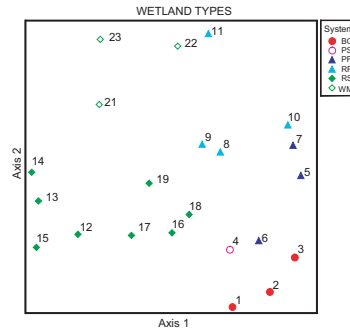


A7 Northern Sedge Poor Fen

Carex lasiocarpa - *C. oligosperma* / *Sphagnum* spp. - *Polytrichum* spp. Herbaceous vegetation

**Description**

This community is dominated by 80–100% cover of *Carex lasiocarpa* (wire-sedge). Short, stunted tamarack trees, usually under 2 m tall, are present above the herb layer at <10% cover. Dwarf-shrubs, most commonly *Chamaedaphne calyculata* (leatherleaf) and *Andromeda glaucophylla* (bog-rosemary), may be present at <40% cover and, in wetter stands, occupy only the drier hummocks. The shrubs *Kalmia polifolia* (bog laurel), *Betula glandulifera* (bog-birch), and *Vaccinium oxycoccos* (small cranberry) may also be present at low density. In addition to *Carex lasiocarpa* (wire-sedge), other common herbs include *Menyanthes trifolia* (buckbean), *Equisetum fluviatile* (water horsetail), *Drosera rotundifolia* (round-leaved sundew), and *Sarricenia purpurea* (pitcher-plant). Stands of this type occurring in water tracks tend to be more mineral rich and may also contain *Pogonia ophioglossoides*, *Carex limosa*, and *Utricularia intermedia*. Sphagnum typically forms a continuous carpet, though in wetter stands may be intermixed with brown mosses. The most abundant species are *Sphagnum megellanicum*, *S. angustifolium*, *S. subsecundum sensu lato*, and *Warnstorffii exanulata*.

The Northern Sedge Poor Fen occurs in and around water tracks of large peatlands. In the wetter, more minerotrophic phase, microtopography consists of wet hollows with scattered hummocks. In the drier phase, hummock and hollow microtopography is more well developed. The substrate is deep, fibric Sphagnum peat. The water regime is saturated.

CHARACTERISTIC SPECIES (n = 5, 8)**Shrub**

Betula glandulifera (bog-birch) V.2, *Larix laricina* (tamarack) V.7, *Picea mariana* (black spruce) V.2

Dwarf-shrub

Andromeda glaucophylla (bog-rosemary) V.15, *Chamaedaphne calyculata* (leatherleaf) V.15, *Kalmia polifolia* (bog laurel) V.7, *Ledum groenlandicum* (labrador tea) V.2, *Vaccinium oxycoccus* (small cranberry) V.7

Forb

Equisetum fluviatile (water horsetail) V.1, *Menyanthes trifoliata* (buckbean) IV.7, *Sarracenia purpurea* (pitcher-plant) V.2

Graminoid

Carex lasiocarpa (wire-sedge) V.65

RANGE*Voyageurs National Park*

This community type occurs in and around water tracks of the Rat Root River Peatland. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Poor Swamp and Poor Fen Systems.

Global

This graminoid poor fen community is found in the Great Lakes region of the United States and Canada, as well as elsewhere in central Canada, from Ontario to Manitoba, south to Iowa, and east to Illinois.

COMMENTS

Diagnostic features of the type include the continuous cover of *Carex lasiocarpa* (wire-sedge), low coverage of tamarack (<10%), and acidic shrubs. The wetter phase of this type occurs in the water tracks and often contains standing water in the hollows. The drier phase usually lacks standing water, has greater cover of tamarack, and has a more well developed scrub layer. These drier phases can grade into the Tamarack Scrub Poor Fen (A5). This type differs from the Wiregrass Sedge Shore Fen (A11), which is also dominated by *Carex lasiocarpa* (wire-sedge), by being seasonally flooded and lacking acidic peatland indicators. A11 is also absent from the Rat Root River Peatland. The A7 type is most similar to Ontario's W20, but also has some similarities to W19, when found within the wetter water tracks (Harris and others, 1996).

MAP UNITS

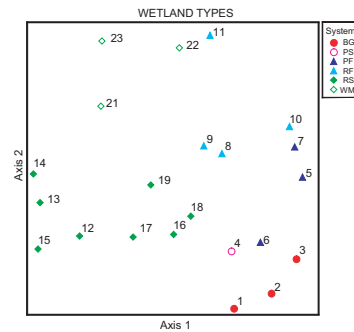
The Northern Sedge Poor Fen (SPF) map unit represents this association and the Boreal Sedge Rich Fen association (A10), which occur in close juxtaposition in the Rat Root River Peatland bog complex. (Veg Map Adjustment: See Appendix 4.)

MINNESOTA STATE TYPE 2003

Graminoid Poor Fen (Basin) (A_{Ph}91b)

A8 Bog Birch - Willow Shore Fen

Alnus incana - *Salix* spp. - *Betula pumila* / *Chamaedaphne calyculata* Shrubland



Description

This shrub fen community contains a tall shrub layer dominated by *Betula glandulifera* (bog-birch); however, *Alnus incana* (speckled alder), *Salix pyrifolia* (balsam willow), *S. pedicellaris* (bog willow), and *S. petiolaris* (meadow willow) are also commonly present, usually at lower cover. Shrubs are usually under 2 m tall and coverage ranges from 30 to 90%. The dwarf-shrub layer cover is often open and may contain *Chamaedaphne calyculata* (leatherleaf), *Ledum groenlandicum* (labrador tea), *Andromeda glaucophylla* (bog-rosemary), and *Kalmia polifolia* (bog laurel). The high density of shrub cover may create a sparse herb layer. The most abundant species are *Carex aquatilis* (water sedge), *C. lacustris* (lake-sedge), and *Smilacina trifolia* (three-leaved false Solomon's-seal), with occasional *Calamagrostis canadensis* (bluejoint) and *Potentilla palustris* (marsh cinquefoil). The moss-lichen layer is dominated by *Sphagnum magellanicum*, *S. angustifolium*, *S. centrale*, *S. girgensohnii*, and *S. fallax*. These species typically comprise 90–100% cover.

This type is most commonly found along the minerotrophic margins of confined basin peatlands, or associated with peatland lake shore complexes, where water levels fluctuate. The substrate is deep fibric, sphagnum peat. The water regime is saturated or, rarely, seasonally flooded. Hummock and hollow microtopography is well developed.

CONSERVATION RANK G?

DATABASE CODE CEGLO05227

CHARACTERISTIC SPECIES (n = 2, 21)**Shrub**

Alnus incana (speckled alder) V.7, *Betula glandulifera* (bog-birch) V.85, *Pinus strobus* (white pine) V.1, *Salix pedicellaris* (bog willow) V.4, *S. petiolaris* (meadow willow) III.7, *S. pyrifolia* (balsam willow) V.7

Dwarf-shrub

Chamaedaphne calyculata (leatherleaf) V.35

Forb

Potentilla palustris (marsh cinquefoil) V.2

Graminoid

Calamagrostis canadensis (bluejoint) V.7, *Carex aquatilis* (water sedge) III.15, *C. lacustris* (lake-sedge) V.7

RANGE*Voyageurs National Park*

This type is found primarily in the northern sections of the Park in association with peatland areas along lake margins. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Rich Fen System.

Global

This shrub shore fen is found in the northern Great Lakes region of the United States and Canada.

COMMENTS

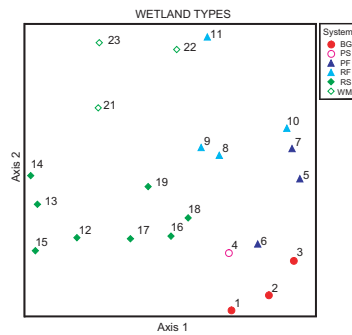
Diagnostic features of the type include a tall shrub layer dominated by *Betula glandulifera* (bog-birch), with *Alnus incana* (speckled alder) and *Salix* spp. (willow) consistent at low cover. An ericaceous dwarf-shrub mix is usually present, but more strongly dominated ericaceous stands are placed in the Leatherleaf - Sweet Gale Shore Fen (A9). When *Salix* spp. or *Alnus incana* increase in cover, this community can grade into either the Speckled Alder Swamp (A19) or the Dogwood - Pussy Willow Swamp (A21), but both of those types typically lack bog species indicators or a prominent peat layer, and are more often found in shoreline situations. The A8 type is similar to Ontario's W16 (Harris and others, 1996).

MAP UNITS

The Bog Birch-Willow Shore Fen (BBSF) map unit represents this association.

MINNESOTA STATE TYPE 2003

Bog Birch - Alder Shore Fen (OPn81a)

A9 Leatherleaf - Sweet Gale Shore Fen*Chamaedaphne calyculata* - *Myrica gale* / *Carex lasiocarpa* Dwarf-shrubland**Description**

This community contains a shrub layer of low to moderate cover, with *Betula glandulifera* (bog-birch), *Alnus incana* (speckled alder), *Salix pyrifolia* (balsam willow), and *S. pedicellaris* (bog willow), the most abundant shrubs. *Chamaedaphne calyculata* (leatherleaf) is usually present at 70–90% cover but may be mixed with lesser amounts of the dwarf-shrubs *Andromeda glaucophylla* (bog-rosemary) and *Vaccinium oxycoccos* (small cranberry). *Myrica gale* (sweet gale) is not common in stands in the Park. In addition to bog plants, such as *Drosera rotundifolia* (round-leaved sundew), other minerotrophic indicators present include *Carex lacustris* (lake sedge), *C. lasiocarpa* (wire-sedge), *Equisetum fluviatile* (water horsetail), *Calamagrostis canadensis* (bluejoint), and *Potentilla palustris* (marsh cinquefoil). Occasionally, herbaceous cover may reach 90%. A continuous carpet of peat moss includes species such as *Sphagnum magellanicum*, *S. recurvum sensu stricta*, *S. angustifolium*, and *S. subsecundum sensu lato*.

This type occupies peatland sites that border lakes and are influenced by fluctuating water levels. Sites can occur right up to the water's edge or be separated from the water by another community, typically a shallow marsh. When they exist up to the water's edge, the peat may be floating or be grounded nearer to shore. Hummock and hollow microtopography is usually well developed, with standing water sometimes present in the hollows. Substrate is deep, fibric, sphagnum peat. The water regime is seasonally flooded to saturated.

