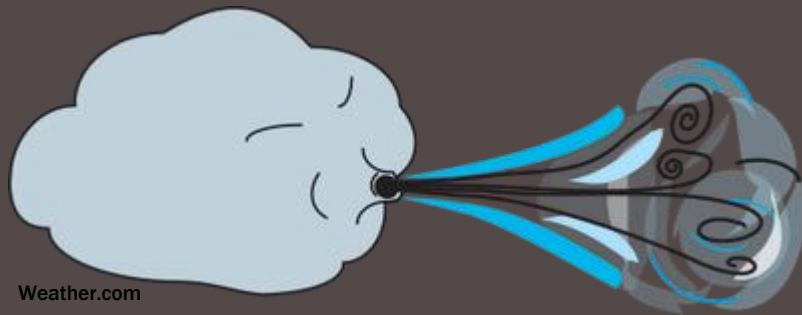


An Assessment of Disturbance on Hydrophytes Adjacent to Seasonal Ponds

Sheila M. Northbird
Kiksapa NASA REU 2015
Leech Lake Tribal College



Landcover schange



Weather.com



07/04/2012

CNF



#NNX14AK04A



My spiritual journey in advancing Ojibwe forest management practices involves ...

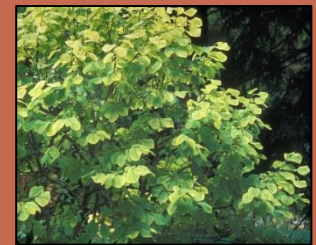
- Observing the affects of land cover schange in seasonal ponds located in the Sucker Lakes Watershed of Leech Lake, The Chippewa National Forest (CNF) after two disturbances, Timber Salvage and blowdown
- Hydrophytes, emergent aquatic plants, endemic to the area are light or shade sensitive
- Hydro periods dependent upon canopy cover which aids in regulation of infiltration and soil saturation, may affect the hydrophyte, Asaron canadenes, Wild Ginger Root
- Large scale ecological trophic disruption is eminent if primary producers fail to regenerate
- The Ojibwe community that harvests Asaron canadenes for a number of medicinal methods will be greatly affected.



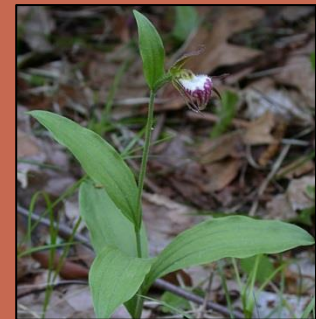
Morchella esculenta



Monotropa uniflora



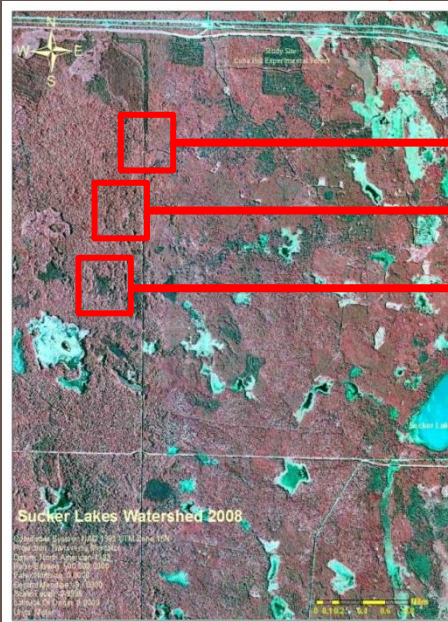
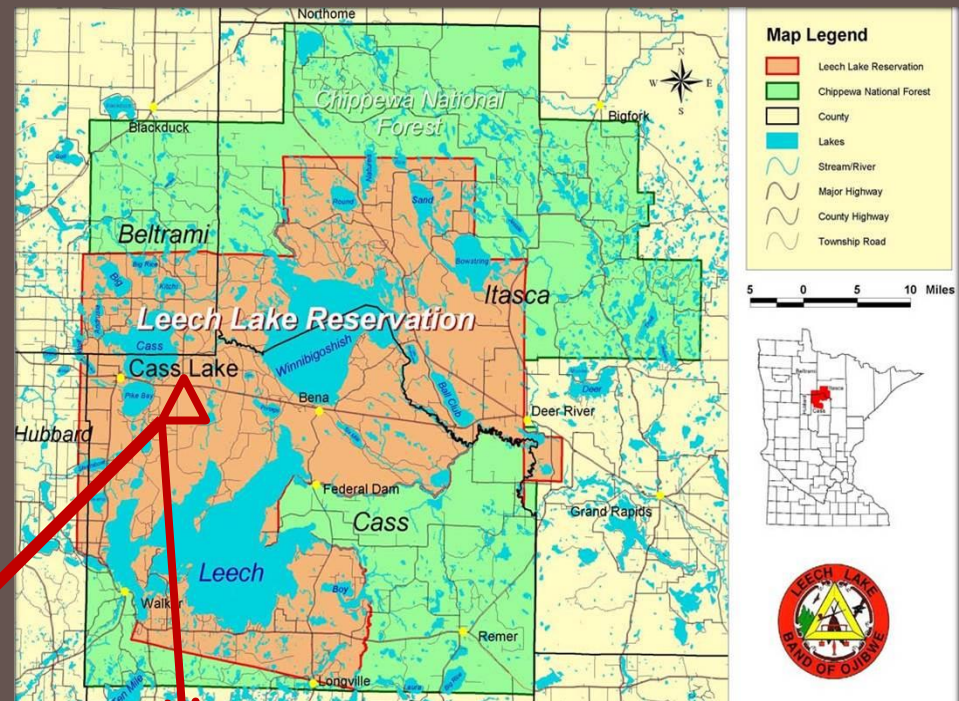
Dicra palustris



