Chiwaukee Illinois Beach Lake Plain Ramsar Site
Additional Information

Geographical coordinates
- Center: 42º27'38.76" N, 87º48'32.88" W
- Northeast: 42º32'55.19" N, 87º49'03.13" W
- South: 42º24'57.60" N, 87º48'42.15" W
- Southwest: 42º23'12.73" N, 87º49'43.24" W

General location
The Chiwaukee Illinois Beach Lake Plain is located in the states of Wisconsin and Illinois in the United States of America. Within the Great Lakes Basin along the south western coast of Lake Michigan, the site is directly south of the City of Kenosha, Wisconsin with its southern boundary extending into the City of Waukegan, Illinois. The site is approximately 25 miles south of Milwaukee, Wisconsin and approximately 35 miles north of Chicago, Illinois.

Elevation
- Average: 179 m.
- Minimum: 176m (average elevation of Lake Michigan).
- Maximum: 188 m (elevation of the western reach of the Glen Flora tributary and wetlands).

General overview of the site (cont.)
In addition to the biodiversity supported by this area, the Lake Plain provides critical ecosystem services, including protection of Lake Michigan water quality; Lake Michigan is used by more than 8.5 million people as a primary source for drinking water in northeast Illinois alone. Five major tributaries and several minor tributaries flow into and through the Lake Plain prior to reaching Lake Michigan, the largest include: Barnes Creek, Dead Dog Creek, Kellogg Creek, Bull Creek and the Glen Flora Tributary. Over thousands of years, these tributaries cut through the glacial material to create unique coastal ravine communities that support many regionally rare northern relic plant species that are associated with seepage of groundwater along steep, clay loam slopes.

The southern basin of Lake Michigan is the most urbanized area in the Great Lakes system. Positioned between two major metropolitan areas (Chicago to the south and Milwaukee to the north) and directly adjacent to numerous smaller municipalities, the Lake Plain provides significant tourism opportunities for local communities, supporting over 2 million visitors a year, engaging community members in volunteer conservation stewardship, and providing high quality examples of coastal wetland communities for education and scientific research.

Ramsar Criteria (cont.)
Criterion 1:
The Ramsar Site supports six representative wetland community types of exemplary high quality and which are designated with a global conservation status ranking* of imperiled or vulnerable as described by the Association for Biodiversity Information and the Nature Conservancy in Plant Communities of the Midwest, Classification in an Ecological Context (2001).

Great Lakes Interdunal Wetlands, Pannes; **Ramsar Wetland Type- Ts (seasonally flooded meadows, sedge meadows)**.

> **DESCRIPTION:** Herbaceous vascular plants have <30% cover, trees and shrubs together have <30% cover, and trees alone have <5% cover. Several variants of this community occur, correlating with depth to the mean annual water table (centers of swales versus highest portions of swales) and distance inland from the lakeshore (exposed duneland versus sheltered inland/duneland). The species composition of the community resembles alkaline shrub/herb fens, especially in the zone of groundwater emergence.

The best examples of panne within the Lake Plain occur at Illinois Beach State Park and Hosha Prairie. Sixty-six acres of panne are found within the Lake Plain, primarily at Illinois Beach State Park.

CONSERVATION RANK: *Globally Imperiled (*the total number of occurrences is unknown). Thirty-six have been documented: 2 in Illinois, 6 in Indiana, 3 in Michigan, and 5 in Wisconsin. No other occurrences have been documented, but the community also occurs in Ontario. It is found in 14 ecoregional subsections. Sizes of 29 occurrences range from 1 to 430 acres, totaling 1326.

Southern Great Lakes Shore Emergent Marsh; **Ramsar Wetland Type- Tp (freshwater marshes and pools)**.

DESCRIPTION: Typical dominants include the emergents *Schoenoplectus tabernaemontani (= Scirpus tabernaemontani)* and *Typha* spp. (*Typha angustifolia, Typha X glauca, Typha latifolia*).

The best examples of freshwater marshes within the Lake Plain occur at Spring Bluff and Chiwaukee Prairie, within the deep water interdunal swales and at Illinois Beach State Park, especially adjacent to the Dead River and within interdunal swales connected to the Dead River.

CONSERVATION RANK: *Globally Vulnerable and Apparently Secure.* This type is found in at least 24 sites in the southern Great Lakes, as part of a number of different Great Lakes Wetland Complexes, but many are disturbed.

