ADIRONDACK BOREAL WETLANDS

FACTS:

Wetlands make up nearly a million acres of the Adirondack landscape. More than 600,000 acres consist of characteristically northern wetland types including Boreal-Laurentian bogs and fens and Northern Appalachian-Acadian acidic swamps.

Formed at the retreat of the last glaciation, these relict habitats have high ecological inertia and specialized adaptations to cold, wet, low nutrient conditions. Peat is the substrate of bogs, fens, and many northern swamps. In these saturated conditions, production of organic material outpaces its decomposition and the result is an accumulation of peat. Peatlands perform critical carbon storage functions.

The Adirondack Park lies at the transition between the temperate and boreal zones. As a result, our boreal wetlands are islands surrounded by temperate forest and critical to regional biodiversity. Because they are naturally disjunct in the landscape, maintaining ecological connectivity between boreal wetlands is particularly important.

Some of the rarest flora and fauna in the state are found in boreal wetlands. These include more than 20 birds considered to be Species of Greatest Conservation Need in New York including olive-sided flycatcher, rusty blackbird, spruce grouse, three-toed woodpecker, and Tennessee warbler. They are nowhere else in New York, and within the park they are confined to these special wetland types. As such, these are responsibility species for the Adirondack Park.

Boreal wetlands in the Adirondacks are important climate change refugia. Refugia are areas relatively buffered from contemporary climate change over time that enable the persistence of valued resources. Peatlands can retain high surface soil moisture and water tables and are often associated with cold-air pooling which can decouple and buffer them from regional climate patterns. Many of our peatlands are associated with lakeshores. Lakes, because of their high heat capacity, can also modify the climate of their surroundings, lending additional value to shoreline peatlands as refugia from regional temperature changes.

Climate change is the most important threat to Adirondack boreal wetlands. These high latitude systems are threatened by warmer temperatures and altered precipitation regimes that have the potential to drastically alter or transition them to new states over time. Peatlands store enormous amounts of terrestrial carbon and alterations to peatland habitats can impact their carbon storage capacity. Existing wetlands protection mechanisms do not account for inundation of peatlands by alterations to hydrology from road or dam construction. Flooding peatlands is a worst case scenario for both greenhouse gas emissions and mercury methylation.

BEST MANAGEMENT PRACTICES

For Forest Land Managers

1. To maintain water quality, hydrologic function, and carbon sequestration, minimize actions that will change what water carries and how water travels to and from peatlands, both above and below ground, maintain/restore water flow across service corridors, avoid wetlands and stream crossings through peatlands, avoid felling into standing water or seeps, keep slash out of streams and wetlands with standing water, and avoid equipment entry into small wetlands.

2. To minimize impacts of harvesting, reduce frequency and intensity of tree cutting, use low impact techniques and vehicles, maintain brush and other woody material in and around peatlands, limit permitted timber harvesting in peatland areas to selection, thinning, or other partial harvest, restrict harvesting to periods of frozen ground and snow cover, confine skidding to a few primary trails in defined corridors, minimize skid trails by maximizing cable lengths to reduce erosion and sedimentation, maintain adequate buffers between peatlands and adjacent logged areas including around temporary ponds and spring seeps, winch logs out of buffer zones rather than entering buffer zones with equipment, use brush or corduroy to minimize soil compaction and rutting in wet areas, and maintain at least 50% crown cover in the buffer to prevent increase in water and ground surface temperature.

3. To minimize impacts associated with roads, avoid construction and maintenance of roads and trails and the use of ATVs in or near peatlands, route roads and trails around the wetland and buffer zone, avoid road construction during wet periods, minimize road width to the size necessary to carry traffic, manage roads to increase landscape permeability, use bridges and boardwalks where roads must cross wetlands, use fabric mats or pads under fill to minimize disturbance and facilitate removal of temporary roads, and where possible locate haul roads at least 150ft downstream from the head of a seep and avoid road building within 150ft uphill from seeps.

4. To minimize impacts associated with recreation on conservation easement or private forest land, protect boreal wetlands by restricting public access or installing boardwalks in popular destinations, routing trails away from peatlands and prohibiting use of ATVs in or around them, limiting snowmobile use – especially during marginal conditions – to reduce localized effects, and limit public access in particularly sensitive areas or those with rare plants and sensitive species.

5. To facilitate appreciation and protection of boreal wetlands, raise awareness among forest landowners and users about peatland importance and threats, provide training about peatlands and peatland management, consider conservation easements as a tool to protect peatland habitats on private land, and create or increase incentives for landowners to buffer wetlands and manage for ecological connectivity.

The palm warbler (Setophaga palmarum) is a colorful warbler that is dependent on this habitat.

Image Credit: Brendan Wiltse Photography, Jeff Nadler (palm warbler),

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