



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

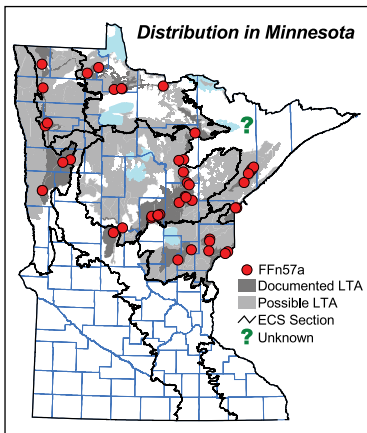
Description is based on summary of vegetation data from 48 plots (relevés).

- **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 meadow-rue (*Thalictrum dasycarpum*), sensitive fern (*Onoclea sensibilis*), Canada mayflower (*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 20–60 in (50–150 cm) 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.

FFn57 Indicator Species	(freq%)	
	FFn57	FFn67
Basswood (<i>C. U</i>)	54	-
Chokecherry (<i>Prunus virginiana</i>)	54	-
Clayton's sweet cicely (<i>Osmorhiza claytonii</i>)	48	-
Graceful sedge (<i>Carex gracillima</i>)	48	-
Pale bellwort (<i>Uvularia sessilifolia</i>)	42	-
Jack-in-the-pulpit (<i>Arisaema triphyllum</i>)	50	5
Canada mayflower (<i>Maianthemum canadense</i>)	50	5
Ostrich fern (<i>Matteuccia struthiopteris</i>)	79	11

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

FFn67 Indicator Species	(freq%)	
	FFn57	FFn67
Tufted loosestrife (<i>Lysimachia thyrsiflora</i>)	-	32
Dotted smartweed (<i>Polygonum punctatum</i>)	-	32
Yellow loosestrife (<i>Lysimachia terrestris</i>)	2	32
Retrorsed sedge (<i>Carex retrorsa</i>)	4	53
Hop umbrella sedge (<i>Carex lupulina</i>)	4	42
Small or Three-cleft bedstraw*	6	53
Common mint (<i>Mentha arvensis</i>)	4	32
Clearweed (<i>Pilea</i> spp.)	6	42

● 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.

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

FFs59 Indicator Species	(freq%)	
	FFn57	FFs59
Cleavers (<i>Galium aparine</i>)	-	51
Blue phlox (<i>Phlox divaricata</i>)	-	37
Missouri gooseberry (<i>Ribes missouriense</i>)	2	53
Aniseroot (<i>Osmorhiza longistylis</i>)	2	37
Virginia knotweed (<i>Polygonum virginianum</i>)	2	35
Hackberry (<i>C. U</i>)	8	65
Greenbrier (<i>Smilax tamnoides</i>)	8	47
Virginia waterleaf (<i>Hydrophyllum virginianum</i>)	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.



FFn57 Indicator Species	(freq%)	
	FFn57	WFS57
Prickly or Smooth wild rose*	27	-
Projecting sedge (<i>Carex projecta</i>)	27	-
Canada anemone (<i>Anemone canadensis</i>)	25	-
Spinulose shield fern (<i>Dryopteris carthusiana</i>)	25	-
Silver maple (C.U.)	50	3
Tall meadow-rue (<i>Thalictrum dasycarpum</i>)	67	13
Ontario aster (<i>Aster ontariensis</i>)	17	3
Erect, Smooth, or Illinois carlion-flower**	75	16

*Prickly or Smooth wild rose (*Rosa acicularis* or *R. blanda*) **Erect, Smooth, or Illinois carlion-flower (*Smilax eckratta*, *S. herbacea*, or *S. illinoensis*) ***Golden or False golden ragwort (*Senecio aureus* or *S. pseud aureus*)

WFS57 Indicator Species	(freq%)	
	FFn57	WFS57
Fowl manna grass (<i>Glyceria striata</i>)	-	68
Cleavers (<i>Galium aparine</i>)	-	45
Skunk cabbage (<i>Symplocarpus foetidus</i>)	-	35
Two-leaved miterwort (<i>Mitella diphylla</i>)	2	48
Sugar maple (C.U.)	4	61
Golden or False golden ragwort***	2	29
Common marsh marigold (<i>Caltha palustris</i>)	6	68
Zigzag goldenrod (<i>Solidago flexicaulis</i>)	4	39

• 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	(freq%)	
	FFn57	MWw36
Jack-in-the-pulpit (<i>Arisaema triphyllum</i>)	50	-
Canada moonseed (<i>Menispermum canadense</i>)	50	-
Assiniboine sedge (<i>Carex assiniboiensis</i>)	30	-
Philadelphia fleabane (<i>Erigeron philadelphicus</i>)	30	-
Virginia waterleaf (<i>Hydrophyllum virginianum</i>)	30	-
Cut-leaved bugleweed (<i>Lycopus americanus</i>)	30	-
Wood nettle (<i>Laportea canadensis</i>)	70	17
Ostrich fern (<i>Matteuccia struthiopteris</i>)	70	17

MHW36 Indicator Species	(freq%)	
	FFn57	MWw36
Bur oak (C)	-	83
Red raspberry (<i>Rubus idaeus</i>)	-	67
Veiny pea (<i>Lathyrus venosus</i>)	-	50
Bracken (<i>Pteridium aquilinum</i>)	-	50
Veiny meadow-rue (<i>Thalictrum venulosum</i>)	-	50
Flat-topped aster (<i>Aster umbellatus</i>)	-	33
Juneberries (<i>Amelanchier</i> spp.)	10	100
Spreading dogbane (<i>Apocynum androsaemifolium</i>)	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.



