

Volo Bog State Natural Area (Ingleside, Illinois, United States) – Exemplar of Bog Succession

Julie Nieset¹

Volo Bog State Natural Area (SNA) is located in northern Illinois in the town of Ingleside (Figure 1). It was nominated and accepted by Society of Wetland Scientists as a Wetland of Distinction for its unique and exceptional qualities discussed below. Perhaps, most importantly, it is the southernmost open-water quaking bog in North America to exhibit all stages of bog succession and Illinois' only remaining open-water quaking bog; hence meeting the WoD metric of rare/unique wetland type within its own biogeographical region. Volo Bog provides habitat for biologically diverse wetland flora and fauna. It is recognized locally as an Illinois Nature Preserve and nationally as National Natural Landmark. Interpretive staff and volunteers organize and provide a plethora of educational outreach and management opportunities for the public. While largely now protected due to state protection, ecological threats include non-native species and an adjacent concrete recycling facility that impacts the site with noise and particulate pollution. Surrounding neighborhoods currently are low density.

¹Illinois Natural History Survey, University of Illinois, Champaign, IL; author contact: jeneset@illinois.edu

The story of how Volo Bog State Natural Area (SNA) came to be preserved and protected is a familiar story to those of us in this profession during this general juncture in history: A place of unique diversity threatened with development that is saved through the grit and ingenuity of groups of determined people. As we wade a bit into this story and sip the depths and breadth of this 12,000+ year-old open-water quaking bog, gleaning the beauty and richness it holds, we begin to sense the largely absent pre-colonial stories of those who co-existed with this bog. The Kiikaaopoi (Kickapoo), Peoria, Bodéwadmiké (Potawatomi), Myaamia, Hoocak (Ho-Chunk), Očhéthi Šakówiŋ territories encompassed the lands of Volo Bog. As the traditional territory of these Native Nations, these lands continue to carry the stories of these Nations, their struggles for survival and identity prior to their forced removal. This statement is a hope that there may be movement of our culture, toward true reconciliation that invites and acknowledges these voices, past and present.

The landscape of the Volo Bog SNA was shaped 12,000 years ago as part of the Woodfordian Stage of the Wisconsin Glaciation which created the Valparaiso Moraine of the Northeastern Morainal Natural Division (McCommas et al. 1972). Ice blocks broke off the receding glacier and over time were buried by glacial outwash. As the glaciers melted, depressions were created that became lakes. Those lakes that exhibited poor drainage were primed to become today's bogs. They filled up with vegetation like *Sphagnum*

