FFn57

Northern Terrace Forest

Wet-mesic deciduous forests on silty or sandy alluvium on level, occasionally flooded sites along medium and large rivers in the northern half of Minnesota.

Vegetation Structure & Composition

Description is based on summary of vegetation data from 48 plots (relevés).

• Ground-layer cover is variable, ranging from sparse to continuous (5-100%), often with abundant wood nettle (Laportea canadensis) and ostrich fern (Matteuccia struthiopteris). Other typical species include erect, smooth. or Illinois carrion-flower (Smilax ecirrata, S. herbacea, or S. illinoensis), sweet-scented bedstraw (Galium triflorum), tall meadowrue (Thalictrum dasycarpum), sensitive fern (Onoclea sensibilis). Canada mavflower (Maianthemum canadense), side-flowering aster (Aster lateriflorus), rugulose or yellow violet (Viola canadensis or V. pubescens), and jack-in-the-pulpit (Arisaema triphyllum). Vining species such as Virginia creepers (Parthenocissus spp.). Canada moonseed



(Menispermum canadense), and virgin's bower *(Clematis virginiana)* are characteristic although not always present.

• **Subcanopy** and **shrub layer** are generally sparse, although patches of young trees or shrubs are often present beneath gaps in the tree canopy. Black ash, green ash, American elm, box elder, basswood, bur oak, chokecherry (*Prunus virginiana*), and nannyberry (*Viburnum lentago*) are the most common understory species.

• **Canopy** is interrupted to continuous (50–100% cover), with black ash and silver maple often abundant, mixed with basswood, green ash, bur oak, or American elm.

• Note: Most of the vegetation samples used to describe FFn57 are east of the PPA and TAP provinces in regions where silver maple and black ash are common. Silver maple is rare as a naturally occurring tree in the RRV and LAP, and black ash is limited to the eastern margins of both sections. The other tree species mentioned above are correspondingly more important in FFn57 in the RRV and LAP.

Landscape Setting & Soils

• River terraces—Common. Topography is flat. Parent material is complexly stratified silty or fine sandy alluvium. The parent material may or may not have been calcareous originally, but free carbonates are rarely present now. Biogenic carbonates such as snail shells are occasionally present. Often, old soil surfaces rich in organic matter are buried beneath newer alluvium deposited during large floods. Gray soil colors are present within 20–60in (50–150cm) of the surface and indicate permanently saturated conditions below. Flooding occurs only in very wet years or following major rains. Soil drainage is dependent on the height of the terrace above river level and ranges from well drained on higher terraces to poorly drained on lower terraces. Soil-moisture regime is moist to very moist. (Present along major rivers in the Laurentian Mixed Forest and Tallgrass Aspen Parkland provinces, in RRV, and in the Hardwood Hills in MIM)

Natural History

In the past, catastrophic disturbances were rare in FFn57. An analysis of Public Land Survey records indicates that the rotation of catastrophic windthrow was about 660 years, and there were no references to catastrophic fires. Events that result in partial loss of the tree canopy, especially flooding or light surface fires, were much more common, with an estimated rotation of about 80 years. Based on the historic composition and age structure of these forests, FFn57 had two growth stages separated by a period of transition.



• 0-55 years—Young forests recovering from severe floods or wind, consisting of mixtures of American elm, bur oak, black ash, and basswood. Willows and quaking aspen are present at low abundance.

• **55–95 years**—A transition period characterized by steady change in tree abundance. Bur oak and basswood decline, quaking aspen and willow are essentially eliminated, black ash, green ash, and American elm increase, and white spruce becomes established during this period.

• > 95 years—Mature forests dominated by American elm, black ash, and green ash mixed with some bur oak, basswood, and white spruce. (Although not present in the historic records, silver maple is frequently abundant in modern terrace forests along with black ash. It is possible that silver maple became important in Northern Terrace Forests only recently, following widespread die-off of elms because of Dutch elm disease. It is more likely, however, based on the ages of silver maples in most forests, that the historic records poorly document this community because of its restriction to extremely limited areas along narrow stream or river corridors. White spruce, which is present in the historic records [except in the far western range of the class], is not common in samples from modern forests.)

