



Lake Gaston TAG 2016

The Survey

- Hydroacoustic survey
 - August – September
 - Whole lake coverage x 2
 - Used data to estimate nuisance level and partial acres
- Volunteer Survey
 - 800+ hours/ 20+ days of total work (not including redos)
 - 6,088 points collected (2014-5,258 points)

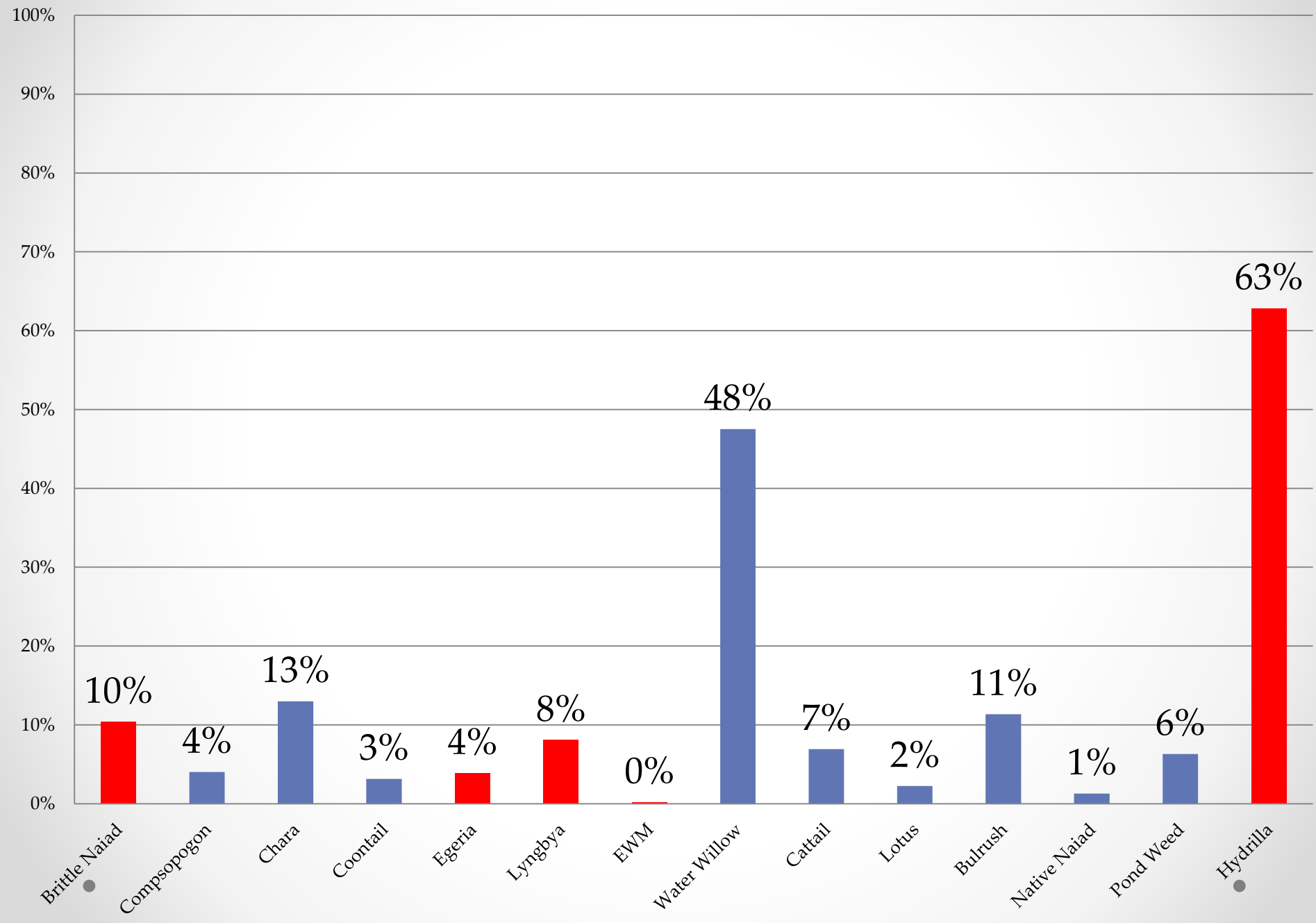
Species Identified

- American Lotus
- Bladderwort
- Brittle Naiad
- Cattail
- Chara
- Coontail
- Compsopogon
- Egeria
- Eurasian Watermilfoil
- Hydrilla
- Lyngbya
- Southern Naiad
- Pickerel Weed
- Arrowhead
- Bulrush

