

# Northern Sedge Meadow (Global Rank G4; State Rank S3)

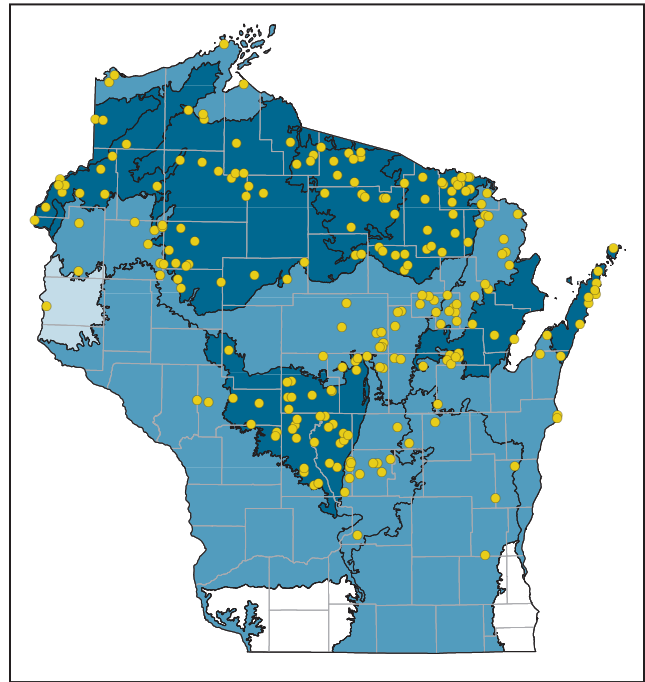
## Overview: Distribution, Abundance, Environmental Setting, Ecological Processes

Northern Sedge Meadow is a minerotrophic wetland community dominated by graminoid herbs that occurs most commonly on glaciated terrain north of the Tension Zone. Sedge meadows occur on lakeshores, along the margins of low-gradient rivers and streams, and in shallow depressions in ground moraine. Along larger rivers with complex floodplains, sedge meadows sometimes fill abandoned channel meanders (oxbows), and near the Great Lakes they are often part of the wetland mosaic of coastal estuaries. Sedge meadows commonly form discrete patches, or distinct zones, between wetter natural communities such as marshes and somewhat drier areas capable of supporting woody wetland vegetation such as shrub swamps, lowland hardwood forests, or stands of swamp conifers. Soils may be organic or mineral, and some peat accumulation may occur.

Important landforms supporting Northern Sedge Meadow include glacial outwash plain, glacial lakebed, and poorly drained ground moraine. Sedge meadows may also be a part of the natural community mosaic for Great Lakes coastal wetlands, especially those associated with estuaries. Sedge meadows are dependent on functional site hydrology for their persistence and influenced by direct contact with ground or surface water. They are not as acidic or nutrient-deprived as boggy wetlands, nor are they as alkaline as the rich fens. The hydrologic regime for Northern Sedge Meadow varies from seasonally flooded to permanently saturated. In ecological landscapes such as the Central Sand Plains, North-west Sands, Northeast Sands, and Northern Highland, periodic wildfire, in addition to site hydrology, sometimes played a key role in maintaining sedge dominance, creating niches used by less competitive plants and animals, and limiting encroachment by trees and shrubs. Peat cores from these regions often contain charcoal and woody peat.

## Community Description: Composition and Structure

The dominant plants are sedges, particularly from the genus *Carex*. Species dominance varies, depending on factors such as amount and origin of groundwater flow, groundwater chemistry, pH, type of substrate, topography, disturbance regime, and land use history. Important species may include woolly-fruit sedge (*Carex lasiocarpa*), few-seeded sedge (*C. oligosperma*), and common yellow lake sedge (*C. utriculata*). Tussock sedge (*Carex stricta*) is important at some sites, and it does not always form tussocks. Blue-joint grass (*Calamagrostis canadensis*) is sometimes co-dominant with the sedges, or, in rare cases, may be the dominant graminoid. Several Northern Sedge Meadow subtypes are recognizable by their dominant plants.



Locations of Northern Sedge Meadow in Wisconsin. The deeper hues shading the ecological landscape polygons indicate geographic areas of greatest abundance. An absence of color indicates that the community has not (yet) been documented in that ecological landscape. The dots indicate locations where a significant occurrence of this community is present, has been documented, and the data incorporated into the Natural Heritage Inventory database.