CONSERVATION RANK G?

DATABASE CODE CEGLO05228

CHARACTERISTIC SPECIES (n = 10, 23)**Shrub**

Alnus incana (speckled alder) V.7, *Betula glandulifera* (bog-birch) IV.15, *Picea mariana* (black spruce) IV.2, *Pinus strobus* (white pine) IV.2, *Salix pedicellaris* (bog willow) III.4, *Salix pyrifolia* (balsam willow) IV.2

Dwarf-shrub

Chamaedaphne calyculata (leatherleaf) V.75, *Vaccinium oxycoccus* (small cranberry) V.7

Forb

Drosera rotundifolia (round-leaved sundew) IV.2, *Equisetum fluviatile* (water horsetail) IV.7, *Potentilla palustris* (marsh cinquefoil) IV.2

Graminoid

Calamagrostis canadensis (bluejoint) IV.15, *Carex lacustris* (lake-sedge) IV.4

RANGE*Voyageurs National Park*

This type is localized in areas around the larger lakes in the Park. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Rich Fen System.

Global

This community is typically found on floating mats on the edges of lakes and streams in the Great Lakes region of the United States and Canada. It ranges from northern Minnesota and adjacent Ontario eastward to localized areas of Michigan and New York. In New York, one site (Deer Creek) is known along the shores of eastern Lake Ontario.

COMMENTS

Diagnostic features of the type include the high cover of *Chamaedaphne calyculata* (leatherleaf) with one or more of the following minerotrophic species present: *Myrica gale* (sweet gale), *Betula glandulifera* (bog-birch), *Salix* spp. (willow), *Carex lacustris*, *C. lasiocarpa* (wire-sedge), *Calamagrostis canadensis* (bluejoint), and *Equisetum fluviatile* (water horsetail). This type differs from the Leatherleaf Poor Fen (A6) in having a shrub layer of minerotrophic species. When cover of *Betula glandulifera* and *Salix* spp. (willow) increases, this community can grade into a Bog Birch - Willow Shore Fen (A8) or a Dogwood - Pussy Willow swamp (A21), and >25% cover of those shrubs would warrant placing the stand into one of these other communities. The A9 type is similar to Ontario's W15 (Harris and others, 1996).

MAP UNITS

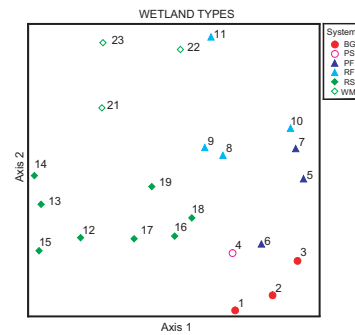
The Leatherleaf-Sweet Gale Shore Fen (LSF) map unit represents this association. This association is also mapped as part of the Beaver Basin Break-up Mosaic (BBX) map unit when it occurs in inundated beaver complexes.

MINNESOTA STATE TYPE 2003

Leatherleaf - Sweet Gale Shore Fen (OPn81b)

A10 Boreal Sedge Rich Fen

Carex lasiocarpa - *Carex buxbaumii* - *Trichophorum caespitosum* Boreal Herbaceous Vegetation



Description

Vegetation is typically dominated by graminoids and *Sphagnum* spp. with low cover of ericaceous dwarf-shrubs on the hummocks and a very scattered tree layer of black spruce, tamarack, and occasional white-cedar. Microtopography can consist of wet hollows with scattered low to intermediate hummocks. The graminoid layer is dominated by *Carex lasiocarpa* (wire sedge), *Rhynchospora alba* (white beakrush), and *C. livida* (livid sedge). The ericaceous shrubs include *Andromeda glaucophylla* (bog rosemary), *Betula glandulifera* (bog birch), and occasional *Chamaedaphne calyculata* (leatherleaf). Mosses include the brown mosses, such as *Campylium stellatum*.

Stands are found in peatlands where flarks form in the interior of well-developed featureless water tracks in larger peatlands. Substrate is saturated fibric to mesic peat.

*Photograph courtesy of Minnesota Department of Natural Resources.

CHARACTERISTIC SPECIES (n = 1, 0)**Tree**

Betula glandulifera (bog-birch) V.15

Shrub

Larix laricina (tamarack) V.15

Dwarf-shrub

Andromeda glaucophylla (bog-rosemary) V.15

Graminoid

Carex lasiocarpa (wire-sedge) V.85

RANGE*Voyageurs National Park*

This type is very localized in the Park, occurring in richer water tracks of the Rat Root River Peatland. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Rich Fen System.

Global

This rich graminoid fen type is found in the northern Great Lakes region of the United States and Canada, and elsewhere in central Canada.

COMMENTS

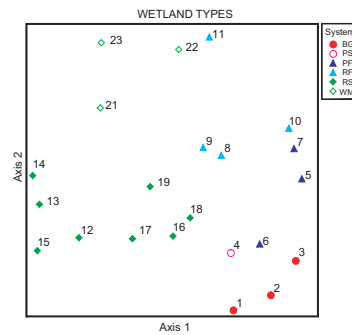
At the time of the vegetation mapping project, this type was not initially recognized, but is now understood as rare in the Park. The description is supplemented from observations elsewhere in northern Minnesota. Diagnostic features of this type include the continuous cover of *Carex lasiocarpa* (wire-sedge) and low coverage of tamarack (<10%). This type differs from the Wiregrass Sedge Shore Fen (A11), also dominated by *C. lasiocarpa* (wire-sedge), but lacks the species more tolerant of seasonal flooding found in the A11 type. This community is also similar to the Northern Sedge Poor Fen (A7) in that both are dominated by *C. lasiocarpa* (wire-sedge), but that community has a significant cover of *Sphagnum* spp. and *Chamaedaphne calyculata* (leatherleaf), whereas this community has a moderate number of minerotrophic indicators. The A10 type is most similar to Ontario's W19 (Harris and others, 1996).

MAP UNITS

The Northern Sedge Poor Fen (SPF) map unit represents this association and the Northern Sedge Poor Fen association (A7), which occur in close juxtaposition in the Rat Root River Peatland bog complex. (Veg Map Adjustment: See Appendix 4.)

MINNESOTA STATE TYPE 2003

Graminoid Rich Fen (Water Track) Flark Subtype (OPn91b2)

A11 Wiregrass Sedge Shore Fen*Carex lasiocarpa* - (*Carex rostrata*) - *Equisetum fluviatile* Herbaceous Vegetation**Description**

This community is characterized by a continuous cover of *Carex lasiocarpa* (wire-sedge). It is typically species poor, with some stands harboring as few as four species. Along with *Carex lasiocarpa* (wire-sedge), *Equisetum fluviatile* (water horsetail) and *C. rostrata* (= *utriculata*) (beaked sedge) can be found at moderate cover. The following herbs are also common, but usually exist at low cover: *Acorus calamus* (sweet flag), *Polygonum amphibium* (water smartweed), *Potentilla palustris* (marsh cinquefoil), and *Utricularia intermedia* (flat-leaved bladderwort). Few, scattered shrubs of *Chamaedaphne calyculata* (leatherleaf) may be present. The moss, *Warnstorfia exannulata* is also frequent in standing water in this community, though at low density.

Stands occur on floating or grounded peat mats near the shores of the large lakes. The peat is commonly a fibric sedge peat, though fibric sphagnum peat can occasionally be found in layers below the sedge peat. Standing water 20–50 cm deep is usually present throughout the year in these stands. Most of these stands are located in areas sheltered from extreme wave action and have very little microtopography. The water regime is permanently flooded to intermittently exposed.

CONSERVATION RANK G?

DATABASE CODE CEGL005229

CHARACTERISTIC SPECIES (n = 4, 4)**Forb**

Acorus calamus (sweet flag) IV.7, *Equisetum fluviatile* (water horsetail) V.25, *Polygonum amphibium* (water smartweed) III.4, *Potentilla palustris* (marsh cinquefoil) IV.7, *Utricularia intermedia* (flat-leaved bladderwort) IV.7

Graminoid

Carex lasiocarpa (wire-sedge) V.75, *Carex rostrata* (beaked sedge) III.4

RANGE*Voyageurs National Park*

This type typically occurs along shores around larger lakes. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Rich Fen System.

Global

This rich graminoid fen type is found in the northern Great Lakes region of the United States and Canada, ranging from Minnesota east to Michigan and northward into Ontario and probably other parts of central Canada.

COMMENTS

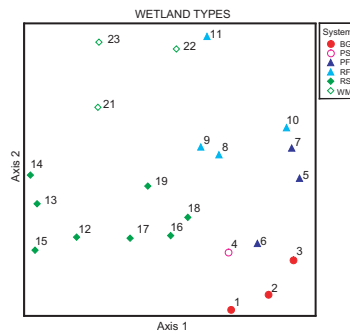
Diagnostic features of the type include an herb layer with >70% cover of *Carex lasiocarpa* (wire-sedge). Overall, this community is most similar to the Northern Sedge Wet Meadow (A22) but can easily be distinguished by its dominance of *Carex lasiocarpa* (wire-sedge) and its restriction to the shores of the large lakes. This type differs from the Boreal Sedge Rich Fen (A10), also dominated by *C. lasiocarpa* (wire-sedge), in that it contains species more tolerant of seasonal flooding. This community differs from the Northern Sedge Poor Fen (A7), which is also dominated by *C. lasiocarpa* (wire-sedge), in lacking acidic indicators found in A7, such as *Sphagnum* spp. and *Chamaedaphne calyculata* (leatherleaf). The A7 type is also only found in the Rat Root River Peatland. The A11 type is similar to Ontario's W14 (Harris and others, 1996).

MAP UNITS

This association is represented with the Wet Meadow/Fen Mosaic/Complex (SMX) map unit, which also includes other associations.

