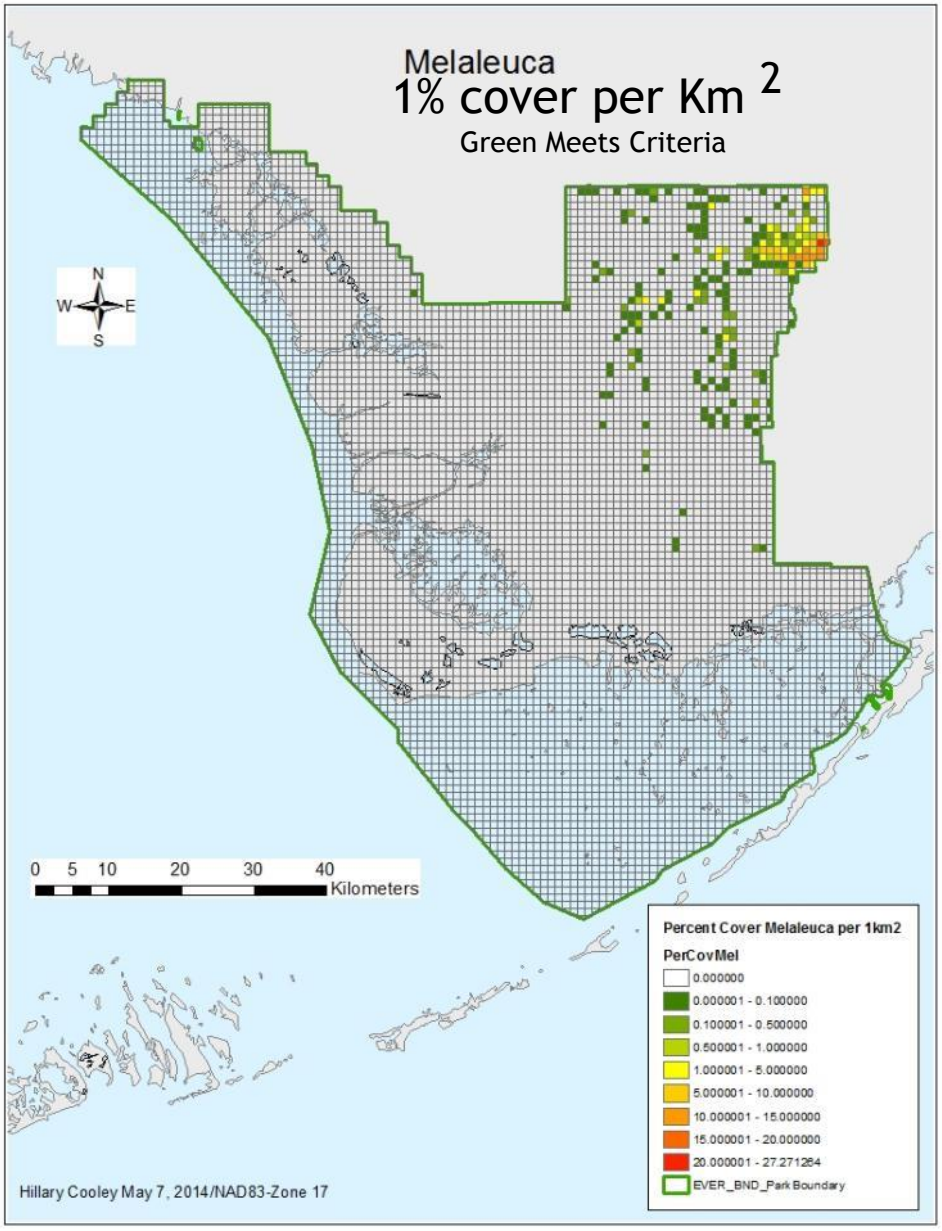
$$=2.698\%$$

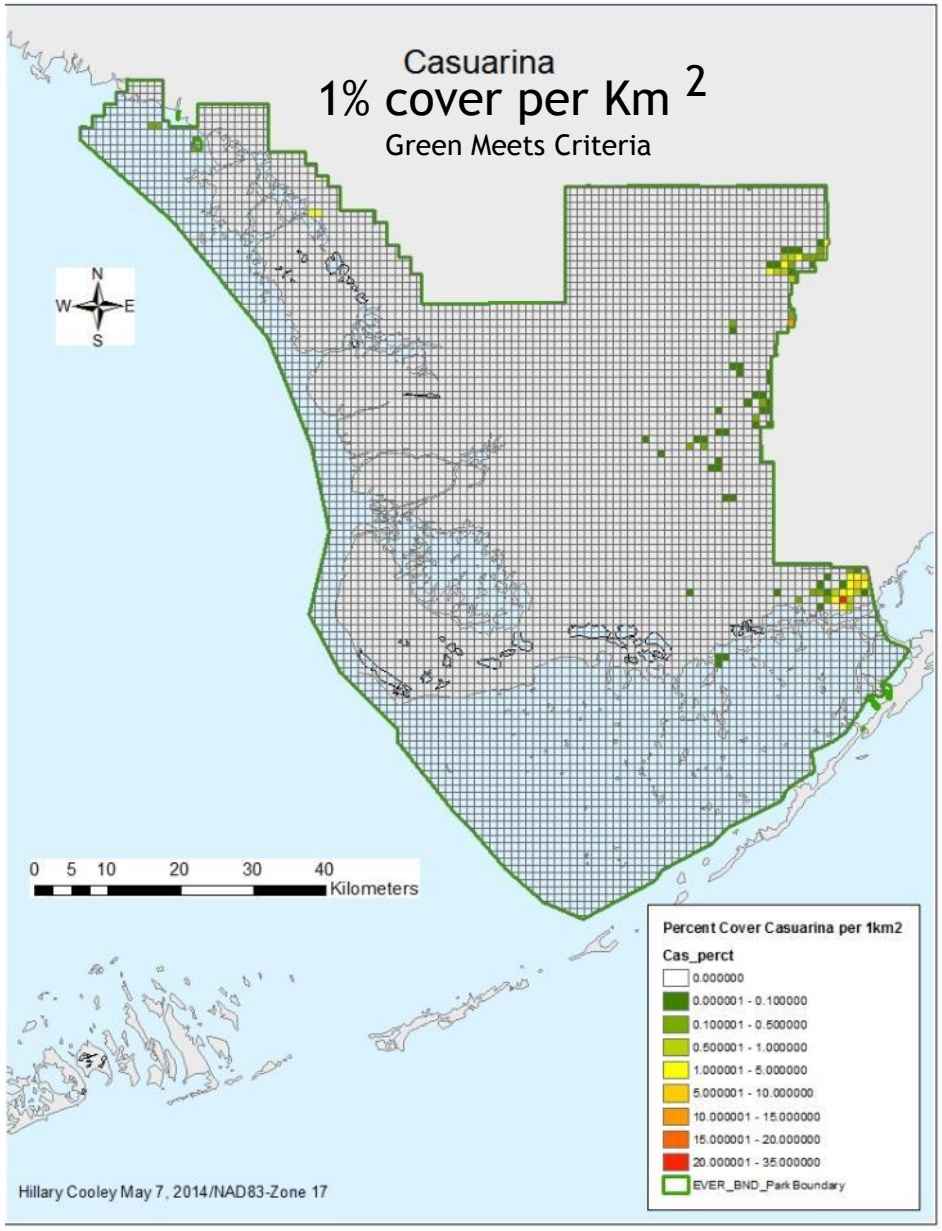