Wire-leaved sedge meadows (or “wire-grass meadows”) are dominated by narrow-leaved species such as woolly-fruit sedge and few-seeded sedge. Other meadows are dominated by broad-leaved species, especially common yellow lake sedge or common lake sedge (*Carex lacustris*). Meadows dominated by tussock sedge and blue-joint grass do occur in northern Wisconsin and structurally resemble Southern Sedge Meadows. However, their composition differs in that they lack the floristic elements affiliated with prairie and calcareous fen that are sometimes found in the southern meadows, while supporting a complement of herbaceous species that are uncommon, rare, or absent in the southern meadows. Bulrushes, including black bulrush (*Scirpus atrovirens*) and wool-grass (*S. cyperinus*), are sometimes important members of this community and seem especially common in stands disturbed by hydrologic manipulation. Sedge meadows may develop in drained impoundments, including old beaver flowages, but their tenure on such sites may be short term. Among the other graminoids that may be present are marsh bluegrass (*Poa palustris*), rattlesnake manna grass (*Glyceria canadensis*), water sedge (*Carex aquatilis*), bristly sedge (*C. comosa*), blister sedge (*C. vesicaria*), common spike-rush

(*Eleocharis palustris*), marsh muhly (*Muhlenbergia glomerata*), and several rushes (*Juncus* spp.).

Forbs and other herbaceous associates of the Northern Sedge Meadows include panicled aster (*Symphyotrichum lanceolatum*), bristly aster (*S. puniceum*), flat-top aster (*Doellingeria umbellata*), spotted Joe-Pye-weed (*Eupatorium maculatum*), marsh fern (*Thelypteris palustris*), marsh cinquefoil (*Comarum palustre*), northern blue flag (*Iris versicolor*), swamp milkweed (*Asclepias incarnata*), northern water-horehound (*Lycopus uniflorus*), water horsetail (*Equisetum fluviatile*), bulb-let water-hemlock (*Cicuta bulbifera*), arrow-leaved tear-thumb (*Polygonum sagittatum*), northern bog goldenrod (*Solidago uliginosa*), grass-leaved goldenrod (*Euthamia graminifolia*), and several species of beggar's-ticks (*Bidens* spp.).

Cover values for woody plants in Northern Sedge Meadow are low. Aggregate tree and shrub cover is less than 50% and may be less than 10%. There are a few examples of mixed sedge meadow and wet shrub communities in which patches dominated by sedges and other herbs are interspersed among patches clearly dominated by shrubs. When these co-occur in the same wetland, they form complex wetland mosaics.

Potentially important shrubs in northern sedge meadow include white meadowsweet (*Spiraea alba*), steep-leaved bush (*S. tomentosa*), speckled alder (*Alnus incana*), bog birch (*Betula pumila*), ninebark (*Physocarpus opulifolius*), dogwoods (*Cornus* spp.), and willows (*Salix* spp.). Trees capable of invading the open meadows include American elm (*Ulmus americana*), black ash (*Fraxinus nigra*), green ash (*F. pensylvanica*), and, sometimes, tamarack (*Larix laricina*). In situations where water levels fluctuate markedly over periods of years or even decades, box elder (*Acer negundo*), balsam poplar (*Populus balsamifera*), eastern cottonwood (*P. deltoides*), or quaking aspen (*P. tremuloides*) may become established, at least until high water drowns them, setting back succession and allowing herbs to reestablish dominance.

Rare plants occurring in Northern Sedge Meadow include smooth black sedge (*Carex nigra*), neat spike-rush (*Eleocharis nitida*), Torrey's bulrush (*Schoenoplectus torreyi*), downy willow-herb (*Epilobium strictum*), clustered bur-reed (*Sparganium glomeratum*), and small yellow water-crowfoot (*Ranunculus gmelinii*).