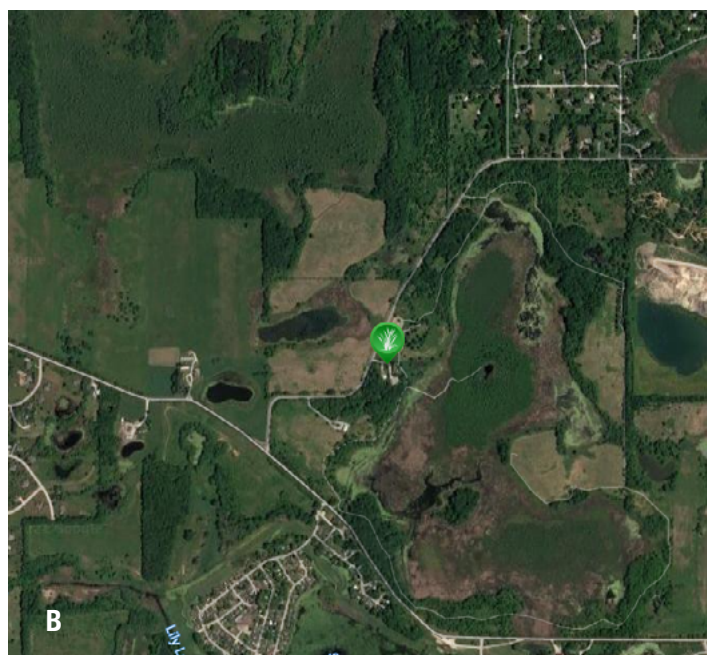
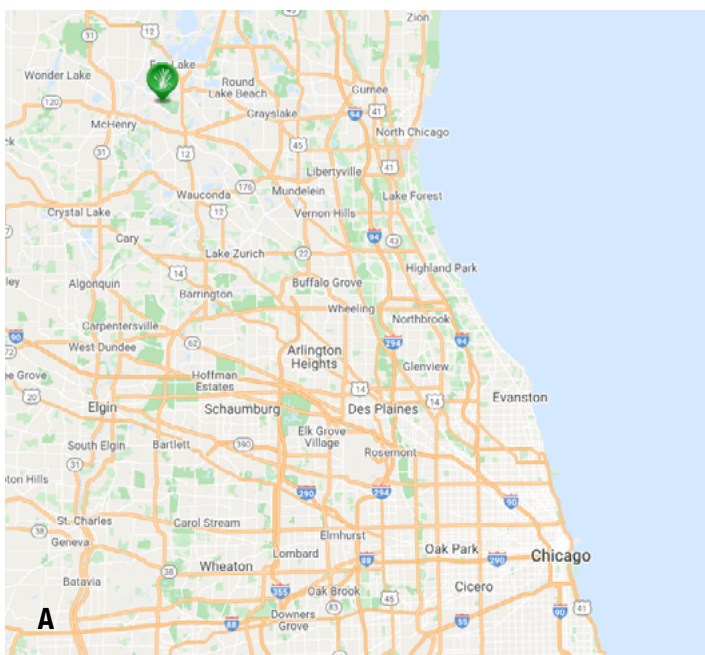


Figure 1. Volo Bog State Natural Area: a) location in northern Illinois and b) aerial view. (Sources: Google Maps and Google Earth, respectively)

mosses. Over time these mosses and other vegetation died. As they decomposed, very slowly and incompletely, they formed a peat mat that helped to create acidic bog conditions. Pollen grains found in stratigraphically contiguous cores of bog sediment at Volo Bog SNA and carbon dated indicate trees such as spruce (*Picea*), fir (*Abies*), birch (*Betula*), alder (*Alnus*), ash (*Fraxinus*), and others grew there between 10,000-11,000 years ago, with subsequent shifting of tree species to present times (King 1981).

This *Wetland of Distinction* in northeastern Illinois is the only open-water quaking bog in the state and North America's southernmost open-water quaking bog, which hosts all stages of bog succession (Figure 2). There are concentric zones of vegetation that grade into one another, around the open water – frequently referred to as the Eye of Volo Bog. Surrounding the open water is a floating herb mat of sedges and ferns over 50 feet of water and muck too thin to support shrubs or trees. As the mat thickens shrubs are supported in what is called the low or inner shrub zone where Leatherleaf (*Chamaedaphne calyculata*), Dwarf Birch (*Betula pumila*), Bog Willow (*Salix pedicellaris*), young Tamarack (*Larix laricina*) trees and other shrubs are growing; the next zone, the older tamarack tree zone is also where the *Sphagnum* mosses abound. These deciduous tamaracks shower the eye with spectacular golds in autumn. The tall or outer shrub zone holds Poison Sumac (*Toxicodendron vernix*), Winterberry (*Ilex verticillata*), and other shrubs. The marsh zone is the furthest from the center which is more of a sedge meadow when water levels are lower.

The Tamarack View Trail is a loop trail around the bog that includes a floating boardwalk through the marsh. The Volo Bog Interpretive Trail is a boardwalk that ventures *into* the eye of the bog where visitors can directly view the five different plant zones, enjoying the uncommon flora of each, with a chance to spy some of the related fauna (Figure 3).

