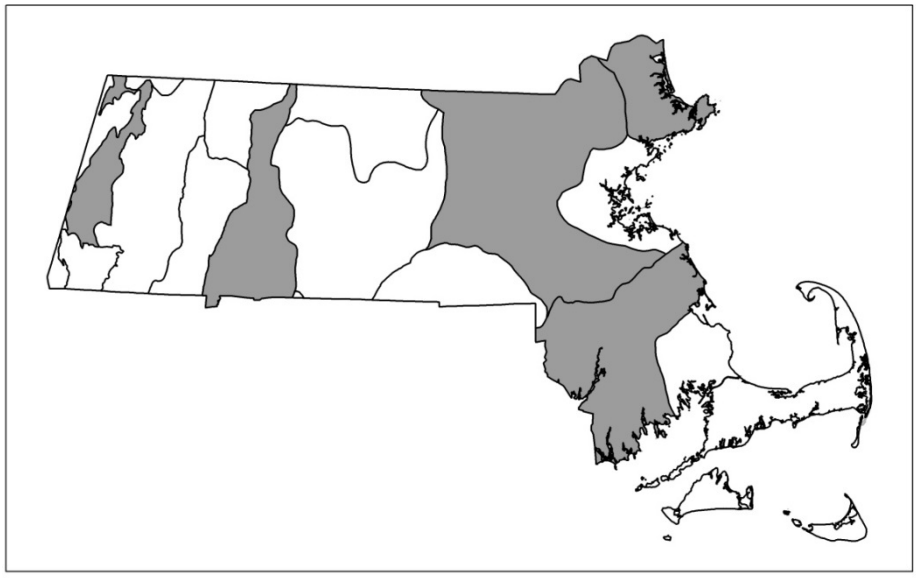
Small-river Floodplain Forest

Community Code: CP1A2B3000

State Rank: S2



Concept: Silver maple/green ash-dominated forests occurring on alluvial soils of small rivers and streams.

Environmental Setting: Small-river Floodplain Forests occur on third-order or smaller tributaries of the Connecticut, Housatonic, and Nashua Rivers, on small rivers of eastern Massachusetts where banks are low and overbank flooding occurs such as the Ipswich, Assabet, Concord, Shawsheen, and Three Mile Rivers, and on edges of riverine islands of the Merrimack River. Annual flooding occurs, but the water volume and degree of scour are much less than in Major-river Floodplain Forests. Soils are hydric silt loams and fine sandy loams with soil mottling within the top 60 cm (2 ft.) and sometimes with a surface organic layer. Patches of the Small-river Floodplain Forest community type also occur in poorly-drained depressions within the level floodplain of other types of floodplain forests.

Vegetation Description: Small-river Floodplain Forests have been called a silver maple-green ash-false nettle-sensitive fern vegetation association. Silver maple (*Acer saccharinum*) is almost always dominant in the overstory, often with green ash (*Fraxinus pennsylvanica*) in the canopy or subcanopy. American or slippery elm (*Ulmus americana* and *U. rubra*), swamp white oak (*Quercus bicolor*) (in wetter areas), and red maple (*Acer rubrum*) often occur in low numbers. Pin oak (*Quercus palustris*) is a common canopy associate in the Connecticut River basin, and river birch (*Betula nigra*) typical in the Merrimack River basin. The shrub layer consists mainly of silky dogwood (*Swida amomum*) and buttonbush (*Cephalanthus occidentalis*). There is greater herbaceous plant diversity in Small-river Floodplain Forests than in Major-river and Transitional types. Sensitive fern (*Onoclea sensibilis*) and false

nettle (*Boehmeria cylindrica*) are most common, and associates include the moisture-loving plants water hemlock (*Cicuta maculata*), swamp candles (*Lysimachia terrestris*), and water parsnip (*Sium suave*). The non-native plant species moneywort (*Lysimachia nummularia*), forget-me-not (*Myosotis scorpioides*), and glossy buckthorn (*Frangula alnus*) are often prevalent in small disturbed areas. Other invasive species regularly include bush honeysuckles (*Lonicera morrowii*), Japanese barberry (*Berberis thunbergii*), and privet (*Ligustrum vulgare*).