Lake Plain Wet Prairie, Wet Sand Prairie; **Ramsar Wetland Type- Ts (seasonally flooded meadows)**

DESCRIPTION: Average vegetation height is 1-2 m with little bare ground exposed. The dominant species are graminoids, although forbs and small trees and shrubs are common.

The best examples of wet sand prairie within the Lake Plain occur at Illinois Beach State Park, Spring Bluff Nature Preserve and Chiwaukee Prairie State Natural Area where the best examples can be found slightly upslope from interdunal swales.

CONSERVATION RANK: *Globally Imperiled and Globally Vulnerable.* There are probably fewer than 100 occurrences of this community range wide. It is reported from Ohio, Indiana, Michigan, Ontario and Vermont. Currently 19 occurrences have been documented from Indiana and Michigan. There are probably less than 4000 acres range-wide. Currently over 370 acres have been documented; the average documented size is about 37 acres.

Cinquefoil - Sedge Prairie Fen, Graminoid Fen or Low Shrub Fen; **Ramsar Wetland Type- U (fens)**.

DESCRIPTION: Graminoids dominate, though forbs and dwarf-shrubs can be prominent. Shrub swamps or tall-shrubfens often surround the core fen area.

The best examples of graminoid fen within the Lake Plain occur at Illinois Beach State Park, Chiwaukee Prairie Scientific Area and Chiwaukee Prairie State Natural Area. In Chiwaukee Prairie 60 acres of fen community have been identified and mapped.

CONSERVATION RANK: *Globally Vulnerable and Apparently Secure*

Twigrush Wet Prairie; **Ramsar Wetland Type- Ts (seasonally flooded meadows, sedge meadows)**

DESCRIPTION: The dominant species include *Carex lasiocarpa* and/or *Cladium mariscoides*. *Carex sartwellii* and occasionally *Calamagrostis canadensis, Calamagrostis stricta*, or *Carex stricta* may be locally dominant.

The best examples of twigrush wet prairie within the Lake Plain occur at Illinois Beach State Park and Chiwaukee Prairie Scientific Area.

CONSERVATION RANK: *Globally Imperiled.* There are probably fewer than 50 occurrences of this community range-wide. It is reported from Ohio where it is found only in the Oak Openings region in the northwest part of the states.

Skunk Cabbage Seepage Meadow, seep; **Ramsar Wetland Type – Xf (Tree-dominated intermittent inland wetland)**

DESCRIPTION: This is an herbaceous-dominated community. Tree and shrub cover may vary, particularly from overhanging upland trees, but trees and shrubs rooted in the stand are less than 25% cover. Forbs dominate the community.

The best examples of skunk cabbage seepage meadows within the Lake Plain occur within the Glen Flora ravine, along the Dead Dog Creek tributary and within vernal pools at Spring Bluff.

CONSERVATION RANK: *Apparently Secure.* This community is found throughout the upper Midwestern region of the United States and adjacent Canada, where it develops around spring heads and in broader areas of groundwater discharge. The type extends from Indiana and possibly Ontario and Ohio, west to Minnesota and Iowa.

Criterion 2

Charadrius melodus (piping plover); Federally Endangered (cont.)

The restricted breeding range of this population creates a gap in the distribution of piping plovers across North America, with the Great Lakes population isolated from the two other breeding populations (Atlantic and Northern Great Plains). The current size of the Great Lakes population makes it extremely vulnerable to chance demographic and environmental events that could extirpate the species from the Great Lakes region.

On May 7, 2001 the USFWS designated 10.2 km of shoreline in the Lake Plain at Illinois Beach State Park, owned by Illinois Department of Natural Resources, and Hosha Prairie owned by Zion Park District (as well as land owned by the Johns Manville Corporation, NRG Energy, City of Waukegan and North Shore Sanitary District not included in this nomination), as critical habitat for the piping plover. This represents 3% of the total Great Lakes shoreline designated as critical habitat for this species (323 km). Critical habitat is defined as (i) the specific areas within the geographical area occupied by a species on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management consideration or protections; and (ii) specific areas outside the geographic area occupied by a species upon a determination that such areas are essential for the conservation of the species. The southern portion of the Lake Plain has also been designated as an Important Bird Area by the National Audubon Society. After an absence from breeding in Illinois of over thirty years, piping plovers were once again documented as nesting at Waukegan Beach in summer 2009, just outside of the Ramsar site's boundary. Four eggs were laid; however when adults abandon the nest, the eggs were taken to the Lincoln Park Zoo for hatching and release in Michigan. Biologists continue to monitor the southern portion of the Lake Plain annually during the breeding season for adult piping plovers.