Birds among the animals of conservation concern inhabiting Northern Sedge Meadow include American Bittern (*Botaurus lentiginosus*), Green-winged Teal (*Anas crecca*), Wilson's Phalarope (*Phalaropus tricolor*), Sandhill Crane (*Antigone canadensis*), Whooping Crane (*Grus americana*), Yellow Rail (*Coturnicops noveboracensis*), Northern Harrier (*Circus cyaneus*), Sedge Wren (*Cistothorus platensis*), Henslow's Sparrow (*Ammodramus henslowii*), Le Conte's Sparrow (*Ammodramus leconteii*), and Nelson's Sparrow (*Ammodramus nelsoni*). Noteworthy herptiles are represented by Blanding's turtle (*Emydoidea blandingii*), boreal chorus frog (*Pseudacris maculata*), mink frog (*Lithobates septentrionalis*), and pickerel frog (*L. palustris*). Several bat species, including eastern red bat (*Lasiurus borealis*), hoary bat

(*L. cinereus*), and the U.S. Threatened northern long-eared bat (*Myotis septentrionalis*), hunt over water and various open wetland communities, including Northern Sedge Meadow.

## Conservation and Management Considerations

Major threats to Northern Sedge Meadow are hydrologic disruption, the addition of excessive amounts of sediments and nutrients, and the introduction and spread of invasive species.

Drainage ditches lower the water table and can channel groundwater flow, resulting in drier conditions that may cause the conversion of an herb-dominated sedge meadow to shrub swamp or lowland forest. Wetland restoration involving the plugging of ditches and dike construction is designed to raise the water table to pre-drainage conditions or sometimes to continue the increase in water levels to create permanently inundated areas of marsh and open water to facilitate certain recreational pursuits. Excessive groundwater withdrawals bear close watching in some areas, especially for their demonstrably cumulative impacts.

The construction of roads and other travel or utility rights-of-way can fragment sedge meadows and alter the internal



This extensive northern sedge meadow borders North Bay, on the east coast of the northern Door Peninsula. Northern Lake Michigan Coastal Ecological Landscape. Photo by Eric Epstein, Wisconsin DNR.



Hydrologically intact open wetland dominated by a mixture of sedges. Blue Swamp, Clark County, Central Sand Plains Ecological Landscape. Photo by Eric Epstein, Wisconsin DNR.



flow of groundwater. On the upslope side of a right-of-way barrier, water may pond, increasing the amount of open water or marsh at the expense of the sedge- or grass-dominated meadow community and its associated specialists. Downslope, the wetland may dry out and eventually succeed to dominance by shrubs and trees. Small mammals, birds, herptiles, and some invertebrates of high conservation concern are frequent victims of vehicles on roadways that cross or border sedge meadows.

Invasive plants can be significant problems, especially reed canary grass (*Phalaris arundinacea*), common reed (*Phragmites australis*), purple loosestrife (*Lythrum salicaria*), glossy buckthorn (*Rhamnus frangula*), and nonnative cat-tails (*Typha* spp.). Stands adjacent to agricultural fields or construction sites are vulnerable to excessive inputs of sediments and nutrients. Though agriculture is generally less prevalent in northern Wisconsin than in the south, it is significant in some parts of the Forest Transition, Northeast Sands, and

Northern Lake Michigan Coastal ecological landscapes. Grazed sedge meadows are subject to soil compaction, the addition of nutrients, disturbance to ground-nesting birds, the introduction of invasive plants, and loss of plant species not adapted (at least competitively) to life with livestock.

In ecological landscapes where fire historically maintained open or semi-open conditions across large areas, the presence of old fields, pastures, and even cropland adjacent to sedge meadows can provide the large expanses of open habitat that are capable of supporting some of the area-sensitive animals that are increasingly restricted to a small number of locations in the state. This applies to ecological landscapes such as the Northwest Sands and Central Sand Plains, where many sensitive species are best adapted to, and sometimes dependent on, open areas at large scales. Historically, the adjacent upland vegetation was often semi-open pine barrens, oak barrens, or sand prairie communities. In some of these habitats, extensive public ownerships allow for the safe use of prescribed fire to



Wire-leaved sedges are the dominant graminoids in this large open wetland, which supports populations of several rare species. Marquette County, Central Sand Hills Ecological Landscape. Photo by Eric Epstein, Wisconsin DNR.



Important wetland communities at the mouth of the Menominee River include northern sedge meadow and emergent marsh. Seagull Bar, Marinette County, Northern Lake Michigan Coastal Ecological Landscape. Photo by Emmet Judziewicz.