247.015= ~1 km^2



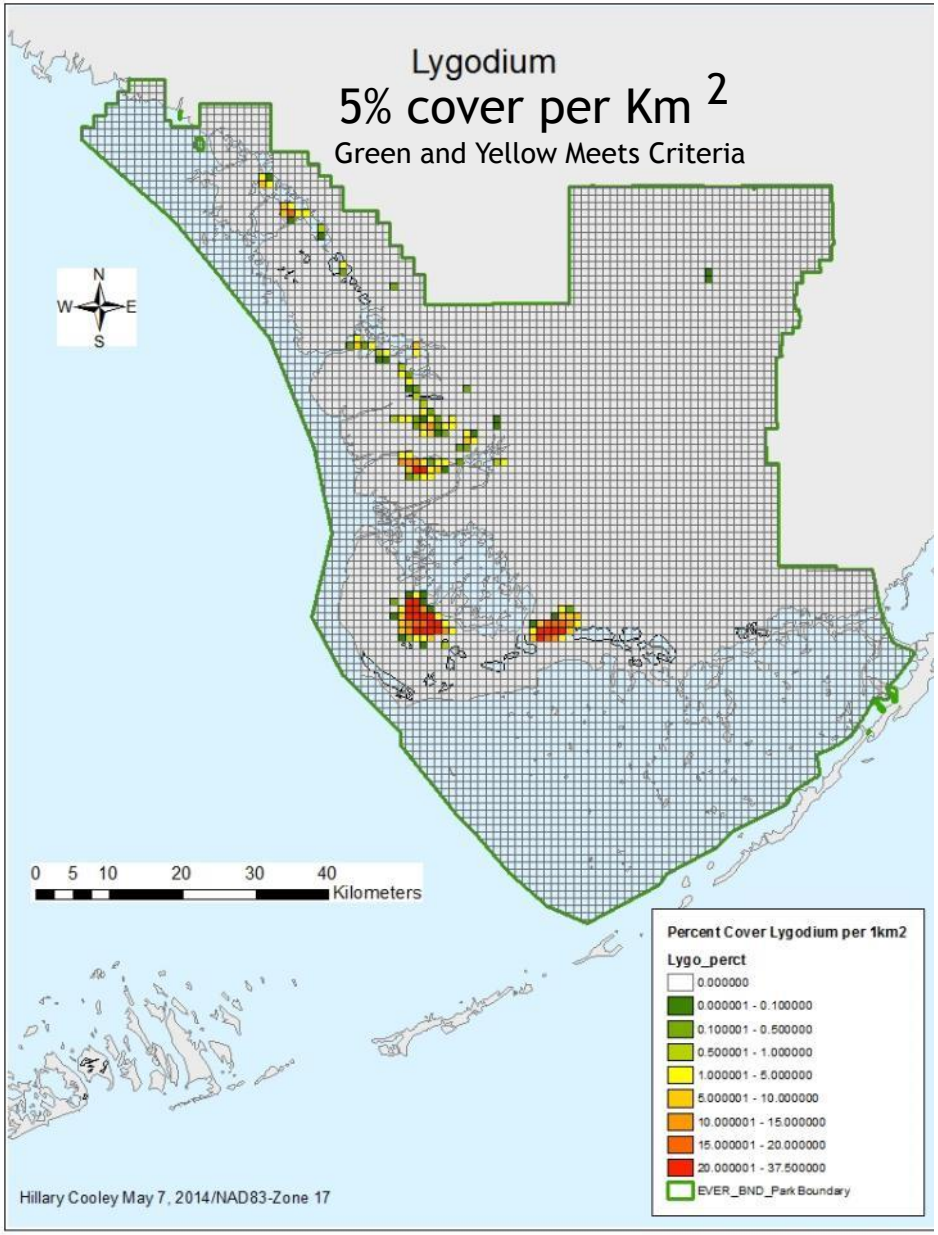
EVERGLADES CISMA

