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Farmington River floodplain forest habitat

The Nature Conservancy conducted a field study of floodplain forests in the Connecticut River basin in 2008 & 2009 that included a total of 90 floodplain forest sites throughout the Connecticut River watershed, of which 8 sites were on the Farmington River and 1 site on Salmon Brook, a tributary of the Farmington. The purpose of this study was to quantify the relationships between different types of floodplain vegetation and the physical environment, particularly flooding. Knowing these relationships allows us to identify how operations at large dams could be modified for greater benefit to floodplain forests as well as prioritizing floodplains within the watershed in terms of their conservation value.

At each field site, we measured the elevation profile along two or more transects that run perpendicular to the river across the channel and the adjacent floodplains. By entering these elevation profiles into a hydrologic model we can simulate under which flow rates different floodplain surfaces flood. We obtained the flow history for these sites from nearby USGS stream gages. We then compare the flood regime on different floodplain surfaces to the vegetation that we recorded there. Thus we were able to obtain accurate descriptions of the physical habitat requirements of floodplain plant species as well as exploring where those habitats still occur within the Connecticut River watershed.

The TNC study discovered that specialist floodplain plants dominate on those parts of the floodplain that are inundated at least once every 2 years, while higher terraces are dominated by upland trees or a mixture of upland and floodplain species. Floodplain species can withstand prolonged flooding, while upland species cannot. The upland tree species are more competitive than the floodplain tree species and are able to displace them in the absence of flooding. Consequently, a reduction in the floodplain area that is inundated at least once every 2 years on average results in a reduction in floodplain forest habitat.

In addition to determining the area of floodplain that gets inundated biannually, peak flows also affect channel mobility. Channel mobilizing flows maintain aquatic habitats in the channel as well contributing disproportionately to the sediment movements that shape topographically varied floodplain surfaces, variation that underlies floodplain habitat diversity. For example, oxbow lakes are a floodplain feature of great value to wildlife that would not exist without active channel migration. Furthermore the floodplain tree species that dominate northern rivers like the Farmington require a mineral soil seedbed for germination that is provided by fresh sediments deposited on growing bars.

With this knowledge, we were able to identify where within the Connecticut River watershed there is the best remaining floodplain forest habitat in terms of these essential physical processes. These priority floodplains are special places not just in terms of their ecological significance but also in terms of their natural beauty. The towering silver maples and cottonwoods that grow on floodplains are some of the largest trees in New England. The exceptionally high productivity of Connecticut River floodplain forests also attracts an abundance of wildlife from great blue herons and belted kingfishers to waterfowl and migratory songbirds.

The prioritization of Connecticut River basin floodplains for conservation action identified 2 important floodplain areas on the Farmington River. The first of these priority



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floodplains is the confluence of the Farmington with the Connecticut River in Windsor. At the confluence the rising waters of the Connecticut River increase flooding on the Farmington River floodplains as far upstream as the I-91 Bridge. This dynamic flood regime in combination with higher than usual sediment movements at the confluence make this site of exceptional value as floodplain forest habitat. The large island at the confluence is particularly noteworthy, having received attention for ecological study as far back as 1916 (Nichols, 1916). Thanks to the wise stewardship of Loomis Chaffee School, the floodplain forest on the island has not been disturbed in a century and now displays some magnificent silver maples and eastern cottonwood trees that are up to 3 feet in diameter.

The second priority floodplain area for conservation action on the Farmington River is the mainstem of the Farmington River in Simsbury. This section of the Farmington River is distinguished by a meandering channel with a multitude of oxbows, providing habitat for such regionally rare species as the northern leopard frog. Few floodplain forests remain in New England and on the Connecticut River in particular; so few that floodplain forests are arguably the rarest forest type in the region. Conservation of this rare floodplain forest remnant in Simsbury should combine protection with advocating for restoring greater peak flows to the Farmington River, a river of great scenic beauty.

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