MINNESOTA STATE TYPE 2003

Graminoid Rich Fen (Basin) (OPn92a)

A12 White Cedar - Boreal Conifer Mesic Forest*Thuja occidentalis* / *Abies balsamea* - *Acer spicatum* Forest**Description**

This community generally exhibits a completely closed canopy of white-cedar (90–100% cover), though some stands may be as low as 60%. Black ash and, less commonly, balsam poplar and trembling aspen can also occur in the tree layers at <25% cover. There is no subcanopy, but occasionally a tall shrub layer with about 25% cover of balsam fir and mountain-maple. The cover of herbaceous species is highly variable, ranging from 10 to 90%, and diverse. Common forbs include *Aralia nudicaulis* (wild sarsaparilla), *Athyrium angustum* (lady-fern), *Clintonia borealis* (bluebead lily), *Cornus canadensis* (bunchberry), *Galium triflorum* (three-flowered bedstraw), *Gymnocarpium dryopteris* (common oak-fern), *Maianthemum canadense* (Canada mayflower), *Mitella nuda* (naked miterwort), *Rubus pubescens* (dwarf raspberry), and *Trientalis borealis* (starflower). The dominant bryophytes are *Rhytidiadelphus triquetrus*, *Climacium dendroides*, *Calliergon cordifolium*, *C. giganteum*, and mosses in the Mniaceae (*Mnium* spp.) family. The cover of the moss-lichen layer can range from very sparse to about 40% cover.

In the southwest part of the Park, this type usually occurs on flat terrain over deep, poorly drained silt clay loams. In the rest of the Park, this community is commonly found on gently sloping terrain, often on toeslopes, located on the upland-wetland interface. There is usually very little surficial bedrock. The soils are typically 7–10 cm loams over dense lacustrine clay. In some cases, a shallow build up of well decomposed peat may be present. Hummocks and hollows formed from fallen trees and build up of organic debris may be absent or well developed.

CHARACTERISTIC SPECIES (n = 10, 30)**Tree**

Fraxinus nigra (black ash) III.15, *Thuja occidentalis* (white-cedar) V.55

Shrub

Abies balsamea (balsam fir) V.2, *Acer spicatum* (mountain maple) III.7, *Amelanchier* spp. (serviceberry) V.1, *Betula papyrifera* (paper birch) IV.4, *Cornus rugosa* (round-leaved dogwood) IV.4, *Corylus cornuta* (beaked hazelnut) IV.2, *Fraxinus nigra* (black ash) V.15, *Thuja occidentalis* (white-cedar) V.25

Dwarf-shrub

Lonicera canadensis (fly honeysuckle) V.4

Forb

Actaea rubra (red baneberry) IV.1, *Aralia nudicaulis* (wild sarsaparilla) V.7, *Athyrium angustum* (lady-fern) V.15, *Circaea alpina* (small enchanter's nightshade) IV.2, *Clintonia borealis* (bluebead lily) V.1, *Coptis groenlandica* (goldthread) IV.2, *Cornus canadensis* (bunchberry) V.2, *Equisetum sylvaticum* (wood horsetail) IV.15, *Galium triflorum* (three-flowered bedstraw) V.2, *Gymnocarpium dryopteris* (common oak-fern) V.4, *Lycopodium lucidulum* (shining clubmoss) IV.1, *Maianthemum canadense* (Canada mayflower) V.2, *Mitella nuda* (naked miterwort) V.4, *Rubus pubescens* (dwarf raspberry) V.25, *Streptopus roseus* (rosey twisted-stalk) IV.1, *Trientalis borealis* (starflower) V.2

Graminoid

Carex intumescens (bladder sedge) IV.2, *Cinna latifolia* (drooping woodreed) IV.2

RANGE*Voyageurs National Park*

This community occurs in small patches in localized areas throughout the Park, typically on moderate slopes. In the southwestern part of the Park it occurs on more flat terrain. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Rich Swamp System.

Global

This community is found in northern Minnesota, northern Wisconsin, northern Michigan, and northwestern Ontario.

COMMENTS

This type often appears in upland-wetland interfaces, whereas the White Cedar - Yellow Birch Forest (A48) is strongly upland. Nonetheless, it is often mapped as part of that same type. In contrast to the White Cedar - (Mixed Conifer) / Alder Swamp (A17), this type generally does not contain *Alnus incana* (speckled alder) in the shrub layer or significant cover of *Sphagnum* spp., but does contain a mix of upland herbs. Intermediate stands, however, do exist. When black ash dominates in the emergent layer or canopy approaching 25% relative cover, this community can grade into the White Cedar - Black Ash Swamp (A15). The A12 type is most similar to Ontario's W32, but may be somewhat drier (Harris and others, 1996), and to V21 of Sims and others (1997).

MAP UNITS

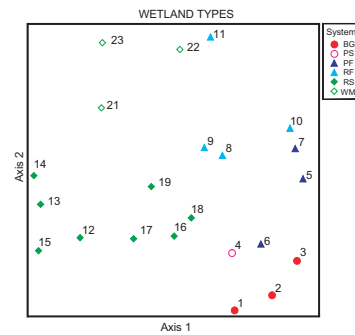
The White Cedar-Boreal Conifer Mesic Forest (WCU) map unit represents this association.

MINNESOTA STATE TYPE 2003

Lowland White Cedar Forest (Northern) (WFn53b)

A13 Trembling Aspen - Balsam Poplar Lowland Forest

Populus tremuloides - *Populus balsamifera* - Mixed Hardwoods Lowland Forest



Description

The canopy of this community is commonly 15–20 m tall and consists of trembling aspen and balsam poplar. Black ash can occasionally reach the canopy as well, though is usually found only in the subcanopy at 20–30% cover. The shrub layer is highly variable, ranging from 20 to 90% cover. It commonly consists of black ash, balsam fir and *Alnus incana* (speckled alder). The herb layer is typically very diverse and covers 80–90% of the forest floor. The most abundant herbaceous species are *Aralia nudicaulis* (wild sarsaparilla), *Aster lateriflorus* (side-flowering aster), *Circaea alpina* (small enchanter's nightshade), *Equisetum sylvaticum* (wood horsetail), *Galium triflorum* (three-flowered bedstraw), *Iris versicolor* (northern blue flag), *Lactuca* sp. (lactuca), *Lycopus uniflorus* (northern bugleweed), *Maianthemum canadense* (Canada mayflower), *Rubus pubescens* (dwarf raspberry), *Taraxacum* sp. (dandelion), and *Trientalis borealis* (starflower).

This type generally occurs on very flat to slightly sloping (<5%) terrain. It can be extensive where the terrain is relatively flat and where poorly drained soils are more common. It can also be found in low areas surrounded by upland or in drainage areas adjacent to lakes. The soils are generally poorly drained and relatively deep, reaching depths >35 cm. Stands occur on consistently deep, heavy, lacustrine clays or sandy clays.

CHARACTERISTIC SPECIES (n = 5, 23)**Tree**

Fraxinus nigra (black ash) V.25, *Fraxinus pennsylvanica* (green ash) IV.7, *Populus tremuloides* (trembling aspen) IV.25

Shrub

Abies balsamea (balsam fir) V.15, *Acer rubrum* (red maple) IV.4, *Alnus incana* (speckled alder) V.15, *Amelanchier* spp. (serviceberry) V.2, *Betula papyrifera* (paper birch) IV.7, *Cornus stolonifera* (red-osier dogwood) IV.4, *Corylus cornuta* (beaked hazelnut) V.7, *Fraxinus nigra* (black ash) V.45, *Fraxinus pennsylvanica* (green ash) IV.25, *Picea glauca* (white spruce) IV.4, *Populus tremuloides* (trembling aspen) IV.7, *Ulmus americana* (American elm) V.7, *Viburnum lentago* (nannyberry) IV.4

Dwarf-shrub

Rosa blanda (and others) (rose) V.1, *Rubus strigosus* (red raspberry) V.7

Forb

Aralia nudicaulis (wild sarsaparilla) V.7, *Aster lateriflorus* (side-flowering aster) V.2, *Aster macrophyllus* (large-leaved aster) IV.4, *Athyrium angustum* (lady-fern) IV.15, *Circaea alpina* (small enchanter's nightshade) V.2, *Cornus canadensis* (bunchberry) IV.4, *Equisetum sylvaticum* (wood horsetail) V.7, *Fragaria virginiana* (common strawberry) IV.4, *Galium triflorum* (three-flowered bedstraw) V.4, *Iris versicolor* (northern blue flag) V.1, *Lactuca* sp. (lactuca) V.1, *Lycopus uniflorus* (northern bugleweed) V.4, *Maianthemum canadense* (Canada mayflower) V.4, *Rubus pubescens* (dwarf raspberry) V.25, *Taraxacum* sp. (dandelion) V.1, *Trientalis borealis* (starflower) V.2

Graminoid

Bromus ciliatus (fringed brome) IV.4, *Carex intumescens* (bladder sedge) IV.7

RANGE*Voyageurs National Park*

This type is most common in the west and southwest part of the Park and in Park environs, where the terrain is relatively flat and poorly drained soils are more common, but also occurs locally elsewhere in the Park in areas surrounded by upland or in drainage areas adjacent to lakes. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Rich Swamp System.

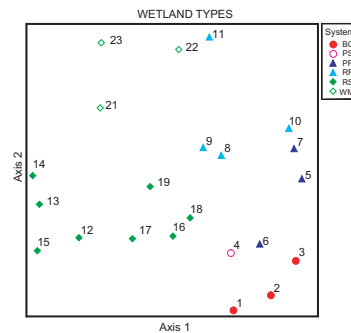
Global

This association is found in northern Michigan, northern Wisconsin, and Ontario.

COMMENTS

Diagnostic features of the type include a canopy of trembling aspen and/or balsam poplar with black ash, *Alnus incana* (speckled alder), or balsam poplar present in the sub-canopy or shrub layers. Though the canopy can be very similar to the Aspen Birch / Boreal Conifer Forest (A46), that type does not contain balsam poplar with black ash, or *Alnus incana*. That type (A46) also has lower diversity of herbaceous plants than this type (A13), and is found on well-drained soils. Very often, stands of A13 type are found adjacent to (and slightly drier than) the Black Ash - Mixed Hardwood Swamp (A14) or as inclusions within A46. The A13 type is most similar to Ontario's V1 (Sims and others, 1997).