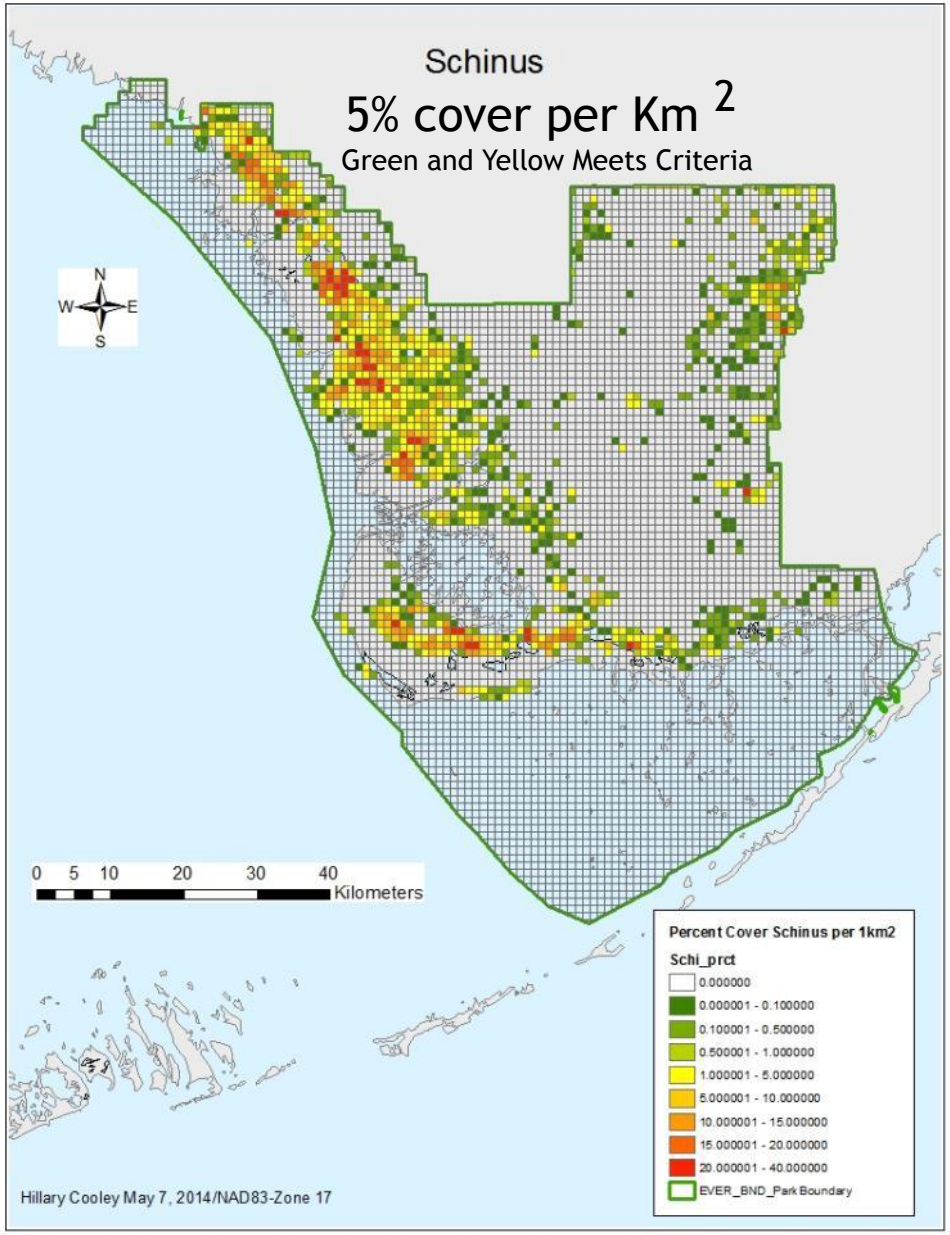
Performance of the Exotic Vegetation Management Program

