

## PART 1

# Wildlife Management Areas: Making the Connection

Vermont Fish & Wildlife Department with Paul Hamelin, Certified Wildlife Biologist



*A repaired wetland in a former hayfield along the Barton River. 2014.*

## Conservation in Action

Fifteen years ago, Paul Hamelin, a certified wildlife biologist with the Vermont Fish & Wildlife Department (VTFWD), took part in a Federal wetland restoration project completed on a 50-acre parcel of private land in the Barton River floodplain. The hayfield on the parcel had been created by draining a wetland from a large, shallow bowl on the property into the nearby Barton River. As a remedy, the project team installed a ditch plug in the center of the bowl to successfully restore about 14 acres of wetland.

Upon completion of the project, the landowner unexpectedly chose to sell the parcel to VTFWD. The parcel was located adjacent to the South Bay Wildlife Management Area (WMA), which protects the confluence of the Barton River with the South Bay of Lake Memphremagog. The land became a natural addition to the South Bay WMA, extending floodplain protections around the river.

As a result of the project, Hamelin began to wonder - *What other “hayfields” may have been wetlands at one time along the Barton River, and are any of them close to WMAs?* Hamelin and other VTFWD staff became temporary “eco-detectives,” looking for clues of former natural habitats that once connected the river to a resilient network of wetlands and floodplain forests.

The sleuthing paid off. Hamelin found evidence of an extensive network of ditches in hayfields draining many former river oxbows and other wetlands in the Barton River floodplain between South Bay WMA on Lake Memphremagog and the Willoughby Falls WMA about 2 miles south. The ditches had decreased the size of wetlands in the area, reduced the duration of seasonal floodwater retention, and converted some areas to wet meadows for hay production. Lack of riparian and wetland buffers, short hay rotations, and fertilizer inputs further impacted the floodplain, severely limiting ecological functions that normally work to keep the Barton river clean and healthy.

Hamelin now knew that widespread opportunities existed to restore floodplain and wetland functions in the area, but only if landowners were willing to collaborate on a large scale project.

## Linking Lands, Restoring Functions

VTFWD drafted a concept proposal to link the South Bay and Willoughby Falls WMAs via strategic wetland acquisition and restoration wherever it was feasible. After a slow start and some persistence on the part of VTFWD, the project took flight, gaining critical momentum by 2008. Since then, five parcels totaling 143 acres within the floodplain have been purchased, now creating a corridor of protected lands linking the South Bay and Willoughby Falls WMAs.

Newly protected lands were transformed into their original states through a savvy combination of State and Federal funds. Landowners could use Federal funds to restore degraded wetlands with ditch plugs, channel restoration, and depressions, promoting a natural flow regime to the Barton River and reducing sediment and nutrient transport to Lake Memphremagog. At this point, the property could be acquired by VTFWD, and staff would implement buffer plantings of trees and shrubs to further restore functionality of the parcel using other funding sources.

Once again, these floodplain wetlands are now providing prime breeding and migration habitat for waterfowl, American woodcock, marsh birds, wetland furbearers, reptiles, amphibians, and a diversity of migratory songbirds and other wildlife.

**WMAs are State protected lands**  
*largely preserved for the protection of wildlife habitat and wildlife-based recreation. Often lining rivers and water bodies, WMAs also provide great opportunities to protect water quality and restore ecological functions. For example, wetlands restored and managed on WMAs provide functions like groundwater recharge, sediment and nutrient retention, flood abatement, fish spawning habitat, and habitat for rare plant and animal communities.*

## Rebuilding Floodplain Forests

In 2009, VTFWD initiated an annual effort to establish tree buffers along sections of the Barton River during the short planting period each spring. The effort expanded substantially in 2014 when the Vermont office of The Nature Conservancy (TNC) contacted VTFWD seeking sites to initiate test plots for a tree nursery to be used in a long-term study of potentially disease resistant American elms.

As a result of the partnership, 928 potentially disease-resistant elms and 6,440 other trees and shrubs have been planted on the two WMAs to date. This work will continue, re-establishing floodplain forest on these former agricultural lands. Establishment of trees is surprisingly challenging due to competition from reed canary grass (which grows over 5 feet tall!), damage from voles and beavers, and the impacts ice, logs, and other debris in floodwaters which flatten the saplings.

The elm planting partnership led to the development of an additional experiment. Staff observed robust natural recruitment of silver maple seedlings in a former cornfield at Johnson Farm WMA in Lemington, the site of another TNC/VTFWD elm trial. The cornfield seedlings were extremely dense and quickly established a young forest stand in only about 5 years.

Biologists postulate that seedlings might naturally colonize the hayfields along the Barton River as well, if the dense reed canary grass is suppressed and the soil is tilled like a cornfield. In consultation with TNC and other State and Federal partners, VTFWD Fisheries Biologist Pete Emerson designed a series of test plots in Willoughby Falls WMA former hayfields. Treatments will be implemented this summer and seedling recruitment monitored for at least 2 years. If successful, this technique will be much more efficient and cost effective than planting individual saplings every spring, expediting the restoration of extensive areas of floodplain forest on ANR lands statewide.

## Treasure Takes Time

Collectively, these efforts over the past 15 years including about 200 acres of WMA lands and 3 miles of riverbanks comprise the initial steps in the restoration of Barton River floodplain forests and wetlands. The project—aiming towards the full restoration of the floodplain—will take decades to accomplish. “We’re in it for the long haul,” says Hamelin. “Slowly, incrementally, the wetland functions are returning.”

This is only one example of the many efforts implemented on WMAs to improve the integrity of Vermont’s waters. Similar projects have been implemented and continue on WMAs throughout the state. But the Barton River floodplain restoration project is a true example perseverance and the landscape-scale outcomes that can be achieved with a systems thinking approach and strong partnerships.

### South Bay WMA to Willoughby Falls WMA via the Barton River (2016)



ABOVE: Location of the WMAs in statewide context.

RIGHT: Map of South Bay Wildlife Management Area (WMA) from [WMA Locator Tool](#). The northern part of the WMA captures a southern section of Lake Memphramagog and the Barton River floodplain flowing into the lake system. Willoughby Falls WMA is south 2 miles.