Small pond within extensive sedge meadow on heavy red clay soils. Numerous rare or otherwise unusual species have been documented here. Pokegama-Carnegie Wetlands, Douglas County, Superior Coastal Plain Ecological Landscape. Photo by Eric Epstein, Wisconsin DNR.



Wet meadow dominated by broad-leaved sedges near the Superior Airport. The prominent forb is flat-topped aster. The shrub swamp in the background is composed of willows, dogwoods, and speckled alder. Douglas County, Superior Coastal Plain Ecological Landscape. Photo by Eric Epstein, Wisconsin DNR.





*This large wetland complex adjoining the Lake Michigan side of the Door Peninsula includes a large, undisturbed coastal sedge meadow. This is part of a major coastal ecosystem protection project by The Nature Conservancy and the Door County Land Trust. North Bay, Northern Lake Michigan Coastal Ecological Landscape. Photo by Thomas Meyer, Wisconsin DNR.*

maintain or create large openings, including sedge meadows that are being encroached upon by shrubs and trees. On a case-by-case basis, this approach may also apply in some of the northern agricultural areas, such as the Forest Transition and Northern Lake Michigan Coastal ecological landscapes, where ownership is mostly private, but the formerly forested uplands are now mostly open and likely to remain that way for the foreseeable future. Such areas need to be managed so that the meadows, other wetlands, and waterways do not receive excessive amounts of sediments, nutrients, and toxic substances from the agricultural lands. Removal of tree cover from areas that were formerly heavily forested may disrupt the local water balance.

The conservation values of sedge meadows have sometimes been understated or unrecognized, sometimes to favor cover types such as marshes or open water, which are more often associated with various forms of recreation and the production of waterfowl and other popular game species. In agricultural areas, Northern Sedge Meadows, along with open peatlands, shrub-carr, and lowland forests, have been drained to facilitate land uses such as crop production, pasture, or residential development. Maintenance of healthy sedge meadow communities depends on allowing site hydrology to function within limits that will prevent the wetland to become too wet and succeed to marsh or too dry and succeed to shrub swamp or forest. Meadows associated with drained

beaver impoundments or heavily cut wet forests tend to be relatively short-lived and may quickly revert to shrub swamp or forest following beaver dam loss or abandonment.

For a more accurate determination of current sedge meadow status, better information is needed on how much sedge meadow conversion has already occurred, the degree to which such conversions are still occurring, and what the outcomes of such conversions have been, especially for sensitive native plants and animals thought to be more strongly associated with meadows than marshes or open water. The conversions are usually accomplished by the construction of dikes, dams, or other control structures that are designed to raise water levels, thereby facilitating recreational boating, or providing additional habitat for waterfowl (note that those are not necessarily compatible actions). We have not encountered examples of the successful conversion of a marsh or impoundment back to a sedge meadow.

From the perspective of conserving biodiversity at the community level, it is clear that several distinct assemblages of graminoids are covered by the term “Northern Sedge Meadow,” and some of these may be worthy of recognition as natural communities. The large “wiregrass” meadows in particular support a number of specialists. Additional research on this variability within Wisconsin’s Northern Sedge Meadows is needed to better assess and conserve them.

## Additional Information

For information on similar communities, see the descriptions for Southern Sedge Meadow, Poor Fen, Boreal Rich Fen, Calcareous Fen, Open Bog, Interdunal Wetland, Emergent Marsh, Alder Thicket, and Shrub-carr. The U.S. National Vegetation Classification type most closely resembling Northern Sedge Meadow—at least in part—is CEG002257 Northern Sedge Wet Meadow (Faber-Langendoen 2001). This type does not adequately address, nor does it really encompass, the wire-leaved sedge meadows, but see CEG005104 Twigrush Wet Prairie, which shares a similar environmental setting, structure, and some species (minus the prairie “obligates” and those associated with strongly calcareous environments) with the wire-leaved sedge meadows of central and some parts of northern, especially northwestern, Wisconsin. Also see CEG002256 Lake Sedge Wet Meadow. On poorly drained lacustrine clays in the Superior Coastal Plain of northwestern Wisconsin, there are lake sedge-dominated sedge meadows.

### Also see:

Crum (1988)  
Curtis (1959)  
Harris et al. (1996)  
Hipp (2008)  
Kost et al. (2007)  
Reuter (1986)

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For a list of terms used, please visit the [Glossary](#).

For a reference list, please see the [Literature Cited](#).