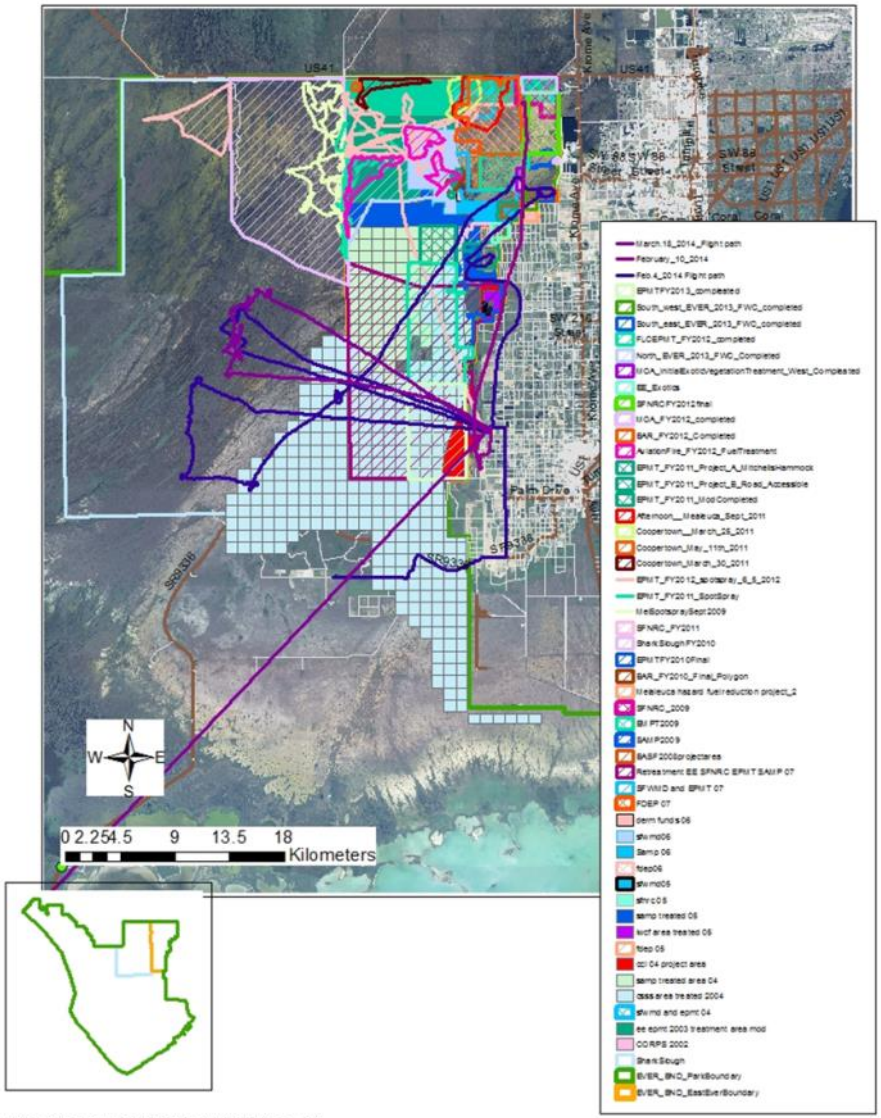




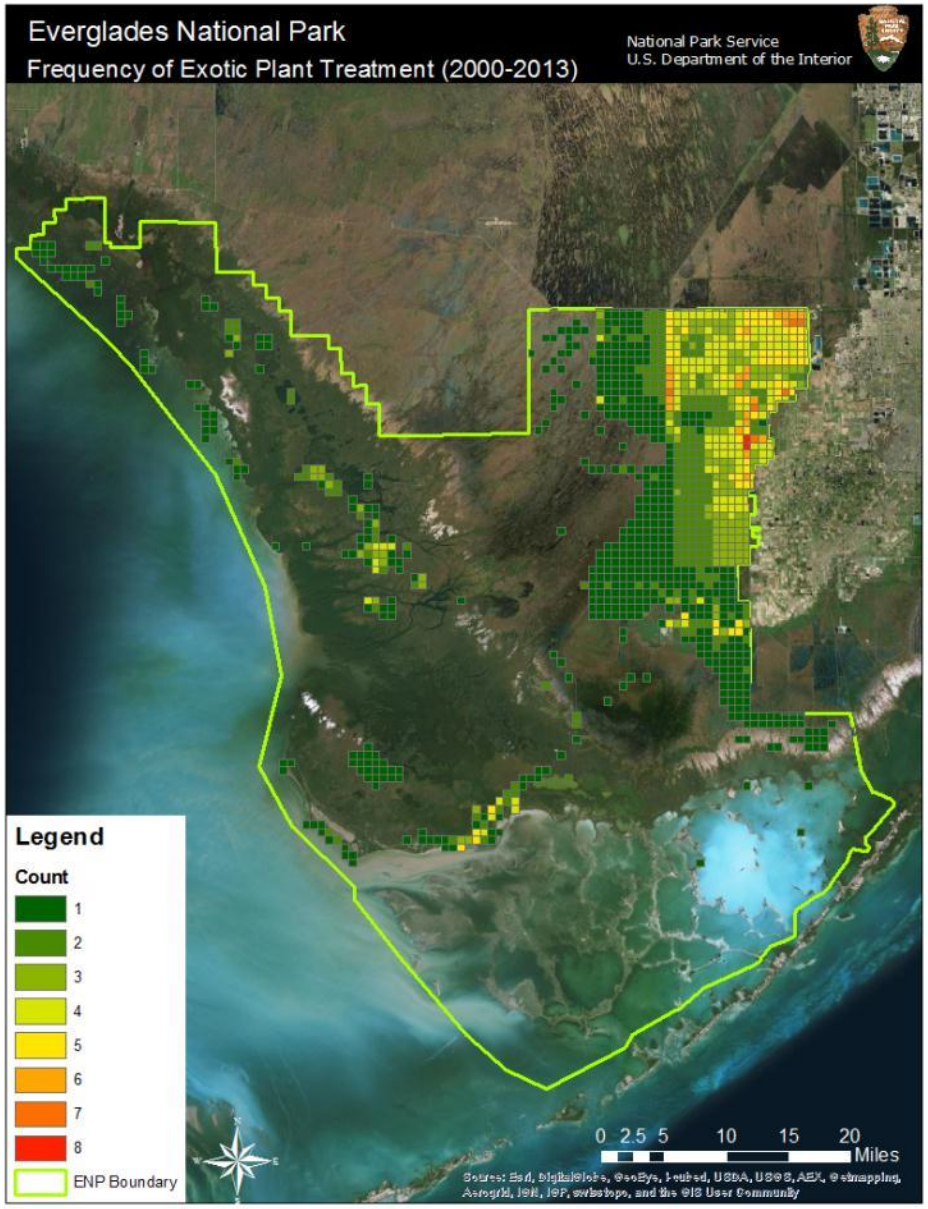
Performance of the Exotic Vegetation Management Program







Hillary Cooley April 21, 2014/NAD83-Zone 17



SOP for making gridded maps using treatment data

Developed by EPMT intern Shea Bruscia

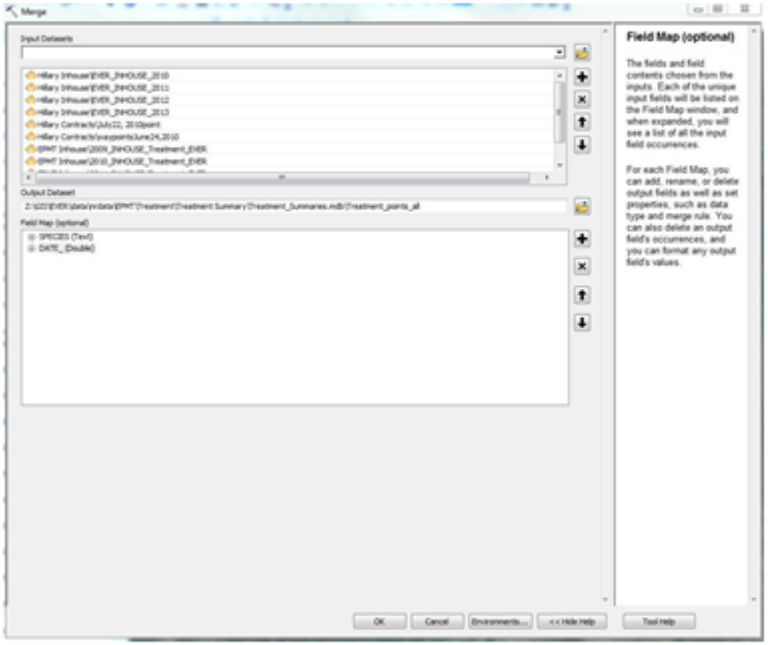
- 7 pgs using lines, points, or polygons for EVER
- 8 pgs using points only for BICY