Cypripedium arietinum

Study Site:

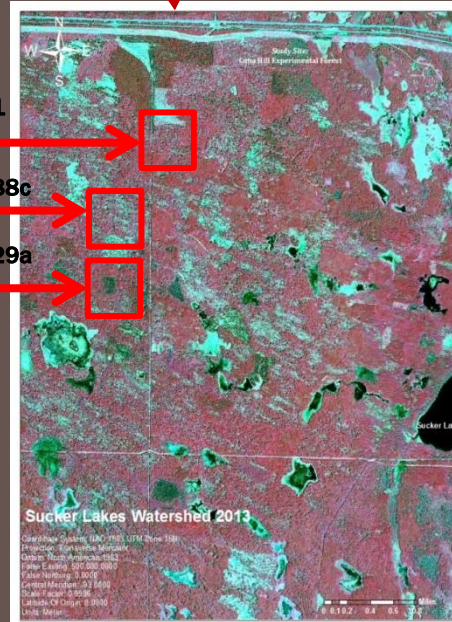
- My current homelands
- The Leech Lake reservation is totally enclosed in the CNF
- The surrounding lake chains are the cleanest watersheds in the United States



Pond 21

Pond 288c

Pond 929a



- Pond 21 incurred blowdown and timber salvage
- Pond 288c incurred blowdown
- Pond 929a is undisturbed

Common: Wildginger Root

Ojibwe: *Mashkiki'ojiibik* (medicine root)

Latin: *Asaron canadenes*



Ecology

Range:

Community:

Black Ash, White Cedar, Elm, Iron wood, Yellow Birch, Maple, Leather wood, Wild Carrot, Morning Star, Strawberry, Goblin Fern, Crested Fern, Bugleweed, Violets, Trilliums, Morels

Habitat:

Mesic soils, moist with good saturation, Low Land Hardwood, Mesic Northern Hardwood, Lowland Conifer

The Objective of My Project is ...



Nuphar advena



Urtica dioica



Coptis trifolia

- Survey disturbance
- Is the hydrophyte *Asaron canadensis* present
- Is there noticeable impacts already in the Sucker Lakes watershed



Circaea boreale

Data needs and sources ...

- Difference Map – Landsat or NAIP data
 - ✓ Earth Explorer: <http://earthexplorer.usgs.gov/>
 - ✓ USDA Geospatial Gateway: <https://gdg.sc.egov.usda.gov/>
 - ✓ Minnesota Data Deli CNF staff is willing to work with me: http://www.mngeo.state.mn.us/chouse/wms/wms_image_server_arcgis_instructions.html
- Drought Map – USDA, USGS
 - ✓ Vegdri: <http://vegdri.unl.edu/>
- Location Map - Kiksapa NASA REU
 - ✓ GIS
- Light and Temperature Graph – USDA, USGS
 - ✓ USDA Forest Service: <http://www.nrs.fs.fed.us/>
- Soils Map - Minnesota Data Deli
 - ✓ MNGeo: <https://gisdata.mn.gov/>
- Elevation Map – USDA, USGS
 - ✓ USDA Geospatial Gateway : <https://gdg.sc.egov.usda.gov/>
- Climate Map – USDA, USGS
 - ✓ USDA Geospatial Gateway: <https://gdg.sc.egov.usda.gov/>



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Moss sphagnum



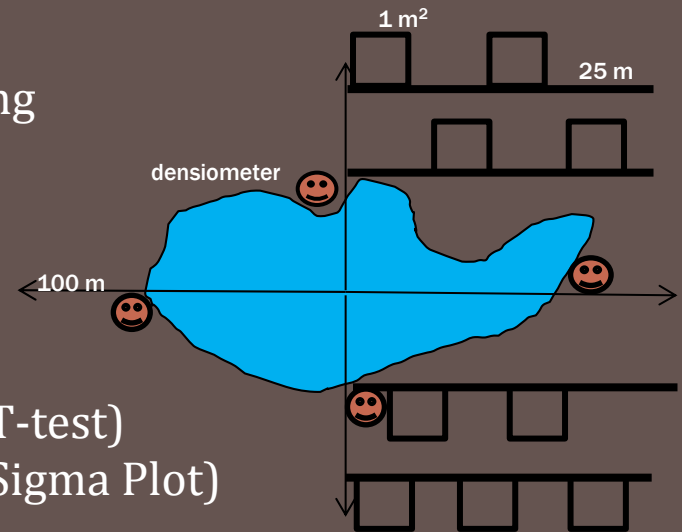
Labrador tea



*Lycopodium
americanus*

Methodology ...

- Take pictures of site
- Data log journal
- Map pond boundary and vegetation with AcrGIS Collector
- Transecting plot sampling



- Statistical analysis (e.g. T-test)
- Statistical analysis (e.g. Sigma Plot)
- Light and Temperature
- Statistical analysis (e.g. Sigma Plot)
- Canopy Cover
- Anniversary date synchronicity
- Results
- Conclusions

Results ...

