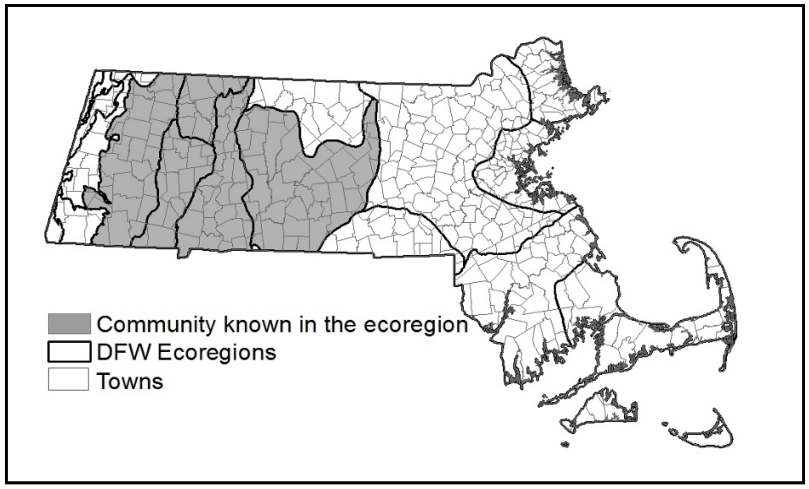
High-energy Riverbank Community

Community Code: CP2A0B2400

State Rank: S3



Concept: Sparse, open herbaceous/graminoid communities occurring on cobble and sand substrates of steep-gradient, fast-flowing rivers that experience severe flooding and ice scour.

Environmental Setting: High-Energy Riverbank communities occur within the zone of active erosion and sedimentation of steep-gradient, fast-flowing rivers and are shaped by continued annual flood events and winter ice scour. They are characterized by cobble and sand substrates and sparse, open vegetation. High-Energy Riverbank communities occur as both narrow rocky zones along riverbanks and as large areas on the exposed, upstream ends of riverine islands. They are broadly defined communities with variation in structure and dominant species occurring both among rivers and among sites within rivers. Differences in severity of scouring and flooding create a gradient of substrate types from the river's edge to the upland transition that can correlate to changes in vegetation.

Vegetation Description: Vegetation zonation within High-energy Riverbank communities corresponds to substrate type and severity of flooding. On open cobbles, a usually sparse mix of native and non-native species dominates: false dragonhead (*Physostegia virginiana*), cocklebur (*Xanthium strumarium*), beggar's ticks (*Bidens* spp.), and lady's thumb (*Persicaria maculosa*) are dominant, growing with colt's-foot (*Tussilago farfara*), wild heal-all (*Prunella vulgaris*), and scattered riverside-sedge (*Carex torta*). Along the Connecticut River, there is typically a distinct band of switchgrass (*Panicum virgatum*) with mixed grasslands of switchgrass, big and little bluestem (*Andropogon gerardii* and *Schizachyrium scoparium*), Indian grass (*Sorghastrum nutans*), and goldenrods (*Solidago* sp.) in the sandier areas with dense patches of sandbar willow (*Salix exigua* ssp. *interior*) and sandbar cherry (*Prunus pumila* var. *depressa*). Intense flooding and ice scour prevent establishment and growth of trees or tall shrubs. Short shrubs such as shadbush (*Amelanchier spp.*), silky dogwood (*Swida amomum*), willows (*Salix sericea* and *S. lucida* ssp. *lucida*), and sapling sycamores (*Platanus occidentalis*) form a vegetation zone on the sandiest sections, typically bordering floodplain forests that occupy siltier soils.

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Differentiating Occurrences:

On river islands the presence of zones of switch grass (*Panicum virgatum*), big bluestem (*Andropogon gerardii*), and Indian grass (*Sorghastrum nutans*), along with sandbar willow (*Salix exigua* ssp. *interior*) and/or sandbar cherry (*Prunus pumila* var. *depressa*) are indicative of High-energy Riverbanks. Along rivers, High-energy Riverbank Communities have, on average, sparser vegetation and more and drier, barer ground than do High-energy Rivershore Meadows or Riverside Seeps. As the percent sand and silt, and moisture increases, prairie dogbane (*Apocynum cannabinum*), riverside-sedge (*Carex torta*), Canadian burnet (*Sanguisorba canadensis*), and water horsetail (*Equisetum fluviatile*), as a group characteristic of High-energy Rivershore Meadows, become denser and dominant. Riverside Seeps occur at the base of steep riverbanks where mineral enriched groundwater seeps out of the bottom of the upland slope; they are wetter than associated High-energy Rivershore Meadows and High-energy Riverbank Communities. Muskflower (*Mimulus moschatus*), Canadian burnet (*Sanguisorba canadensis*), and golden Alexanders (*Zizia aurea*) as a group are good indicator species of Riverside Seeps. Low-energy Riverbank Communities are open herbaceous/graminoid communities occurring on sandy or silty mineral soils of river and stream banks that do not experience severe flooding or ice scour. The vegetation is often dominated by reed canary grass (*Phalaris arundinacea*), Canada blue joint grass (*Calamagrostis canadensis*), or other dense grasses, with some of the same species typical of disturbed areas as High-energy Riverbanks. Cobble bars that have a tree canopy (cover >30%) are classified separately as Cobble Bar Forests.

Habitat Values for Associated Fauna:

High-Energy Riverbank Communities are very open. They provide habitat for migrating shorebirds, including Dunlins and Spotted Sandpipers, and for other birds of open habitats such as Killdeer. Dragonfly and tiger beetle larvae live in burrows in sand between cobbles and boulders; adult tiger beetles forage on sand above the high-water mark.

Threats:

The two major threats to high-energy river communities are alteration of natural flooding regimes due to river control projects and the invasion of non-native plant species. High-energy riverbank environments are created by severe flooding and ice scour, and these natural disturbance regimes are necessary to maintain the community. Because of the community's exposure to flooding, it is susceptible to colonization by exotic plants, such as Japanese knotweed (*Fallopia japonica*), purple loosestrife (*Lythrum salicaria*), Colt's-foot (*Tussilago farfara*) and lady's thumb (*Persicaria maculosa*) that have their seeds washed in from upstream sources. Trampling from campers and boaters creates further disturbance and favors fast-growing exotic plants.

Management Needs:

Where possible, highly invasive exotic plants should be mechanically removed. Management to reduce non-native plant species throughout a drainage basin will help preserve the native plant communities of high-energy riverbanks. Natural hydrologic regimes should be maintained.

USNVC/NatureServe:

CEGL006536 *Carex torta* - *Apocynum cannabinum* - *Cyperus* spp. herbaceous vegetation (Northeastern Temperate Cobble Scour Rivershore).