Similar Native Plant Community Classes • FFn67 Northern Floodplain Forest

FFn67 often occurs along the same rivers as FFn57, and the two communities can grade into one another. FFn67 generally is present on sites that are inundated every spring (and sometimes following heavy rain) for several days to several weeks and have regular deposition of silt and sand, while FFn57 is present on sites that flood only occasionally—such as terraces and levees—and usually for just a few days at most. Recently deposited sediment, windrowed debris, and ice scars on trees are all useful evidence for distinguishing active floodplain sites from sites where terrace forests occur.

| | | | | 1%) |
|-------|--|--|--|--|
| FFn57 | FFn67 | FFn67 Indicator Species | FFn57 | FFn67 |
| 54 | - | Tufted loosestrife (Lysimachia thyrsiflora) | - | 32 |
| 54 | - | Dotted smartweed (Polygonum punctatum) | - | 32 |
| 48 | - | Yellow loosestrife (Lysimachia terrestris) | 2 | 32 |
| 48 | - | Retrorse sedge (Carex retrorsa) | 4 | 53 |
| 42 | - | Hop umbrella sedge (Carex lupulina) | 4 | 42 |
| 50 | 5 | Small or Three-cleft bedstraw* | 6 | 53 |
| 50 | 5 | Common mint (Mentha arvensis) | 4 | 32 |
| 79 | 11 | Clearweed (Pilea spp.) | 6 | 42 |
| | 54 54 48 42 50 50 79 | 54 - 54 - 48 - 48 - 42 - 50 5 50 5 | 54 - Tufted loosestrife (Lysimachia thyrsiflora) 54 - Dotted smartweed (Polygonum punctatum) 48 - Yellow loosestrife (Lysimachia terrestris) 48 - Retrorse sedge (Carex retrorsa) 42 - Hop umbrella sedge (Carex tupulina) 50 5 Small or Three-cleft bedstraw* 50 5 Common mint (Mentha arvensis) 79 11 Clearwed (Pilea sp.) | 54 - Tutted loosestrife (Lysimachia thyrsiflora) - 54 - Dotted smartweed (Polygonum punctatum) - 48 - Yellow loosestrife (Lysimachia terrestris) 2 48 - Retrorse sedge (Carex retrorsa) 4 42 - Hop umbrella sedge (Carex hupulina) 4 50 5 Small or Three-cleft bedstraw* 6 50 5 Common mint (Mentha arvensis) 4 79 11 Clearweed (Piloa spp.) 6 |

Small or Three-cleft bedstraw (Galium tinctorium or G. trifidum)

• FFs59 Southern Terrace Forest

FFs59 also occurs on terraces, levees, and other occasionally flooded sites along medium and large rivers. FFs59 is similar to FFn57 but is restricted to the southern half of the state. The ranges of the two communities overlap in east-central and west-central Minnesota.

| FFnF7 Indicator Chaption | (fre | |
|--|-------|-------|
| FFn57 Indicator Species | FFn57 | FFs59 |
| Canada mayflower (Maianthemum canadense) | 50 | - |
| Graceful sedge (Carex gracillima) | 48 | - |
| Spotted water hemlock (Cicuta maculata) | 40 | - |
| Bladder sedge (Carex intumescens) | 48 | 2 |
| Pale bellwort (Uvularia sessilifolia) | 42 | 2 |
| Tall meadow-rue (Thalictrum dasycarpum) | 67 | 5 |
| Bur oak (C,U) | 60 | 9 |
| Sensitive fern (Onoclea sensibilis) | 63 | 9 |

| FFoFO Indicator Cassian | (free | 1%) |
|---|-------|-------------|
| FFs59 Indicator Species | FFn57 | FFs59 |
| Cleavers (Galium aparine) | - | 51 |
| Blue phlox (Phlox divaricata) | - | 37 |
| Missouri gooseberry (Ribes missouriense) | 2 | 53 |
| Aniseroot (Osmorhiza longistylis) | 2 | 37 |
| Virginia knotweed (Polygonum virginianum) | 2 | 35 |
| Hackberry (C,U) | 8 | 65 |
| Greenbrier (Smilax tamnoides) | 8 | 47 |
| Virginia waterleaf (Hydrophyllum virginianum) | 15 | 70 |

WFs57 Southern Wet Ash Swamp

WFs57 is similar in many respects to FFn57 and often occurs on terraces or riparian zones along rivers. WFs57, however, is present in groundwater seepage areas with continuously saturated, often peaty soils, while FFn57 is present on sites with seasonally high local water tables but not saturated continuously by groundwater seepage. In addition, FFn57 occurs on sandy or silty mineral soils rather than peat soils. The canopy of WFs57 is strongly dominated by black ash, while FFn57 is more likely to have a mixture of canopy species, with black ash important in many stands but mixed with other species such as basswood, green ash, and bur oak.



