



RESOURCE STEWARDSHIP STRATEGY SUMMARY

INDIANA DUNES NATIONAL PARK
INDIANA



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INTRODUCTION

PURPOSE OF A RESOURCE STEWARDSHIP STRATEGY

A resource stewardship strategy (RSS) is a strategic plan intended to help park managers achieve and maintain desired resource conditions over time (see NPS Management Policies 2006 [§2.3.2]). As part of a park’s planning portfolio, a resource stewardship strategy serves as a bridge between the park’s foundation document, other plans, and everyday management of its natural and cultural resources.

More specifically, a resource stewardship strategy is a dynamic planning tool used to set stewardship goals and track progress in achieving and maintaining desired natural and cultural resource conditions. All resource stewardship goals and activities should be based on science, law, NPS management policies, and the long-term public interest.

Essentially, a resource stewardship strategy establishes a framework and a coordinated process for

1. evaluating and summarizing existing information about priority park resources (including key issues, stressors, and threats),
2. using science and scholarship to establish stewardship goals for priority resources,
3. integrating natural and cultural resource management to achieve stewardship goals, and
4. determining what stewardship activities are needed to get us “from where we are to where we want to be.”

This information provides a basis for making informed resource management decisions for specific project proposals and for developing and revising annual work plans over time.

A resource stewardship strategy is not a static document or one-time effort. Rather, it is a dynamic framework that should be routinely updated as conditions change; new issues, stressors, or threats are identified; and activities are accomplished. A resource stewardship strategy is reviewed by NPS subject-matter experts and decision makers; however, it is not a publicly reviewed decision document.

The RSS process also provides an opportunity for a park to take an integrated approach to resource management by capitalizing on overlapping opportunities among and within disciplines, identifying stewardship activities that benefit multiple resources, or addressing larger parkwide issues. Taking an integrated approach can result in more effective stewardship for resources through the use of science, scholarship, research, policy, interpretation, and direct management.

INTENT OF THIS SUMMARY DOCUMENT

This summary document is intended to provide readers with a snapshot of the resource stewardship strategy for Indiana Dunes National Park. For the sake of simplification, this unit of the national park system will also be referred to as “the park” or INDU in this document. The document serves as a communication tool that complements the dynamic and evolving RSS desktop application that is actively used for resource management. This summary is not intended to describe all of the elements in the resource stewardship strategy, but instead focuses on those components of the strategy that are essential for communicating information about the park’s plan to address key management issues and seize opportunities for those resources identified as priority natural and cultural resources.

This document includes a summary of key issues, stressors, and threats affecting park resources; brief descriptions of the park’s priority resources and their components; stewardship goals for priority resources; and stewardship activities determined to be high priorities for the next 3 to 5 years. The document concludes with a brief description of future RSS implementation.

It is important to remember that implementation of the resource stewardship strategy is an ongoing process, with necessary updates and revisions occurring as resource and management conditions change and stewardship activities are carried out.

MESSAGE FROM THE SUPERINTENDENT

Indiana Dunes National Park offers this resource stewardship strategy summary document as a tool to help guide the park’s natural and cultural resource programs in the coming years. As a national park, we are entrusted to care for all resources in the Indiana Dunes for this and future generations. We continue to prioritize equally the conservation, protection, and restoration of both natural and cultural resources, always considering the opportunities for public use and enjoyment. This RSS document is a good start and captures where we are as a park and where we hope to be. As conditions and knowledge of the resources change, we will be opportunistic and nimble, adapting to the dynamic landscape that is Indiana Dunes National Park. We continue to look to existing and new partners in the corporate, government, and nonprofit sectors and to a growing army of volunteers helping shape the future of the Indiana Dunes. We view this community as the means to achieving greater success for all as we plot our way to the future, a newly renamed national park, and to determining what that really means. This RSS document and the process that helped get us here will help us focus our efforts on what makes our region truly remarkable, a place where the urban, suburban, industrial, and natural worlds meet this narrow sliver of the Lake Michigan South Shore we call home.



BRIEF DESCRIPTION OF INDIANA DUNES NATIONAL PARK

The following brief description of the park was adapted from the park's foundation document, which was approved in 2017. A map of the park is presented as figure 1.