Key issues:

1. Data organization – folder and file naming process matters for facilitating quick results.
   - Program for writing filepath to all shapefiles in a directory: AddPopulatePathField.py
2. Metadata – provides insight into shapefiles for data users that are external to the program.
   - https://edg.epa.gov/EME/ - source of metadata editor

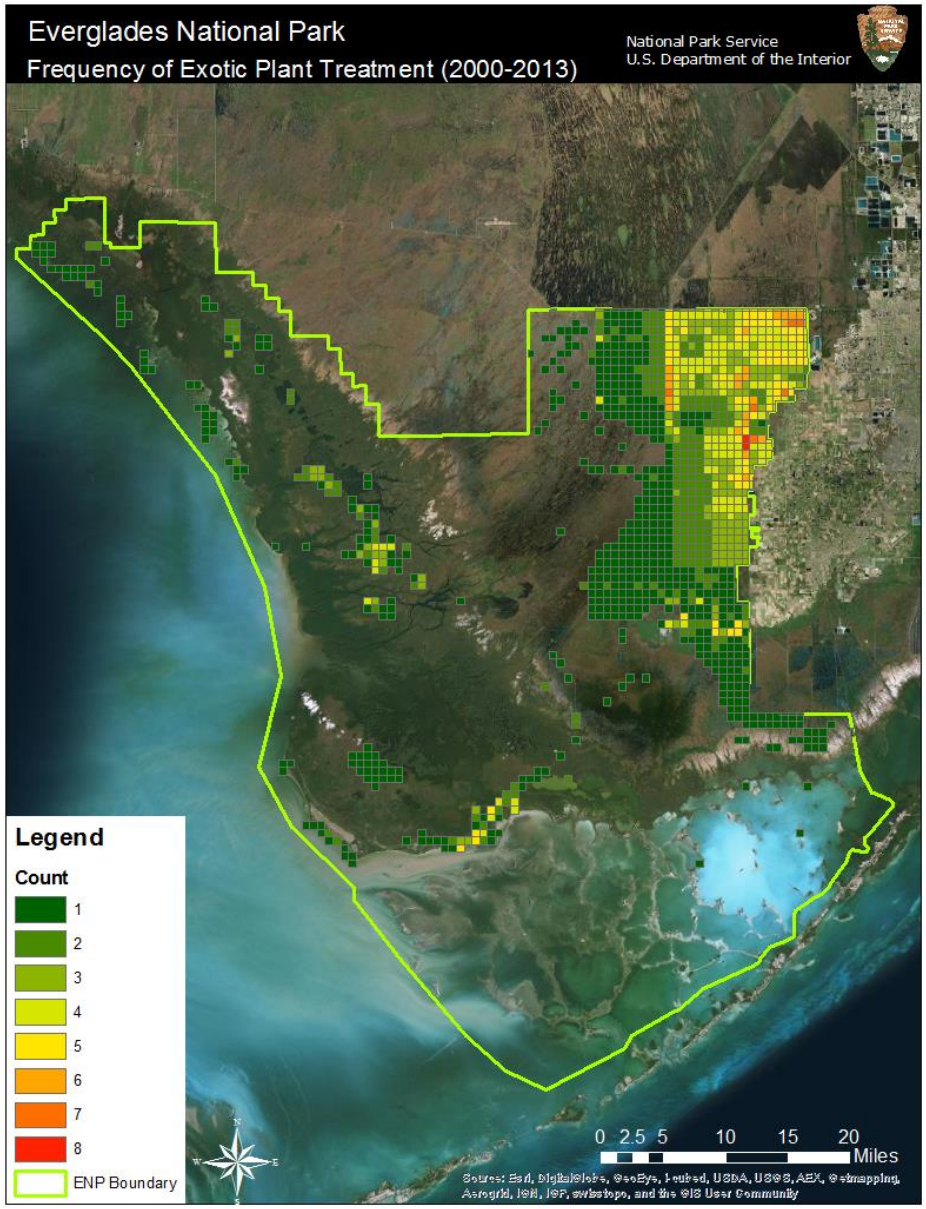
Creating Grid Cell Maps Using Treatment Data (With Polygons, lines, and points)