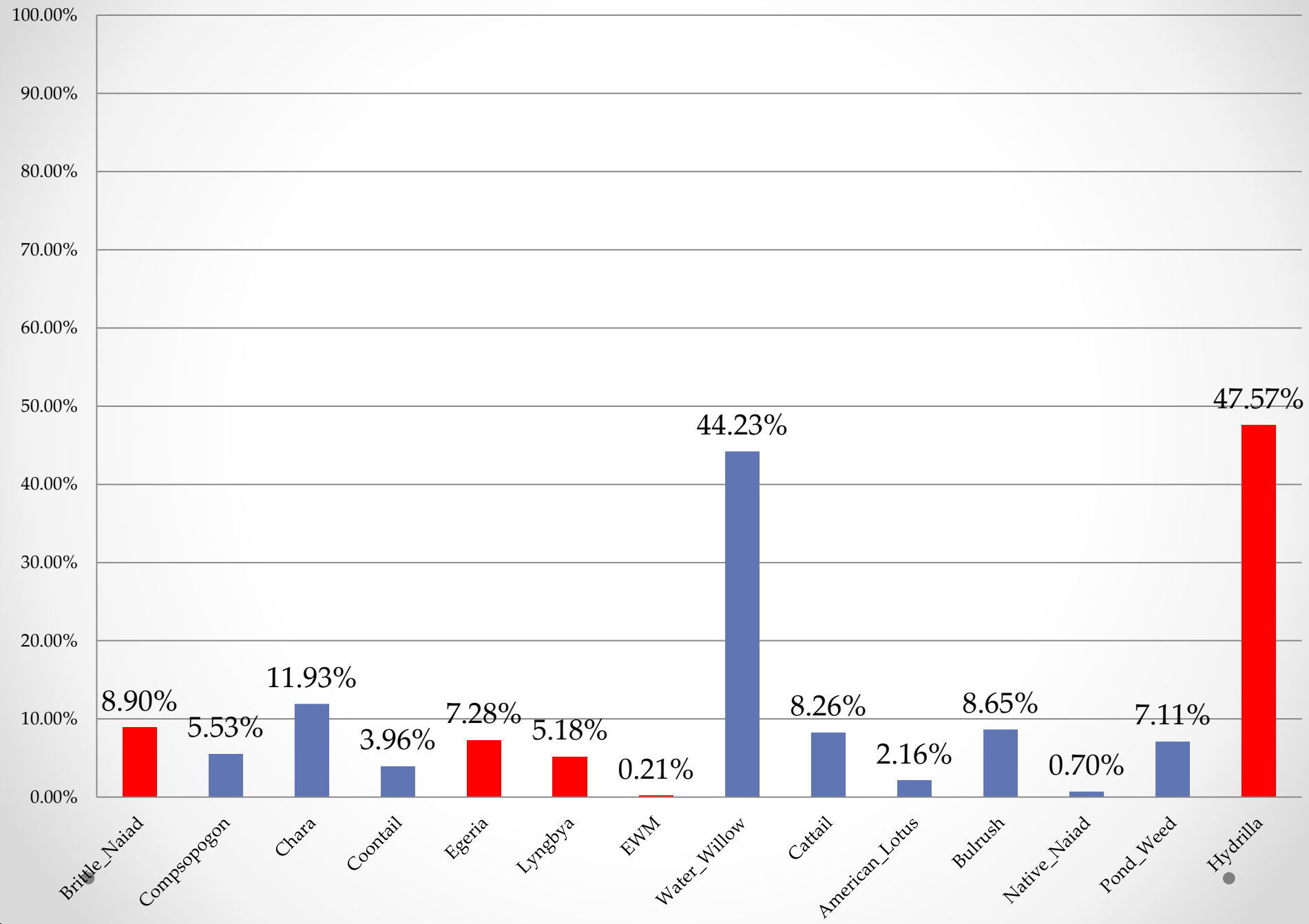
- Pondweed
- Water Willow



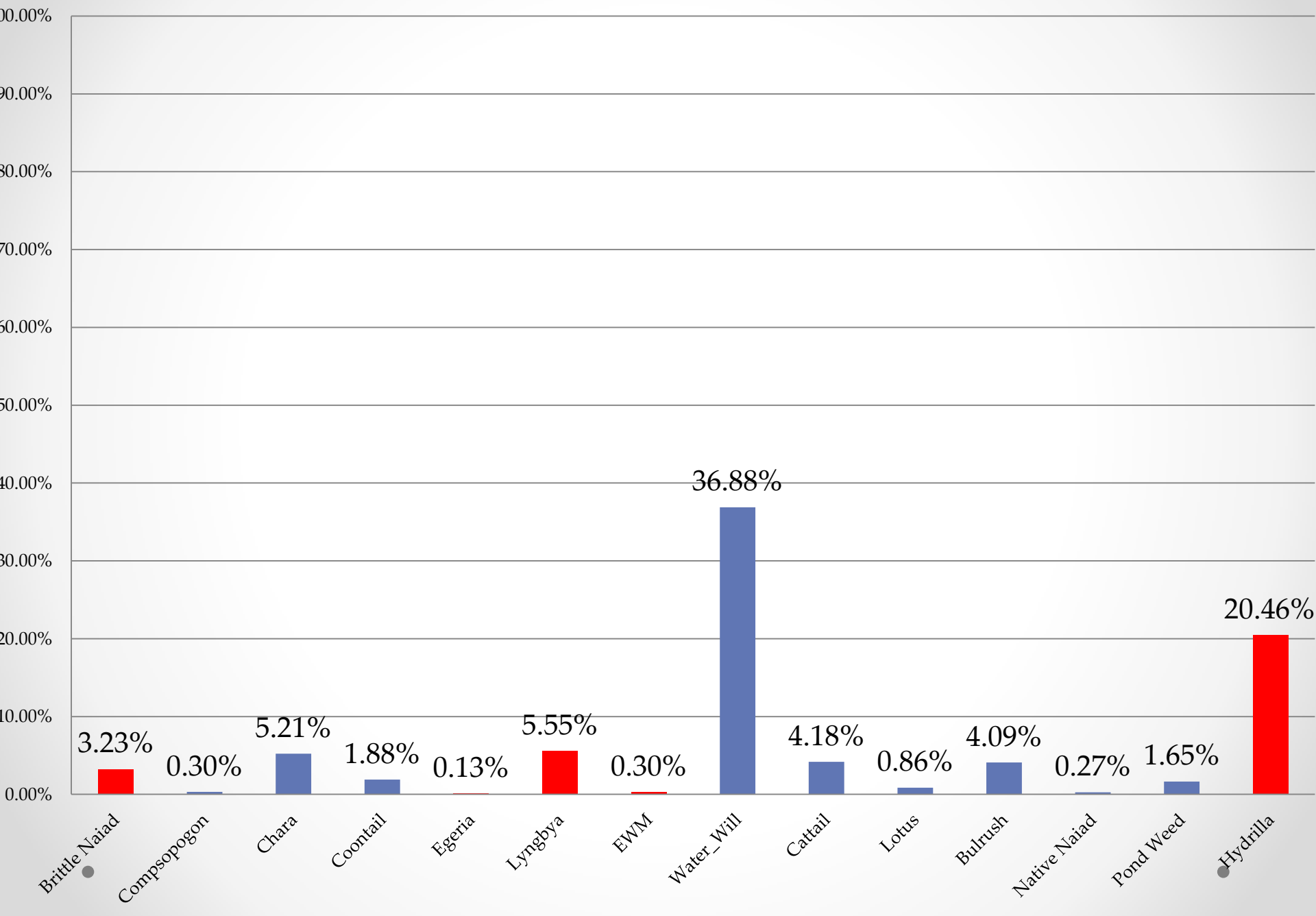
Aquatic Plant Abundance - 2012



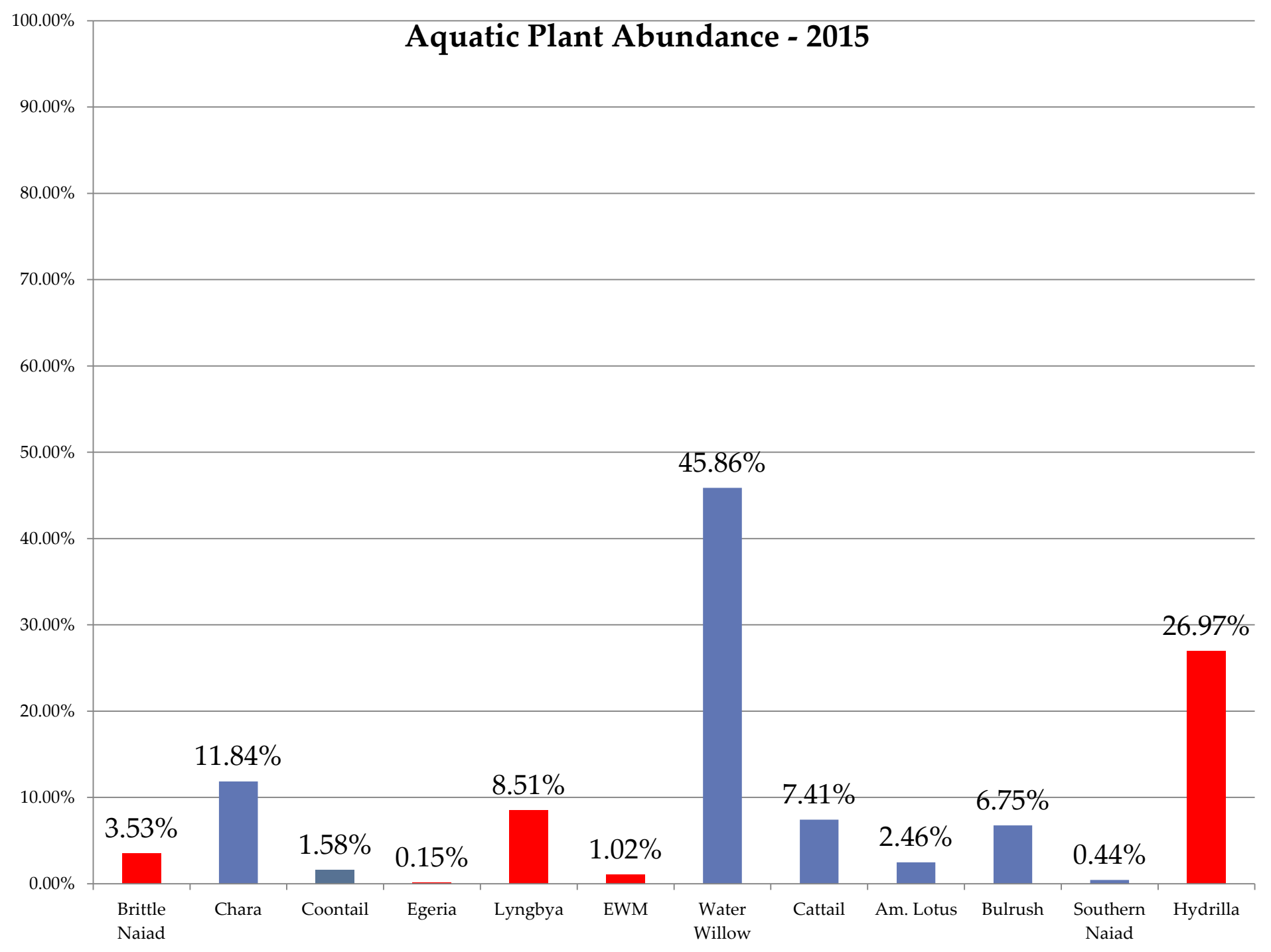
Aquatic Plant Abundance - 2013



Aquatic Plant Abundance - 2014



Aquatic Plant Abundance - 2015



Hydrilla

- Found Lake-wide – 0.27 of points (+ 8%)
- Average length – 11.6 inch (+10.44 inch)
- Topped-out – 10% (+9.99%)