Differentiating Occurrences: Floodplain forest communities occur within the zone of active flooding of rivers and streams on mineral soils that receive annual silt deposition. They differ in the size of river on which they are found and in the severity of flooding. Small-river, Transitional, and Major-river Floodplain Forests can be viewed as points on a continuum from least severely scoured and poorly drained (small-river type) to most severely scoured and well-drained (major-river type). Major-river Floodplain Forests occur along mainstem sections of large rivers (the Connecticut, Housatonic, and Deerfield Rivers in Massachusetts). Soils are predominantly sandy loams without soil mottles and without a surface organic layer. Flooding at these sites is usually severe. Transitional Floodplain Forests occur on third-order or smaller tributaries of the Connecticut River, on portions of the Housatonic River, and in depressions within Major-river Floodplain Forests of the Connecticut and Deerfield Rivers. Soils are intermediate in severity of flooding, soil texture, and drainage between Major-river and Small-river Floodplain Forests. Soils are either silt loams or very fine sandy loams, and soil mottling is generally present within 60 cm (2 ft.) of soil surface. A surface organic layer is typically absent. Small-river Floodplain Forests occur on third-order or smaller tributaries of the Connecticut and Nashua Rivers, on small rivers of eastern Massachusetts where banks are low and overbank flooding occurs (Ipswich, Assabet, Concord, Shawsheen, and Three Mile), and on edges of riverine islands of the Merrimack River. Annual flooding occurs, but the water volume and degree of scour are much less than in Major-river Floodplain Forests. Soils are hydric silt loams and fine sandy loams with soil mottling within the top 60 cm (2 ft.) and sometimes with a surface organic layer. Small-river Floodplain Forests, like all annually flooded forests, are dominated by silver maple, but with more other species mixed in than the other types. However, cottonwood (*Populus deltoides*) is typically absent in the canopy of the Small-river type. Small-river Floodplain Forests have a more substantial shrub layer than either Major-river and Transitional types, but less than Red Maple Alluvial Swamps. There is greater herbaceous plant diversity in Small-river Floodplain Forests than in Major-river and Transitional types, but again, the Alluvial Red Maple Swamps have a greater diversity. Occurrences of High-terrace Floodplain Forests tend to be relatively small narrow forests on high alluvial terraces that flood only occasionally (not annually) and for a shorter duration than other types of floodplain forests. They are sometimes seen as a hybrid between floodplain and upland forests, and include upland species lacking in other types of floodplain forest. They have more litter accumulated than other floodplain forests. Alluvial Red Maple Swamps along low-gradient rivers flood annually and are slow to drain. Silver maple is often a codominant with red maple. They have dense shrub and diverse herbaceous layers.

Alluvial Hardwood Flats are along small streams that have multiple short flooding events throughout the year after storms. Black cherry and white pine are usually abundant in the canopy with red maple, but not silver maple.

Associated Fauna: Small-river Floodplain Forests often contain meander scars or backwater sloughs that function as vernal pools and provide important amphibian breeding habitat. Becau7se they are small communities, they are part of the habitat of wide-ranging riverine and upland animals, providing sheltered, riverside corridors for deer and migratory songbirds. Floodplain forests are insect-rich habitats that attract warblers, thrushes and other songbirds. Yellow-throated and Warbling Vireos nest in the canopies of riverside trees. In spring floods, Wood Ducks and Hooded Mergansers like the shady edges of floodplain forests and the interior meander scar pools. Eastern comma butterflies feed on elm, nettles and hops, and the shady riverbanks are patrolled by dragonflies. Changes in water quality and quantity alter herbaceous, and eventually tree, species, changing habitat for birds and browsers, such as deer and rabbits.

Public Access: Bailey Conservation Area (Essex County Greenbelt Association), North Andover; Great Meadows National Wildlife Refuge, Concord; Oxbow National Wildlife Refuge, Ayer; Arcadia Wildlife Sanctuary (Massachusetts Audubon Society), Northampton; Hop Brook WMA, Lee.

Threats: The non-native plant species, moneywort (*Lysimachia nummularia*), forget-me-not (*Myosotis scorpioides*), and glossy buckthorn (*Frangula alnus*), are most prevalent in Small-river and Transitional Floodplain Forest types, especially in disturbed areas. Other invasive species regularly include bush honeysuckles (*Lonicera morrowii*), Japanese barberry (*Berberis thunbergii*), and privet (*Ligustrum vulgare*).

Management Needs: Removal of non-native plants is needed, especially in areas where they are competing with state-protected rare species.

USNVC/NatureServe: Similar to *Quercus palustris - Acer rubrum* Temporarily Flooded Forest Alliance -- *Quercus palustris-Acer rubrum/Carex grayi-Geum canadense* Forest [CEGL006185] and to *Acer saccharinum* Temporarily Flooded Forest Alliance -- *Acer saccharinum/Onoclea sensibilis - Boehmeria cylindrica* Forest (CEGL006176) (in areas with calcareous or sedimentary bedrock) and maybe CEGL006548 *Acer* (*rubrum*, *saccharinum*) - *Fraxinus pennsylvanica - Ulmus americana/Boehmeria cylindrica* Forest.