Approximately 160 plant species abound in Volo Bog, with 21 that are state endangered or threatened (Curtis 2010). Some of the herbaceous plants found here are Pitcher Plant (*Sarracenia purpurea*), Bog Buckbean (*Menyanthes trifoliata*), Gray Bog Sedge (*Carex canescens*), Wild Calla (*Calla palustris*) and Cotton Sedge (*Eriophorum virginicum*). Some notable tree and shrub species are present that have high (9-10) rating for Coefficient of Conservatism: Tamarack, Dwarf Birch, Bog Willow, and Highbush Cranberry (*Viburnum opulus* var. *americanum*).

There is an abundance of wildlife at Volo Bog SNA. The Illinois Department of Natural Resources (IDNR), along with the McHenry County Audubon Society lead regular public bird hikes. 212 species of birds have been recorded at Volo Bog SNA of which 68 species are known or highly probable to nest at the site. Wood ducks (*Aix sponsa*), Red-winged Blackbirds (*Agelaius phoeniceus*), Song Sparrows (*Melospiza melodia*), Yellow Warblers (*Setophaga petechia*), Great-blue Herons (*Ardea herodias*), Green Herons (*Butorides virescens*), Great Egrets (*Ardea alba*), and Yellow-rumped Warblers (*Setophaga coronata*) are some common birds seen seasonally. Some rarer to the region bird species include the Virginia Rail (*Rallus*



Figure 2. Overlooking the 'Eye' of Volo Bog. (Photo by Stacy Iwanicki)

limicola), Sora (*Porzana Carolina*), Marsh Wren (*Cistothorus palustris*), Swamp Sparrow (*Melospiza georgiana*), Black-crowned Night Heron (*Nycticorax nycticorax*) (state endangered), and Sandhill Crane (*Antigone canadensis*). Recently, the state-endangered King Rail (*Rallus elegans*) was found at Volo Bog SNA (Rahlin 2020).

There are 30 species of mammals listed as being at Volo Bog SNA. Bat species such as the Little Brown (*Myotis lucifugus*) and Big Brown Bat (*Eptesicus fuscus*), are confirmed during the interpretive center bat programs. Other species of mammals are those common to wet areas like Beaver (*Castor canadensis*), Mink (*Mustela vison*), Masked Shrew (*Sorex cinereus*), Meadow Jumping Mouse (*Zapus hudsonius*), Meadow Vole (*Microtus pennsylvanicus*), and Muskrat (*Ondatra zibethicus*). Lists for reptiles, amphibians, diverse insects, e.g. damselfly and dragonfly species at Volo Bog SNA are in progress, as well as those for freshwater snails (Tiemann 2014).

There are areas on the property surrounding the wetlands (woodlands, savanna, marsh, shrub, old field, and prairie) being restored. Volunteers through the Illinois Department of Natural Resources engage in habitat restoration around the bog, including invasive upland buckthorn and honeysuckle removal. Bluebird houses have been erected along a trail for regular monitoring.



Figure 3. Volo Bog Interpretive Trail boardwalk during autumn. (Photo by Stacy Iwanicki)

Although there is a healthy population of Tree Swallows (*Tachycineta bicolor*) that claim the bird boxes, Eastern Bluebird (*Sialia sialis*) populations have increased here (Chicago Tribune 2020). Data is sent to the East Central Illinois Bluebird Society for increasing knowledge about local bluebird population dynamics. This state natural area also hosts ongoing field research studies on Sandhill Cranes and Wood Duck populations.

At the Volo Bog Visitors Center there is a butterfly garden with an outdoor display created with artwork by members of Girl Scout Troop 264 (Figure 4). 27 butterfly species have been noted at Volo Bog SNA, including the Spicebush Swallowtail (*Papilio Troilus*), Red Spotted Purple (*Limenitis Astyanax*), Baltimore Checkerspot (*Euphydryas phaeton*), Painted Lady (*Vanessa cordui*), Comma (*Polygonia comma*), Mourning cloak (*Nymphalis antiopa*), Eastern tailed Blue (*Everes comyntas*) and the Eyed Brown (*Satyroides eurydice*). The state endangered Swamp Metalmark (*Calepeilis muticum*) is found here.