FLOODPLAIN FOREST/SYSTEM Northern Floristic Region

| FFn57 Indicator Species | (fre | q%) | WFs57 Indicator Species | (free | q%) |
|--|-------|-------|--|-------|-------------|
| rriisi indicator species | FFn57 | WFs57 | wrs57 indicator species | FFn57 | WFs57 |
| Prickly or Smooth wild rose* | 27 | - | Fowl manna grass (Glyceria striata) | - | 68 |
| Projecting sedge (Carex projecta) | 27 | - | Cleavers (Galium aparine) | - | 45 |
| Canada anemone (Anemone canadensis) | 25 | - | Skunk cabbage (Symplocarpus foetidus) | - | 35 |
| Spinulose shield fern (Dryopteris carthusiana) | 25 | - | Two-leaved miterwort (Mitella diphylla) | 2 | 48 |
| Silver maple (C,U) | 50 | 3 | Sugar maple (C,U) | 4 | 61 |
| Tall meadow-rue (Thalictrum dasycarpum) | 67 | 13 | Golden or False golden ragwort*** | 2 | 29 |
| Ontario aster (Aster ontarionis) | 17 | 3 | Common marsh marigold (Caltha palustris) | 6 | 68 |
| Erect, Smooth, or Illinois carrion-flower** | 75 | 16 | Zigzag goldenrod (Solidago flexicaulis) | 4 | 39 |

"Prickly or Smooth wild rose (Rosa acicularis or R. blanda) ""Erect, Smooth, or Illinois carrion-flower (Smilax ecirrata, S. herbacea, or S. illinoensis) ""Golden or False golden ragwort (Senecio aureus or S. pseudaureus)

MHw36 Northwestern Wet-Mesic Hardwood Forest

MHw36 occurs on sites protected from fire, often including riparian corridors along which FFn57 is present. Both can have canopies with American elm, basswood, and green ash. MHw36 occurs on sites that seldom flood whereas FFn57 is present on sites that are occasionally subjected to flooding.

| FFn57 Indicator Species | | q%) | MHw36 Indicator Species | (fre | q%) |
|---|-------|-------|---|-------|-------|
| rriisi illuicator species | FFn57 | MWw36 | winwso indicator species | FFn57 | MWw36 |
| Jack-in-the-pulpit (Arisaema triphyllum) | 50 | - | Bur oak (C) | - | 83 |
| Canada moonseed (Menispermum canadense) | 50 | - | Red raspberry (Rubus idaeus) | - | 67 |
| Assiniboine sedge (Carex assiniboinensis) | 30 | - | Veiny pea (Lathyrus venosus) | - | 50 |
| Philadelphia fleabane (Erigeron philadelphicus) | 30 | - | Bracken (Pteridium aquilinum) | - | 50 |
| Virginia waterleaf (Hydrophyllum virginianum) | 30 | - | Veiny meadow-rue (Thalictrum venulosum) | - | 50 |
| Cut-leaved bugleweed (Lycopus americanus) | 30 | - 1 | Flat-topped aster (Aster umbellatus) | - | 33 |
| Wood nettle (Laportea canadensis) | 70 | 17 | Juneberries (Amelanchier spp.) | 10 | 100 |
| Ostrich fern (Matteuccia struthiopteris) | 70 | 17 | Spreading dogbane (Apocynum androsaemifolium) | 10 | 83 |

Native Plant Community Types in Class

• FFn57a Black Ash - Silver Maple Terrace Forest

FFn57a is the only community type recognized in this class at present. Variation within the class may become evident with collection of more vegetation data along some of the larger rivers in northern, northwestern, and west-central Minnesota.



photo by M.D. Lee, MN DNR

Morrison County, MN

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| Chrobs, Farns & Forn Allies Cassee & Seegee Cassee & Seegee Cassee & Seegee Wood netle (Lapoter candensis) 7 ************************************ | • | 38 38 | 42 | : | ər 19 | Box elder | • | Tall scouring rush (Equisetum hyemale) 1 | Tall scouring rush |
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| Grasses & Sedges Grasses & Sedges adensis) 81 ••• ruthiopteris) 79 ••• allum triflorum) 75 •• Balder sedge (Carex intumescens) 50 allum triflorum) 73 •• allum triflorum) 67 •• Badder sedge (Carex intumescens) 50 allum triflorus) 67 •• Itaeriflorus) 63 •• Itaeriflorus) 52 •• Itaeriflorus) 50 •• Itaeriflorus) 50 •• Itaeriflorus) 50 •• Indensis or V. pubescens) 50 •• So •• Noding tescue (Festuca subverticillata) 27 'henum canadense) 50 •• Finge sedge (Carex crinita) 25 'henum canadense) 50 •• Woodbine (Parthenocissus vitacea) 58 a triphyllum) 50 •• Woodbine (Parthenocissus vitacea) 58 um dicicum) 48 • Virgin's bower (Clematis virginian) 59 sillolia) 42 • Shrubs 54 | | 54 | | | herry (Prunus virginiana) | Chokecl | • | | Tall coneflower (R |
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