(Continued on page 123)

A14 Black Ash - Mixed Hardwood Swamp*Fraxinus nigra* - Mixed Hardwoods-Conifers / *Cornus sericea* / *Carex* spp. Forest**Description**

The canopy and subcanopy (if present) of this community most commonly consists solely of black ash. In some situations, white-cedar may be mixed in these layers at low cover (<25%). Canopy cover is typically 70–90% but may be as low as 40%. Black ash saplings may dominate in the shrub/sapling layer. In wetter stands, *Alnus incana* (speckled alder) shrubs may be present, typically around 20–30% cover. Balsam fir and *Acer spicatum* (mountain maple) can also occasionally be found in the shrub layers. The herb layer is very diverse and usually reaches 80–100% cover. The most abundant graminoids are *Carex gracillima* (graceful sedge) and *C. intumescens* (bladder sedge). Characteristic forbs include *Athyrium angustum* (lady-fern), *Circaea alpina* (small enchanter's nightshade), *Equisetum sylvaticum* (wood horsetail), *Galium triflorum* (three-flowered bedstraw), *Lycopus uniflorus* (northern bugleweed), *Rubus pubescens* (dwarf raspberry), *Scutellaria lateriflora* (mad-dog skullcap), and *Trientalis borealis* (starflower). Mosses are more prevalent in the wetter parts of stands, where bryophytes typically colonize the hollows, low hummocks and fallen logs. Species include *Rhytidiadelphus triquetrus*, *Calliergon cordifolium*, *Mnium* spp., and *Drepanocladus* spp.

This type occurs throughout the Park in shallow depressions and low areas or adjacent to peatlands. Although soils may occasionally be fairly deep peats reaching depths of >30 cm, more commonly, the soils consist of 4–10 cm mineral soils or peat over dense clay. In the wetter sites, standing water is usually present throughout the season in the hollows. Thus, depending on topographic position and substrate, the water regime in these communities can be temporarily to seasonally flooded or saturated.

CHARACTERISTIC SPECIES (n = 5, 37)**Tree**

Fraxinus nigra (black ash) V.55

Shrub

Abies balsamea (balsam fir) IV.4, *Acer spicatum* (mountain maple) V.7, *Fraxinus nigra* (black ash) V.65, *Ulmus americana* (American elm) IV.7

Dwarf-shrub

Rubus strigosus (red raspberry) V.7

Forb

Aster lateriflorus (side-flowering aster) IV.7, *Athyrium angustum* (lady-fern) V.15, *Caltha palustris* (swamp marsh-marigold) IV.4, *Circaea alpina* (small enchanter's nightshade) V.2, *Equisetum sylvaticum* (wood horsetail) V.15, *Galium triflorum* (three-flowered bedstraw) V.2, *Lycopus uniflorus* (northern bugleweed) V.2, *Rubus pubescens* (dwarf raspberry) V.15, *Scutellaria lateriflora* (mad-dog skullcap) V.2, *Trientalis borealis* (starflower) V.1

Graminoid

Carex gracillima (graceful sedge) V.4, *Carex intumescens* (bladder sedge) V.7, *Cinna latifolia* (drooping woodreed) IV.7

RANGE*Voyageurs National Park*

This community type occurs throughout the Park in shallow depressions and low areas or adjacent to peatlands. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Rich Swamp System.

Global

This black ash - hardwood swamp forest type is found widely in the northern Midwest region of the United States and into the boreal region of Central Canada. This association is found in Illinois, Michigan, Minnesota, western North Dakota, Wisconsin, Manitoba, and Ontario. It may also occur in Indiana.

COMMENTS*Voyageurs National Park*

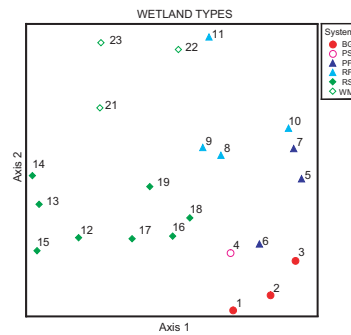
The main diagnostic feature of the type is a canopy of black ash. As cedar becomes more common in the canopy and subcanopy, this type grades into the White Cedar - Black Ash Swamp (A15), but this type differs from A15 in that it contains <25% cover of white-cedar in the canopy or subcanopy. Stands intermediate between these two types are common. Stands of mixed aspen and ash may resemble the Trembling Aspen - Balsam Poplar Lowland Forest (A13). Many stands of this type (A14) occur in drainages influenced by beaver activity, and because black ash trees cannot survive prolonged periods of inundation, these communities are frequently flooded out by beaver activity. The A14 type is similar to Ontario's W33 and W34 (Harris and others, 1996).

MAP UNITS

The Black Ash-Mixed Hardwood Swamp (BA) map unit represents this association.

MINNESOTA STATE TYPE 2003

Black Ash - Alder Swamp (Northern) (WFn64c)

A15 White Cedar - Black Ash Swamp*Thuja occidentalis* - *Fraxinus nigra* Forest**Description**

This community consists of a mixed canopy of black ash and white-cedar, each comprising at least 25% relative cover. It is also found with a canopy solely of black ash (usually 80–100% cover) and a subcanopy of white-cedar (40–90% cover). The shrub layer, with 20–40% cover, is dominated by *Acer spicatum* (mountain maple), *Alnus incana* (speckled alder), balsam fir, and black ash, with some red maple. *Alnus incana* alone may occasionally occupy the shrub layer at 70–90% cover. The herb layer usually covers 80–100% of the forest floor and is very diverse. The most common herbs are *Equisetum sylvaticum* (wood horsetail), *Carex intumescens* (bladder sedge), *C. gracillima* (graceful sedge), *Calamagrostis canadensis* (bluejoint), and *Coptis groenlandica* (gold-thread). Moss cover is highly variable ranging from 30 to 90%. *Rhytidiadelphus triquetrus*, *Calliergon cordifolium*, *C. giganteum*, *Mnium* spp., *Thuidium* spp., *Sphagnum warnstorffii*, and *S. squarrosum* are the most abundant mosses.

This type is found in confined basins surrounded by upland or as part of large wetland complexes. If associated with peatlands, it is usually found on the upland border where more minerotrophic conditions exist. Soils are either deep, well decomposed peats or shallow, well decomposed peats over clay. Microtopography of hummocks and hollows may be well developed or absent. Standing water is often present. The water regime is seasonally flooded to saturated.

CONSERVATION RANK G?**DATABASE CODE** CEG005165

CHARACTERISTIC SPECIES (n = 1, 26)**Tree**

Abies balsamea (balsam fir) V.15, *Fraxinus nigra* (black ash) V.85, *Thuja occidentalis* (white-cedar) V.65

Shrub

Abies balsamea (balsam fir) V.4, *Acer spicatum* (mountain maple) V.15, *Alnus incana* (speckled alder) V.4, *Thuja occidentalis* (white-cedar) V.4

Forb

Circaea alpina (small enchanter's nightshade) V.4, *Mitella nuda* (naked miterwort) V.4, *Rubus pubescens* (dwarf raspberry) V.15

Graminoid

Carex gracillima (graceful sedge) V.4, *Cinna latifolia* (drooping woodreed) V.4

RANGE*Voyageurs National Park*

This type is found in pockets throughout the Park, but also occurs as large stands in the environs west of Park, and along the margins of the Rat Root River Peatland. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Rich Swamp System.

Global

This association is found in the northern Great Lakes region of the United States and throughout central Canada.

COMMENTS

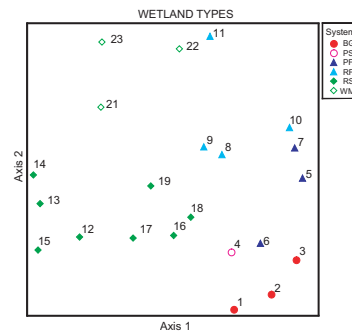
Diagnostic features of the type include the canopy of white-cedar and black ash, both comprising at least 25% cover, or stands that have a canopy of all black ash, with at least 25% cover of white-cedar in the subcanopy. This type intergrades with the Black Ash - Mixed Hardwood Swamp (A14), and is similar in terms of moisture and mineral status, but A14 has white-cedar with <25% cover. When the cover of black ash in the canopy is <25%, the stand is more likely to belong to the White Cedar - Boreal Conifer Mesic Forest (A12). The A15 type may be flooded as a result of beaver activity. The White Cedar - Black Ash Swamp has no clear match to Ontario types.

MAP UNITS

The White Cedar-Black Ash Swamp (WCBA) map unit represents this association.

MINNESOTA STATE TYPE 2003

Black Ash - Conifer Swamp (Northeast) (WFn64a)

A16 Black Spruce / Alder Rich Swamp*Picea mariana* / *Alnus incana* / *Sphagnum* spp. Forest**Description**

The canopy of black spruce in this community is typically uneven and fairly open, ranging from 20 to 40%. In rare cases, canopy coverage may be as high as 90%. Tamarack and white-cedar can also be found in the canopy at low cover. A shrub layer of *Alnus incana* (speckled alder) and black spruce ranges from 30 to 90%. The dwarf-shrub layer is dominated by *Ledum groenlandicum* (labrador tea) and, less commonly, *Chamaedaphne calyculata* (leatherleaf). Coverage of dwarf-shrubs is highly variable (10–80%). The herb layer is typically moderately rich, variable in cover, and dominated by *Calamagrostis canadensis* (bluejoint), *Smilacina trifolia* (three-leaved false Solomon's-seal), and/or *Carex lacustris* (lake sedge). *Carex trisperma* (three-fruited sedge), *Cornus canadensis* (bunchberry), and *Dryopteris carthusiana* (spinulose fern) are also common. Sphagnum typically occupies 90–100% of the forest floor. The most abundant species are *Sphagnum magellanicum*, *S. girgensohnii*, *S. centrale*, *S. wulfianum*, and *S. recurvum sensu lato*.

This type occurs as part of large peatlands, in confined basins and along the upland margins of less minerotrophic peatlands. The substrate is deep peat or peat over clay. Hummock and hollow microtopography is moderately to well developed with standing water occasionally occurring in the hollows. The water regime is saturated.

CHARACTERISTIC SPECIES (n = 7, 22)**Tree**

Larix laricina (tamarack) III.15, *Picea mariana* (black spruce) V.25

Shrub

Abies balsamea (balsam fir) V.7, *Acer rubrum* (red maple) IV.2, *Alnus incana* (speckled alder) V.45, *Betula papyrifera* (paper birch) V.15, *Larix laricina* (tamarack) IV.15, *Picea mariana* (black spruce) V.35

Dwarf-shrub

Gaultheria hispidula (creeping snowberry) V.7, *Ledum groenlandicum* (labrador tea) V.35, *Vaccinium angustifolium* (lowbush blueberry) V.2

Forb

Cornus canadensis (bunchberry) V.2, *Dryopteris carthusiana* (and others) (spinulose fern) V.1, *Smilacina trifolia* (three-leaved false Solomon's-seal) V.7, *Trientalis borealis* (starflower) V.2

Graminoid

Calamagrostis canadensis (bluejoint) IV.15, *Carex paupercula* (poor sedge) III.4, *Carex trisperma* (three-fruited sedge) V.4

RANGE*Voyageurs National Park*

This type is most common in the northern parts of the Park, where peatlands are more extensive, but can be found throughout the Park in small confined basins. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Rich Swamp System.

