

## Vegetation Patterns Along the Mill River

Another objective of the Riparian Buffer Survey was to classify major plant communities along the mainstem of the Mill River. Riparian plant communities are key components of the natural landscape, providing a transition zone between a terrestrial and aquatic environments (Nilsson, 1994).



Visual assessment was used to determine the dominant plants and distinguish plant associations within a 20-200 meter corridor along the Mill River. Using this approach, ten major plant associations were observed along the mainstem of the Mill River. The plant associations that follow are listed in order, from the confluence of the Mill River and the Connecticut in Hatfield to its headwaters in Conway. They are the result of past and current land use, geology and hydrology.

1. **Silver Maple Floodplain Forest:** Silver maple dominates, with red ash (*Fraxinus pensylvanica* var. *subinterima*), cottonwood (*Populus deltoides*) as important constituents. Other canopy trees include black willow (*Salix nigra*) and Pin Oak (*Quercus palustris*). The understory is dominated by Ostrich Fern (*Matteucia struthiopteris*) and Sensitive Fern (*Onoclea sensibilis*), with inclusions of Stinging nettle (*Laportea canadensis*) and Poison Ivy (*Toxicodendron radicans*). There is virtually no shrub layer; vines (*Vitis labrusca*) are common. This community is recognized by the Massachusetts' Natural Heritage and Endangered Species Program as Exemplary. It supports at least four state-listed species. On the levees above the current floodplain, red oak (*Quercus rubra*) and sugar maple (*Acer saccharum*) frequently occur.

It extends from the confluence of the Mill River and the Connecticut to Elm Street, Hatfield.

2. **Silver Maple Dominated, with Red Oak, Sugar Maple and occasional Butternut (*Juglans cinerea*) on adjacent levees.** This plant association occurs from Elm Street, Hatfield to the Advocate Dam. The width of the forest buffer is narrow, and is bordered by either agricultural activity or residential uses. Other common canopy species include cottonwood, pin oak and red maple. The shrub layer includes both box elder (*Acer negundo*) and Staghorn sumac (*Rhus typhina*). Herbs include Touch-Me-Not (*Impatiens capensis*) and Poison Ivy; other common herbs are Virginia creeper (*Parthenocissus virginiana*), Glassweed (*Pilea pumila*), and *Leersia virginica*.
3. **Red Maple and Silver Maple Forest, with abundant Pin Oak:** This association extends from the Advocate Dam to Chestnut Street. Other important canopy species include Hickory (*Carya* spp.), Green Ash (*Fraxinus pensylvanica*); sycamore is occasional. Silky dogwood (*Cornus amomum*) is common in the shrub layer; beaked hazelnut (*Corylus cornuta*), ironwood (*Carpinus caroliniana*) and Elm (*Ulmus rubra*) are occasional. Sensitive fern, poison ivy and touch-me-not are the most abundant herbs. Other common herbs include ostrich fern, groundnut (*Apios americana*), jumpseed (*Tovara virginiana*), interrupted fern (*Osmunda claytoniana*), Royal Fern (*Osmunda regalis*), Lady Fern (*Athyrium felix-femina*), New York fern (*Thelypteris novaeboracensis*), Virginia creeper, *Leersia virginica*, and Asiatic bittersweet (*Celastrus orbiculatus*). Above the Advocate Dam, the impounded area is an emergent marsh dominated by water willow (*Decodon verticillata*), touch-me-not, and isolated clusters of speckled alder (*Alnus rugosa*).
4. **Red Maple/Pin Oak Forest** extends from Chestnut Street to Route 91, and then again above the channelized portion of the Mill River to the hayfields north of Swamp Road, Whately. Other common canopy species include white pine (*Pinus strobus*), red oak, butternut, silver maple, and green ash. Drier upland areas, which are infrequent, support hemlock (*Tsuga canadensis*) and beech (*Fagus grandifolia*). The shrub layer is dominated by silky dogwood, with some northern arrowwood (*Viburnum recognitum*). Grape (*Vitis labrusca*, *V. riparia*) is common. The most abundant herbs are touch-me-not, sensitive fern, poison ivy, Virginia creeper, false nettle, Virgin's bower (*Clematis virginiana*) and *Elymus riparius*. *Eupatorium rugosum*, Smooth goldenrod (*Solidago canadensis*), False nettle (*Boehmeria cylindrica*), Arrow-leaved tearthumb (*Polygonum arifolium*), zigzag goldenrod (*Solidago arguta*) and jumpseed. Also present lady fern and, in muddy areas, moneywort (*Lysimachia nummularia*) and rice cut grass (*Leersia oryzoides*) are frequent. Multiflora rose (*Rosa multiflora*) is localized and abundant; Asiatic bittersweet is found frequently along the river edge. See Silky Dogwood Shrub Swamp for the plant community below Claverack Road.
5. **Black locust/cottonwood/red maple/ cottonwood/black willow** dominate the edges along the channelized section of the Mill River. Silver maple and green ash occur infrequently. The shrub layer is dominated by silky dogwood and speckled alder; elderberry (*Sambucus canadensis*) is common. Abundant herbs include touch- me-

not, reed canary grass (*Phalaris arundinacea*), and cattail (*Typha latifolia*). False nettle, Joe Pye weed (*Eupatorium maculatum*), groundnut, false nettle, *Cinna arundinacea*, arrow-leaved tearthumb, *Eupatorium rugosum* is common. Purple loosestrife (*Lythrum salicaria*), Asiatic bittersweet, and Japanese knotweed (*Reynoutria japonica*) are also occasional. Both *Vitis riparia* and *V. labrusca* are common. Back from the river's edge, the forest is dominated by red maple in the canopy and an understory mix of witch hazel, northern arrowwood, and cinnamon fern (*Osmunda cinnamomea*).

6. **Silky Dogwood Shrub Swamp**, which occurs below Claverack Road, is characterized by dense tangles of silky dogwood, along with Virgin's Bower, touch-me-not, arrow-leaved tearthumb, sensitive fern, and Joe Pye weed. Beaver activity is common here. Pin oak and red maple are common canopy trees along the upland edges.
7. **Reed canary grass/Carex Wet Meadows** characterize the hayfields along the Mill River where it parallels North Street, Whately.
8. **Black Willow/Silky Dogwood/Speckled Alder** dominate the riparian buffer that extends from Town Farm Road to .5 km north of Stockbridge Road. The canopy, which also includes red maple, is sparse. The wet meadows below are dominated by tangles of silky dogwood and speckled alder. Broad patches of reed canary grass and sensitive fern dominate the diverse herb layer. Hayfields or row crops border this narrow band of vegetation.
9. **Cattail/Beaver Marsh**: A large marsh is dominated by cattails, reed canary grass, rice cut grass (*Leersia oryzoides*) and islands of speckled alder. Smartweeds (*Polygonum* spp.) are abundant. The beaver pond lies below the cow pasture on South Mill River Road.
10. **Hemlock/Hardwood Forest**, consisting of sugar maple, yellow birch, basswood (*Tilia americana*), beech, white ash, black birch and white pine, forms the canopy in the headwaters of the Mill River along Route 116. The understory is thin, with interrupted fern, sensitive fern and scattered herbs.