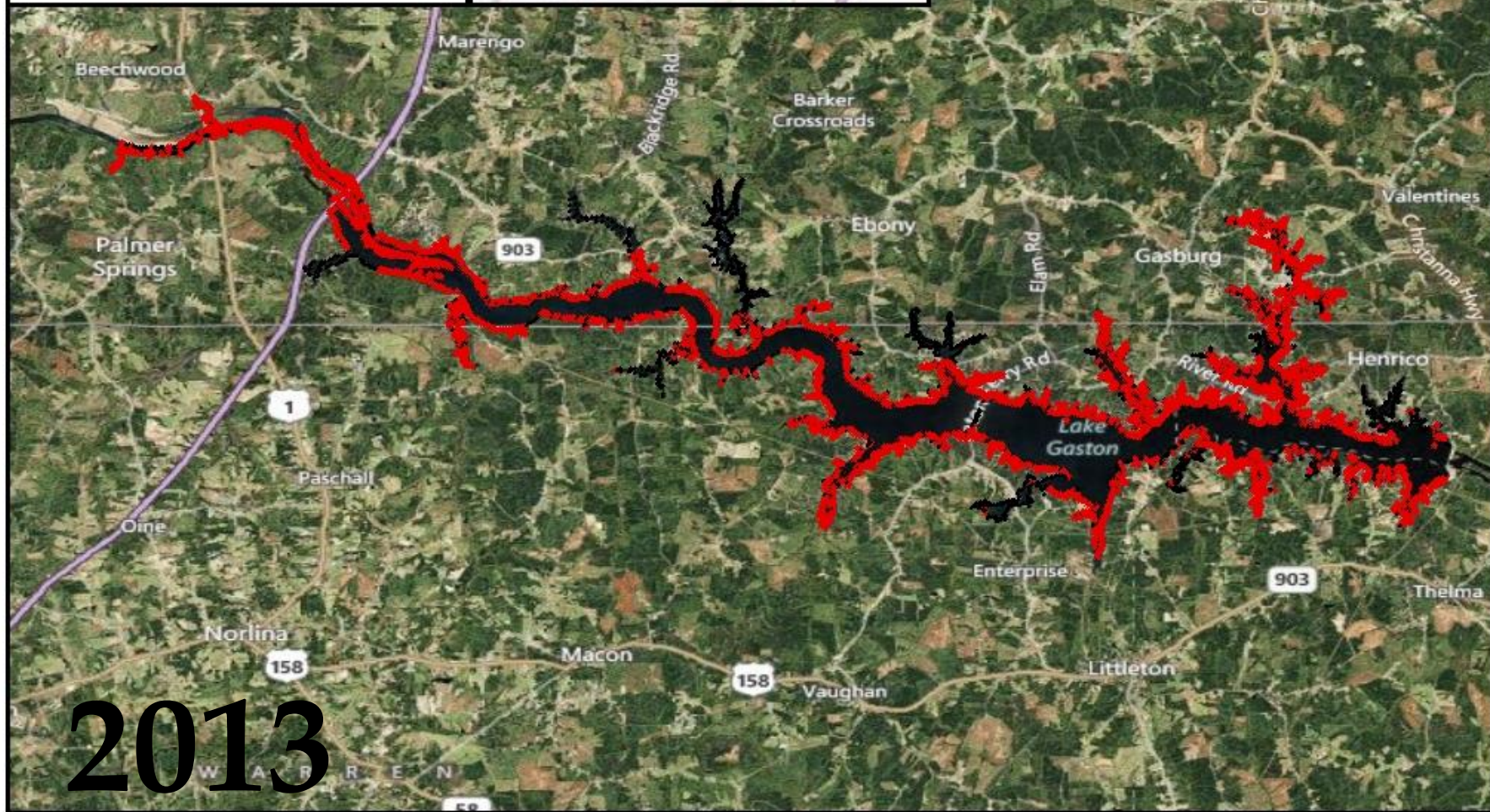
Volunteer Survey Results Lake Gaston

Hydrilla

- Yes
- No



0 1.5 3 6 Miles



2013

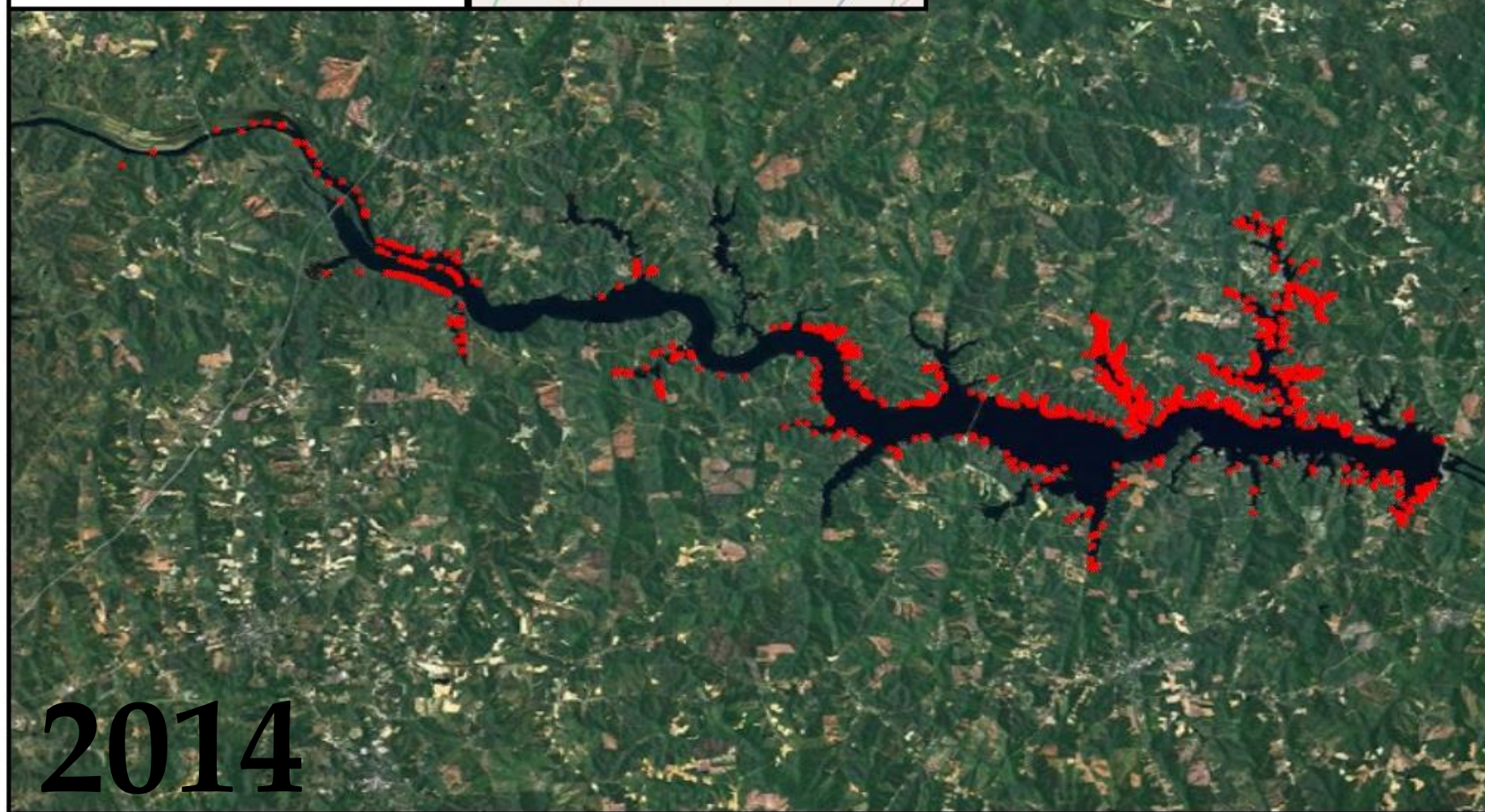
Volunteer Survey Results Lake Gaston 2014

Hydrilla

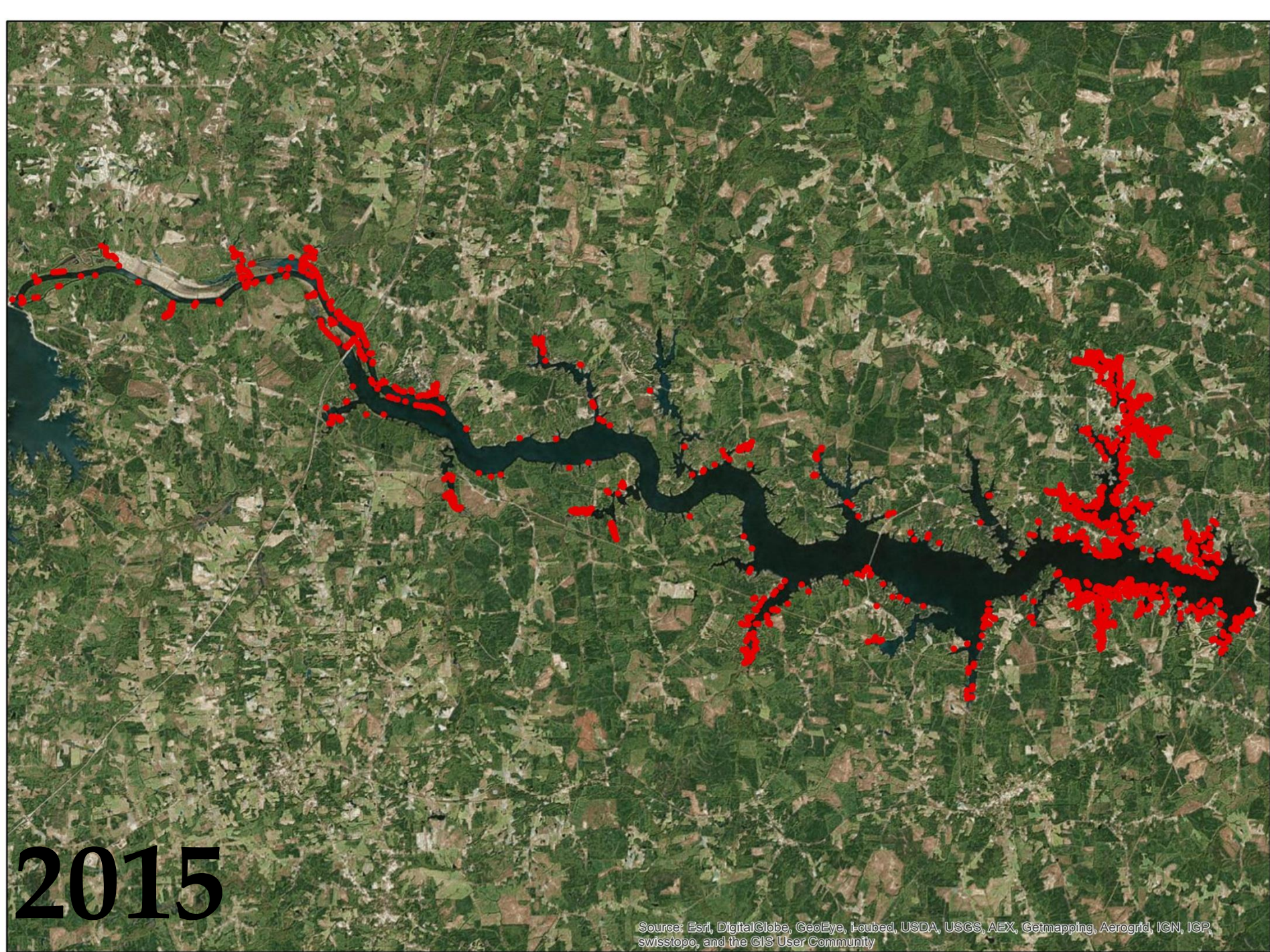
* Yes



0 1.5 3 6 Miles



2014



2015

Source: Esri, DigitalGlobe, GeoEye, I-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Lyngbya

- Found at 0.085 occurrence rate (+3.5%)
- 2014 - Estimated 50A, actually 85A
- 2015 - 211.5A