Criterion 4

Ornithologists at Chicago's Field Museum of Natural History estimate that on average, more than five million migrating songbirds pass up and down the coast of Lake Michigan, including the Chiwaukee Illinois Beach Lake Plain. This represents a significant fraction of the total number of migrant songbirds moving through the entire North American continent. Most of these species are "passerines" or land birds, which migrate at night (to avoid predators, mainly hawks and falcons, which migrate by day) and alight in any scrap of open space they find when dawn breaks. Passerines avoid flying over water if at all possible and especially when winds are from the west, tend to crowd right up against the lake shore while flying, a pattern that has been documented by use of Doppler radar by the Illinois Natural History Survey. The entire Lake Michigan shoreline is especially important as a navigational aid, bringing species both to and through the area. The lake acts as a natural "funnel" for birds passing around the lake to destinations north, northwest and northeast (from the south and southwest) during spring migration (including Willets, Sanderlings, Bonaparte's Gulls, various terns and a variety of passerines, especially warblers) and for species that are heading south and east around the bottom of the lake (including such

diverse species as loons, Tundra Swans, scoters and other ducks, various hawks especially Broad-winged, accipiters, and falcons, Sandhill Cranes, jaegers, and Black-throated Blue, Connecticut, and Mourning Warblers) in fall. One of the most important roles of lakes, ponds, and impoundments, such as sand pond found within Illinois Beach, is as resting habitat for migrating waterbirds. These open-water habitats are often the only deep-water habitat available for loons, grebes, scaup, Common Goldeneyes, Buffleheads, and mergansers, all of which dive to catch food. Similarly, gulls and terns forage over open water during migration. Lake Michigan and its immediate shoreline provide most of this type of habitat for a large percentage of waterbirds passing through the area during migration. At low water, the edges of lakes are also used by shorebirds, herons, and egrets.

Biogeographic region

The Ramsar Site occurs within an ecoregion that comprises portions of southern Minnesota, Wisconsin, and Michigan and northern portions of Illinois and Ohio, known as the Midwest Broadleaf Forest Province. The ecological sub-region known as the "Southwestern Great Lakes Morainal Section (222K) affects the climate of the region resulting in warm to hot summers and frequent growing season water deficits, especially in late summer.

Physical features of the site

Geology and Geomorphology **-** The Lake Plain is located within the Wheaton Morainal Country subdivision of the physiographic division called the Great Lakes Section of the Central Lowland Province. The bedrock of the Lake Plain is dominated by sedimentary bedrock (dolomite). The sedimentary bedrock is alkaline (calcareous), forming soils that are nutrient- and moisture-rich loams and clays. Bedrock is overlain by glacial sediment and landforms created during the last glaciation (Wisconsin Episode, ~ 17,000 years ago), including several moraines, that, in combination with recent (within the last 4000 years) long-shore transport processes (waves, near shore currents), create the prevalent physiographic features of the coastal dune and swale system. The Lake Plain is composed of a set of beach ridges and dunes with intervening swales that formed by fluctuating lake levels after the final retreat of glacial ice from the Lake Michigan basin during and after the last glacial episode (Chrzastowski 2000). The beach ridges consist of sand and gravel that were built up by wave action. Dune sand caps many of the beach ridges. The swales are the intervening low-lying spaces where wetlands often form and are commonly underlain by organic matter. The western most portion of the Lake Plain is characterized by a bluff and ravine system. The ravines formed from surface water runoff following a path of least resistance to the swales within the downstream lake plain. Over time, the runoff deepened the channels and steep ravines formed. Often the incision of the ravines intersected with the ground water table and water seeped out of the steep ravine banks, creating unique wetland micro sites along otherwise dry ravine slopes. Tree dominated wetlands also formed along the banks and meanders of the tributaries.

