



North American Beaver

Castor canadensis

A tall quaking aspen tree crashes into a forested brook deep in the north woods. The beaver backs away to admire its handy work for a moment, then gets to gnawing on the next aspen. In a few days the ecosystem is transformed from brook to pond, and soon the Kingfisher's rattling call echoes from the shoreline. Dozens more species of plants, mammals, birds, and insects will take advantage of this new, highly valuable habitat created by a beaver's incisors and ingenuity over the coming decades.

What is it?

Second only to humans in their profound ability to alter and manipulate their environment, American beavers are the largest member of the rodent family in North America. Growing up to 4 ft and 60 pounds, they have webbed back feet, thick, waterproof fur, and a specialized respiratory systems that allows them to remain under water as long as 20 minutes. Equipped with a set of constantly growing, very sharp incisors, they can cut down trees both large and small in mere minutes to create lodges, dams, and supply a year-round food source to their family groups.

Why is it important?

Beavers are considered a "keystone" species, creating natural disturbances in wetlands and playing a crucial role in promoting biodiversity. Many other species rely either partly or entirely on beaver ponds for their survival, some of which are threatened or endangered. Due to loss of habitat and over-trapping for their valuable pelts, beavers were largely absent from much of the northeast as early as the mid-1700's and didn't start to reestablish until the early 1900's. They have made a comeback in recent decades as forests have returned to the region and trapping pressures have mostly abated.

How does NETN monitor it?

Though not implicitly monitored by the network, beaver activity has a direct impact on NETN's Freshwater Wetlands monitoring program in Acadia. Though other factors may be involved, anecdotal evidence appears to point towards an

Busy as a beaver.

Working in pairs, beavers can erect a 2 ft. by 10 ft. dam in as little as 2 nights.

increasing population of beavers in the park. Three out of the 10 NETN sentinel wetland monitoring sites have since been occupied by beaver after they were first sampled by staff in 2011. Their renewed presence has dramatically altered where, when, and how much water is in these wetlands. Because of the dams they create, water-level spikes aren't as pronounced after heavy rain events and draw-downs aren't as low during prolonged dry periods.

How is it doing?

Since their reintroduction in 1921 to Maine's Mount Desert Island (MDI), beaver populations have fluctuated in Acadia. As the animals increased in numbers, they moved into areas that were not ideal by their standards (sites where dams could only create small ponds with low access to their preferred tree species). By the population peak in 1979, more than half of the sites occupied by beaver were of poor habitat, and most of those sites have since been abandoned and remain vacant to this day. Even though some evidence points towards a slight increase of beavers on MDI, it is likely that without a disturbance of some kind that would increase the amount of beaver-preferred tree species, much growth beyond the



Steve Herseyva photo.



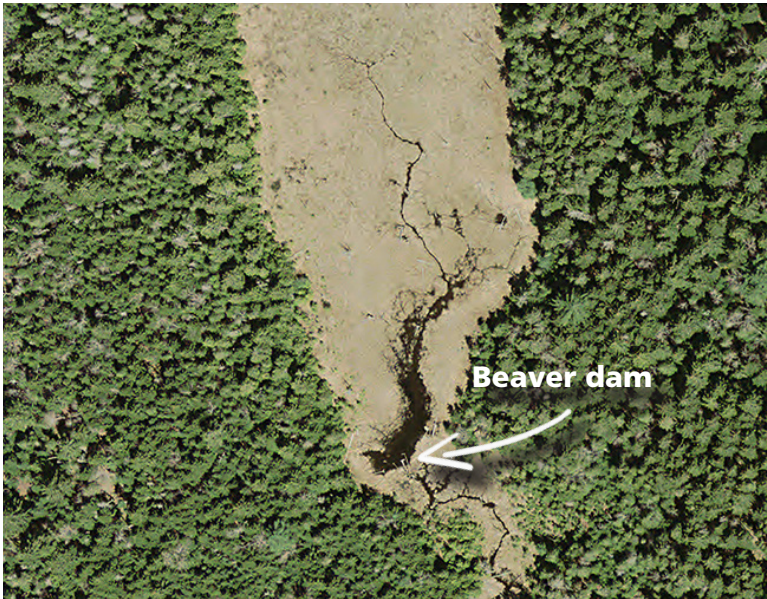
Beaver meadow in New Hampshire. After beavers abandon their ponds and lodges, the un-maintained dams eventually give way creating what are known as "beaver meadows" which add to the diverse mosaic of habitats of northern forest ecosystems. Many hundreds of other species utilize this unique habitat for years or even decades afterwards. When beavers preferred tree species have a chance to re-establish some years later, they will often move in again, repairing old dams and lodges and beginning the cycle anew. Ed Sharron photo.