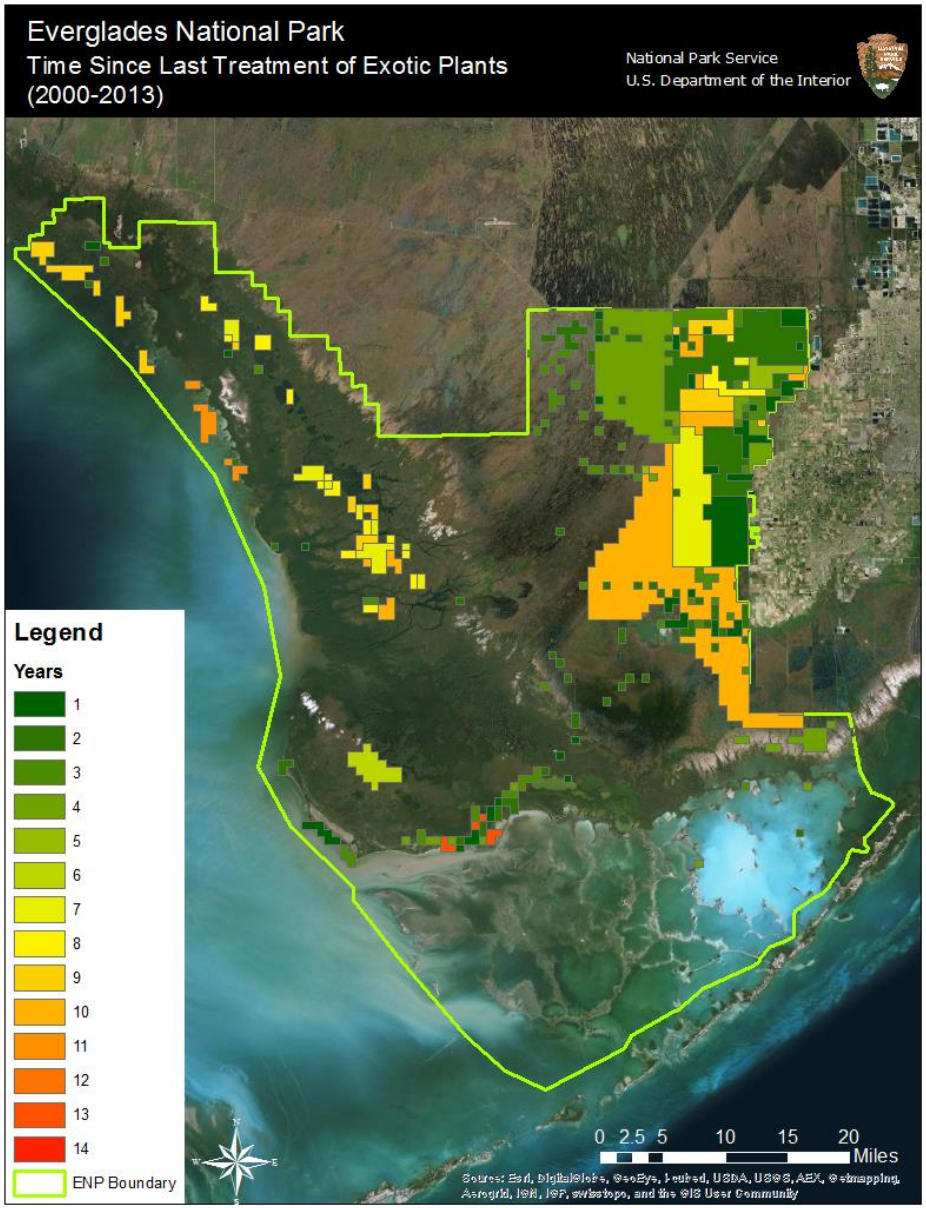
1) Open blank ArcMap document. Add imagery, park boundary, grid, and all of the treatment data (points, lines, polygons).
2) Click on the "Geoprocessing" tab and select "Merge". Under "Input Datasets", select all point treatment files. Under "Output Dataset", name the file as "Treatment_points_all" and save it in the appropriate location. In the "Field Map", delete everything except for species and date. Click "OK". Follow this same procedure for the polygons and the lines naming them appropriately.



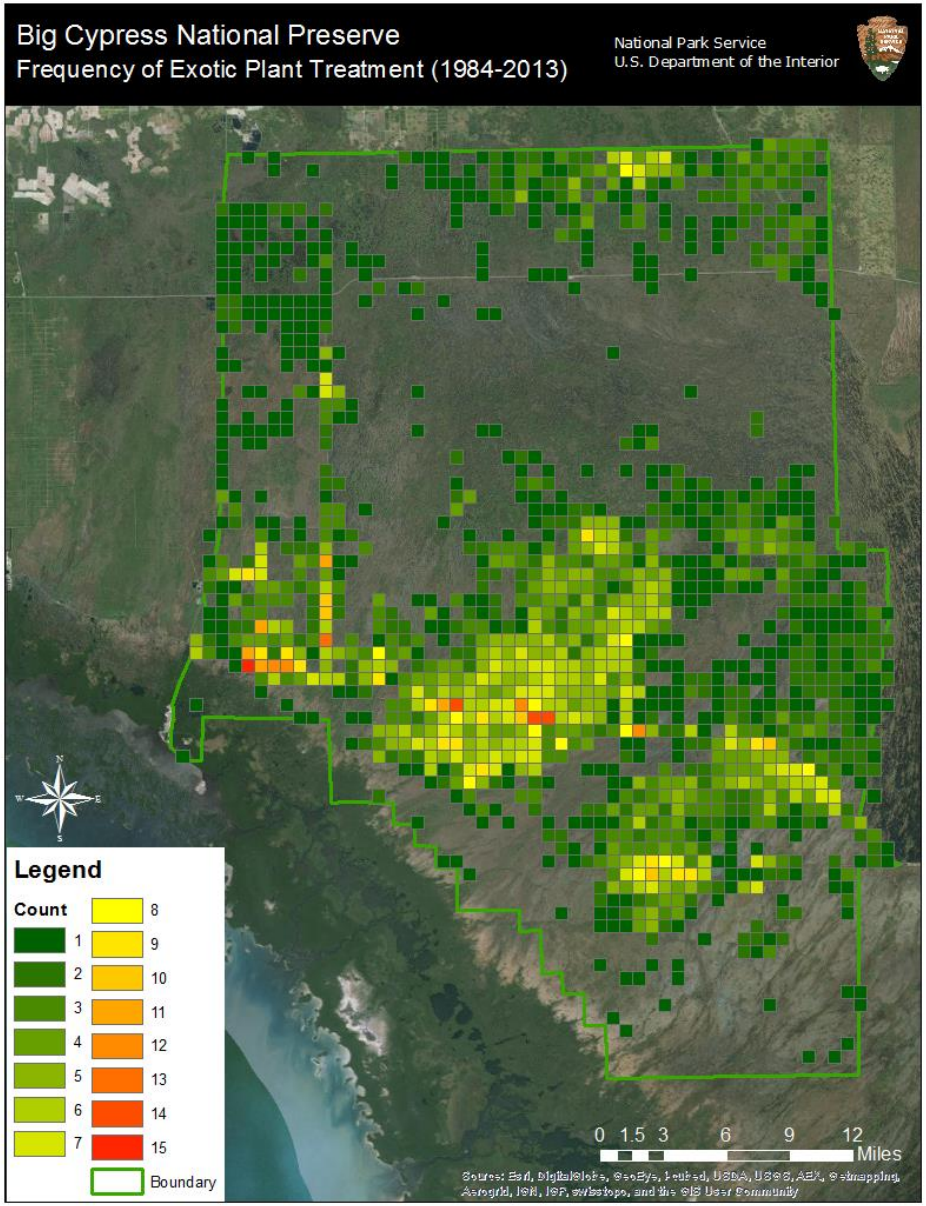
3) Once all three shapefiles have been created, open the search function and search for "Spatial Join". Click on "Spatial join (Analysis)". For the Target Feature, select the "Grid_EVER" shapefile and for the Join feature, select "Treatment_points_all". Save in appropriate place as "Treatment_points_all_join". Change the Join Operation to "Join_one_to_many". In the field Map Features, only keep the Count_ and Date_ fields. For the match option, select "Contains". Press OK.

