

Wetlands of the Land Between Part 1: Lets talk about peat, bogs, fens and turtles!

"Learning about wetlands is lots of fen, no need to feel bogged down!"

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What is a wetland? As its name suggests, it is land that is wet. Water covers or saturates the soil for at least part of the year, if not year round. Depending on the depth of water covering the soil, and if the wet area is connected to ground water or a water body nearby, it will develop into a certain type of wetland. Here in the Land Between we have four general types of wetland: bogs, fens, swamps and marshes. This week we will look at the peat forming wetlands, bogs and fens.

Bogs

A bog, the oldest type of wetland, forms slowly over thousands of years as waterlogged, low oxygen soil prevents complete decomposition of plant material and 'peat', a dark spongy material is formed. Eventually, metres of peat build up and separate the surface soil from ground water below.

Being separated from ground water means that bogs' only incoming source of water is precipitation. Because rain water is naturally acidic, bogs' surface water and soil end up being acidic as well. Bog soil is also low in nutrients because ground water can't bring in nutrients from the mineral rich bedrock below, and surface waters from neighbouring nutrient rich water bodies do not reach bogs either. These harsh conditions make it hard for many plant species to survive in a bog.



A block of peat. Photo credit: David Stanley Flickr.



A bog in Algonquin Park. Photo credit: Mac Armstrong Flickr.

Your first clue that a wetland is a bog is a thick spongy carpet of moss. Often, the ground will be uneven because mounds can form in the moss mat called “hummocks”. Sphagnum moss species, the dominant mosses in bogs, make bog soils even more acidic because of the charged particles they exchange with the soil.



A bog with Cottongrass and a small Tamarack.



Other plants you might find in a bog are low shrubs, sedges like Cottongrass, carnivorous plants like Pitcher Plants, Black Spruce, and possibly a few Tamarack along the edges. Any shallow standing surface water is reddish brown, and will be in the centre of the bog. You might notice that trees are small, or that there are

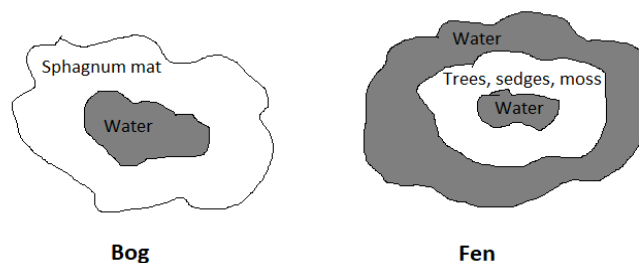
dead trees in a bog. This is because trees struggle to survive bog conditions, even species like Black Spruce which are adapted for wet, acidic, low nutrient soils.

Fens

Fens also form on accumulated layers of peat, and can have thick moss carpet covered portions. However, they differ from bogs because some ground water is able to pass through fen soil bringing nutrients along with it. With more nutrients in their soils, fens can support a greater variety of plant species than bogs can. If standing water is present in the centre of a fen, it will be surrounded by ring of 'land' (ie. with mosses sedges, trees), that is then surrounded by another ring of standing water and sedges.

In most of Ontario, fens can be distinguished easily from bogs because they have more sedges which are grass-like plants that usually have triangular stems. However, in the Land Between (TLB), fens more closely resemble bogs because they often have less sedge cover and more moss cover.

What you can look for in TLB to differentiate a fen from a bog, is the ratio of Tamarack and Black Spruce and where they are located in the wetland. Fens have more, taller Tamaracks that occur throughout the wetland and if they have Black Spruce, they will be along the outer edges. Bogs on the other hand tend to have Black Spruce throughout and if Tamarack are present there are less of them, they are smaller and usually along the outer edges. A final clue is the outer ring of water; this will only happen in a fen.



Schematic showing where standing water pools in bogs and fens.

Turtles in bogs and fens

Both Blanding's Turtles and Spotted Turtles use bogs and fens as habitat. Blanding's Turtles can be found in most wetland types and are able to travel large distances between wetlands on land. They use fens and bogs as foraging sites in the summer and as hibernation sites in the winter months.

Spotted Turtles have smaller home ranges compared to Blanding's Turtles, and often use a few different wetlands that are spaced close together. Their home range usually contains a bog or fen because they like to forage, spend summer dormant months, and hibernate in bogs and fens.

Peatlands as carbon sinks

Bogs and fens are natural carbon sinks, meaning they take carbon from the environment (ie. from plant material) and store it away instead of recycling it back into the carbon cycle. It is stored in the form of peat. As long as bogs and fens are left undisturbed they can continue to perform this important function. However, if fens and bogs are disturbed (ex. by building roads) or converted to different land types (ex. agriculture), the carbon they hold in their dense layers of peat will be released into the atmosphere as methane. As we work towards slowing and reducing global warming by reducing fossil fuel emissions, it is important that we protect peat forming wetlands like bogs and fens.



Spotted Turtle in vegetation.
Photo credit aeicole2010 Flickr.



Blanding's Turtle on a log. Photo credit Matt MacGillvray Flickr.

References and additional resources



Turtle Guardians

Ontario Wetland evaluation System, Southern Manual

<https://dr6j45jk9xcmk.cloudfront.net/documents/2685/stdprod-103924.pdf>

Wetland Conservation in Ontario

https://www.ossqa.com/multimedia/2016-03-15-115020-49198/wetland_conservation_in_ontario.pdf

Akumu, C.E. and McLaughlin, J.W., 2013. Regional variation in peatland carbon stock assessments, northern Ontario, Canada. *Geoderma*, 209, pp.161-167.

Photo links

Peat – David Stanley Flickr <https://www.flickr.com/photos/davidstanleytravel/>

Bog in Algonquin park – Mac Armstrong flickr <https://www.flickr.com/photos/reiver/>

Spotted Turtle aecole2010 flickr <https://www.flickr.com/photos/aecole/>

Blandings turtle Matt MacGillvray flickr <https://www.flickr.com/photos/qmnonic/>