Origins **-** The evolution of the Lake Plain is well understood. It is a unique, migratory, coastal landform. About 17,000 years ago the Lake Michigan lobe of the Wisconsin glaciation receded northward forming a pro-glacial lake in southern lakes Michigan. The Lake Plain originated from coastal processes including wave dynamics, the movement of sediment by wave action, short and long-term changes in Lake Michigan lake levels, and the influence of coastal ice. Lake levels fluctuated dramatically between 17,000 and 2500 years ago as outflows were dammed and opened by retreating ice and moraines and as the Great Lakes basins responded to isostatic adjustment (removal of weight of ice caused the earth's crust to lift up). Sand and gravel that ultimately became the majority of the beach ridge/dune and swale portion of the Lake Plain were transported from eroded glacial deposits, including a delta that formed to the north in the Pike /Root river waterway. This material was eroded, transported and deposited by wave action and marked the beginning of the development of the dune and swale topography. Littoral transport was responsible for the formation of the dune and swale topography under the influence of wave action and wave-induced currents. During the past 3800 years there has been continued erosion of glacial relict deposits, including the delta and deposition along the Lake Michigan coast to form what today is call the Chiwaukee Illinois Beach Lake Plain. The ridges and swales found within the southern portion of the Lake Plain represent the youngest geologic features in the Lake Plain compared to those in the northern area of the Lake Plain known as Chiwaukee Prairie. The ravines formed in response to lake-level fluctuations. During low lake level phases, rivers and streams flowing into ancestral Lake Michigan down-cut into the substrate present when lake levels were tens to hundreds of feet lower than today. In

response to lower lake levels, erosion occurred along the river and stream channels draining to the lake, resulting in the incision of the ravines.

Hydrology and Water Quality - Sedge Meadows experience surface waters that are shallower than emergent marshes during the wettest months, on average 0.75 feet above land surface, but 0.5 to 2.0 feet below land surface in dry months. Wet prairies experience surface waters that are shallower during the wettest months, on average 0.5 feet above land surface in late winter and early spring, but 0.5 to 1.5 feet below land surface in dry months (Kay et.al 2009). Groundwater driven communities such as fens often show less fluctuation in ground water levels compared to emergent marsh and wet meadows, possibly due to the regular inflow of ground water and or the high organic content and moisture holding capacity of the soils that underlie these communities (Kay et.al. 2009). The seeps of the ravine communities play an important role in creation of wet microsites on otherwise dry clay slopes. These seeps provide a location where ground water daylights and flows across the ravine slope. Tributaries in the lake plain are generally perennial features, although many are significantly influenced by high volumes of runoff from urbanized areas or agricultural areas. Wetlands that are closer to or more directly influenced by tributaries that flow into the Lake Plain generally experience some level of degradation as indicated by the presence of invasive plant species and a loss of more conservative native vegetation.

Several man-made ponds and ditches occur throughout the Lake Plain. Although these features are not natural they are important open water areas for wetland dependent species, such as the Blanding's turtle, especially during times of drought and as resting areas for migratory species searching for protected open water habitat. Several of the tributaries that flow into the Lake Plain and ultimately Lake Michigan provide a critical link for fish to spawn up stream, although because of the dynamic nature of littoral drift, wave action and wetland hydrology, these tributaries can intermittently become blocked from Lake Michigan by sand and gravel deposits.

Hydrological values (cont.)
Several of the wetland types of high conservation concern, such as fens, rely on these recharge areas to maintain the groundwater upwellings that are critical for the hydrologic and chemical characteristics necessary to support calcifiles and other fen species. Because the Lake Plain is located at the bottom of the watershed, it provides little in the way of flood control; however, at a very local level, the wetlands provide flood control for the North Point Marina located directly east of Spring Bluff and the residences of the Carol Beach subdivision found within the northern portion of Chiwaukee Prairie.

Noteworthy flora
Forty-four (44) state protected plant species are known to occur in the Lake Plain. All of these species are considered unique and limited in their range, therefore the Lake Plain provides important habitat for the conservation of these species within the region. See Annex II for the list of State endangered and threatened plant species found within the Ramsar Site.

As mentioned under Criterion 1, the Ramsar Site contains significant wetland types. Below is a description of the flora found within each wetland type.

Great Lakes Interdunal Wetlands, Pannes.

> The physiognomy and floristics of the herbdominated intermediate zone of the swale are emphasized in this description and include *Calamagrostis canadensis, Carex* spp., *Cladium mariscoides, Eleocharis quinqueflora, Equisetum variegatum, Juncus balticus, Dichanthelium acuminatum var. fasciculatum (= Panicum implicatum), Rhynchospora capillacea, Schoenoplectus acutus (= Scirpus acutus)*, and *Typha* spp. Apart from the dominants, characteristic species include *Carex viridula, Oligoneuron ohioense (= Solidago ohioensis), Hypericum kalmianum, Panicum flexile, Scleria verticillata, Lysimachia quadriflora, Packera paupercula (= Senecio pauperculus), Eleocharis* spp. (including *Eleocharis quinqueflora (= Eleocharis pauciflora)*). (White and Madany 1978, Homoya et al. 1985, Hiebert et al1986, Chapman et al. 1989).
>
> Interdunal wetlands are found on the sandy soils of wet depressions in wind-deposited dune systems of the Great Lakes. The substrate is 75-100% sand. Organics and silts occur in small

amounts in depressions of exposed dunelands, and in larger amounts in sheltered, inland wet depressions.

