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Illinois Coastal Management Program Issue Paper

Habitat, Ecosystem and Natural Area Restoration

Overview

Habitats are abundant in the Lake Michigan coastal management zone, despite heavy urbanization and development in the area. Ecosystems (short for ecological systems) are defined as functional units that result from the interactions of abiotic, biotic, and cultural components. Like all systems, they are a combination of interacting, interrelated parts that form a unitary whole¹. The Lake Michigan coastal zone can be defined as one ecosystem, or more narrowly as a collection of smaller ecosystems.

A habitat is defined as a community that is appropriate for a particular organism at some point in its life. Habitat is most often used to refer to the plant community used by an animal, but can also be used to refer to the environment used by a plant, fungus, or other organism². Habitats for fish, wildlife, plants, and other aquatic beings are included in the Lake Michigan coastal zone. This issue paper will address the northern section of the zone most closely, as it contains the most undeveloped portion of the zone, but will also address other areas of the Lake Michigan coast.

Green Bay Road plays a major role in defining the coastal zone boundary through Lake County and into northern Cook County. This arterial generally follows the crest of a glacial moraine (the Highland Park Moraine) that is the high ground forming the boundary of the Lake Michigan watershed. In northern Lake County, Green Bay Road is as much as four miles inland from the Lake Michigan shoreline, and thus northern Lake County has a broad area within the coastal zone. This extent includes all of the watersheds of streams that drain this area and discharge to Lake Michigan such as Kellogg Creek near Winthrop Harbor, Bull Creek in Zion and Beach Park, Waukegan River in Waukegan, and Pettibone Creek in North Chicago.

The most applicable part of the coastal management zone for habitat and ecosystem restoration is the undeveloped portion of shoreline in Cook and Lake Counties immediately north of Chicago to the Wisconsin state line. These areas include Illinois Beach State Park, Waukegan Beach, the Great Lakes Naval Training Center, Spring Bluff forest preserve, and wooded ravines along the Lake Michigan bluffs. On the South Side of the City of Chicago, Lake Calumet and its surrounding wetlands are also an important habitat area.

Some important habitats in the Lake Michigan zone include dune and swale habitat, migratory bird flyways, shorebird habitat, fish and aquatic habitat, and plant habitat. Other issues include industrialized and channelized waterways, shoreline revitalization, wetland restoration, and invasive species infiltration.

Important Habitat Areas

Illinois Beach State Park and Waukegan Beach

At over 3000 acres, Illinois Beach State Park contains the largest single tract of undeveloped coastal habitat left in Illinois. It includes 6.5 miles of Lake Michigan shoreline and two dedicated Nature Preserves, Illinois Beach Nature Preserve and North Dunes Nature Preserve. These preserves are natural areas of exceptional quality that support a diverse variety of plants and animals as a result of the site's

unique coastal beach ridge and swale topography. Within the preserves are found 14 high quality natural communities, at least 31 state-listed endangered and threatened species, and habitat for 4 federally endangered species³.

Beach and dune communities support state endangered species such as Marram grass, seaside spurge and sea rocket, which colonize the open sand⁴, along with other species such as the rare piping plover, Kalm's St. Johnswort, pale foxglove, bog arrow grass, eastern prairie fringed orchid, and little green sedge. The federally endangered Pitcher's thistle is an example of a rare plant dependent on natural sand movement. Wildlife such as the hoary elfin butterfly and the state endangered Blandings turtle also find suitable habitat in the area⁵.

The park boasts many ecological niches that have been lost to urbanization in the surrounding area. Growing on the beach and foredunes are hardy species like the sea rocket, bearberry, and the Waukegan or horizontal juniper, which grows just a few inches off the ground. In the sand prairie, plants such as Indian grass, little bluestem, and pear cactus grow in their native environment.

Farther inland are the oak savannas, which occupy much of the higher ground, while the wetlands in the swales host Kalm's St. Johnswort, sundew, and a wide variety of orchids, including many that are endangered. The red-osier dogwood grows in the wetlands surrounding the park.