A core value of the staff at Volo Bog SNA throughout the decades, is engaging with local citizens. From the early 1970s when seasonal naturalists utilized a 4' x 8' plywood hut (with a lawn chair) to the renovated circa-1900 dairy barn turned sportsman clubhouse now known as the Volo Bog Visitors Center (Figure 5), numerous outreach activities occur throughout the year. Visitors regularly join in a plethora of seasonal nature hikes and bog tours as part of the interpretive programming. A snapshot of the current happenings at Volo Bog SNA includes habitat restoration and stewardship days, outdoor and environmental literature, bird walks, a photography group meet called "ShutterBugs of Volo Bog", "Walk with a Naturalist" programs, and an Annual Nature Photo Contest on display at the visitor center with a subsequent award ceremony. Notably the "Of Bogs and Books" book discussions of classic to contemporary natural history have been ongoing since 1994 with close to 300 environmental books read and discussed.

Locals enjoy music, crafts, snow sculpting, and bog tours seasonally at Winterfest. Activity guides are available for students to learn about the bog (Iwanicki 1995a,b). The Volo Bog teaching herbarium contains at least 147 vascular plants from the bog basin (Curtis 2010). Friends of Volo Bog (FOVB) is a non-profit organization started in 1983 "dedicated to the preservation of Volo Bog through education and citizen awareness" (Friends of Volo Bog 2022). The FOVB newsletter - "The Bog Log" - was also started at this time and continues to be published quarterly. This group organizes a shop and other fundraising efforts to support Volo Bog SNA activities.

Stacy Iwanicki has been at Volo Bog SNA for 34 years and is the current Natural Resources Coordinator. When



Figure 4. Butterfly garden outdoor display at Volo Bog SNA. (Photo by Julie Nieset)



Figure 5. View overlooking Volo Bog SNA Visitors Center. (Photo by Julie Nieset)

she leads hikes through the bog, she says “Sometimes I conclude with the story of *Billy on a bicycle*”.

The Billy she refers to is Dr. William J. Beecher, past Director of the Chicago Academy of Sciences who wrote an article for the Chicago Tribune Magazine about saving Volo Bog from development, with the apt title “A quaking remnant of the Ice Age, Volo Bog has recorded changes in our climate for 12,000 years. Anybody care to try for 13,000?” In the article he writes about himself as a young boy on his bicycle pedaling across the landscape. When he encounters the bog, “...I stood stunned. There... springing out of a flat, round sedge marsh, were green spires of conifers...I knew this must be a tamarack bog... a secret place, a wilderness of rare birds and orchids. I could not have imagined...one day I would be fighting for its life in a court battle.” His treasured time exploring in the bog during childhood led him to be part of citizen resistance to its proposed development and subsequent protection as an adult.

During the 1940s and 1950s locals were noticing natural areas being destroyed and realized that Volo Bog needed protection. Through the then-forming Illinois Chapter of The Nature Conservatory volunteers started a fundraising campaign that led to the purchase of a portion of the area - 47.5 acres of bog, which was donated to the University of Illinois in 1958 (Iwanicki 2007-2008).

Then in the 1960s the wetlands and meadows surrounding the bog were threatened with development that would adversely affect the bog. The harrowing story is described in the Beecher article originally in Chicago Tribune and re-told in Winter 2007-8 issue of *The Bog Log* (Iwanicki 2008). In brief, there was a hasty move by a developer to appeal to the local planning commission

to install a 94-million-dollar complex of homes, condominiums, shopping center, and golf course to surround Volo Bog. The commission voted down the re-zoning for development by one vote. This was followed by a rezoning decision made in a courtroom, with subsequent underhanded actions by the developer who dug a trench that threatened to impact the existence of the bog that resulted in more dramatic courtroom hearings. In the end there was enough public support and pressure for the Illinois Nature Preserves Commission to utilize the state’s right of eminent domain to take the land.