Southern Great Lakes Shore Emergent Marsh.

Apart from the dominant species mentioned in criteria 1, this type also contains *Thelypteris palustris* is a common fern. *Impatiens capensis* may be common in open parts of the marsh. Floating and rooted aquatics include *Ceratophyllum demersum, Lemna minor, Nymphaea odorata, Potamogeton gramineus, Sagittaria latifolia*, and *Spirodela polyrrhiza* (Minc and Albert 1998). Water depth generally exceeds 0.3 m.

Lake Plain Wet Prairie, Wet Sand Prairie.

This type is characterized by the presence of *Calamagrostis canadensis, Carex aquatilis, Carex pellita (= Carex lanuginosa)*, and *Spartina pectinata. Andropogon gerardii, Symphyotrichum ericoides (= Aster ericoides), Juncus balticus, Panicum virgatum, Oligoneuron ohioense (= Solidago ohioensis)*, and *Sorghastrum nutans* are all common components of this community.

This community occurs on level, sandy glacial outwash, sandy glacial lake plains, and deposits of dune sand in silty/clay glacial lake plains. Soils are sandy or sandy loam soil, rarely with clay or silt loam. There is often a clay layer below the surface that impedes drainage and prevents groundwater from moving to the surface (Comer et al.1995b). These conditions result in temporary flooding in the winter and spring and drought in the summer and fall. The soil is neutral to somewhat alkaline (Chapman 1984). The subsurface clay was deposited on the beds of glacial lakes, whereas the sand was deposited on lake beaches or by alluvial processes (Comer et al. 1995b).

Cinquefoil - Sedge Prairie Fen, Graminoid Fen or Low Shrub Fen.

Diagnostic species include the prairie grasses *Andropogon gerardii* and *Spartina pectinata*, prairie forbs such as *Arnoglossum plantagineum (= Cacalia plantaginea), Filipendula rubra, Liatris spicata, Silphium terebinthinaceum* (more eastern), *Oligoneuron ohioense (= Solidago ohioensis)*, and the sedges *Carex aquatilis, Carex haydenii, Carex hystericina, Carex leptalea, Carex sterilis*, and *Carex stricta*. Other characteristic species include *Doellingeria umbellata (= Aster umbellatus), Eupatorium maculatum, Gentianopsis virgata (= Gentianopsis procera), Lobelia kalmii, Lysimachia quadriflora, Muhlenbergia glomerata, Oxypolis rigidior, Pedicularis lanceolata, Pycnanthemum virginianum, Thalictrum dasycarpum*, and *Thelypteris palustris*. The most characteristic shrubs of this type is *Salix candida*, but *Cornus sericea*, and *Salix discolor* can also be found. Open areas around spring discharges are often sparsely vegetated, and contain *Cladium mariscoides, Eleocharis elliptica, Eleocharis rostellata, Lobelia kalmii, Parnassia glauca, Rhynchospora capillacea, Schoenoplectus acutus (= Scirpus acutus)*, and *Triantha glutinosa (= Tofieldia glutinosa)*. (Anderson 1996, Chapman et al. 1989, MNNHP 1993, White and Madany 1978).

This community is found on muck (peaty muck), through which flows groundwater rich in calcium and magnesium carbonates. Soils are saturated mucks, with neutral to slightly alkaline pH. Sites typically lie next to lakes, less commonly along streams and rivers, all of which occur in glacial outwash, ice contact topography or coarse-textured end moraines (Chapman et al. 1989).

Twigrush Wet Prairie.

Stand composition is quite variable, and other species include *Carex atherodes, Carex buxbaumii, Carex cryptolepis, Carex pellita, Coreopsis tripteris, Eleocharis elliptica, Euthamia caroliniana (= Euthamia remota), Gentiana andrewsii, Hypericum kalmianum, Liatris spicata, Lobelia kalmii, Lythrum alatum, Prenanthes racemosa, Sorghastrum nutans*, and *Oligoneuron riddellii (= Solidago riddellii)*. Scattered shrubs such as *Salix petiolaris* may occur. The wettest areas tend to favor *Carex sartwellii, Iris versicolor*, and *Dulichium arundinaceum*. Shrubs including *Salix discolor, Salix petiolaris, Ilex verticillata, Physocarpus opulifolius*, and the non-native *Frangula alnus (= Rhamnus frangula)* may increase in drier areas (Schneider and Cochrane 1997). Stands occur in low-lying, sandy areas where the groundwater is at or near the surface for much of the year. Soils are typically muck over sand. Stands are seasonally flooded, and water depth may vary in spring from several centimeters to almost 0.5 m. (Schneider and Cochrane 1997).