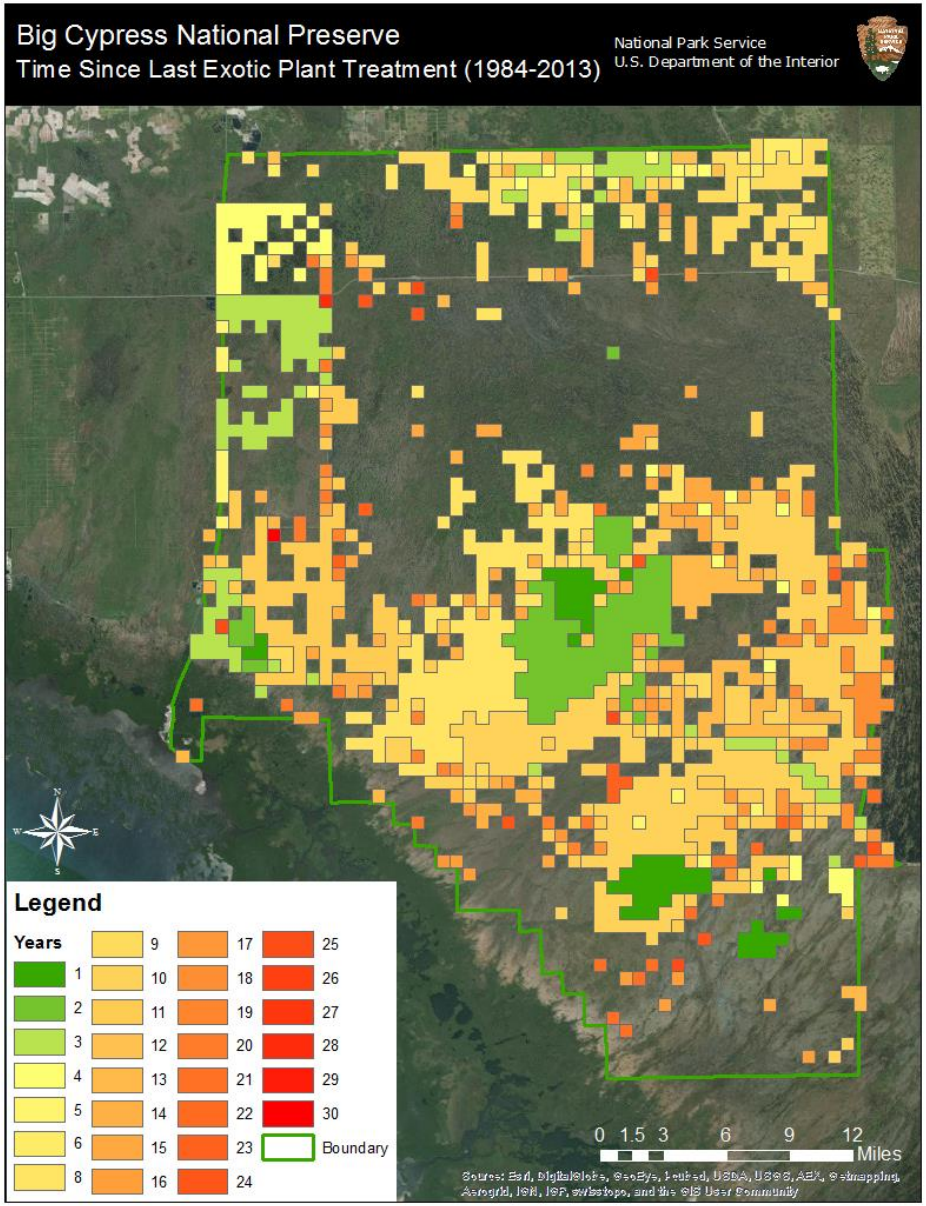
EVERGLADES CISMA

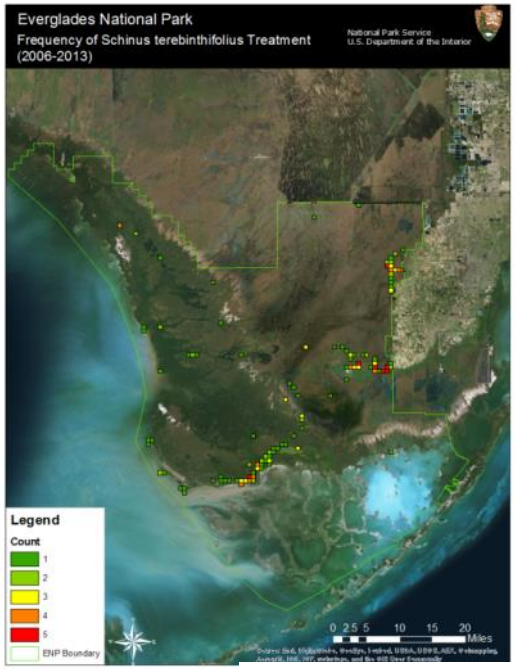


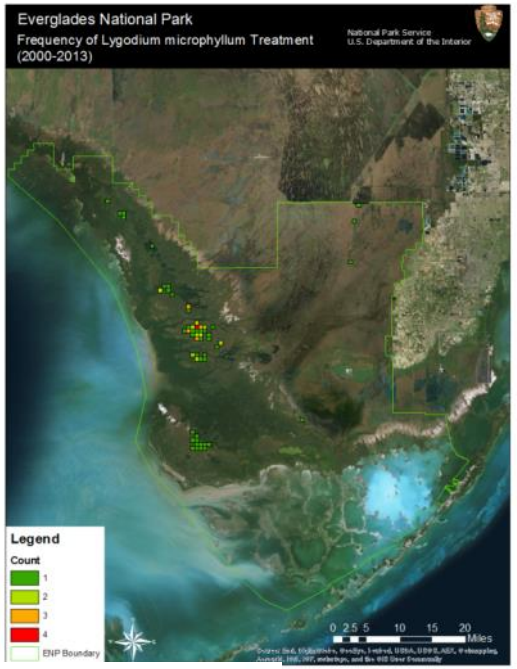


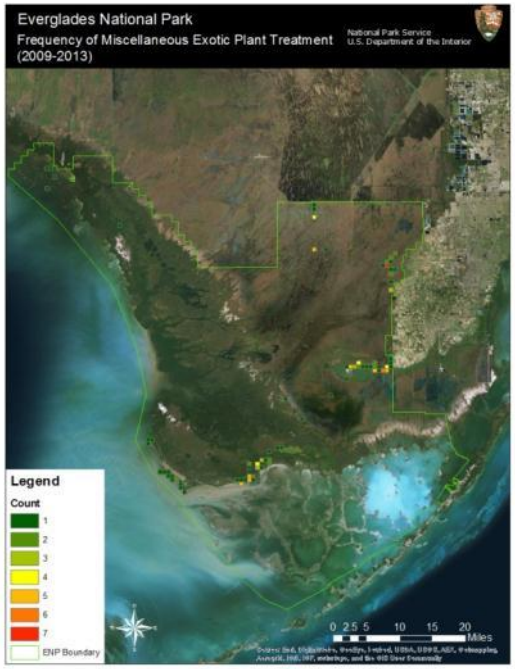
EVERGLADES CISMA

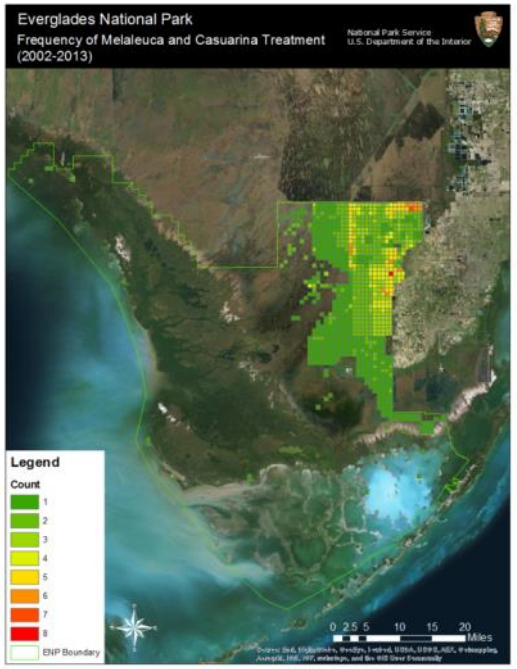

Big Cypress National Preserve
Frequency of Exotic Plant Treatment (1984-2013)
National Park Service
U.S. Department of the Interior
Legend
Count
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
Boundary
0 1.5 3 6 9 12
Miles
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community


Big Cypress National Preserve
Time Since Last Exotic Plant Treatment (1984-2013)
National Park Service
U.S. Department of the Interior
Legend
Years
1
2
3
4
5
6
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
Boundary
0 1.5 3 6 9 12
Miles
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community


Everglades National Park
Frequency of Schinus terebinthifolius Treatment
(2006-2013)
National Park Service
U.S. Department of the Interior
Legend
Count
1
2
3
4
5
ENP Boundary
0 2.5 5 10 15 20
Miles


Everglades National Park
Frequency of Lygodium microphyllum Treatment
(2000-2013)
National Park Service
U.S. Department of the Interior
Legend
Count
1
2
3
4
ENP Boundary
0 2.5 5 10 15 20
Miles


Everglades National Park
Frequency of Miscellaneous Exotic Plant Treatment
(2009-2013)
National Park Service
U.S. Department of the Interior
Legend
Count
1
2
3
4
5
6
7
ENP Boundary
0 2.5 5 10 15 20
Miles


Everglades National Park
Frequency of Melaleuca and Casuarina Treatment
(2002-2013)
National Park Service