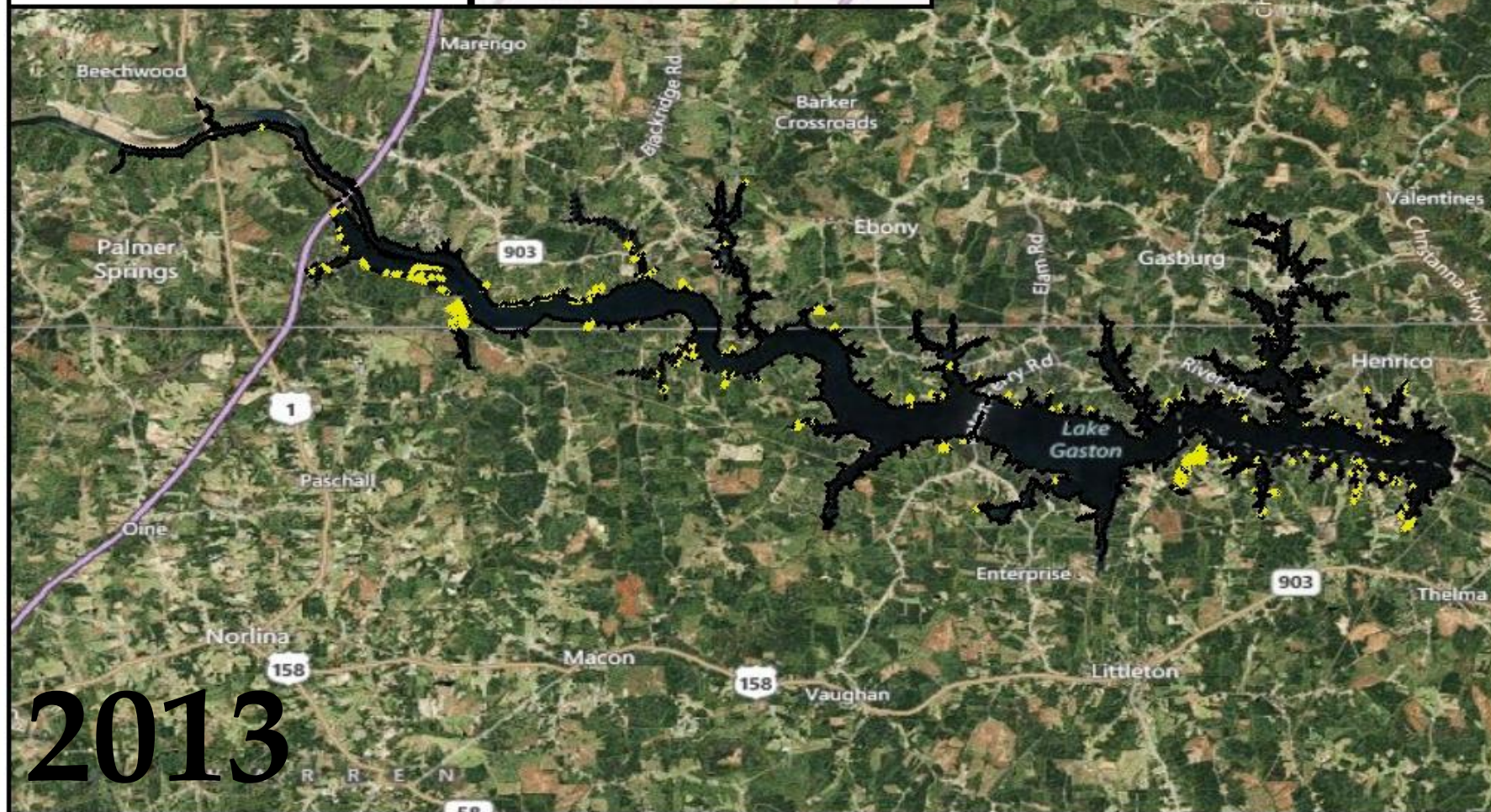
Volunteer Survey Results Lake Gaston

Lyngbya

- Yes
- No



0 1.5 3 6 Miles



Volunteer Survey Results Lake Gaston 2014

Lygbya

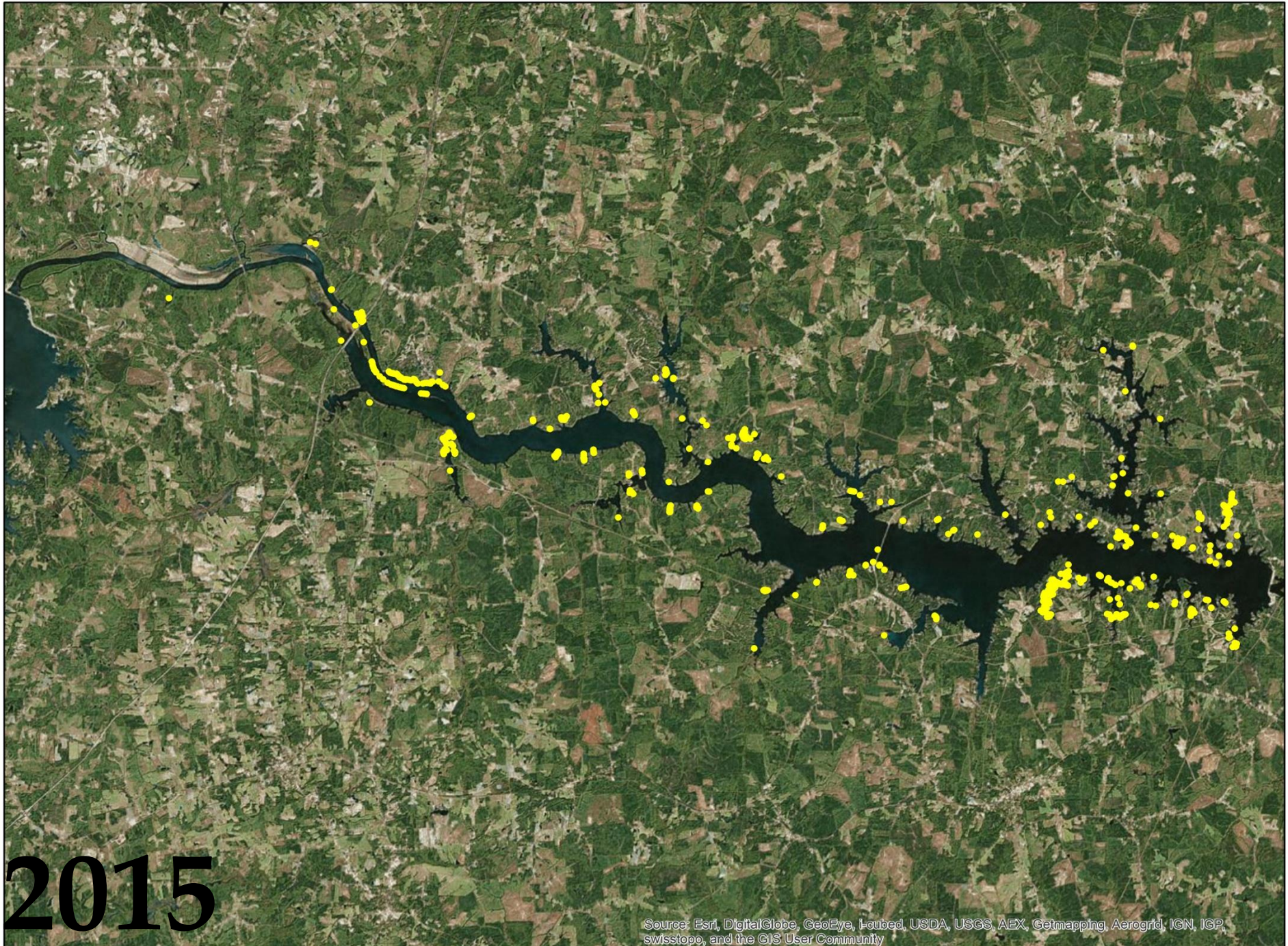
• Yes



0 1.5 3 6 Miles