Skunk Cabbage Seepage Meadow, seep.

This community is characterized by the presence of *Symplocarpus foetidus* and *Angelica atropurpurea,* the leading dominant and indicator species. Other forbs and ferns present include *Caltha palustris, Chelone glabra, Epilobium coloratum, Impatiens capensis (=Impatiens biflora), Pedicularis lanceolata, Pilea pumila, Saxifraga pensylvanica, Solidago patula*, and *Thelypteris palustris*. Graminoid cover is generally low, less than 25%, and may include *Carex bromoides, Carex comosa, Carex lacustris, Carex stricta*, and *Carex trichocarpa* (MNNHP 1993, White and Madany 1978). This community develops around spring heads and in broader areas of groundwater discharge, where water flows to the surface in a diffuse rather than concentrated flow. Stands can occur along the lower slopes of glacial moraines, ravines and in deep glacial melt water-cut river valleys at the bases of slopes separating stream terraces. Soils are seasonally to more-or-less permanently saturated (MNNHP 1993).

Platanthera leucophaea (eastern prairie fringed orchid); Federally Threatened

Eastern prairie fringed orchid (EPFO) occurs in a wide variety of habitats, from mesic prairie to wetlands, such as sedge meadows, freshwater marsh edges, and even bogs. It requires full sun for optimum growth and flowering and a grassy habitat with little or no woody encroachment. Early decline was due to the loss of habitat, while current decline is mainly due to the loss of habitat specifically from the drainage and development of wetlands. As a result of this decline, on September 28, 1989, the U.S. Fish and Wildlife Service (USFWS) listed the EPFO as threatened under the Endangered Species Act (Act) of 1973, as amended (U.S. Fish and Wildlife Service 1989). In September 1999 a recovery plan was completed by the USFWS which delineates reasonable actions needed to recover and/or protect this orchid (Bowles, Eastern Prairie Fringed Orchid Recovery Plan, 1995). Only a few population census counts in the United States have exceeded 500 individual flowering EPFO plants, and these numbers are from successional habitats that fluctuate widely over time. Less than 30 percent of the populations in the United States have full legal protection and only about 20 percent are adequately protected and managed (Bowles, Eastern Prairie Fringed Orchid Recovery Plan, 1995).

Noteworthy fauna

Seventeen (17) state protected animal species are known to occur in the Lake Plain.

Common Name	Scientific Name	Status	Habitats
Black-crowned night-heron	*Nycticorax nycticorax*	SE	Palustrine Wetlands; Breeding, Foraging
Brewer's blackbird	*Euphagus cyanocephalus*	ST	Mesic Prairie / Foraging
Henslow's sparrow	*Ammodramus henslowii*	SE	Wet Prairies / Breeding, Foraging
King rail	*Rallus elegans*	SE	Palustrine Wetlands; Breeding, Foraging
Least bittern	*Ixobrychus exilis*	SE	Palustrine Wetlands; Breeding, Foraging
Pied-billed grebe	*Podilymbus podiceps*	SE	Palustrine Wetlands; Breeding, Foraging
Upland sandpiper	*Bartramia longicauda*	SE	Foredune and Beach; migration, foraging
Veery	*Catharus fuscescens*	ST	Wet Woods / Migration, Foraging
Hoary elfin	*Incisalia polios*	SE	Sand Savanna / Breeding, Foraging
Leafhopper	*Paraphlepsius lupalus*	SE	Breeding, Foraging
Redveined leafhopper	*Aflexia rubranura*	ST	Prairies / Breeding, Foraging
Cisco	*Coregonus artedii*	ST	Lacustrine; Foraging
Lake whitefish	*Coregonus clupeaformis*	ST	Lacustrine; Foraging
Longnose sucker	*Catostomus catostomus*	ST	Riverine; Breeding, Foraging
Blanding's turtle	*Emydoidea blandingii*	ST	Palustrine Wetlands; Breeding, Foraging
Kirtland's watersnake	*Clonophis Kirtlandii*	SE	Palustrine Wetlands; Breeding, Foraging
Franklin's Ground Squirrel	*Spermophilus franklinii*	SE	Shrubby wetlands and uplands