Indiana Dunes National Park is in northern Indiana along the southern shore of Lake Michigan between Gary and Michigan City, Indiana, approximately 50 miles southeast of Chicago. The more than 15,000 acres that comprise the park include 15 miles of Lake Michigan's southern shore. It encompasses a series of noncontiguous tracts located in LaPorte, Porter, and Lake Counties and is near 15 cities and towns. Indiana Dunes State Park, Calumet Prairie State Nature Preserve, and Hoosier Prairie State Nature Preserve are located within the designated boundaries. They are owned and managed by the Indiana Department of Natural Resources. The park was authorized as Indiana Dunes National Lakeshore in 1966 by the 89th Congress after a long history of events—dating back to 1899—to preserve the dunal landscape and the high biological diversity it offers. At its creation, the park consisted of 8,330 acres, and four expansions followed (1976, 1980, 1986, and 1992) to increase the size of the park to what it is today. In 2019, the park unit was redesignated by the 116th Congress as Indiana Dunes National Park.

The park is approximately 50 miles from Chicago, the third-largest metropolitan area in the country, and draws nearly two million visitors each year. The proximity to vast urban, suburban, and rural settings creates an audience of tremendous scope and diversity. As a leading destination for recreation in the state, it offers many outdoor recreational amenities, such as hiking, bicycling, and horseback riding trails; campsites; beach access points; a visitor center; picnic tables and shelters; paddling locations; and interpretive programs. While many visitors come for recreation, the park also features many natural and historical resources. These include three dedicated Indiana state nature preserves, four national natural landmarks, one national historic landmark, and many historic structures, cultural landscapes, and archeological sites that are listed or eligible for listing on the National Register of Historic Places.

Geological processes are responsible for the formation and ongoing evolution of the impressive dunes, wetlands, and other landscape features of the park. The park's beaches and the primary dunes were created by the dynamic interface between the waters of Lake Michigan and the shoreline. The geologic record of three ancient dune systems—remnants of ancient shorelines—is preserved in the park, as is a mix of ecosystems that occupy the landscapes created by these geologic processes.

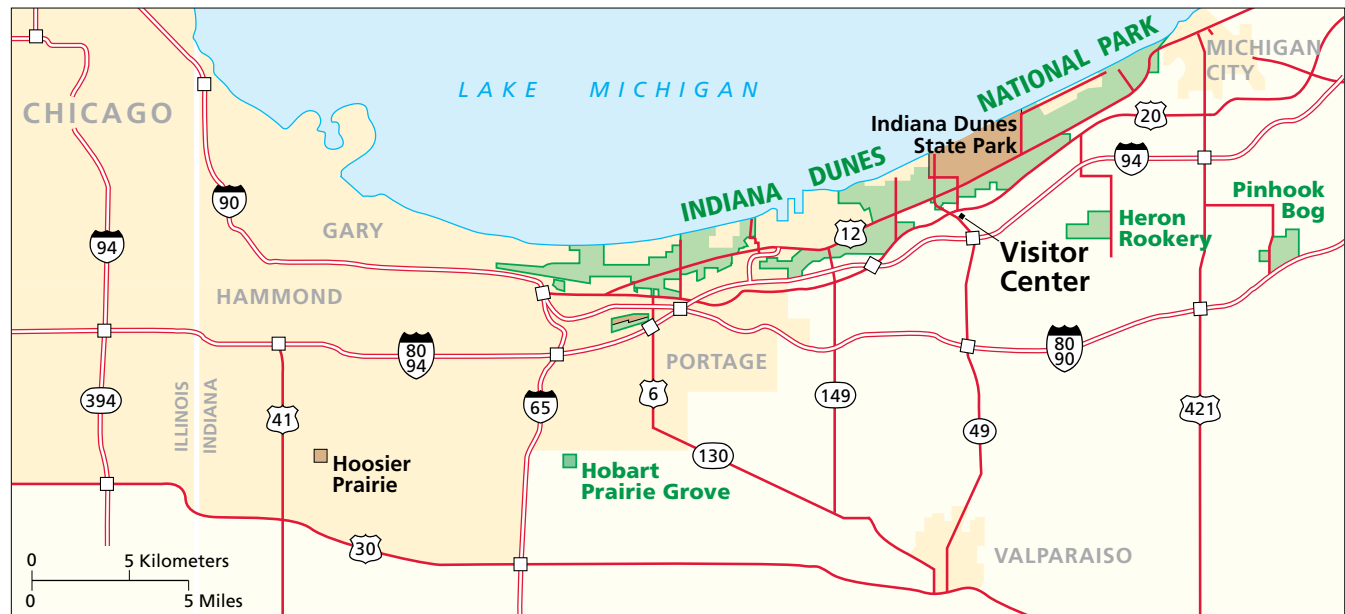
Indiana Dunes National Park is known for its rich natural resources. Because the park is located in several ecological transition zones, the diversity is many times greater than most areas its size. The park comprises more than 15,000 acres of wetlands, pannes, dunes, forests, prairies, savannas, and open water and supports more than 1,100 species of native vascular plants. The moderating effect of Lake Michigan, along with the great variety of habitats within a small area, explain much of the plant and animal diversity. Forty-six species of mammals, 18 species of amphibians, 23 species of reptiles, 71 species of fish, 60 species of butterflies, and 60 species of dragonflies and damselflies can be found in the park. The largest herbivore is the white-tailed deer, while the largest predator is the coyote. Three-hundred and fifty-two species of birds have been identified, with 113 of these being regular nesters.