Spring and fall are the best time to see birds, when they migrate through the park in tremendous numbers. Red-tailed hawks are common throughout the winter, and great horned owls are often heard at night. Many deer, red fox, mink and beaver live in the park, along with a small population of gray fox⁶.

Birds are also abundant in this habitat area. Birders have observed many species of hawks, including sharp-shinned and Cooper's Hawks, northern harriers, ospreys, merlins, peregrine falcons, American kestrels, broad-winged hawks, red-tailed hawks, red-shouldered hawks, occasional bald eagles, and, rarely, goshawks, Swainson's hawks, and golden eagles. Other key birds in the area include migratory loons, gulls, shorebirds, rails, raptors, owls, songbirds, and breeding Brewer's blackbirds⁷.

Waukegan Beach and Bowen Park, located south of Illinois Beach State Park, offers habitat for many birds in the area. Some of these species include migrating hawks, ducks, shorebirds, and passerines. Other birds in the area include migratory gulls and shorebirds, including the purple Sandpiper and, very rarely, piping plover. The snowy owl sets up its winter habitat in the area, and the common tern breeds in this zone⁸.

Spring Bluff Forest Preserve

Spring Bluff Forest Preserve offers a diverse habitat. The preserve is located in Lake County just south of the Wisconsin border. This prairie habitat is home to some species that are not found elsewhere in the area. Bluebirds and kestrels are common. Notable breeding species of wildlife include kingfisher, woodcock, Henslow's sparrow, king rail, upland sandpiper, common snipe, least bittern, American bittern, and Virginia rail⁹.

In terms of habitat improvements, considerable success has been achieved in the control of exotic invasive purple loosestrife at Powderhorn Lake Forest Preserve as of 2006. Over the years, the multiple releases of purple loosestrife-eating Galerucella beetles at Powderhorn Marsh helped control the invasive species. Interdunal marshes that were choked with loosestrife ten years ago have now been reclaimed by cattails. In addition, Powderhorn Lake Forest Preserve was approved for Illinois Nature Preserve status¹⁰.

Lake Michigan Bluff Ravines

The Lake Michigan bluff ravine system is also a significant habitat area. Plant communities in the ravines are of particular concern, as many are locally rare, with as many as 16 state-threatened or endangered species potentially present in the ravines. Seeps flowing out of ravine slopes create an unusual wetland habitat supporting plant species that are uncommon in other areas. Skunk cabbage and marsh marigold grow in seep areas along Bull Creek ravine. Because temperatures tend to be somewhat cooler due to the close proximity to the lake, vegetation found along the lakeshore and in ravines include relict species no longer found elsewhere in Illinois and whose current natural range are much farther north. These species include paper birch, white pine, arbor vitae, Canadian buffalo-berry, and star-flower. These plants were probably more common in the area following the retreat of the glaciers 12,000 years ago when the climate was significantly cooler. The ravines now provide some of the only remaining habitat for such species in Illinois. The only known colonies of beech in northern Illinois are also found on the cool, moist, north-facing slopes of Lake Michigan ravines¹¹.

Lake Calumet

The Calumet area contains very important natural areas. Remnant prairie and wetland systems exist throughout the area on public and private lands. Some are recognized statewide for their high levels of native plant and animal species. Many are recognized by the state as Illinois Natural Area Inventory Sites.

Lake Calumet is a dominant hydrologic feature of the Calumet Region. It is the only inland lake hydrologically connected to Lake Michigan via the Calumet River. Lake Calumet provides migratory bird habitat as well as feeding and spawning habitat for fish species.

Sections of the Lake Calumet shoreline have limited wetland systems that are dominated by canary reed grass and cattail. Lake Calumet currently hosts a number of Illinois state endangered bird species, including the black-crowned night heron, the little blue heron, and the yellow-headed blackbird. The surrounding area is a stopover for migrating bird species from across North America. Lake Calumet has very little instream structure and emergent aquatic plants for fish habitat and foraging. Some of the slip channels on the eastern side of the lake contain riprap and debris material along the banks. Although the lake has limited fish habitat, it has the potential through restoration efforts to provide diverse aquatic habitat for fish and wildlife. Aquatic habitat could be created to support many Lake Michigan fish species, as well as many warm water game species. Lake Calumet already provides abundant habitat to support bird species, including waterfowl and gulls¹².