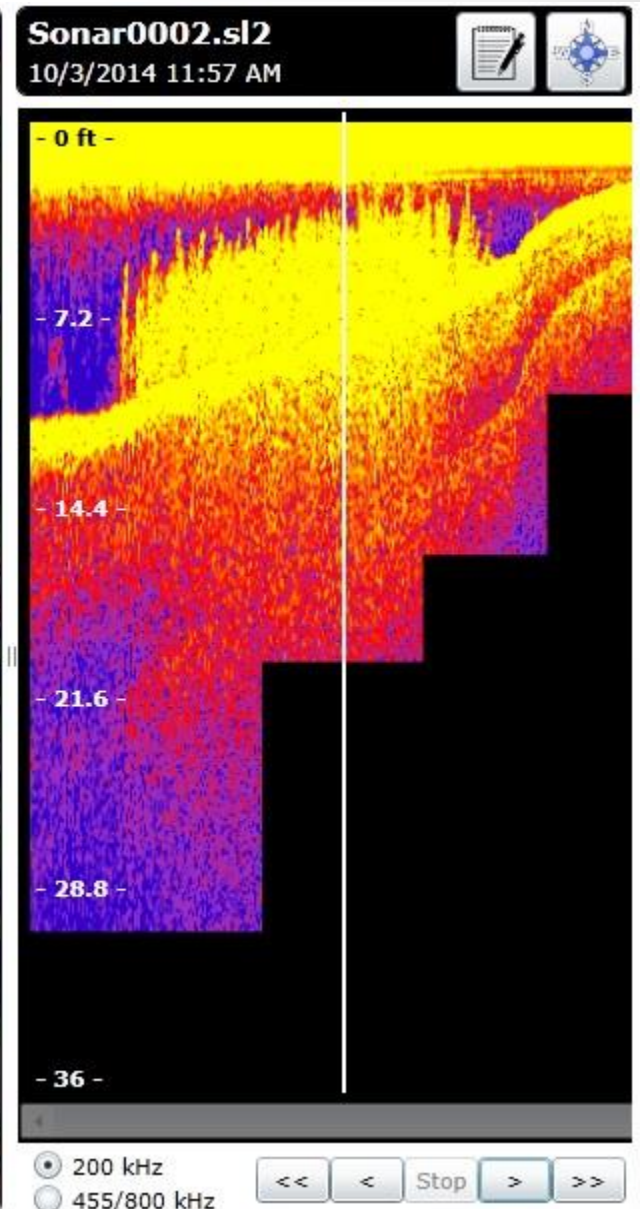
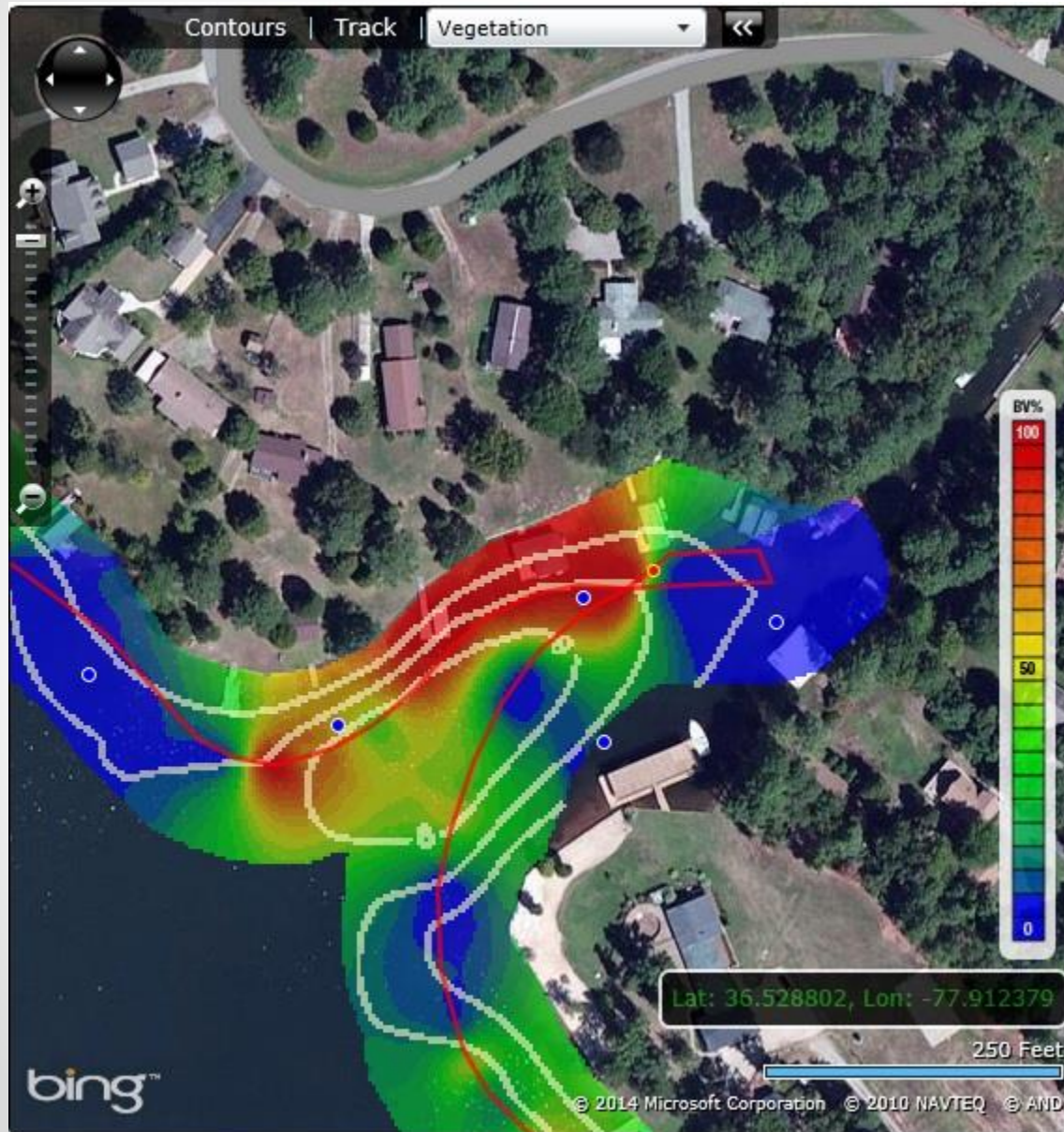
2014



2015

Source: Esri, DigitalGlobe, GeoEye, I-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, ICP, swisstopo, and the GIS User Community