Thus, what started out as grassroots efforts by citizens, led to state agency intervention that prevented the development around Volo Bog. The bog was then transferred to the Illinois Department of Natural Resources and dedicated as an Illinois Nature Preserve. Since this time nearly 1200 additional acres have been acquired as buffer, adding two other bogs (Pistakee and Brandenburg Bogs), marshes, woodlands, shrubland and other open-land to the original protected parcel. In 1974 Volo Bog SNA became officially recognized as a National Natural Landmark (Illinois Nature Preserves Commission 2010).

Iwanicki remarks further during her hike “...12 years old...think about a 12-year-old that you know. You never know what great things they will do, how the experiences you share with them will lead them to what they will love...” Indeed as Dr. Beecher’s childhood adventures in the bog formed a foundation for him to help protect and preserve the bog there is much potential in sharing knowledge of and enthusiasm for the wetlands in our care with others.

Truly the staff at Volo Bog SNA are an inspiration implementing educational initiatives. All their outreach activities undoubtedly have led to citizens cherishing



Figure 6. In 2021 Volo Bog SNA celebrated International Bog Day with an art show, live music, bog tours, bog crafts, and bog frog cookies and cake. International Bog Day (celebrated the 4th Sunday of July) was established in Scotland in 1991 and was first celebrated in the United States at Volo Bog SNA in 2008. Other areas in the U.S. started celebrating starting 2012. (Photo by Stacy Iwanicki and cake artwork by Chuck Keller)

this significant body of life. If you find yourself in the Chicago Illinois area take the time to check Volo Bog out in person! In the meantime current events are listed <https://www.friendsofvolobog.org/> as well as through this Facebook page: <https://www.facebook.com/Friends-of-Volo-Bog-330866217005358>. They invite other bogs to celebrate International Bog Day (celebrated the 4th Sunday of July) (Figure 6).

View their social media page to see photos of critters and plants (like the lovely Rose Pogonia Orchid (*Pogonia ophioglossoides*) in Figure 7) throughout the season and find opportunities to attend virtual events currently through Zoom. Let's support this bog and those who care for it by spreading some of their commitment to outreach and delight in wetlands, in turn, to our own wetlands in our respective regions. Here's to those who care for and protect Volo Bog - may their example and others like them continue to move our culture in the direction of treasuring and nurturing our natural areas, deepening and broadening our stories of place.



Figure 7. Rose Pogonia Orchid (*Pogonia ophioglossoides*) in Volo Bog SNA. (Photo by Steve Savocchi)

Table 1. Links to videos and articles about Volo Bog.

Video	Volo Bog State Natural Area: Lake County - Bing video
	Eye of Volo Bog June 2021 - Bing video
	https://www.youtube.com/watch?v=9sCgn0-fPTc
Article	https://petalspapersimplethymes.wordpress.com/2016/08/16/volo-bog-state-natural-area/
	https://skyaboveus.com/climbing-hiking/Off-The-Beaten-Path-Chicago-Volo-Bog
	https://www2.illinois.gov/dnr/oi/documents/june08volobog.pdf

ACKNOWLEDGEMENTS

Thank you to Stacy Iwanicki and Steve Savocchi for permission to use their photos in this publication. Additional thanks to Stacy Iwanicki for sharing resources and knowledge that were utilized in the writing of this article and for her long-time commitment and care of Volo Bog SNA.

REFERENCES

- Beecher, W.J. 2008. The battle to save Volo Bog. The Friends of Volo Bog, Ingleside, IL. The Bog Log 25(1 - Spring 2008).
- Checklist of Butterflies of Volo Bog <https://www.friendsofvolobog.org/checklists>
- Checklist of Birds at Volo Bog State Natural Area https://939e6bb0-0cb8-4fc4-ab41-37e96d56f754.filesusr.com/ugd/25b1f6_3ad5f2f6035b4d22889cd704ff058c11.pdf
- Curtis, L. 2010. Additions to the Volo Bog Herbarium, Illinois Nature Preserve, Lake County, Illinois. Illinois Native Plant Society. *Erigenia* 23 (Winter 2010): 34-38. https://illinoisplants.org/images/pub/Erigenia_No_23_Winter2012.pdf#page=36