Issues

Industrial Use of Waterways

Waterways in and around the coastal zone have historically been used for heavy industry. These waterways were used as outlets for industrial waste, sewage and urban runoff without treatment. Waukegan Harbor, the Chicago River, the Calumet River, and Lake Calumet are some of the most prominent examples of heavy industrial use. Eventually, much of the waste was treated before entering the waterways, and the Clean Water Act of 1972 helped to clean up the polluted waterways. The Union Stock Yards closed in 1971, which also led to a decline in pollution. Restoration has progressed significantly, but more progress needs to be made in order for these areas to serve as prime habitat locations.

Wetlands

The extensive freshwater marshes of the Great Lakes coasts are unique in ecological character, size and variety. They range from small wetlands nestled in scattered bays to extensive shoreline wetlands such as those of southwestern Lake Erie, freshwater estuaries such as the Kakagon Sloughs of northern Wisconsin and the enormous freshwater delta marshes of the St. Clair River. Formerly, the Illinois portion of Lake Michigan had a wetland system, but it was filled in for urban use.

The Great Lakes basin has four main types of wetlands, each with its own set of chemical and physical characteristics, plants and wildlife. Marshes are usually associated with ponds, lakes or streams. Typical plants include rushes, reeds, cattails and lily pads. Swamps are wooded wetlands characterized by conifers, hardwoods or shrubby vegetation. Bogs are areas with minimal water flow, highly acidic peaty soils and carpets of mosses, especially Sphagnum. Vegetation such as black spruce, blueberries, cranberries, orchids and insect-eating plants are typical. Fens are similar to bogs but with less acidic soil, due to more ground and surface water flowing through. Sedges and low shrubs prevail, with some orchids and insect-eating plants.

Wetlands provide habitats for many kinds of plants and animals, some of which are found nowhere else. For waterfowl and other migratory birds, wetlands are the most important part of the migratory cycle, providing food, resting places and seasonal habitats. Wetlands also play an essential role in sustaining a productive fishery, with many species of Great Lakes fish depending on coastal wetlands for successful reproduction.

More than two-thirds of the natural Great Lakes wetlands have already been filled in or drained for agriculture, urban uses, shoreline development, recreation and resource extraction (i.e., peat mining). The loss of these lands poses special problems for hydrological processes and water quality because of the natural storage and cleansing functions of wetlands¹³.

Invasive Species

Invasive aquatic species such as Asian carp garner most of the press attention, but flora such as buckthorn, honeysuckle, grapevine, purple loosestrife, curly-leaf pondweed, Eurasian watermilfoil, flowering rush, and garlic mustard have gained a foothold in much of the Lake County area of the coastal management zone. These non-native species often overrun their competitors and do not allow native prairie species to grow. Local groups make an effort to remove these invasive species before they spread further, but they require constant attention and manpower, and can be quite costly to control. Other invasive species have infiltrated Lake Michigan. Mollusks such as the zebra mussel, crustaceans such as the spiny water flea and the rusty crayfish, fish such as the common carp, round goby, Eurasian ruffe, sea lamprey, and white perch are exotic species that are taking over the Great Lakes¹⁴. These invasive aquatic species impact our native species through competition, predation, and habitat alteration. They also can impact our economy by clogging our water intake pipes, disrupting fishing, and impeding navigation.

ICMP Opportunities

Monitoring

Habitat monitoring opportunities are present in the ICMP. While the populations of many of the species are already monitored, heightened water quality monitoring in the region would serve many purposes. Along with improving aquatic habitat, monitoring would enhance understanding of the relationship between water quality and plant habitat. Monitoring for invasive species should also continue, as these

threaten the habitat of many local species. The impact, and subsequent spread, of a new invader can be reduced if they are detected early.