Social and cultural values

Three prehistoric archaeological sites are found within the Lake Plain, all within the Ramsar Site: Barnes Creek, Chesrow Site and Lucas Site. Little is known about the Barnes Creek site other than it is a prehistoric site with the following periods of significance 0 AD to 1499 AD. The Chesrow site is the most researched and is known to have two activity areas atop and along the lakeward side of a former beach. The area is covered with sand banks and hollows where remnants and relics of Paleoindian occupancy were recovered. Studies have determined that the sand banks and ridges of this area were actually remnants of the various beaches associated with the glacial stages of Lake Michigan. Excavation of the southern area provided evidence of chert processing in the form of heat alteration and subsequent bifaces productions. Tools, including complex drills and cores, hammer stones, flake tools, cutting and scrapping tools, and projectile points, were also found. One particular chipped stone tool recovered, a Paleoindian fluted point, was dated to ca. 9500-8000 B.C. A small amount of debitage was found at the Lucas site.

The wetlands within the Lake Plain provide a vast array of recreation opportunities and value for tourism. Wetlands provide ideal places for wildlife viewing, hiking and biking (along the trail systems and adjacent roadways), fishing (in manmade ponds), hunting, and land stewardship through volunteerism.

Current land/water use

Wthin the Ramsar site:

Principal human activities within the Ramsar site include (listed in order of importance to the conservation and long-term protection of the Ramsar site):

- Research
    i. Hydrological
    ii. Ecological
    iii. Wildlife
    iv. Rare Plant
    v. Archaeological
- Education
    i. Primary Education
    ii. Secondary Education
    iii. College / University Education
    iv. Citizen Scientists and Stewardship
- Recreation and Tourism
    v. Walking / Hiking
    vi. Biking
    vii. Swimming
    viii. Birding
    ix. Fishing
    x. Hunting*

* Hunting is only allowed on designated portions of Chiwaukee Prairie State Natural Area.

In the surrounding area:

Principal human activities in the surrounding catchment:

- *Domestic Drinking Water* (from Lake Michigan) (use is projected to increase; domestic use for all communities in the Lake Michigan Watershed including City of Kenosha, the Village of Pleasant Prairie, Winthrop Harbor, City of Zion, Beach Park, and the City of Waukegan). Lake Michigan is connected hydrologically, both surface and ground water, to the Ramsar site
- *Residential Housing and Development* (projected to remain stable (in Illinois) or increase as populations increase (in Wisconsin).
- *Commercial and Industrial Use and Development*
- *Recreation and Tourism* (use is increasing in Lake County, Illinois (by 4.6% in 2012) and Kenosha County, Wisconsin (by 3.8% in 2012)
    i. Boating

ii. Fishing
iii. Swimming
iv. Golfing
v. Biking
vi. Dining
vii. Lodging
viii. Camping

- Agriculture (use is decreasing within watershed of the Ramsar Site in Illinois and Wisconsin)

Factors adversely affecting the site's ecological character

- Nuclear Power Plant – The Exelon nuclear power plant is not within the Ramsar Site and is currently being decommissioned, with an estimated completion date of 2020. The adverse impact of the power plant is the physical fragmentation of the north and south unit of Illinois Beach State Park. There are no adverse impacts of the power plant currently or anticipated in the future. Oversight of the decommissioning operations is being conducted by ZionSolutions Inc. ZionSolutions has an environmental division that is responsible for ensuring that the decommissioning is completed in a manner that meets all regulatory laws, including those that protect the adjacent wetlands, Lake Michigan, and other natural resources.

  The past environmental factors were addressed in the Final Environmental Statement (December, 1972) which was required prior to construction of the plant and the issuance of the operating licenses for the Zion Nuclear Power Station in accordance with 10 CFR Part 50, Appendix D, implementing the requirements of the National Environmental Policy Act of 1969 (NEPA).

  The Zion Nuclear Power Station is currently undergoing decommissioning and demolition and the present and potential factors of the decommissioning and demolition of the Zion Nuclear Station are addressed in the License Termination Plan (LTP) which was submitted to the NRC in December of 2014. The LTP concluded that there are no new significant environmental impacts associated with the decommissioning and demolition of the Zion Nuclear Power Station. The LTP is available on the NRC website.

