



Monitoring matters

Acadia's Wetlands: All Wet or Going Swimmingly?

How Are Acadia's Wetlands Doing?

Acadia's freshwater wetland health is measured by looking at their soils, vegetation, and water quality. This information is then used to rank wetland condition into three categories: *poor, fair, or good*. The current long-term monitoring program shows that most park wetland's health is 'good'. Signs of high-quality wetlands are abundant native plants and lots of moss cover. These can be missing in low quality wetlands because they are very sensitive to things like trampling, non-native plant invasions, and polluted water.

Unfortunately, the park also has several wetlands that fall into the 'poor' category too. Poor sites, Great Meadow being the primary example, have many exotic and invasive plant species (like glossy buckthorn) and poor soil and/or water conditions. Wetland health is affected by the way water moves into and through them. Impacted wetlands tend to have more surface run-off coming in from outside sources like developed or agricultural lands. This influx of nutrients can change the chemistry of the water, bringing in so many nutrients they can overload the system and lead to algae blooms.

"About half of all migratory birds rely on wetlands during at least one stage of their life-cycle."

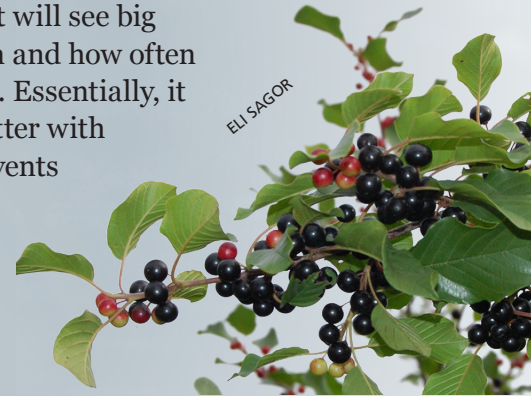
Why Do We Monitor Wetlands?

As transition zones between dry and aquatic areas, wetlands provide important habitat for many kinds of life. Even though they only make up about 7% of Acadia's landscape, freshwater wetlands are home to a whopping 2/3's of Maine's state-listed rare plants that occur in the region. Wetlands are indispensable for many birds too - about half of all migratory species in North America rely on them during some part of the year.

Wetlands provide many vital "ecosystem services" as well, such as nutrient cycling, erosion control, groundwater recharge, carbon sequestration, and catching excess water during large storm events.

How Could Climate Change Affect Park Wetlands?

Wetland ecosystems are very sensitive to changes in annual rainfall. Several climate models predict the Northeast will see big changes in how much and how often precipitation will fall. Essentially, it is expected to get wetter with more large rainfall events taking place, though some places could experience drier conditions as well.



ELI SAGOR

The invasive **Glossy Buckthorn** plant is often found Acadia's degraded wetlands. Invasives can reduce bird and butterfly numbers since most native insects can't or won't eat them.

Birds like **Common Yellowthroats** find less food in wetlands in poor condition. The park map overleaf shows where this may be the case in the park, as well as wetlands that have a richer diversity.



DAN PANCAMO

Wetter conditions could lead to bigger wetland areas, but too much additional water would change some wetlands into outright open water - i.e. ponds and lakes. On the other hand, a drier climate could cause groundwater-fed wetlands, like *northern white cedar swamps*, to change to dry upland habitats if the water table lowers enough. Establishing baseline wetland conditions and monitoring changes over time will help the park track wetland response to climate change, and inform park management of how these changes may impact park resources, operations, and infrastructure.

