

Permanent Freshwater Wetland Monitoring in Acadia National Park

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Introduction

Starting in 2011, the Northeast Temperate Network (NETN) of the National Park Service began monitoring permanent freshwater wetlands in Acadia National Park (NP) using a 3-tiered sampling approach. Level 1 is GIS-based monitoring of landscape condition. Level 2 is a rapid field assessment. Level 3 involves intensive sampling of soil, water chemistry, hydrology and vegetation, and follows methods developed for the Environmental Protection Agency's National Wetland Condition Assessment (NWCA). NETN currently monitors 40 randomly located sites in Acadia NP using Level 1 and 2 methods. The 10 sites receiving Level 3 monitoring are sentinel sites that were hand-picked to represent best condition for a range of wetland types and sizes in Acadia NP. Sentinel sites also serve as potential reference sites for the NWCA. The overall goal of the NETN monitoring program is to monitor status and trends in wetland condition relative to vegetation, soil, hydrology, and water quality in ACAD.

Methods

Metrics collected in each sampling tier include:

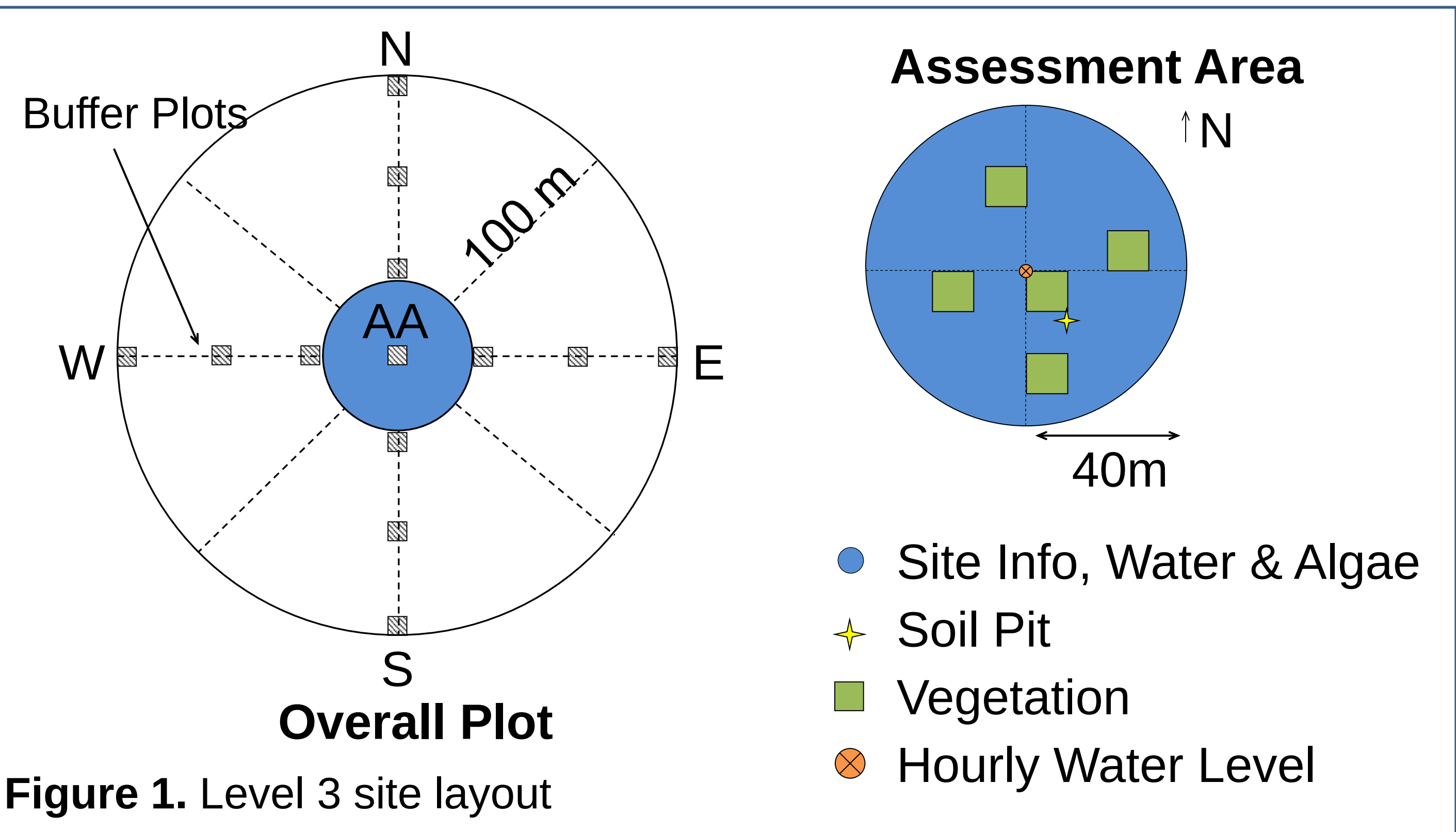
- Level 1 Monitoring
 - GIS-based assessment of buffer condition