Global

This community is found in the northern Great Lakes region of the United States and in central Canada.

COMMENTS

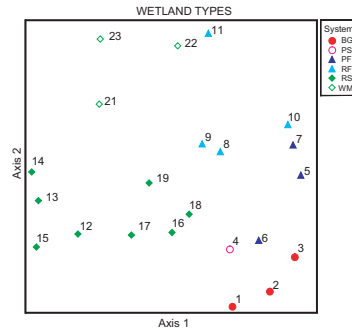
Diagnostic features of the type include the canopy of black spruce and <25% cover of other conifers, with a shrub layer of *Alnus incana* (speckled alder). This type is similar to the Black Spruce / Labrador Tea Poor Swamp (A4) but that type often contains >25% relative cover of tamarack, and lacks the minerotrophic indicators of this type, such as *Calamagrostis canadensis* (bluejoint). In stands where tree cover is low, this type can grade into the peat phase of the Speckled Alder Swamp (A19). The A16 type is similar to Ontario's W29 and W30 (Harris and others, 1996).

MAP UNITS

The Black Spruce/Alder Rich Swamp (BSAS) map unit represents this association.

MINNESOTA STATE TYPE 2003

Rich Black Spruce Swamp (Basin) (FPn62a)

A17 White Cedar - (Mixed Conifer) / Alder Swamp*Thuja occidentalis* - (*Picea mariana* - *Abies balsamea*) / *Alnus incana* Forest**Description**

In this community, white-cedar typically forms a fairly closed canopy, with cover ranging from 70 to 100%. Associates include tamarack, black spruce, and black ash. In larger peatlands, the canopy may be as low as 30%, and an emergent layer of black spruce may be present. A shrub layer of *Alnus incana* (speckled alder), with balsam fir, white-cedar, and tamarack is nearly always present, but cover is highly variable, ranging from 20 to 90%. *Ledum groenlandicum* (labrador tea) is occasionally prominent in the dwarf-shrub layer. Species diversity in the herb layer is very high. Graminoids include *Calamagrostis canadensis* (bluejoint), *Carex disperma* (soft-leaved sedge), *C. leptalea* (bristle-stalked sedge), and *C. paupercula* (poor sedge). Forbs include *Caltha palustris* (swamp marsh-marigold), *Coptis groenlandica* (goldthread), *Cornus canadensis* (bunchberry), *Iris versicolor* (northern blue flag), *Potentilla palustris* (marsh cinquefoil), *Rubus pubescens* (dwarf raspberry), *Smilacina trifolia* (three-leaved false Solomon's-seal) and *Trientalis borealis* (starflower). The moss-lichen layer can also be very diverse. In some circumstances, *Sphagnum* spp. dominate this layer with 90–100% cover, leaving other species like *Rhytidiadelphus triquetrus* and *Calliergon cordifolium* to colonize the wet hollows. In other cases, though, sphagnum is found sharing dominance with a mix of *Rhytidiadelphus triquetrus*, *Calliergon cordifolium*, *C. giganteum*, *Rhizomnium magnifolium*, *R. pseudopunctatum*, and *Climacium dendroides*. In both cases, the dominant sphagnum species found in this community are *Sphagnum warnstorffii*, *S. wulfianum*, *S. centrale*, and *S. recurvum sensu lato*.

This type occurs in moderately minerotrophic conditions over deep peat. Hummock and hollow microtopography is usually well developed. In wetter stands, there is often standing water present in the hollows. Coarse woody debris can be significant. The water regime is saturated.

CONSERVATION RANK G4**DATABASE CODE** CEGL002456

CHARACTERISTIC SPECIES (n = 4, 38)**Tree**

Larix laricina (tamarack) IV.7, *Picea mariana* (black spruce) IV.1, *Thuja occidentalis* (white-cedar) IV.25

Shrub

Abies balsamea (balsam fir) V.7, *Alnus incana* (speckled alder) V.55, *Betula glandulifera* (bog-birch) III.4, *Cornus foemina* (gray dogwood) III.4, *Cornus stolonifera* (red-osier dogwood) IV.1, *Larix laricina* (tamarack) V.15, *Picea mariana* (black spruce) V.2, *Thuja occidentalis* (white-cedar) V.45

Dwarf-shrub

Andromeda glaucophylla (bog-rosemary) IV.1, *Gaultheria hispidula* (creeping snowberry) V.2, *Ledum groenlandicum* (labrador tea) V.25, *Lonicera oblongifolia* (swamp fly-honeysuckle) V.2, *Rhamnus alnifolia* (alder-leaved buckthorn) V.2, *Vaccinium oxycoccus* (small cranberry) V.4

Forb

Caltha palustris (swamp marsh-marigold) V.2, *Campanula aparinoides* (marsh bellflower) IV.1, *Clintonia borealis* (bluebead lily) IV.2, *Coptis groenlandica* (goldthread) V.2, *Cornus canadensis* (bunchberry) V.4, *Cypripedium reginae* (showy lady-slipper) IV.7, *Dryopteris cristata* (crested fern) IV.1, *Epilobium leptophyllum* (and others) (fireweed) IV.1, *Galium triflorum* (three-flowered bedstraw) IV.2, *Iris versicolor* (northern blue flag) V.2, *Linnaea borealis* (twinflower) IV.1, *Maianthemum canadense* (Canada mayflower) IV.1, *Mitella nuda* (naked miterwort) IV.1, *Osmunda cinnamomea* (cinnamon fern) III.4, *Platanthera hyperborea* (northern bog-orchid) IV.2, *Potentilla palustris* (marsh cinquefoil) V.2, *Pyrola secunda* (one-sided pyrola) IV.1, *Rubus pubescens* (dwarf raspberry) V.15, *Smilacina trifolia* (three-leaved false Solomon's-seal) V.7, *Thelypteris palustris* (northern marsh-fern) IV.1, *Trientalis borealis* (starflower) V.2

Graminoid

Calamagrostis canadensis (bluejoint) V.4, *Carex cephalantha* (bunched sedge) III.4, *C. disperma* (soft-leaved sedge) V.2, *C. leptalea* (bristle-stalked sedge) V.15, *C. paupercula* (poor sedge) V.4

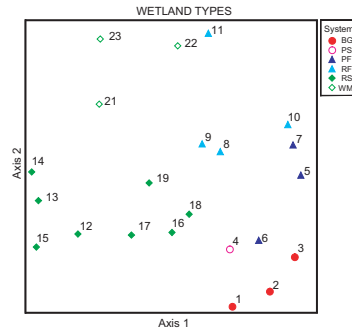
RANGE*Voyageurs National Park*

This type occurs in localized areas throughout the Park. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Rich Swamp System.

Global

This community is found in the upper Great Lakes region of the United States and parts of central Canada.

(Continued on page 123)

A18 Northern Tamarack Rich Swamp*Larix laricina* / *Alnus incana* Forest**Description**

In this community, the canopy of tamarack is typically uneven and fairly open, ranging from 20 to 50%. White-cedar and black spruce may also occur in the canopy at low densities (<25% relative cover). A shrub layer of *Alnus incana* (speckled alder) and *Betula glandulifera* (bog-birch) is typically present at 40–90% cover. The shrub layer may also include *Salix* spp. (willow), typically *S. pyrifolia*, *S. discolor*, and/or *S. pedicellaris*. A dwarf-shrub layer of *Ledum groenlandicum* (labrador tea) and *Chamaedaphne calyculata* (leatherleaf) is typically present at 70–90% cover, though it may be as low as 10% cover in some stands. The herb layer is moderately species rich and highly variable in cover, ranging from very low to continuous. The most abundant species are *Calamagrostis canadensis* (bluejoint), *Smilacina trifolia* (three-leaved false Solomon's-seal), and *Carex lacustris* (lake-sedge). *Rubus pubescens* (dwarf raspberry), *Carex leptalea* (bristle-stalked sedge), *Lysimachia thyrsiflora* (tufted loosestrife), and *Potentilla palustris* (marsh cinquefoil) are also commonly present. Sphagnum typically occupies 90–100% of the forest floor. The most abundant species are *Sphagnum magellanicum*, *S. recurvum sensu lato*, and *S. russowii*. *Calliergon cordifolium* and/or *C. giganteum* infrequently colonize the wet hollows.

This type occurs as part of large peatlands, in confined basins and along the upland margins of less minerotrophic peatlands. The substrate is deep peat or shallow peat over clay. Hummock and hollow microtopography is moderately to well developed, with standing water occasionally occurring in the hollows. The water regime is saturated.

CHARACTERISTIC SPECIES (n = 8, 52)**Tree**

Larix laricina (tamarack) IV.7, *Picea mariana* (black spruce) III.7

Shrub

Alnus incana (speckled alder) IV.15, *Betula glandulifera* (bog-birch) V.35, *Larix laricina* (tamarack) V.25, *Picea mariana* (black spruce) V.25, *Salix pedicellaris* (bog willow) V.2, *Thuja occidentalis* (white-cedar) V.15

Dwarf-shrub

Andromeda glaucophylla (bog-rosemary) V.15, *Chamaedaphne calyculata* (leatherleaf) V.15, *Gaultheria hispidula* (creeping snowberry) IV.1, *Kalmia polifolia* (bog laurel) IV.1, *Ledum groenlandicum* (labrador tea) V.35, *Lonicera oblongifolia* (swamp fly-honeysuckle) IV.1, *Lonicera villosa* (mountain fly-honeysuckle) IV.1, *Myrica gale* (sweet gale) III.4, *Vaccinium oxycoccus* (small cranberry) V.2

Forb

Caltha palustris (swamp marsh-marigold) IV.1, *Drosera rotundifolia* (round-leaved sundew) IV.1, *Epilobium leptophyllum* (and others) (fireweed) IV.2, *Equisetum fluviatile* (water horsetail) III.4, *Lysimachia thyrsiflora* (tufted loosestrife) V.4, *Maianthemum canadense* (Canada mayflower) IV.1, *Menyanthes trifoliata* (buckbean) IV.4, *Osmunda cinnamomea* (cinnamon fern) III.4, *Potentilla palustris* (marsh cinquefoil) V.2, *Rubus acaulis* (arctic raspberry) IV.4, *Rubus pubescens* (dwarf raspberry) IV.2, *Rumex orbiculatus* (great water dock) IV.1, *Sarracenia purpurea* (pitcher-plant) IV.1, *Smilacina trifolia* (three-leaved false Solomon's-seal) V.7, *Trientalis borealis* (starflower) IV.1

Graminoid

Calamagrostis canadensis (bluejoint) IV.1, *Carex leptalea* (bristle-stalked sedge) V.4, *Carex paupercula* (poor sedge) V.4

RANGE*Voyageurs National Park*

This type occurs as part of large peatlands, in confined basins and along the upland margins of less minerotrophic peatlands throughout the Park. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Rich Swamp System.