Beavers: Wetland Movers and Shakers

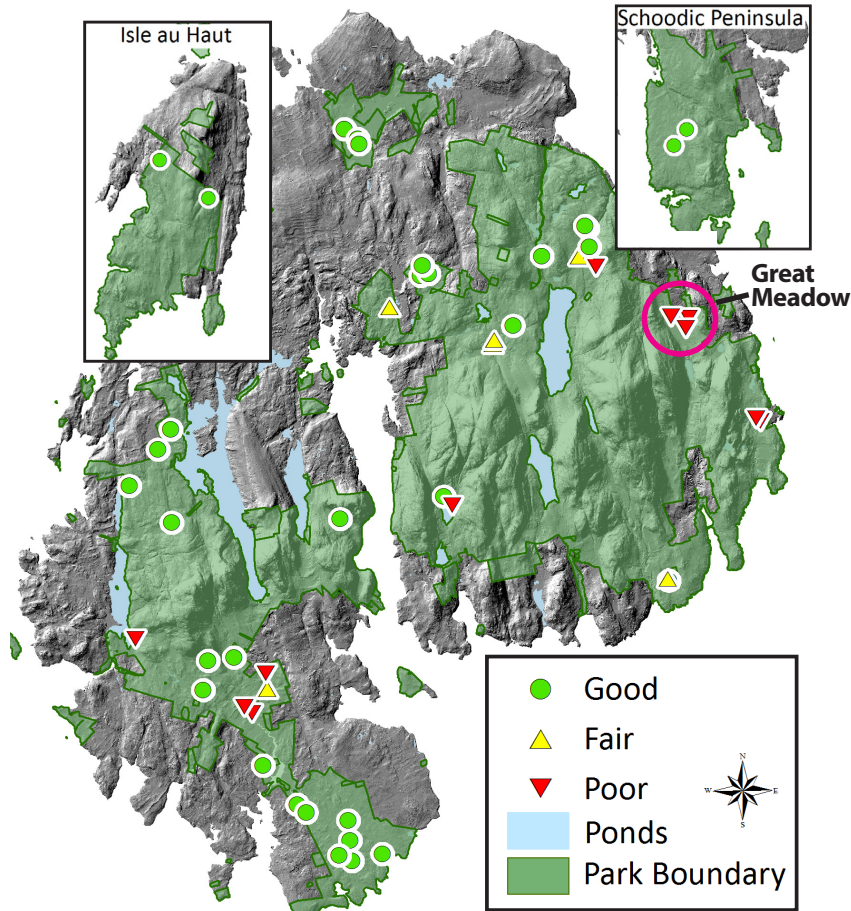
Beaver are well-known for creating their own wetlands by damming forest streams. When they set-up shop in existing, particularly sensitive wetlands however, their activity can create ideal conditions for grasses and sedges to thrive, but decrease sensitive woody plants and mosses. Beaver activity often leads to increases in nutrient concentrations in water and soils as well. For these reasons, beaver-influenced wetlands mostly rated 'fair'. This is not a bad thing for overall park health however. Beavers are a 'keystone' species that create habitat for many other plants and animals, but too much beaver activity can also be a problem. Current beaver populations in the park are stable and not a concern for park management.

A telling sign of wetland ecosystem resilience is when the vegetation, soils, and water chemistry quickly recover after beavers abandon their ponds. Park wetlands with a poor rating however, such as Great

Meadow, are being influenced by both beavers and humans (nutrient run-off, infrastructure, invasive species, etc.) to such a degree it is unlikely they would be able to fully recover without the park taking some action to limit human impacts.

Monitoring and the Great Meadow Restoration

While most park wetlands are in good condition, the popular Great Meadow faces many challenges. The



How Acadia's wetlands rank according to recent monitoring data.

biggest issues are being caused by changes to the ways water flows into the wetland and the impacted plant communities. Having said that, water quality in Great Meadow is still good for a beaver-influenced wetland.

Friends of Acadia funded monitoring, in partnership with monitoring by the Northeast Temperate Network and the Environmental Protection Agency, suggest that restoring natural water flow into the wetlands and controlling invasive plants should be of primary focus. Fixing undersized culverts and reducing sediment input from roads help healthy wetlands stay that way and should also improve overall condition of impacted sites. Invasive species management is essential to keep them out of uninvaded wetlands and to control their numbers where they are found. Continued wetland monitoring will help define desired conditions for wetlands and help the park track wetland response to management actions over time.

Want to Learn More About Acadia's Wetlands?

For monitoring maps, protocols, reports, briefs, and data: NETN's Freshwater Wetland web page: <http://go.nps.gov/fresh>

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