An intimate look at Poconos habitats: Glacial Bogs

By Brittney Coleman for BWA, Feb. 2023

Living in the Poconos, we are fortunate that our varied landscape provides a slew of fascinating habitats to explore. From mossy forests to verdant meadows to sparkling streams to rocky summits, you can discover a new type of habitat every day of the week! What's more, if you take the time to dive a little deeper, you'll find that the Poconos is home to a multitude of rare and unique ecosystems situated within the larger context of our diverse Poconos habitats. These special ecosystems may harbor unusual and sometimes peculiar plant life and geological features, but more importantly, they provide invaluable ecological benefits to the environment and the living communities they support.

Perhaps the most impressive and impactful phenomenon that's occurred on the Poconos landscape has been glaciation – the formation and movement of glaciers over the surface of the earth. Glaciers shape the landscape through the processes of erosion, weathering, transportation and deposition, which creates distinct landforms. One of the most interesting habitats created by glaciers are ***glacial bogs***.

Glacial bogs are unique habitats that are formed when glaciers melt and leave behind sediment, peat moss, and other organic materials that accumulate in wet depressions. These special wetlands, millennia in the making, are characterized by their low nutrient content, acidic water, and unique wildlife.

Glacial bogs are home to a wide range of plants and mosses that are adapted to thrive in constantly wet conditions. Sphagnum moss, sedges, lichens, blueberry, cranberry, and some of the popular carnivorous plants like pitcher plant and sundew are common in our local glacial bogs. These novel plants grow in nutrient-poor habitats because over time they have adapted to absorb nutrients from captured animal bodies rather than absorbing nutrients from the soil. These captured animals tend to be insects, but on rare occasion a foolhardy salamander has been discovered inside the leaf of a pitcher plant.

Amazingly, only 3% of the Earth's surface is covered in peatlands, but they store twice the amount of carbon than all the world's forests. What makes bogs and peatlands so effective at sequestering carbon is because they accumulate more biomass than they are able to decompose. The water that covers the surface of a glacial bog limits the ecosystem's available oxygen, which is typically needed for decomposition to occur. Partially decomposed plant matter – the peat – piles up in thick layers over thousands of years, instead of completely decaying and releasing its carbon into the atmosphere. As such, those peat layers can store and preserve some fascinating historical artifacts and remains. Just look up the term "bog bodies" and you'll get an idea.

While not strictly a fossil fuel, the peat found in bogs is considered a *slowly* renewable energy resource, and over time will eventually become coal. Peat is highly flammable and has been extracted and used for centuries as a fuel and heat source. Peat has also been used to produce small amounts of electricity in countries with plenty of access to bogs. Unfortunately, many of the world's peatlands have been extensively damaged due to extraction for fuel and as a gardening medium, draining for agriculture, burning, and even thawing and drying out due to climate change. And when that happens, peat releases greenhouse gases into the atmosphere on a scale that is comparable to fossil fuels.

Glacial bogs are also worthy of protection because they perform other important ecological functions like water filtration and flood control. Bogs improve water quality and cleanliness by removing toxins

and heavy metals, all while absorbing large amounts of runoff and rainfall just like a sponge. Historically bogs have buffered and protected some of our local areas from terrible flood damage since they can soak up massive amounts of rain and snowmelt and allow it to dissipate slowly and safely.

Finally, peatlands like glacial bogs are biodiversity hot spots. In addition to all the interesting plants, bogs support turtles, frogs, insects, and insect-eating birds, many of which can only live or breed in these special habitats. They make fine places for waterfowl, wading birds, and water-loving mammals to raise their families, and also act as vital stopover sites, or rest stops, for migrating birds. Therefore, we must appreciate that bogs have great economic value as they provide recreational opportunities for hikers, birdwatchers and photographers. Understanding the importance of glacial bogs is essential to preserving these fragile ecosystems and the biodiversity they support.