Hydroacoustics Survey



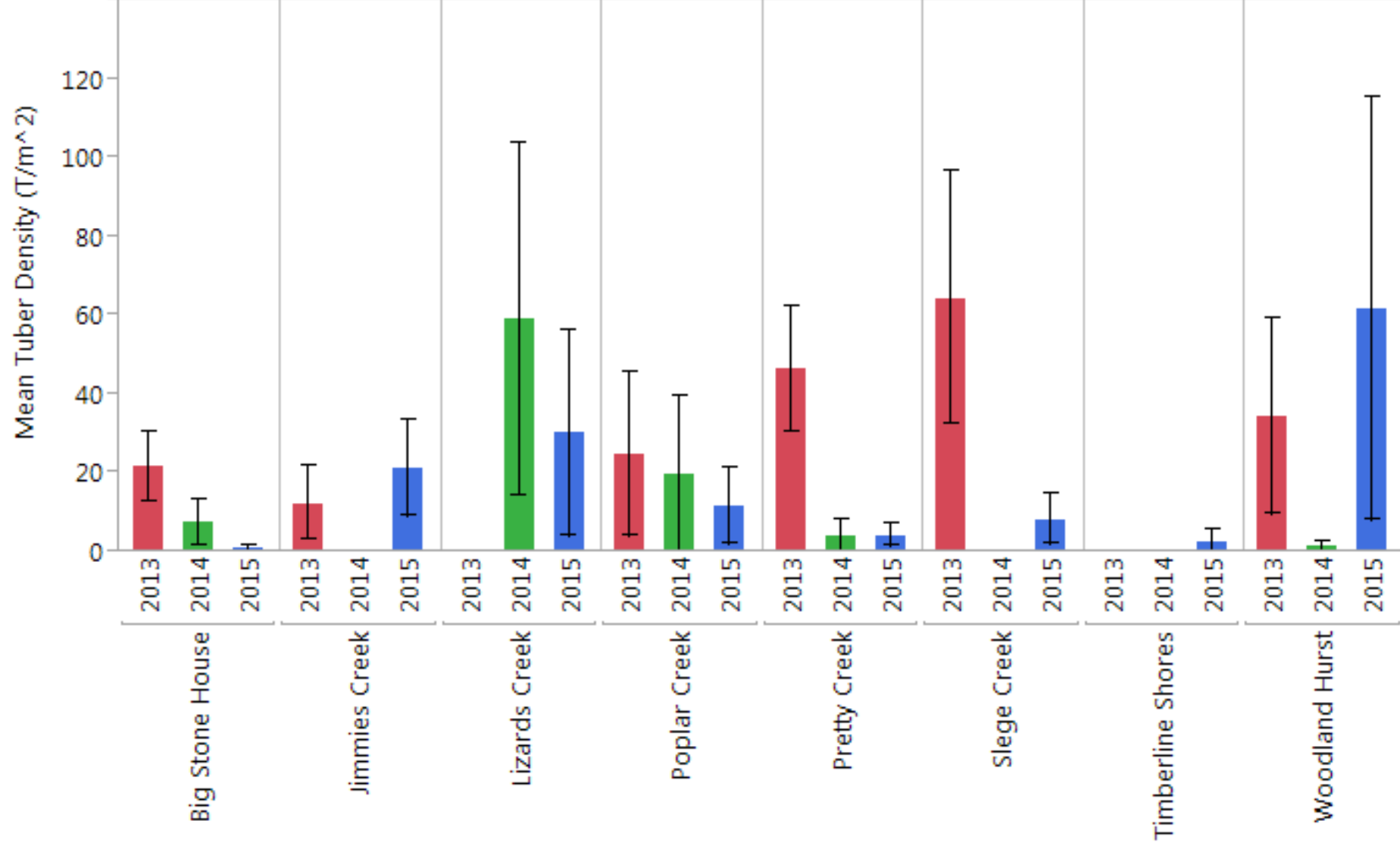


[illegible]

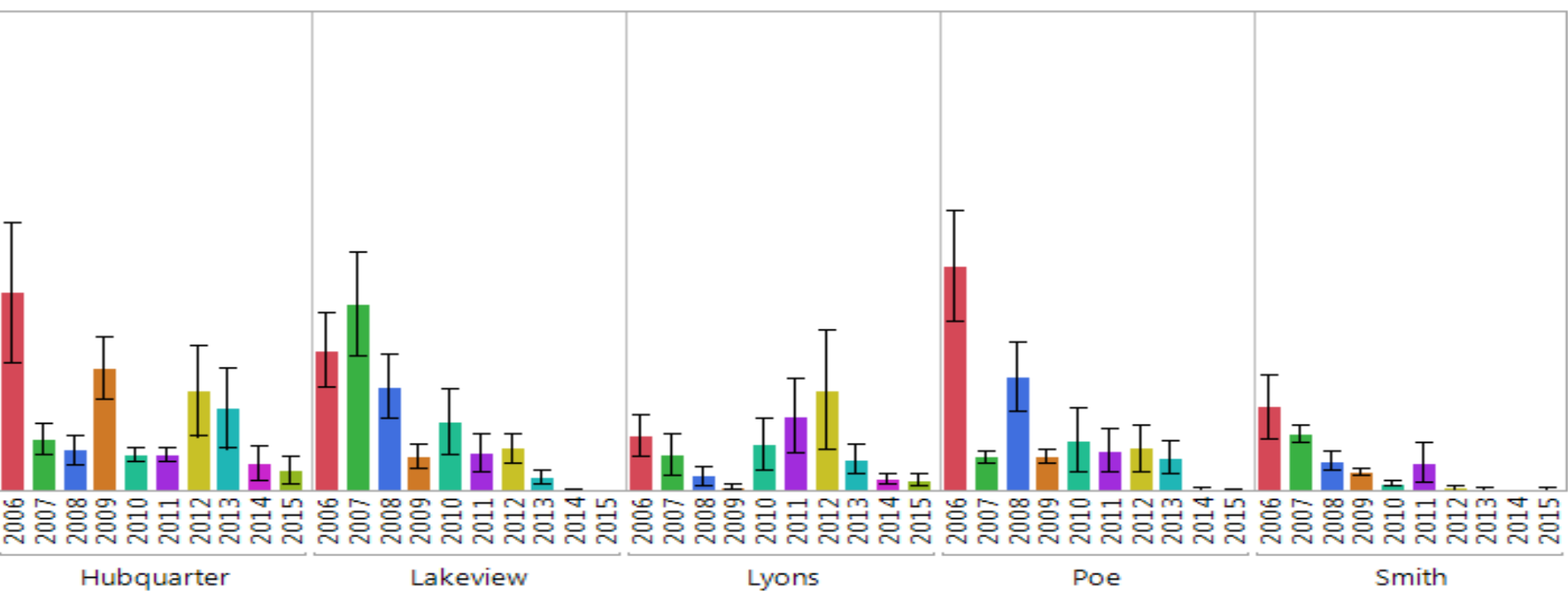
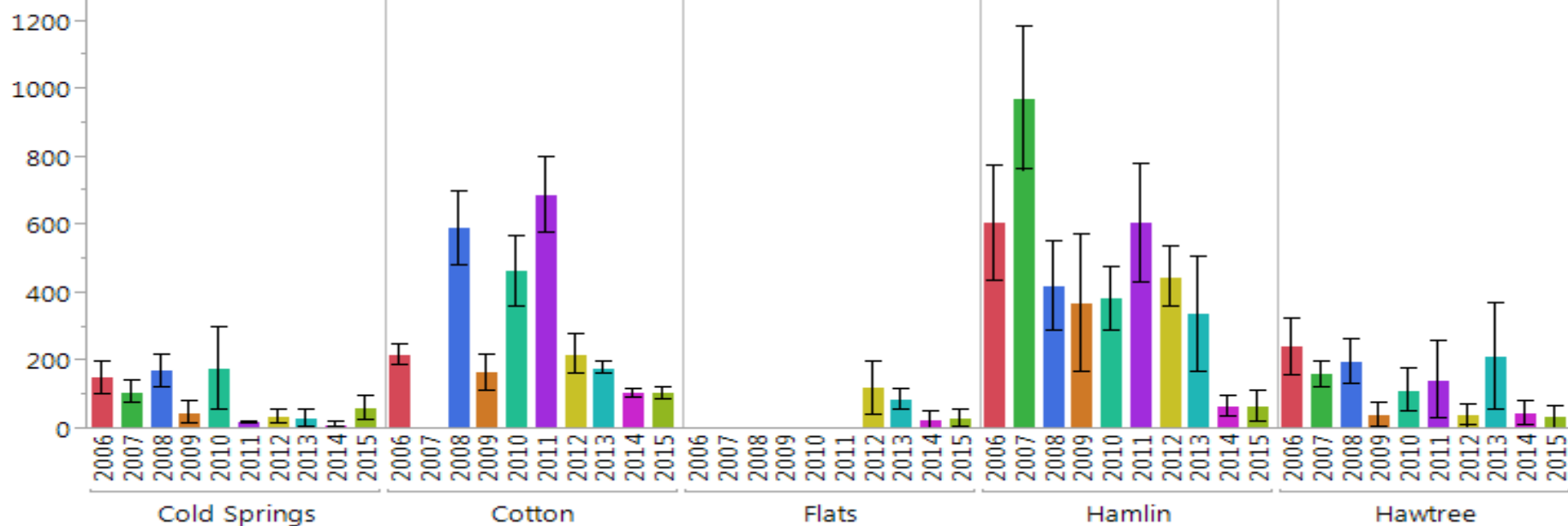
How NCSU Calculates Acreages