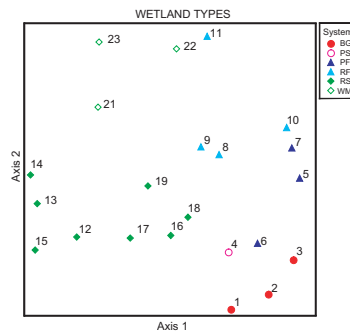
Global

This community is found in the United States in northern and central parts of Minnesota, Wisconsin, and Michigan; and in Canada in Ontario, Manitoba, and probably elsewhere.

COMMENTS

Diagnostic features of the type include a canopy strongly dominated by tamarack, with *Alnus incana* (speckled alder) in the shrub layer. This type is usually wetter than the Black Spruce / Alder Rich Swamp (A16) or the Black Spruce / Labrador Tea Poor Swamp (A4), but the *Sphagnum* spp. layer can range from patchy to more continuous. The type differs from those communities by having black spruce at <25% relative cover, and moderately minerotrophic indicators. The type can also grade into the peat phase of the Speckled Alder Swamp (A19) when canopy cover thins out to <20% cover. The A18 type is somewhat analogous to Ontario's W32 (Harris and others, 1996).

(Continued on page 123)



Description

Alnus incana (speckled alder) shrubs, around 2–3 m tall, usually form a dense canopy in this community. *Salix* spp. (willow) and *Betula glandulifera* (bog-birch) may also occur at low cover in the shrub layer. There is a wide variation in the composition of the herbaceous and moss-lichen layers, largely as a result of the wide range of environmental conditions where this community can exist. In most circumstances, the herb layer ranges from 30 to 90% and is dominated by *Calamagrostis canadensis* (bluejoint), *Carex lacustris* (lake-sedge), *Rubus pubescens* (dwarf raspberry), *Typha* spp. (cattail), *Potentilla palustris* (marsh cinquefoil), and *Calla palustris* (wild calla). Some examples of this type contain a nearly continuous carpet of sphagnum. In these situations, *Chamaedaphne calyculata* (leatherleaf) may be found as a dwarf-shrub, and the herb layer may also contain species associated with sphagnum (e.g., *Carex trisperma* [three-fruited sedge], *C. disperma* [soft-leaved sedge], and *Smilacina trifolia* [three-leaved false Solomon's-seal]). In situations lacking sphagnum, the associated species also are lacking and the moss layer is minor and consists of *Mnium* spp., *Drepanocladus* spp., and *Climacium dendroides*.

The Speckled Alder Swamp occurs in isolated low areas surrounded by upland or as a ring around the edge of less minerotrophic peatlands. Stands can occur on deep peats, shallow peats, or mineral soils where drainage is impeded by clay or dense glacial till. Depending on substrate and topographic placement, they can be temporarily or seasonally flooded or remain saturated throughout the growing season.

CHARACTERISTIC SPECIES (n = 4, 36)**Shrub**

Abies balsamea (balsam fir) IV.1, *Acer rubrum* (red maple) IV.7, *Alnus incana* (speckled alder) V.85, *Amelanchier* spp. (serviceberry) IV.1, *Betula papyrifera* (paper birch) IV.2, *Fraxinus nigra* (black ash) IV.2

Dwarf-shrub

Rubus strigosus (red raspberry) V.2, *Vaccinium angustifolium* (lowbush blueberry) IV.2

Forb

Calla palustris (wild calla) III.7, *Cornus canadensis* (bunchberry) IV.2, *Dryopteris carthusiana* (and others) (spinulose fern) IV.1, *D. cristata* (crested fern) IV.1, *Iris versicolor* (northern blue flag) IV.1, *Lycopus uniflorus* (northern bugleweed) IV.7, *Maianthemum canadense* (Canada mayflower) IV.1, *Rubus pubescens* (dwarf raspberry) IV.7, *Smilacina trifolia* (three-leaved false Solomon's-seal) III.7, *Trientalis borealis* (starflower) IV.1

Graminoid

Calamagrostis canadensis (bluejoint) V.15, *Carex disperma* (soft-leaved sedge) III.4, *C. lacustris* (lake-sedge) IV.15

RANGE*Voyageurs National Park*

This community type occurs throughout the Park in isolated low areas surrounded by uplands or as a ring around the edge of less minerotrophic peatlands. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Rich Swamp System.

Global

This type is widespread in the Midwest and Northeast United States, and in central Canada.

COMMENTS

The diagnostic feature of the type is a tall shrubland dominated by *Alnus incana* (speckled alder). In situations where willow or bog birch become more dominant, this community grades into the Dogwood - Pussy Willow Swamp (A21) or the Bog Birch - Leatherleaf Poor Fen (A8). In non-peatland situations, this type can have <25% black ash canopy over the alder shrub layer. The Black Spruce / Alder Rich Swamp (A16), the Black Spruce / Labrador Tea Poor Swamp (A4), and the Northern Tamarack Rich Swamp (A18) all can resemble this type, but differ in that they contain >25% cover of conifers in the canopy. More data are needed to determine if separate associations are needed for a mineral-soil Alder Swamp (more like wet meadows) and a peatland Alder Swamp. The A19 type is similar to Ontario's W35 (Harris and others, 1996).

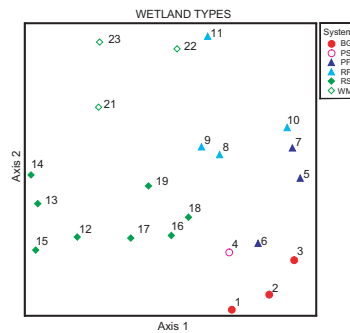
Basins with water levels controlled by beavers can experience fluctuating water levels. Alder often persists after trees such as black spruce or white-cedar have died from the rising water levels. Outside the Park, this type can be found in wetlands (including peatlands) that have been recently logged.

MAP UNITS

The Speckled Alder Swamp (AS) map unit represents this association.

MINNESOTA STATE TYPE 2003

Alder Swamp [peat phase] (FPn73a)

A21 Dogwood - Pussy Willow Swamp*Cornus* spp. - *Salix discolor* - (*Rosa palustris*) Shrubland**Description**

This community contains a shrub layer mainly of willows 1–5 m tall and usually 40–70% cover. The most abundant willow species are *Salix discolor* (pussy willow) and *S. gracilis* (slender willow). The following willow species are also common though usually present at low cover: *S. planifolia* (diamond-leaf willow), *S. serissima* (autumn-leaf willow), *S. pedicellaris* (bog willow), and *S. candida* (sage-leaf willow). Other, less common shrubs include *Cornus sericea* (red-osier dogwood), *Spiraea alba* (meadowsweet), and *Alnus incana* (speckled alder). Herbaceous cover is typically high (90–100%) and is made up primarily of the graminoids *Calamagrostis canadensis* (bluejoint) and *Carex lacustris* (lake-sedge). Forbs include *Acorus calamus* (sweet flag), *Dryopteris cristata* (crested fern), *Rubus pubescens* (dwarf raspberry), and *Typha* sp. (cattail). Mosses may be present, around 10–30% cover, or absent. The most common moss species include *Aulacomnium palustre*, *Campylium stellatum*, *Hypnum lindbergii*, *Sphagnum* spp., *Drepanocladus* spp., *Calliergon cordifolium*, *C. giganteum*, and *Climacium dendroides*. In rare cases, *Sphagnum* spp. may have nearly 100% cover and form a continuous carpet. This occurs primarily when this type is adjacent to a peatland.

Stands commonly occupy beaver meadows and the shorelines of the large lakes in sheltered bays. They infrequently occur up to the water's edge but are often found between the upland and a shallow marsh, wet meadow, or fen. A thick (2–5 cm) thatch layer of undecomposed organic matter is common. Soils are typically shallow peats over dense lacustrine clay, but some deep peat stands may occur. Hummock and hollow microtopography may be present. The water regime is temporarily to seasonally flooded or saturated.

CHARACTERISTIC SPECIES (n = 4, 30)**Shrub**

Alnus incana (speckled alder) III.4, *Betula papyrifera* (paper birch) IV.2, *Cornus stolonifera* (red-osier dogwood) V.7, *Fraxinus nigra* (black ash) IV.1, *Salix bebbiana* (bebb's willow) IV.15, *S. discolor* (pussy willow) IV.15, *S. gracilis* (slender willow) V.35

Dwarf-shrub

Spiraea alba (meadowsweet) IV.15

Forb

Acorus calamus (sweet flag) IV.7, *Campanula aparinoides* (marsh bellflower) IV.2, *Dryopteris cristata* (crested fern) V.2, *Rubus pubescens* (dwarf raspberry) IV.7, *Typha* sp. (cattail) IV.2

Graminoid

Calamagrostis canadensis (bluejoint) V.55, *Carex lacustris* (lake-sedge) IV.35, *Scirpus cyperinus* (wool-grass) V.7

RANGE*Voyageurs National Park*

This community type commonly occupies beaver meadows and the shorelines of the large lakes in sheltered bays throughout the Park. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Wet Meadow - Shrub Swamp System.

Global

This dogwood-willow shrub swamp community type is found in the upper Midwestern region of the United States in New York, Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, and into southern Ontario and central Canada.