Chicago Tribune. 2020. Volunteers monitor man-made boxes to help native songbirds. Accessed January, 3, 2022. <https://www.chicagotribune.com/suburbs/lake-county-news-sun/ct-lns-bluebird-monitors-st-0608-20200607-kmle6zbj4fdtjkw16weyiigkfi-story.html>

eBird Checklist – Volo Bog State Natural Area. <https://ebird.org/hotspot/L322146>

Friends of Volo Bog. 2022. <https://www.friendsofvolobog.org/>
Illinois Nature Preserves Commission. Volo Bog. 2010. Accessed November 5, 2021: <https://www2.illinois.gov/dnr/INPC/Pages/Area2LakeVoloBog.aspx>

Iwanicki, S. 2008. Now and Then: The intriguing history of Volo Bog: 50th Anniversary of Volo Bog's Purchase by The Nature Conservancy. *The Bog Log: The Quarterly Newsletter of the Friends of Volo Bog and Volo Bog State Natural Area*. Vol. 24 (4).

Iwanicki, S. 1995a. Ecology of Volo Bog, Part 1. Curriculum for 10th – 12th grade students. <https://www2.illinois.gov/dnr/Parks/Interpret/Documents/Ecology%20of%20Volo%20Bog%20Part%201.pdf>

Iwanicki, S. 1995b. Ecology of Volo Bog, Part 2. Curriculum for 10th – 12th grade students. <https://www2.illinois.gov/dnr/Parks/Interpret/Documents/Ecology%20of%20Volo%20Bog%20Part%202.pdf>

Jeffords, M., and S. Post. 2014. Volo Bog State Natural Area. Exploring Nature in Illinois: A Field Guide to the Prairie State. University of Illinois Press, Champaign, IL. pp. 80–83. <http://www.jstor.org/stable/10.5406/j.ctt6wr55m.26>.

King, J. 1981. Late Quaternary Vegetational History of Illinois. *Ecological Monographs* 51 (1): 43-62. Accessed November 10, 2021: https://www.jstor.org/stable/2937306?seq=1#metadata_info_tab_contents

Checklist of Mammals of Volo Bog <https://www.friendsofvolobog.org/mammals-index-page>

McComas, M., Kempton, J., and K. Hinkley. 1972. Geology, Soils, and Hydrogeology of Volo Bog and Vicinity, Lake County, Illinois. Illinois State Geological Survey. *Environmental Geology Notes* Number 57. <https://www.ideals.illinois.edu/bitstream/handle/2142/78971/geology-soilshydr57mcco.pdf?sequence=1>

Frankie W., J. Miner, S. Benton, G.E. Pociask, E. Plankell, A. Stumpf, and R. Jacobson. 2007. Guide to the geology of Moraine Hills, Glacial Park, and Volo Bog areas, McHenry and Lake Counties, Illinois. <https://www.semanticscholar.org/paper/Guide-to-the-geology-of-Moraine-Hills%2C-Glacial-and-Frankie-Miner/cb90f50ac12296a357e663732e02ce252908d955>

Native Land Digital. 2021. Accessed November 5, 2021. <https://native-land.ca/>

Rahlin, A. 2020. Finding one elusive bird. <https://news.illinois.edu/view/6367/1639621107>

Sheviak, C., and A. Haney. 1973. Ecological Interpretations of the Vegetation Patterns of Volo Bog, Lake County, Illinois. *Transactions Illinois Academy of Science*. <https://ilacadofsci.com/wp-content/uploads/2013/10/066-13-print.pdf>

Tiemann, J. 2014. Freshwater snail survey of wetlands in northern Illinois. Illinois Natural History Technical Report 2014 (07) 20 February 2014. <http://hdl.handle.net/2142/47232>

Trees and Shrubs of Volo Bog State Natural Area. 2021. Accessed November 10, 2021. <https://www.friendsofvolobog.org/checklists>