Level 2 Monitoring

- USA-RAM Stressor Checklist
- Timed plant search in 40 m radius plot

Level 3 Monitoring:

- 100m² buffer plots (n=13)
- 100m² vegetation plots (n=5)
- 1m deep soil horizon and sample collection
- Water chemistry sample
- Site characteristics and hydrology



Preliminary Results

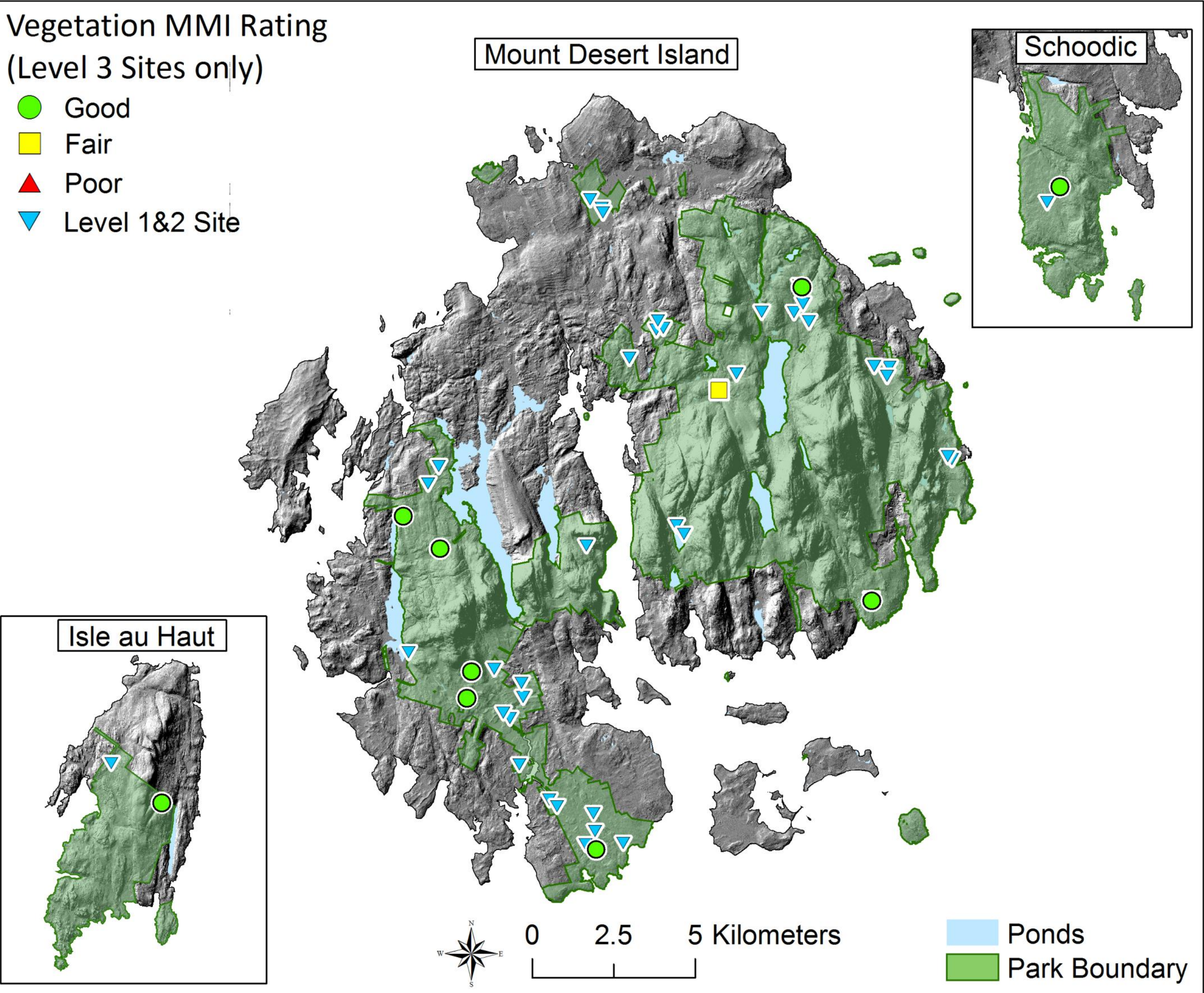
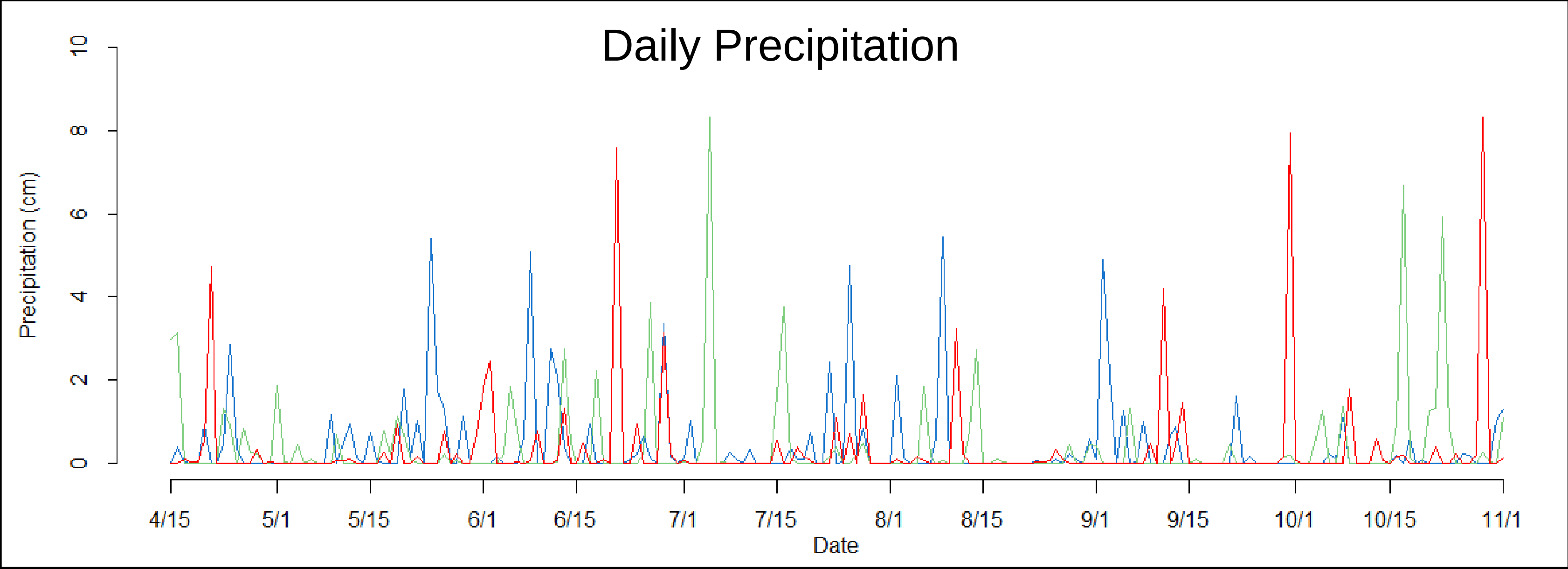
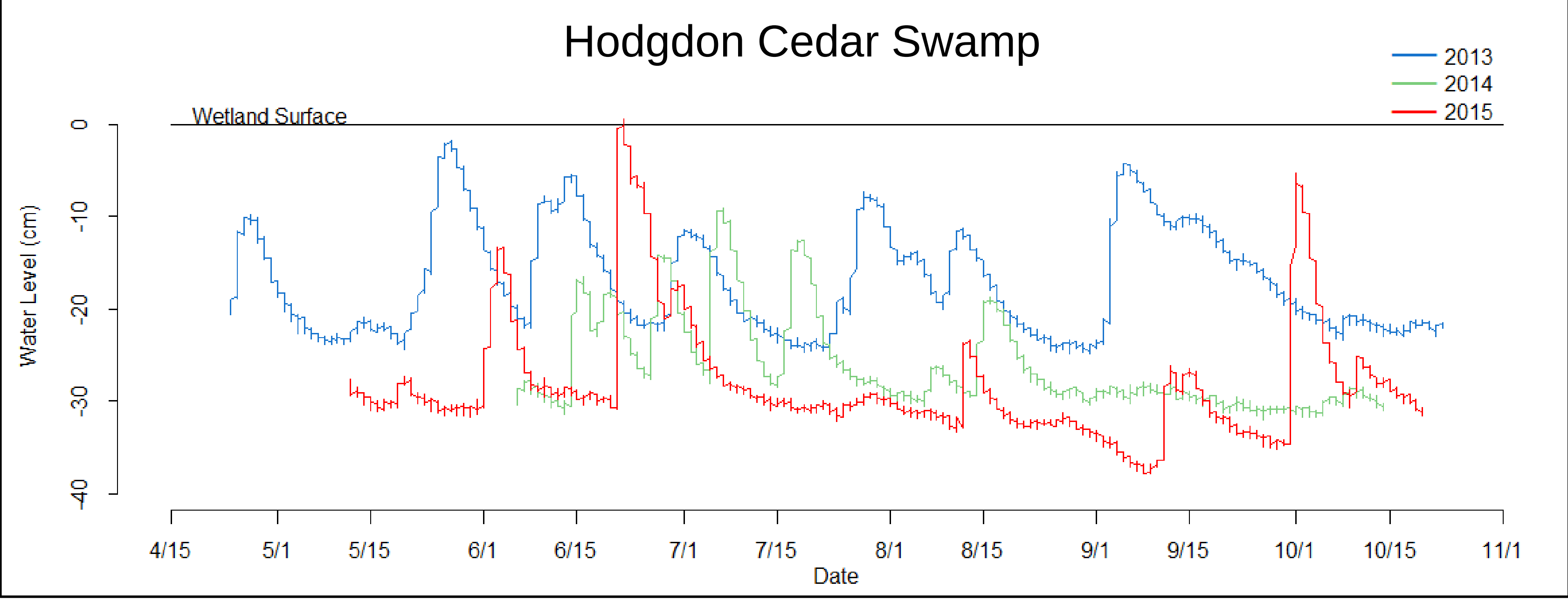
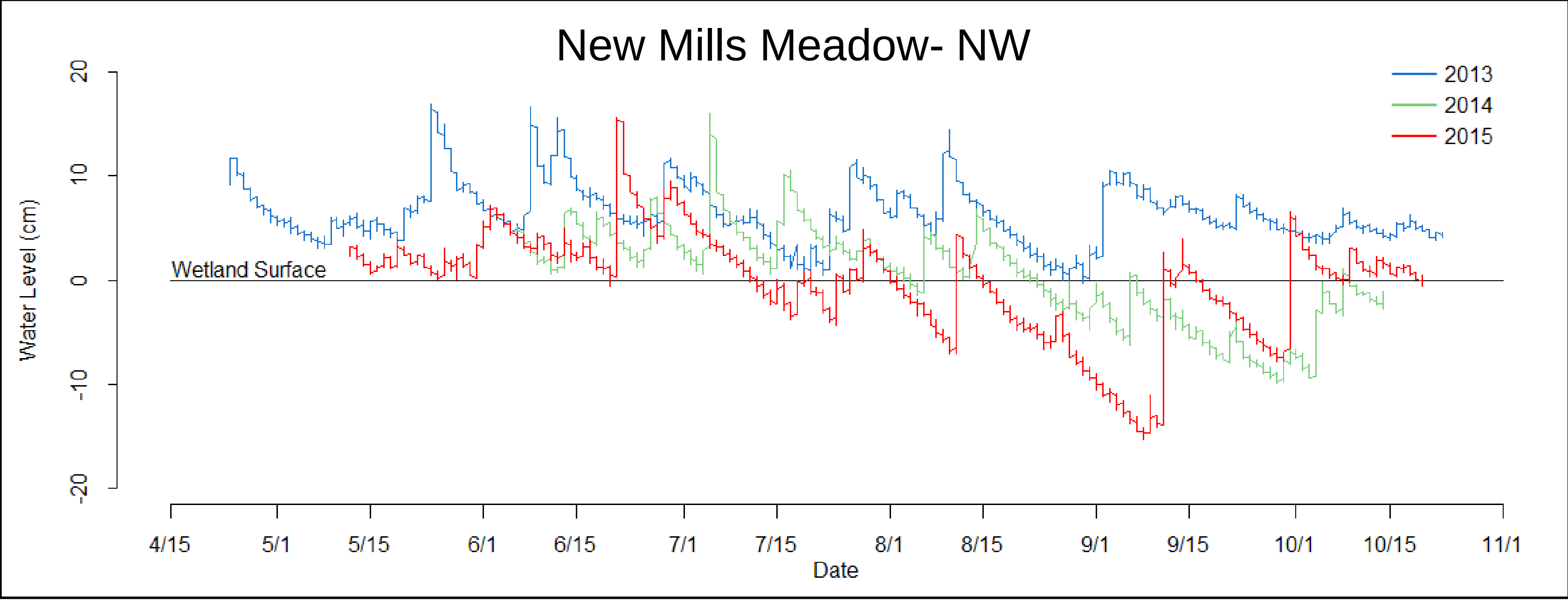
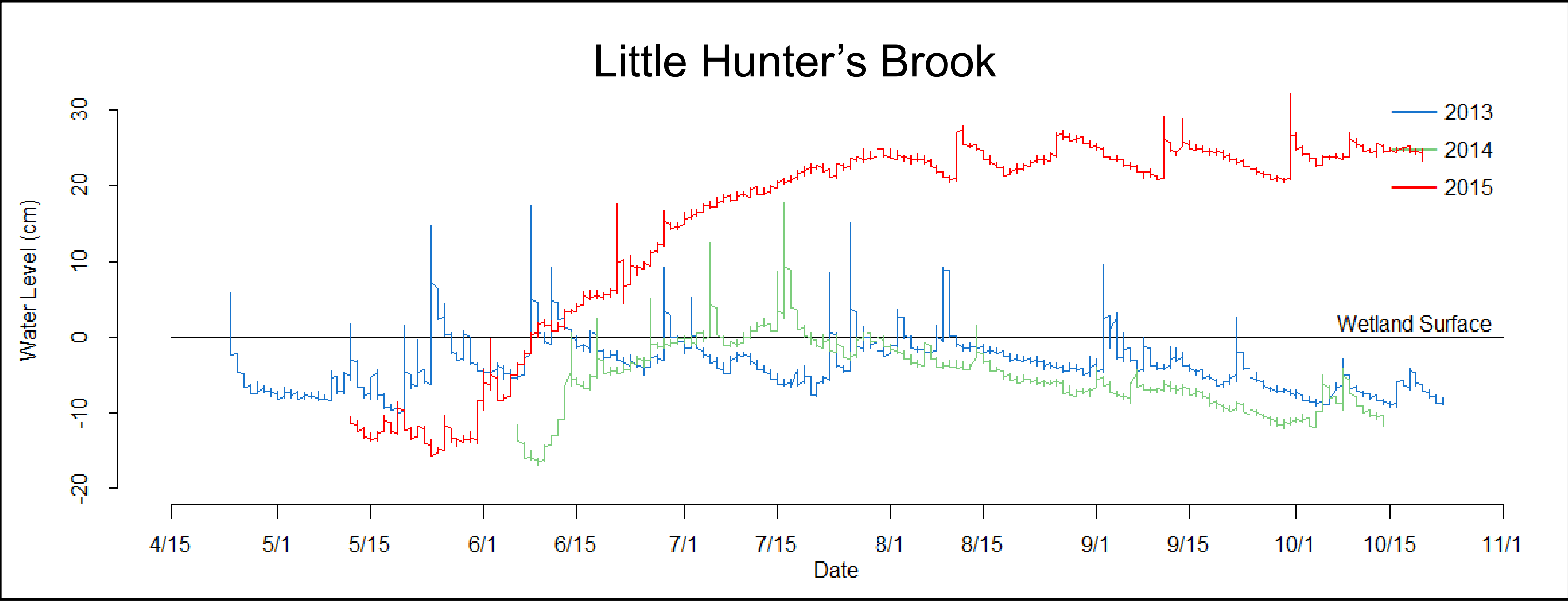


Figure 2. Vegetation MMI ratings for Sentinel Sites sampled in 2011

Table 1. Most common exotic species observed out of 50 total sites

Common Name	Latin	# Sites	% of Sites
Glossy buckthorn	<i>Rhamnus frangula</i>	8	16.0%
Japanese barberry	<i>Berberis thunbergii</i>	4	8.0%
Cow vetch	<i>Vicia cracca</i>	2	4.0%
Total # Exotic	5 species	12	24.0%

Future Directions

An NPS summary report due this fall/ winter will cover the results of the last 5 years of wetland monitoring in Acadia NP. Analyses will include:

- Vegetation MMI ratings for all 50 sites
- Soil and Water MMI ratings for the 10 sentinel sites
- Hydrological metrics related to water level fluctuation
- Characterization of buffers surrounding wetland sites
- Comparisons of condition with regional wetlands