Little Hunter's Brook, Acadia National Park

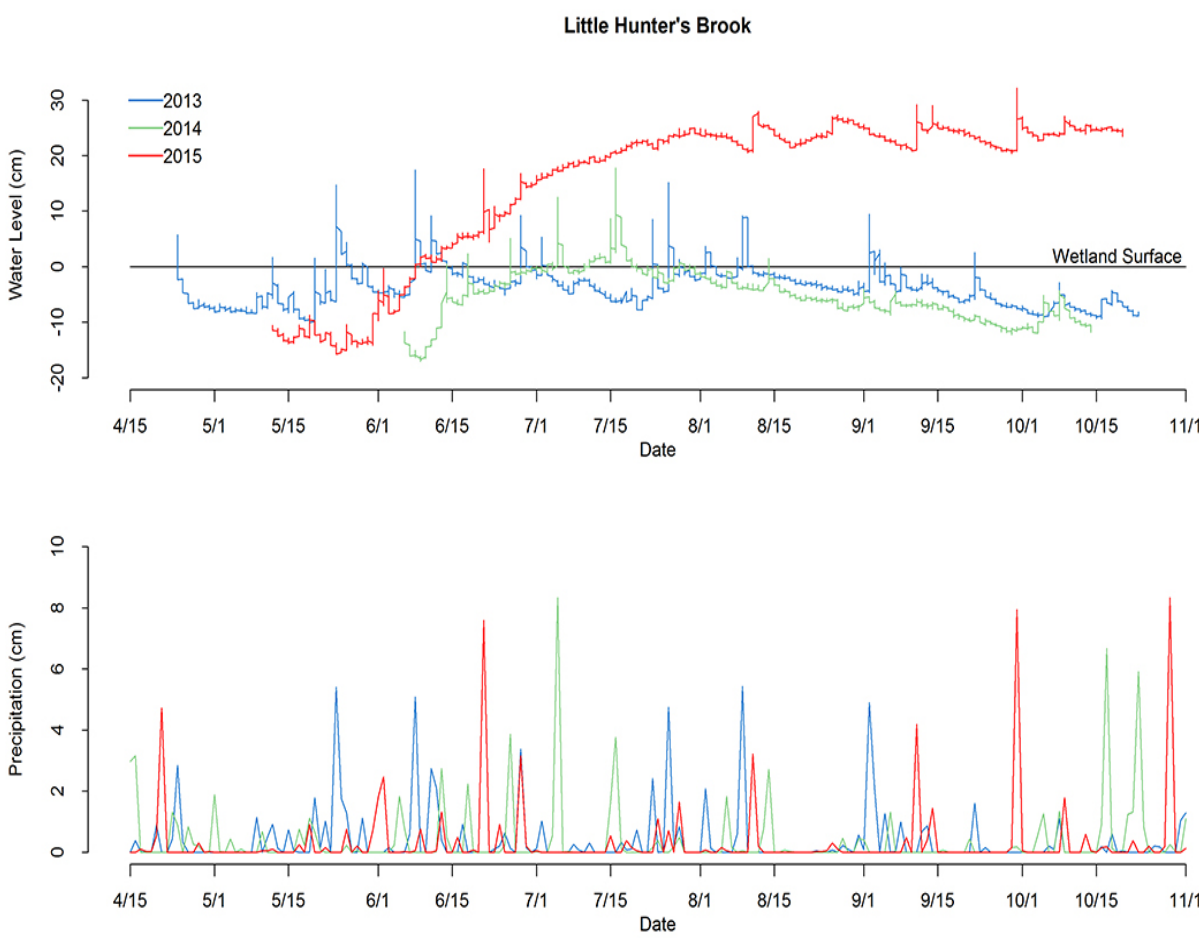
2008 - pre-recent beaver activity



2015 - after recent beaver activity



Beavers often go through a cycle of utilization and abandonment of dam/lodge sites. Little Hunter's Brook in Acadia appears to have been utilized by beavers in the past, and then abandoned when preferred tree species (mostly aspens and poplars) were exhausted within easy reach of the safety of their ponds. When freshwater wetland monitoring began at this site in 2011, no sign of recent beaver activity was present. In 2015 beavers moved back in expanding wetland habitat and completely altering the hydrology of the site. The graphs below clearly show that water level steadily increased over the summer of 2015, very different from the growing seasons of 2013 and 2014. Much like other recent years, 2015 was a dry growing season overall and all other wetlands declined in water levels. The Little Hunter's Brook monitoring site was the only one that increased over the course of the season.



current beaver population is unlikely, and these marginal sites may return to a shrub-dominated or forested state. Prior research in the park has documented a pattern of natural succession in wetland plants caused by beaver activity. Wetlands actively or recently occupied by beaver are dominated by open water and emergent vegetation (plants that are rooted in the pond bottom, but whose leaves and stems extend out of the water). Without beavers, wetlands tend to move towards shrub-dominated and forested wetlands.

For more information

See NETN's Freshwater Wetland monitoring page for more information including briefs and the full protocol.