COMMENTS

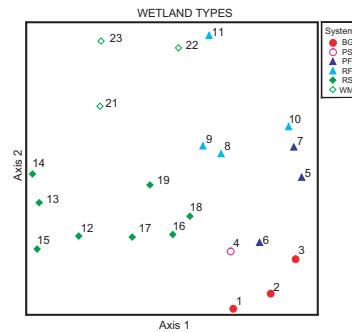
Diagnostic features of the type are the diverse mix of willows. This type is closely related to the Canada Bluejoint Eastern Meadow (A23), the Northern Sedge Wet Meadow (A22), and the mineral soil phase of the Speckled Alder Swamp (A19). Sometimes this type can have a mixture of willows and *Alnus incana* (speckled alder) or *Betula glandulifera* (bog-birch), grading into Bog Birch - Willow Shore Fen (A8). The A21 type is similar to Ontario's W36 (Harris and others, 1996).

MAP UNITS

The Dogwood-Pussy Willow Swamp (DS) map unit represents this association.

MINNESOTA STATE TYPE 2003

Willow - Dogwood Shrub Swamp (WMn82a)

A22 Northern Sedge Wet Meadow*Carex (rostrata, utriculata) - Carex lacustris - (Carex vesicaria) Herbaceous Vegetation***Description**

This community is most commonly dominated by *Calamagrostis canadensis* (bluejoint), *Carex lacustris* (lake-sedge), *C. lasiocarpa* (wire-sedge), and *C. rostrata* (= *utriculata*) (beaked sedge). In some circumstances, *C. rostrata* (beaked sedge) and/or *C. vesicaria* (inflated sedge) may share dominance with *C. lacustris* or obtain complete dominance. Cover of this herb layer is usually 90–100%. Shrubs of *Alnus incana* (speckled alder), *Chamaedaphne calyculata* (leatherleaf), or *Salix* spp. (willow) may be found at low cover (<25%). Stands with standing water or water channels running through them may contain species typical of wetter conditions like *Acorus calamus* (sweet flag) or *Potentilla palustris* (marsh cinquefoil). In most circumstances, the moss layer is virtually absent.

This community type occurs in beaver meadows, along lake shores, along slow moving streams and in isolated basins. Substrate is most often deep sedge peat under various stages of decomposition, or shallow (5–10 cm) peat over clay. A thick thatch layer over the peat may be present. The peat mat may occasionally be floating. Standing dead trees, especially in beaver meadows, are common. Hummock and hollow microtopography is usually well developed. Standing water is common in the hollows. The water regime is highly variable, ranging from saturated to permanently flooded.

CHARACTERISTIC SPECIES (n = 7, 35)

Forb

Acorus calamus (sweet flag) III.15, *Potentilla palustris* (marsh cinquefoil) V.4

Graminoid

Calamagrostis canadensis (bluejoint) V.15, *Carex lacustris* (lake-sedge) III.35, *C. lasiocarpa* (wire-sedge) III.25, *C. rostrata* (beaked sedge) III.25

RANGE

Voyageurs National Park

This community type occurs in beaver meadows, along lake shores and slow moving streams, and in isolated basins throughout the Park. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Wet Meadow - Shrub Swamp System.

Global

This association is found in Iowa, Michigan, Minnesota, Wisconsin, Manitoba, Ontario, and possibly North and South Dakota.

COMMENTS

Diagnostic features of the type are >40% cover of *C. lacustris* (lake-sedge) or *C. rostrata* (beaked sedge). The sedges in this community can occasionally occur mixed with *Typha* spp. (cattail) and *Calamagrostis canadensis* (bluejoint), grading into the Midwest Cattail Deep Marsh (A24) and the Canada Bluejoint Eastern Meadow (A23) respectively. When *Carex* spp. occurs mixed with *Typha* spp. or *Calamagrostis canadensis*, there must be >50% cover of sedges to remain in this type. Occasionally, *Alnus incana* (speckled alder) or other shrubs may invade this type. The shrubs must have >25% cover for the stand to be considered a Speckled Alder Swamp (A19) or other shrub type. Stands dominated by *Carex lasiocarpa* (wire-sedge) are placed in the Wiregrass Sedge Shore Fen (A11). The A22 type is similar to Ontario's W12 (Harris and others, 1996).

This community is subject to disturbance by beaver activity. In recently flooded beaver ponds, small patches of this type may occur interspersed with small patches of Northern Water Lily Aquatic Wetland (A30).

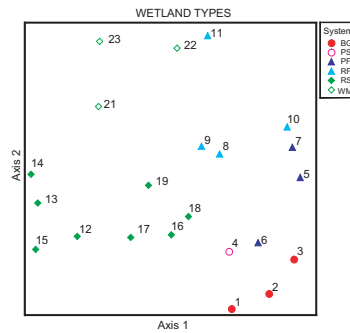
MAP UNITS

This association is represented with the Wet Meadow/Fen Mosaic/Complex (SMX) map unit, which also includes other associations.

MINNESOTA STATE TYPE 2003

Sedge Meadow Beaked Sedge Subtype (WMn82b3)

Sedge Meadow Lake Sedge Subtype (WMn82b4)

A23 Canada Bluejoint Eastern Meadow*Calamagrostis canadensis* Eastern Herbaceous Vegetation**Description**

This community is characterized by a continuous cover of *Calamagrostis canadensis* (bluejoint). *Alnus incana* (speckled alder), *Betula glandulifera* (bog-birch), or *Salix* spp. (willow) infrequently colonize these sites at <25% cover. Other graminoid species are usually present but with low cover. These often include *Carex lacustris* (lake-sedge) and *Scirpus cyperinus* (wool-grass). Occasional forbs include *Eupatorium maculatum* (spotted joe-pye-weed), *Typha latifolia* (broad-leaved cattail), *Campanula aparinoides* (tall bellflower), *Dryopteris cristata* (crested fern), *Polygonum sagittatum* (arrow-leaved tearthumb), and *Potentilla norvegica* (rough cinquefoil). In some stands *Calamagrostis canadensis* cover can be so dense as to exclude almost all other species. Water channels occasionally occur within these stands and can contain species typical of wetter conditions.

The A23 type occurs predominately in old beaver meadows or along slow moving streams. In beaver meadows, this community is found on relatively dry sites and often occurs on the upland edge of more recent beaver floodings or completely colonizing older, drier beaver meadows. Soils usually contain deep, dense clay preventing or slowing drainage. A shallow layer of mineral soil or well decomposed peat may occur over the clay. In wetter conditions of this type, standing water may be present in low areas. In these situations, tussocky microtopography is often present. Water channels and standing or fallen dead trees are frequently present. The water regime is temporarily to seasonally flooded.

CONSERVATION RANK G?

DATABASE CODE CEG005174

CHARACTERISTIC SPECIES (n = 5, 32)

Forb

Dryopteris cristata (crested fern) V.2, *Polygonum sagittatum* (arrow-leaved tearthumb) V.1, *Potentilla norvegica* (rough cinquefoil) V.1

Graminoid

Calamagrostis canadensis (bluejoint) V.85, *Carex lacustris* (lake-sedge) IV.15, *Scirpus cyperinus* (wool-grass) V.7

RANGE

Voyageurs National Park

This type occurs predominately in old beaver meadows or along slow moving streams throughout the Park. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Wet Meadow - Shrub Swamp System.

Global

This association is widespread throughout the eastern United States and adjacent southern Canada.

COMMENTS

Diagnostic features of the type include a herb layer with continuous cover of *Calamagrostis canadensis* (bluejoint). This community often occurs adjacent to, and readily grades into the Northern Sedge Wet Meadow (A22). This type can, more rarely, grade into the Midwest Cattail Deep Marsh (A24). Occasionally, *Alnus incana* (speckled alder) or other shrubs may invade this type. The shrubs must have >25% cover for the stand to be considered a Speckled Alder Swamp (A19) or other shrub type. The A23 type is similar to Ontario's W13 (Harris and others, 1996).

The Canada Bluejoint Eastern Meadow most commonly occurs in beaver meadows. Constant beaver activity can alter local hydrology and, over time, cause this community to grade into other communities.

MAP UNITS

The Canada Bluejoint Eastern Meadow (BJ) map unit represents this association. This association is also represented with the Wet Meadow/Fen Mosaic/Complex (SMX) map unit, which also includes other associations.

MINNESOTA STATE TYPE 2003

Sedge Meadow Bluejoint Subtype (WMn82b1)

A24 Midwest Cattail Deep Marsh*Typha* spp. Midwest Herbaceous Vegetation**Description**

This herbaceous community can be dominated almost exclusively by *Typha angustifolia* (narrow-leaved cattail) and *Typha latifolia* (broad-leaved cattail) or, less frequently, by a mix of *Typha* spp. and other graminoids. Near monocultures with coverage of 80–100% of *Typha* spp. are common. Other possible species (usually at low cover) include *Scirpus validus* (softstem bulrush), *Phragmites australis* (common reed), *Calamagrostis canadensis* (bluejoint), *Polygonum lapathifolium* (nodding smartweed), *Sagittaria cuneata* (arum-leaf arrowhead), and *S. latifolia* (broad-leaf arrowhead). In cattail stands located on the shores of a lake, it is common to find submerged or floating-leaved aquatic species at low density, such as *Ceratophyllum demersum* (coon-tail), *Lemna* spp. (duckweed), *Myriophyllum sibiricum* (Siberian water-milfoil), *Utricularia vulgaris* (greater bladderwort), and *Potamogeton* spp. (pondweed).

Stands are most commonly found in 0.25–1 m of water along the shores of lakes. Wave exposure is low to moderate and substrate is clay, sand or muck. In more isolated sites, a floating mat may develop. This community can also occur in beaver floodings and low areas surrounded by upland. In these instances, substrate is usually well decomposed peat and the water regime is permanently to temporarily flooded. Open water is common in both circumstances.

CHARACTERISTIC SPECIES (n = 6, 36)**Forb**

Typha spp. (cattail) V.65

Graminoid

Scirpus validus (softstem bulrush) III.7

RANGE

Voyageurs National Park

This community type is typically found along the shores of lakes and ponds. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Freshwater Marsh System.

Global

This association is found throughout the north-central and northeastern United States and adjacent Canada.

COMMENTS

The diagnostic feature of this herbaceous community is a continuous cover of cattails (*Typha latifolia*, *T. angustifolia*, or *T. X glauca*). Temporarily flooded or saturated cattail marshes found in shallow basins are floristically quite different from those along the shores of lakes and may represent a sub-type. Insufficient data exist to determine the relation between these two situations. Cattail stands along the shores of the lakes often contain little else other than cattail and are therefore difficult to confuse with any other type. When they exist in drier situations, especially inland, *Typha* spp. can share dominance with other graminoids, particularly sedges. Cattails may invade Northern Sedge Wet Meadow stands (A22), and if >60% cover of cattails occurs, then the stand is treated as a Midwest Cattail Deep Marsh. The A24 type is similar to Ontario's W11 (Harris and others, 1996).