Shoreline Revitalization

The shoreline is home to unique habitats to both flora and fauna. Although the shoreline is in a highly developed urban area, opportunities still exist for wildlife to thrive. Continued shoreline revitalization is important in order to improve future habitat areas and protect current species.

Wetland Restoration

Opportunities exist for wetland restoration in the coastal management zone. Illinois has lost nearly 90% of its coastal wetlands¹⁵, and efforts should be made to address this.

Numerous laws, policies and programs at international, federal, state and local levels address Great Lakes coastal wetlands. No single government agency has management authority. Sections 401 and 404 of the Clean Water Act give the U.S. Army Corps of Engineers, in consultation with the U.S. Environmental Protection Agency (USEPA) and, in some cases state agencies, regulatory authority over permitted development in coastal wetlands. Numerous federal agencies, either directly or through state agencies, fund conservation or restoration projects in coastal wetlands.

Lakewide Management Plans and Remedial Action Plans for Areas of Concern focus on localized Great Lakes issues. However, many of these programs are wetland specific. Wetlands may also be included in larger programs that conserve habitats and species or programs that study and protect wetland-dependent animal and plant populations. Beyond state and federal government programs, non-governmental organizations have established coastal wetlands programs¹⁶.

Improve Aquatic Habitat

A number of opportunities exist for improvements in the quality and quantity of aquatic habitat. Such improvements may include the daylighting of ravine flows currently contained in culverts and the naturalization of these channels. Aquatic habitat might also be improved through the implementation of pollution prevention practices to reduce pollutant loading to ravine systems. Likewise, multi-objective Best Management Practices (BMPs) can be employed to improve habitat as well as hydrology and water quality. Special attention should be devoted to restoring/creating riparian buffer zones of native plants for the stream channels¹⁷. Decreases in the amount of phosphorus and nitrogen into the lake would also improve water quality and fish habitat. Formerly, the Great Lakes Commission offered grants that funded research for soil and erosion projects, but Congress did not approve the grants this year¹⁸.

Education

The public needs to have increased awareness of habitat issues in the Lake Michigan Coastal Management Zone. More public outreach, along with attracting more people to Illinois Beach State Park is one solution to this problem. Perhaps if more people saw firsthand the beauty of the park, more people would champion habitat revitalization in the area. Education on everyday practices that contribute to excess nutrients arriving in the lake is also important. In addition, outreach on invasive species is necessary in order to prevent new introductions and the spread of existing invaders.

Brownfield programs

One program that attempts to convert brownfields to habitat is Mud to Parks. The idea of this program is to dredge sediment from the Illinois River near Peoria, where it has clogged the river, and move it to brownfield sites that need soil to cover their waste. This serves three important purposes: unclogging a river filled with sediment, preventing stormwater runoff from picking up pollutants at brownfield sites, and turning polluted areas into viable habitat. One site in this region is the former U.S. Steel site along Lake Michigan south of Chicago. The habitat value is yet to be determined, although it is currently home to several species including the red fox.

Hegewisch

Hegewisch Marsh has received grants for restoration, including a \$750,000 Coastal Wetland Grant¹⁹. After a number of severe drought years, the deep marsh habitat at Hegewisch Marsh is closing up; vegetation is now thoroughly choking out the center basin. Hegewisch Marsh has traditionally provided nesting habitat for Yellow-headed Blackbirds and other deep marsh birds, but if the center basin closes up completely, Hegewisch Marsh will no longer provide appropriate habitat for these species. As of 2006, Yellow-headed Blackbirds are rarely spotted in the Calumet region. One territorial male at Hegewisch Marsh, two territorial males at Eggers Woods, and one territorial male at Burnham Prairie have been observed. Funds from the National Coastal Wetlands Conservation Grant will be used to clear out vegetation and otherwise rehabilitate Hegewisch Marsh in the upcoming months²⁰.

Existing Authorities and Committees

Numerous groups exist that are interested in this issue, including local, state, and federal authorities authorized by their respective statutes along with many advisory groups including non-profit environmental groups and developers.

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