U.S. Department of the Interior
Legend
Count
1
2
3
4
5
6
7
8
ENP Boundary
0 2.5 5 10 15 20
Miles

Developing subjects

Relating treatment return intervals with change in exotic abundance

cell	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
1	0	1	0	0	0	0	1	0	0	1	0	1	1	0	0	1	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1	1	0	0	1	0	0	0	1	0	1	1	1	0	1	1	0
6	0	1	0	1	0	0	1	1	0	1	0	1	0	0	0	1	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
8	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
9	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
10	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1

Understanding the strengths and weaknesses of current monitoring approaches through comparison and (hopefully) ground truthing

Species	Total number of 250 x 250 m cells observed	Total number of exotic occupied cells	Number of occupied cells seen by both	Average count of % Cover agreed	Average Count % Cover disagreed	Total Count of cells expected to be occupied (based on DASM)	Total Count of cells where DASM expectation was confirmed	expected confirmed / expected occupied
Casuarina	3128	29	6	0.8	0.2	9	5	0.556
Lygodium	3128	56	3	0.667	0.33	42	30	0.714
Melaleuca	3128	208	68	0.826	0.17	113	63	0.558
Schinus	3128	221	134	0.552	0.48	123	85	0.691

Lessons learned

- The format of data storage is important! Specific attributes of file names, folder names, column fields can make synthesis much easier (or much harder).

- Patience – learning as a group can be a delicate process. Although over time, the learning/synthesis process is very useful.