MAP UNITS

The Midwest Cattail Deep Marsh (CM) map unit represents this association. This association is also represented with the Deep Marsh Mosaic/Complex (DMX) and the Wet Meadow/Fen Mosaic/Complex (SMX) map units, each of which also includes other associations.

MINNESOTA STATE TYPE 2003

Cattail Marsh (Northern) (MRn83b)

A25 Eastern Reed Marsh*Phragmites australis* Semipermanently Flooded Ruderal Herbaceous Vegetation**Description**

This community is composed primarily, and sometimes solely, of one species, *Phragmites australis* (common reed). Its density, however, is highly variable. In deep water (1–1.5 m deep), cover can be as low as 40%, whereas in shallow water (0–1 m) it is commonly 100%. Stands typically consist of very few species. In most cases, one or more of the following species may be present as low (0–15%) cover: *Polygonum lapathifolium* (nodding smartweed), *Typha* spp. (cattail), *Calamagrostis canadensis* (bluejoint), *Carex rostrata* (beaked sedge), and bulrushes (*Scirpus acutus*, and/or *S. validus*). In addition, a wide variety of submerged aquatic plants may be found, but these aquatics often float in from other areas without rooting, because of the high wave energy.

Stands occur on large lakes, most often on fairly wave exposed sites on sand bars or shallow areas adjacent to islands. The substrate is typically sand or, in some cases, clay or peat over clay. The density of *Phragmites australis* tends to be inversely related to water depth with the deeper stands having as much as 60% open water. Most sites contain 0.25–1 m standing water. The water regime is permanently flooded to intermittently exposed.

CHARACTERISTIC SPECIES (n = 3, 9)

Forb

Equisetum fluviatile (water horsetail) IV.7

Graminoid

Calamagrostis canadensis (bluejoint) IV.15, *Phragmites australis* (common reed) V.85

RANGE

Voyageurs National Park

This type is restricted to shorelines of the large lakes and islands in the Park. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Freshwater Marsh System.

Global

This association is widespread throughout the eastern United States.

COMMENTS

Diagnostic features of the type include the herbaceous community dominated solely by *Phragmites australis* (common reed). The A25 type is similar to Ontario's W8 (Harris and others, 1996).

Phragmites australis is a species of obscure origins in central North America, and has become somewhat invasive in wetlands further south. Its presence in Voyageurs seems to be limited to relatively small stands in flooded areas of the large lakes, but it is treated here as a seminatural type, not originally part of the Voyageurs landscape. It is not recognized as a separate type in the Minnesota state classification.

MAP UNITS

The Eastern Reed Marsh (PM) map unit represents this association. This association is also represented with the Deep Marsh Mosaic/Complex (DMX) and the Wet Meadow/Fen Mosaic/Complex (SMX) map units, each of which also includes other associations.

MINNESOTA STATE TYPE 2003

Cattail Marsh (Northern) (MRn83b)

A26 Freshwater Bulrush Marsh*Scirpus acutus* - (*Scirpus fluviatilis*) Freshwater Herbaceous Vegetation

**Description**

This community is dominated by *Scirpus acutus* (hardstem bulrush), *S. validus* (softstem bulrush) and, to a lesser extent, *S. fluviatilis* (river bulrush). Cover of these dominants is typically 50–90%, though in rare instances may be much lower. Floating leaf aquatics may be present at low cover, especially *Nuphar lutea* var. *variegatum* (yellow water-lily), *Nymphaea odorata* (fragrant white water-lily), *Lemna minor* (lesser duckweed), and *L. trisulca* (star duckweed). Submerged aquatics may also be present at low cover and include *Elodea canadensis* (Canadian elodea), *Potamogeton zosteriformis* (flat-stemmed pondweed), *P. richardsonii* (Richardson's pondweed), *P. friesii* (fries pondweed), *Myriophyllum sibiricum* (Siberian water-milfoil), and *Utricularia vulgaris* (greater bladderwort).

Stands occur on sheltered to moderately wave exposed sites, primarily on the large lakes. Water depth is typically 0.5–1.5 m and substrate is clay, muck or sand. The water regime is permanently flooded.

CHARACTERISTIC SPECIES (n = 4, 8)

Forb

Elodea canadensis (Canadian elodea) III.4, *Lemna* sp. (duckweed) IV.1, *Potamogeton richardsonii* (Richardson's pondweed) IV.1

Graminoid

Scirpus acutus (hardstem bulrush) III.35

RANGE

Voyageurs National Park

This community type occurs primarily on large lakes. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Freshwater Marsh System.

Global

This community is found in Iowa, Minnesota, North Dakota, South Dakota, southern Manitoba, and northwestern Ontario.

COMMENTS

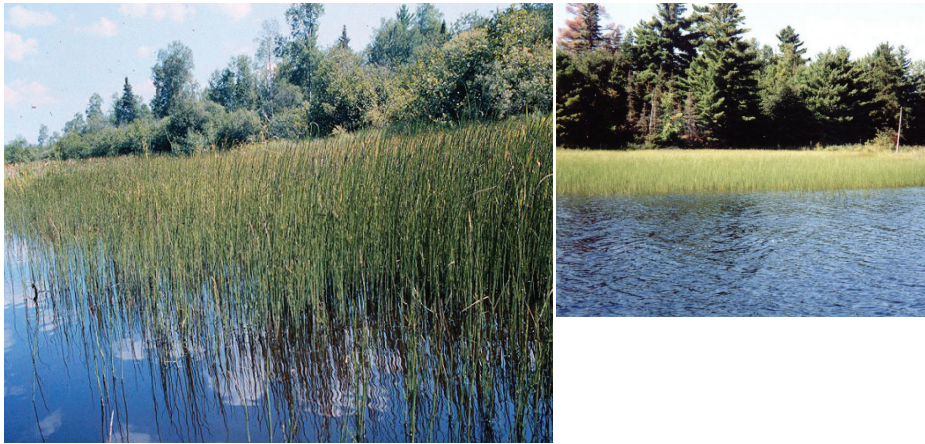
Diagnostic features of the type are dominance by *Scirpus acutus* (hardstem bulrush) and *Scirpus validus* (softstem bulrush). The A26 type is similar to Ontario's W7 (Harris and others, 1996).

MAP UNITS

The Freshwater Bulrush Marsh (BM) map unit represents this association. This association is also represented with the Deep Marsh Mosaic/Complex (DMX), which also includes other associations.

MINNESOTA STATE TYPE 2003

Bulrush Marsh (Northern) (MRn93a)

A27 Water Horsetail - Spikerush Marsh*Equisetum fluviatile* - (*Eleocharis smallii*) Herbaceous Vegetation**Description**

This herbaceous community is dominated by *Acorus calamus* (sweet flag), *Equisetum fluviatile* (water horsetail), *Polygonum lapathifolium* (nodding smartweed), *Sagittaria rigida* (sessile-fruited arrowhead), and *Typha* spp. (cattail). Stands may be dominated by just one of these species or they may occur mixed. Most commonly, *Equisetum fluviatile* co-occurs with *Acorus calamus*. *Acorus calamus* also co-dominates with *Sagittaria rigida* and, less commonly, *Sparganium chlorocarpum* (green-fruited bur-reed). Aquatic species may also be present at low density and include *Potamogeton* spp. (pondweed), *Utricularia intermedia* (flat-leaved bladderwort), and *Najas flexilis* (flexuous naiad).

This type occurs in sheltered bays and shores and along slow moving streams throughout the Park. Wave exposure is typically low. Standing water is typically present up to 0.5 m deep. Substrate is clay or shallow peat over clay. The water regime is permanently flooded to intermittently exposed. Stands may be ephemeral due to fluctuating water levels in the large lakes.

CHARACTERISTIC SPECIES (n = 2, 3)**Forb**

Acorus calamus (sweet flag) III.35, *Equisetum fluviatile* (water horsetail) III.45, *Polygonum lapathifolium* (nodding smartweed) V.7, *Sagittaria rigida* (sessile-fruited arrowhead) III.35, *Sium suave* (water-parsnip) V.2, *Typha* spp. (cattail) III.7

Graminoid

Carex rostrata (beaked sedge) III.15

RANGE*Voyageurs National Park*

This community is fairly uncommon in the Park. It is most abundant in the larger bays like Daley and Tom Cod, though some stands may also be found in the many smaller bays throughout the Park. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Freshwater Marsh System.

Global

This association is found in the northern Great Lakes region of the United States and into central Canada.

COMMENTS

Diagnostic features of the type include the herb layer dominated by *Acorus calamus* (sweet flag), *Equisetum fluviatile* (water horsetail), *Polygonum lapathifolium* (nodding smartweed), and *Sagittaria rigida* (sessile-fruited arrowhead). When dominated solely by *Equisetum fluviatile*, this type can grade into the Wiregrass Sedge Shore Fen (A11). The A27 type is most analogous to Ontario's W5 (Harris and others, 1996), though appears to include W6 as well.

MAP UNITS

This association is represented with the Deep Marsh Mosaic/Complex (DMX), which also includes other associations.

MINNESOTA STATE TYPE 2003

Spikerush - Bur Reed Marsh (Northern) (MRn93b)

**Description**

Cover of *Zizania palustris* (wild rice) in this community is highly variable, ranging from 20 to 100%. Other emergent species such as *Scirpus acutus* (hardstem bulrush) and *Scirpus validus* (softstem bulrush) may be present at low cover. Submerged and floating aquatic plants also are often present at low cover. *Nymphaea odorata* (fragrant white water lily) and *Nuphar lutea* var. *variegatum* (yellow water lily) are the most abundant floating aquatic plants. Depending on the site, any of a number of submerged aquatics also may be present, including *Vallisneria americana* (eelgrass), *Sparganium fluctuans* (floating bur-reed), *Najas flexilis* (flexuous naiad), *Potamogeton gramineus* (grass-leaved pondweed), *P. zosteriformis* (flat-stemmed pondweed), and *P. friesii* (Fries' pondweed).

Stands are typically found in sheltered and isolated bays along the shores of large lakes. These sites are permanently flooded with water 0.5–2 m deep. Substrate is deep muck or clay or a thin layer of muck over clay.