

Bog Relict (Global Rank G3; State Rank S3)

“Bog Relict” is still tracked by Wisconsin DNR’s Natural Heritage Inventory as of 07/2016. As many southern Wisconsin occurrences do not closely resemble the “Open Bog” community or any other acid peatland type as they are defined and described farther north, at the very least a clearer description of what this type actually represents is needed. In past state natural area inventories, the “Bog Relict” more often represents a complex of natural communities with some “northern characteristics,” such as swamp conifers, ericaceous shrubs, sedges, and peat mosses. Patches of varying structure and composition are often somewhat telescoped or intermixed and stands are difficult to type as single communities. On glacial landforms such as collapsed outwash or end moraine, it may be worth considering treatment of these as “complexes” or use other existing natural community types, such as Southern Tamarack Swamp.

Overview: Distribution, Abundance, Environmental Setting, Ecological Processes

Bog Relicts are somewhat acidic, weakly to moderately minerotrophic wetlands that occur at scattered locations south of the ecoclimatic Tension Zone within a matrix of widespread southern Wisconsin vegetation types such as hardwood forest, oak savanna, shrub-carr, sedge meadow, and marsh. Stands are isolated from the much more abundant, better-developed, and more widespread acid peatlands found throughout the northern and central parts of the state.



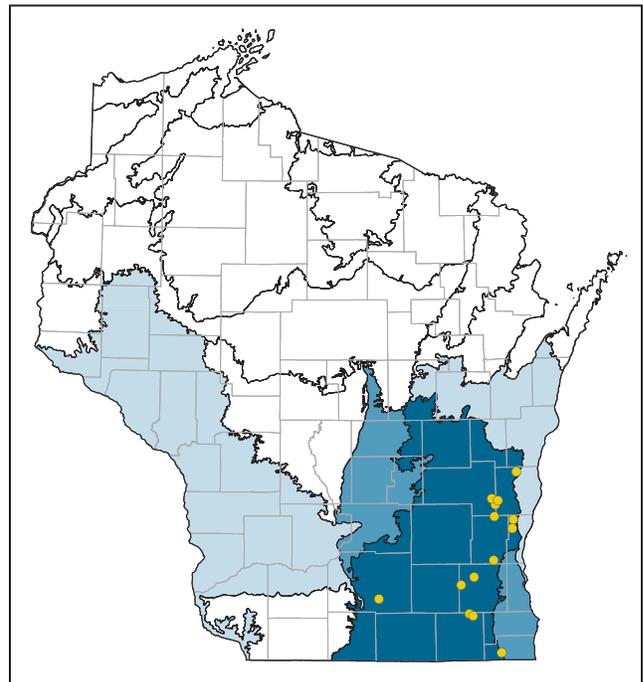
The term “Bog Relict” has been used to describe sites harboring patches of “boggy” vegetation that are far south of the Tension Zone and the usual range of true bog vegetation. Pictured here is an open meadow that supports several plant species characteristic of northern peatlands. The open areas are bordered by a dense conifer swamp composed of tamarack. The shrubs in the foreground are poison sumac, one of the unavoidable hazards of working in such communities. Not only is this patch of “northern” vegetation small and isolated but in the mid-1800s the site was surrounded by prairie and oak savanna. Silver Lake Bog State Natural Area, Kenosha County, Southern Lake Michigan Coastal Ecological Landscape. Photo by Thomas Meyer, Wisconsin DNR.

Some vegetation classified as “Bog Relict” is “boggy” only in a general sense, and not many wetland ecologists would classify them by the criteria used to describe and define the peatland communities elsewhere in the northern hemisphere. The latter attributes include water source, water chemistry, peat accumulation, peat landforms, and species composition.

Stands examined in southeastern Wisconsin are all somewhat alkaline and more closely resemble “shrub-fen” communities described in other states (Kost et al. 2007) and the Province of Ontario (Harris et al. 1996) than the much more highly acidic bogs and other peatlands found north of the Tension Zone in Wisconsin. In the “Bog Relicts,” the representation of peatland species that are widespread and common farther north is sometimes very weak, an attribute that may have become more pronounced in recent decades due to continued habitat degradation, successional processes in the absence of a functional natural disturbance regime, and perhaps climatic factors.