Cultural resources at Indiana Dunes National Park are central to understanding how humans have used, modified, and interacted with the natural environment.

Together, the natural and cultural resources tell the story of 10,000 years of interactions between humans and their environment, and other historic sites are representative of early settlement of the area. The Bailly Homestead, a national historic landmark, is a primary resource that represents a time of dramatic cultural change for the American Indians and Europeans who lived in Northwest Indiana throughout the 1800s. Nineteenth and 20th-century historic landscapes and structures in the park represent settlement and migration; transportation; residential and recreational development; and art, architecture, and scientific research in the dunes.

In addition to these natural and historic features, the park surrounds three residential communities; abuts three major steel mills and two fossil fuel electricity-generating stations; and includes three major railroads, numerous transmission lines, pipelines, two U.S. highways, one toll road, one interstate highway, and miles of roads and streets within or adjacent to its boundary. As the resources of the park extend beyond legislated boundaries, partnering with other organizations allows for more effective management and is critical to the park's success. The park actively works with nearby communities, local and state governments, elected officials, universities, neighboring landowners, non-profit organizations, and other groups on resource stewardship and other projects.

Figure 1. Indiana Dunes National Park Map



DEVELOPMENT OF THE RESOURCE STEWARDSHIP STRATEGY FOR INDIANA DUNES NATIONAL PARK

This resource stewardship strategy represents the collaborative efforts of National Park Service (NPS) personnel from the park; the NPS Midwest Region (MWRO), the NPS Cultural Resources, Partnerships and Science Directorate (CRPS); the NPS Natural Resource Stewardship and Science Directorate (NRSS); and the NPS Denver Service Center, Planning Division (DSC-P). It is based on information about park resources that was available at the time of RSS development and on the experience and professional judgment of resource specialists.

In developing the resource stewardship strategy, the project team followed a five-step process established by a national NPS working group that formed to provide direction and oversight for RSS efforts nationwide. First, the team gathered and evaluated existing information about park resources to determine the current condition of resources and status of information. Next, they identified and assessed key issues, stressors, and threats that are impacting park resources or could do so in the future. The team then identified priority resources and their components for this resource stewardship strategy. They subsequently set stewardship goals for each priority resource. Finally, the team identified stewardship activities aimed at achieving those goals and prioritized activities to implement within the next 3 to 5 years. The organization of this summary document parallels this RSS development process, which is described in more detail in internal NPS documents, including the RSS Development Guide prepared in 2019. Some key terms that are used throughout this summary document are defined on the following page.



DEFINITIONS OF KEY TERMS

Priority Resource: A cultural or natural resource or value that the National Park Service manages or monitors to maintain a park unit's purpose and significance, to address policy/law mandates, or to address scholarly and scientific research needs or findings.

Stewardship Goal: A description of what resource condition or information that managers are working to achieve for a particular priority resource. Stewardship goals guide the National Park Service in its aim to enhance information; improve or maintain resource conditions; address issues, stressors, or threats; or achieve other park stewardship needs related to the priority resource such as increasing collaboration with partners or expanding education, interpretation, and other programming.