Current communications, education and public awareness (CEPA) activities related to or benefiting the site

The Lake Plain offers a variety of CEPA activities including a nature center located at Illinois Beach State Park that provides information of the geologic history of the area, natural communities, including the wetlands, and the plants and animals that occur in the Lake Plain. Nature trails are located in Chiwaukee Prairie, Illinois Beach State Park, Fossland Park, and Bowen Park (location of the Glen Flora Tributary) providing opportunity to explore a wide variety of natural communities in the Lake Plain, including wet prairies, pannes, sedge meadows, and marsh communities. The University of Wisconsin-Parkside and Carroll College annually visit the Chiwaukee Prairie portion of the Lake Plain for botany and ecology field trips. Bowen Park provides a newly renovated children's playground that is designed to engage children in nature-based play, providing educational play opportunities to learn about forest ecosystems. Bowen Park also offers summer and day camps for youth that include outdoor recreation at Bowen Park and nature studies that introduce youth to the unique natural areas found within the park.

Two volunteer groups, the Chiwaukee Prairie Preservation Fund and the Friends of Illinois Beach are very active in the Lake Plain, fostering community engagement and support for the Lake Plain natural areas. The Chiwaukee Prairie Preservation Fund, established as a not-for-profit 501(c) 3 in 1985 started as a grassroots effort by community members in 1965 to acquire and protect the area of wetlands and prairie that today is known as Chiwaukee Prairie. The Chiwaukee Prairie Preservation Fund has been and remains integral to the acquisition and protection of lands within the Ramsar Site, and both volunteer groups are important to the long term restoration and management of these areas within the Ramsar Site. Both groups host monthly workdays that provide an opportunity for local community members to

experience the natural areas, assist with controlling invasive plants, monitoring for rare plants, learning about the flora and fauna, and assisting with prescribed burn management.

Current recreation and tourism:
The wetlands within the Lake Plain are used for recreation, including, bird watching, hiking, and fishing (in manmade ponds). The majority of recreation within the wetlands is seasonal, occurring from April to November, with warm weather recreation occurring from June to September. Recreation generally occurs along established trails within the Lake Plain (grass trails, gravel trails, or roadways).

Jurisdiction

- Chiwaukee Prairie State Natural Area and Scientific Area – Territorial and Functional Jurisdiction: Wisconsin Department of Natural Resources, 101 South Webster Street, Madison, Wisconsin, 53707; Land Division. *Contact: Sharon Fandel, 608-279-4768, Sharon.fandel@wisconsin.gov*
- Carol Beach Parks and Open space, and Barnes Creek - Territorial and Functional Jurisdiction: The Village of Pleasant Prairie, 8600 Green Bay Road Pleasant Prairie, Wisconsin 53158; Public Works Department. *Contact: Kevin Meyers, 262-948-8930, kmeyers@plprairiewi.com*
- Chiwaukee Prairie Scientific Area – Territorial and Functional Jurisdiction: University of Wisconsin Board of Regents, 1860 Van Hise Hall, 1220 Linden Drive, Madison, Wisconsin, 53706; University of Wisconsin-Parkside. *Contact: David Rogers, 608-572-0556, rogersd@uwp.edu*
- Spring Bluff Nature Preserve – Territorial and Functional Jurisdiction: Lake County Forest Preserve District, 1899 West Winchester Road, Libertyville, Illinois 60080; Natural Resource Division, Department of Planning, Conservation and Development. Contact: *Debbie Maurer, 847-968-3285, dmaurer@LCFPD.org*
- Fossland Park, Dead Dog Creek Tributary – Territorial and Functional Jurisdiction: Village of Winthrop Harbor 830 Sheridan Road, Winthrop Harbor, Illinois 60096; Department of Parks and Recreation. *Contact: Scott Fuller, 847-746-3505, SFuller@whpd.org*
- Illinois Beach State Park and Nature Preserve– Territorial and Functional Jurisdiction: Illinois Department of Natural Resources, One Natural Resources Way, Springfield, IL 62702; Office of Resource Conservation. Contact: *Brad Semel, 815-675-2386 ext.317, Brad.Semel@illinois.gov*
- Hosha Prairie - Territorial and Functional Jurisdiction: Zion Park District, 2400 Dowie Memorial Drive, Zion, IL 60099; Zion Park District. *Contact: Marilyn Krieger, 847-746-5500 ext. 445, mkrieger@zionparkdistrict.org*
- Bowen Park, Glen Flora Tributary – Territorial and Functional Jurisdiction: Waukegan Park District, 2000 Belvidere Road, Waukegan, Illinois 60085; Waukegan Park District. *Contact: Mike Trigg, 847-360-4724, mtrigg@waukeganparks.org*

Management authority

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- Chiwaukee Illinois Beach Lake Plain Memorandum of Understanding. 2010.