Morrison County, MN

photo by M.D. Lee, MN DNR



FFn57 Northern Terrace Forest — Species Frequency & Cover

Forbs, Ferns & Fern Allies		freq % cover	
Wood nettle (<i>Laportea canadensis</i>)	81	•••	
Ostrich fern (<i>Matteuccia struthiopteris</i>)	79	••••	
Erect, Smooth, or Illinois carrion-flower*	75	•	
Sweet-scented bedstraw (<i>Galium triflorum</i>)	73	•	
Tall meadow-rue (<i>Thalictrum dasycarpum</i>)	67	•	
Sensitive fern (<i>Osmoclea sensibilis</i>)	63	••	
Side-flowering aster (<i>Aster lateriflorus</i>)	52	•	
Rugulose or Yellow violet (<i>Viola canadensis</i> or <i>V. pubescens</i>)	50	•	
Canada mayflower (<i>Maianthemum canadense</i>)	50	•	
Jack-in-the-pulpit (<i>Amisema triphyllum</i>)	50	•	
Clayton's sweet cicely (<i>Osmorhiza claytonii</i>)	48	•	
Early meadow-rue (<i>Thalictrum dioicum</i>)	48	•	
Pale bellwort (<i>Uvularia sessilifolia</i>)	42	•	
Spotted water hemlock (<i>Cicuta maculata</i>)	40	•	
Tall cornflower (<i>Rudbeckia laciniata</i>)	35	••	
Field horsetail (<i>Equisetum arvense</i>)	35	•	
Giant goldenrod (<i>Solidago gigantea</i>)	35	•	
Hog peanut (<i>Amphicarpaea bracteata</i>)	33	•	
Common enchanters' nightshade (<i>Circaea luteana</i>)	33	•	
Lady fern (<i>Athyrium filix-femina</i>)	31	••	
Maryland black snake-root (<i>Sanicula marilandica</i>)	31	•	
Northern blue flag (<i>Iris versicolor</i>)	31	•	
Homewort (<i>Cryptotaenia canadensis</i>)	29	•••	
Dwarf raspberry (<i>Rubus pubescens</i>)	29	•	
Fringed loosestrife (<i>Lysimachia ciliata</i>)	29	•	
Nodding trillium (<i>Trillium cernuum</i>)	29	•	
Red baneberry (<i>Actaea rubra</i>)	29	•	
Starry false Solomon's seal (<i>Smilacina stellata</i>)	27	•	
Meadow horsetail (<i>Equisetum pratense</i>)	25	••	
Northern bugleweed (<i>Lycopus uniflorus</i>)	25	•	
Canada anemone (<i>Anemone canadensis</i>)	25	•	
Mad dog skulicap (<i>Scutellaria lateriflora</i>)	23	•	
Wild ginger (<i>Asarum canadense</i>)	19	••	
Tall scouting rush (<i>Equisetum hyemale</i>)	19	•	
*Erect, Smooth, or Illinois carrion-flower (<i>Smilax eckinata</i> , <i>S. herbacea</i> , or <i>S. illinoensis</i>)			
Grasses & Sedges		freq % cover	
Virginia wild rye (<i>Elymus virginicus</i>)	65	••	
Starry sedge (<i>Carex roseea</i>)	50	••	
Bladder sedge (<i>Carex intumescens</i>)	48	••	
Graceful sedge (<i>Carex gracillima</i>)	48	•	
Projecting sedge (<i>Carex projecta</i>)	27	•	
Dewey's sedge (<i>Carex deweyana</i>)	27	•	
Nodding fescue (<i>Festuca subverticillata</i>)	25	••	
Fringe sedge (<i>Carex cincta</i>)	21	•	
Woody Vines		freq % cover	
Woodbine (<i>Parthenocissus vitacea</i>)	58	•	
Canada moonseed (<i>Menispermum canadense</i>)	31	••	
Virgin's bower (<i>Clematis virginiana</i>)	29	•	
Shrubs		freq % cover	
Nannyberry (<i>Viburnum lentago</i>)	54	••	
Chokeberry (<i>Prunus virginiana</i>)	54	•	
Poison ivy (<i>Toxicodendron rydbergii</i>)	35	•	
American hazelnut (<i>Corylus americana</i>)	33	•••	
Picky ash (<i>Zanthoxylum americanum</i>)	31	•••	
Wild black currant (<i>Ribes americanum</i>)	31	••	
Highbush cranberry (<i>Viburnum trilobum</i>)	27	•	
Picky or Smooth wild rose (<i>Rosa aciculans</i> or <i>R. blanda</i>)	27	•	
Hawthorn (<i>Crataegus</i> spp.)	27	•	
Beaked hazelnut (<i>Corylus cornuta</i>)	25	••	
Winterberry (<i>Ilex verticillata</i>)	17	••	
Trees		freq % cover	
Canopy		freq % cover	
Black ash	69	•••	60
Basswood	54	•••	40
Green ash	52	•••	63
Silver maple	50	••••	23
Bur oak	38	•••	38
American elm	33	•••	54
Box elder	19	••	42
Subcanopy		freq % cover	
Black ash	69	•••	56
Basswood	54	•••	27
Green ash	52	•••	54
Silver maple	50	•••	19
Bur oak	38	•••	52
American elm	33	•••	50
Box elder	19	••	38