- Krieg out Volunteer data (makes assumptions about areas not surveyed from areas that were)
- 2 Years of SONAR data has resulted in very accurate bathymetric map
 - Based littoral zone on areas 10' and less in depth
- Observations from on the lake and SONAR data showed “sparse” hydrilla
- Krieg out SONAR data
- Overlay maps and where <5% biovolume detected but volunteers found hydrilla we assigned a 10% coverage
- Areas with >5% biovolume and positive for hydrilla we assigned a full acre

Tuber Survey



Mean Tuber Density



LT TA Site	Spring 13	Fall 13	Fall 14	Fall 15
Sledge	86	64	0	8
Woodland Hurst	140	34	1	62
Pretty	58	46	3	4
Jimmies	36	12	0	21
Timberline Shores	2	0	0	3
Big Stonehouse	31	22	7	1
Poplar	75	25	20	12
*Hamlin	446	336	67	65

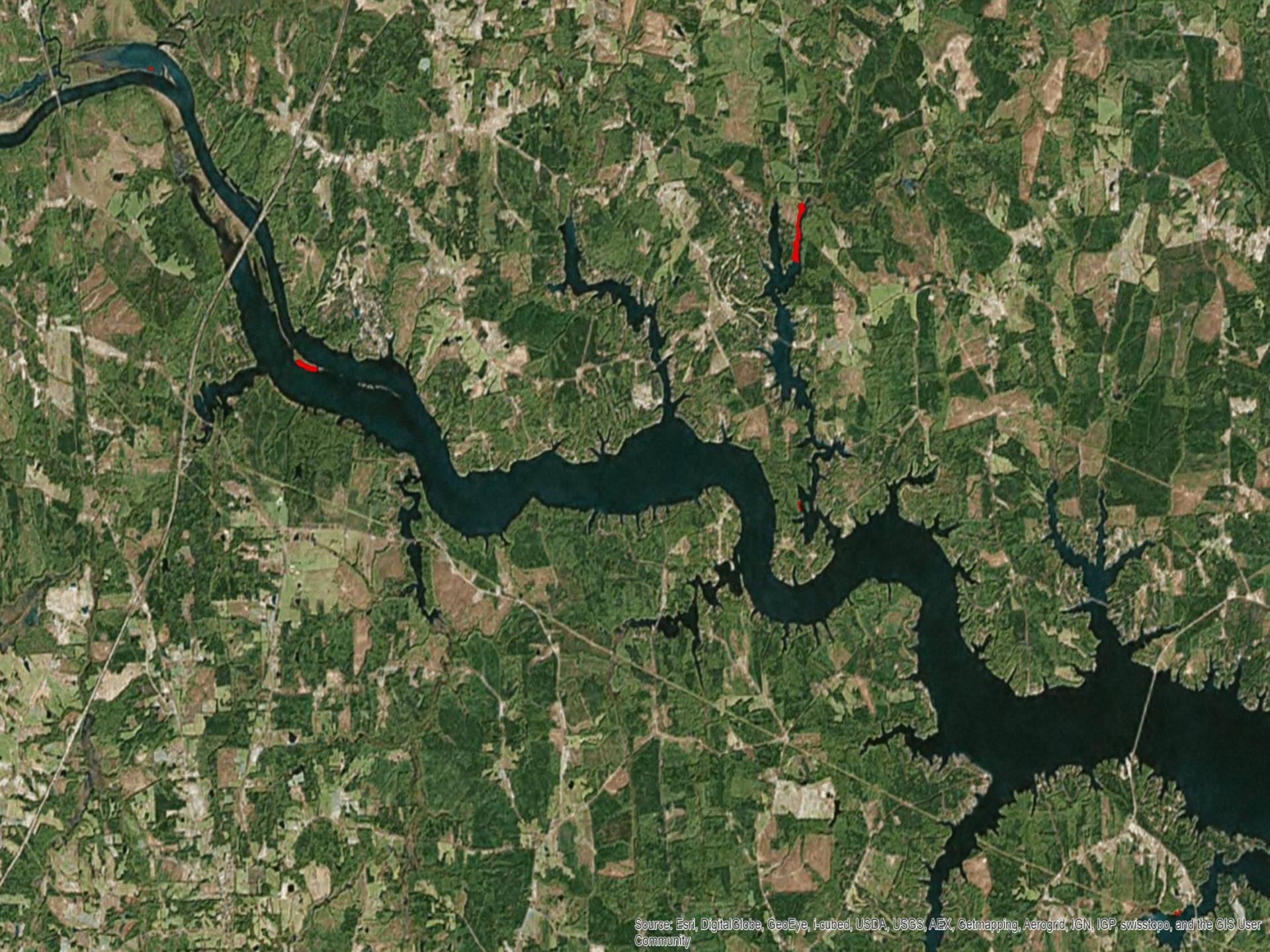
* Untreated Control

Treatment Decisions

- Hubquarter-1 site with 217 T/m² in back of cove
- Lyons - 2 sites with 62, 67 T/m² in back of cove
- Hawtree - 1 site with 132 T/m² in back of cove
- Sledge - 1 site with 20 T/m² at mouth of cove
- Pretty - 2 sites with 16.5, 8 T/m² in back of cove
- Big Stonehouse - 1 site with 1 tuber
- Flats - No hydrilla seen outside cages

2016 Hydrilla Treatments

- Based on volunteer survey, SONAR data, tuber densities and personal observations
- Poplar-East arm - 23A
- Flats-Reveg cages - 10A
- Beachwood Flats cages - 0.9A
- Poplar Creek southern cages - 1.3A
- Big Stone House cages - 1.5A
- Lizards - 163A
- Pea Hill Branches - 195A
- Jimmies-East arm - 32A
- Woodland Hurst - 6.4A
- TOTAL - 433A





Grass Carp

- Propose stocking grass carp behind Lake Gaston Dr. bridge in Pea Hill
- By far the worst area of hydrilla on the lake
- Likely very few grass carp migrated to area
- Total area - 111A
- Total hydrilla AVERAGE - 84A
- $18.5 \text{ fish/A} = 1,554$
- $15 \text{ fish/A} = 1,260$
- $10 \text{ fish/A} = 840$

Lyngbya Treatments

- 2016-Redistribute sites between 3 companies
- Reevaluate sites in early spring
- Retreat sites when water temps reach 60F



TAG Recommendations

- Continue-
 - Lake/treatment monitoring-Biomass
 - Vegetation survey, volunteer and SONAR
 - Tuber sampling
 - Evaluate 2015 lyngbya trt sites
 - Fund NCWRC revegetation efforts
 - Hydrilla management plan-chemical trts.
- Add-
 - 2016 lyngbya treatments
 - 1,260 grass carp stocked into Pea Hill