Community Description: Composition and Structure

Most examples occur in the poorly drained glaciated terrain of southeastern and south central Wisconsin, but a few stands



Locations of Bog Relict 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.

classified here have been documented in Driftless Area valleys in the southwestern part of the state. The Bog Relicts have proven to be highly vulnerable to invasion by exotic shrubs and herbs, especially glossy buckthorn (*Rhamnus frangula*) and reed canary grass (*Phalaris arundinacea*). Native species such as red maple (*Acer rubrum*), dogwoods (*Cornus* spp.) and willows (*Salix* spp.) now dominate the understories of at least some of these occurrences, and the abundance of these species may have altered the processes that had previously maintained the “relict bogs” over recent millennia.

Among the acidophiles present are peat mosses (especially *Sphagnum* spp.), certain sedges such as few-seeded sedge (*Carex oligosperma*), ericaceous shrubs such as leather-leaf (*Chamaedaphne calyculata*) and Labrador-tea (*Ledum groenlandicum*), and insectivorous herbs such as purple pitcher plants (*Sarracenia purpurea*), sundews (*Drosera* spp.), and bladderworts (*Utricularia* spp.). Tamarack (*Larix laricina*) is usually the most common tree, though the presence of tamarack in many stands has declined and is now sparse, with the trees existing as scattered individuals or clumps. Poison-sumac (*Toxicodendron vernix*) may be abundant and a formidable impediment to access, especially in the moat (or “lagg”) at the upland/wetland interface of many of these so-called “relicts.” Other tall shrubs, such as speckled alder (*Alnus incana*), common winterberry (*Ilex verticillata*), and nannyberry (*Viburnum lentago*) may also be quite common, and these may be “released” and increase rapidly when hydrology is disrupted or the partial canopy of remnant conifers is removed.

Conservation and Management Considerations

The bog relicts can and sometimes do support outlying populations of plants and animals that are more widespread in northern Wisconsin peatlands and represent disjunct outposts of biodiversity at the species and community levels that are significant from at least the local perspective. The relicts also pose and exemplify interesting problems in plant

and animal biogeography as well as increasingly daunting challenges to those charged with managing, maintaining, or restoring them.

The origin of the Bog Relicts remains somewhat problematic. Some researchers contend that such vegetation is not “relictual” at all but is the result of climatic shifts that have occurred several times since the Pleistocene and the retreat of the glacial ice. However, the mechanisms explaining shifts from ombrotrophic bog to minerotrophic marsh and back again under different climatic regimes have not been clearly explained in the Upper Midwest (Crum 1988).

What is less puzzling but more urgently troubling is that some of these boggy peatland complexes are now in very poor condition (due to hydrological disruption, land use changes, and climate change) and apparently converting to vegetation types in which deciduous shrubs and trees that are common and widespread across southern Wisconsin are quickly becoming dominant. Among these are the pernicious invasive exotic shrubs glossy buckthorn (*Rhamnus frangula*) and common buckthorn (*R. cathartica*). There is a need to better document the structure and composition of the Bog Relicts in the very near future and clarify recent changes to landscape context and functional elements as these may be the keys to restoration potential. Note that most of the more intact conifer swamps of southern Wisconsin have been classified as “Southern Tamarack Swamp.”

Additional Information

For related information, see the natural community descriptions for Southern Tamarack Swamp, Northern Tamarack Swamp, Black Spruce Swamp, Southern Hardwood Swamp, Poor Fen, and Boreal (Rich) Fen. The U.S. National Vegetation Classification type most closely resembling Wisconsin’s “Bog Relict” community is probably Central Tamarack – Red Maple Rich Swamp CEG005232 (Faber-Langendoen 2001). This is really a complex but with some differences from the kettle bog complexes in northern Wisconsin.

FROM: Epstein, E.E. Natural communities, aquatic features, and selected habitats of Wisconsin. Chapter 7 in *The ecological landscapes of Wisconsin: An assessment of ecological resources and a guide to planning sustainable management*. Wisconsin Department of Natural Resources, PUB-SS-1131H 2017, Madison.

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

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