Stewardship Activity: One or more initiatives that strive to achieve a short-term stewardship goal. On its own, a stewardship activity should produce a specific deliverable or outcome. Activities may include assessments, documentation, identification, maintenance, operations, resource protection, thematic studies, cataloging, evaluation, interpretation, planning, training, data recovery, education, inventory, monitoring, research, survey, treatment, restoration, or other types of management.

Strategy: A tactical path forward defined through achievable actions that maintain or improve aspects of a priority resource. Strategies start with a stewardship goal and include a comprehensive set of activities to achieve that goal. Strategies are logically organized, science/scholarship-based, well documented, and reviewed by subject-matter experts. Depending on a park's needs, the typical time frame for executing a strategy is short term, normally 3 to 5 years.



KEY PARK ISSUES, STRESSORS, AND THREATS

Indiana Dunes National Park faces a variety of issues, stressors, and threats that affect park resources or may potentially affect park resources in the future. These include factors that are related to climate change and those that are unrelated. Key issues are management concerns that directly relate to park resources and their conditions. Stressors are factors that exacerbate change in resource conditions, while threats are immediate or potential factors that may negatively impact park resources in the future but do not currently affect park resources. The identification of key issues, stressors, and threats helped drive the selection of priority resources for this resource stewardship strategy. Furthermore, the National Park Service considered key issues, stressors, and threats when setting stewardship goals for priority resources and when developing and prioritizing stewardship activities that respond to those goals.

Table 1, which begins on the following page, summarizes key issues, stressors, and threats; their potential implications; and resource types affected.



Table 1. Key Issues, Stressors, and Threats, Potential Implications, and Affected Resources

ISSUE, STRESSOR, OR THREAT	POTENTIAL IMPLICATIONS	RESOURCE TYPES AFFECTED
INVASIVE PESTS, PLANTS, AND PATHOGENS	Invasive species threaten structure function, composition, and diversity of native communities; displace species; alter water availability, nutrient cycles, and disturbance regimes; and affect traditional use and visitor experience.	Vegetation; fish and wildlife; threatened species; ecological processes; archeology (including historic sites); cultural landscapes; ethnographic resources.
ALTERED SHORELINE PROCESSES AND DUNE DESTABILIZATION	Construction of numerous navigational harbors and hardened (man-made) structures along southern Lake Michigan has heavily impacted natural shoreline processes. The structures alter Lake Michigan’s natural littoral drift, resulting in areas of sediment accretion east of Michigan City and the Port of Indiana and sediment starvation to the west of these same harbors. The lack of continued sediment replenishment from natural littoral drift has resulted in extensive beach and dune erosion, which is affecting globally rare plant communities, rare species, and may affect prehistoric and early settlement-era archeological sites.	Shoreline; fish and wildlife, vegetation; ecological processes; rare plant communities; federally listed species; beach; dune; shoreline ecosystem; archeological resources; historic structures; ethnographic resources
CLIMATE CHANGE— Temperature	Rising temperatures affect historic buildings, change phenology and natural cycles, cause heat stress on biota, support invasive species, and cause range expansion and contraction. Vegetation of northern Indiana is highly vulnerable to a biome shift from temperate mixed to temperate broadleaf forest. Ice cover on Lake Michigan is expected to decline as temperatures warm. Less ice, coupled with more frequency and intense storms, leaves shores vulnerable to erosion and flooding.	Vegetation; fish and wildlife; air quality; historic structures; ethnographic resources; cultural landscapes; Lake Michigan shoreline and dunes
CLIMATE CHANGE— Precipitation	Increases in mean precipitation, along with an increase in storm frequency/intensity, are projected for the region. Implications include increased flood events, increased combined sewer overflows, increased erosion, increased non-point source pollution, and threats to infrastructure. Changes in precipitation quantity, timing, and severity can alter vegetation communities and plant invasion risk. Increased storm severity and flooding threatens archeological sites and historic structures. Park infrastructure failures may lead to resource damage.	Historic structures; vegetation; archeology; fish and wildlife; cultural landscapes; Lake Michigan shoreline and dunes; rivers and creeks; soils; hydrology; ecological processes; ethnographic resources
REGIONAL DEVELOPMENT AND SURROUNDING LAND USE AND PRESENCE/VISIBILITY	Areas of urban, extractive, and agricultural land uses could fragment habitat and decrease connectivity, introduce invasive plants, disturb native plant communities, wildlife movement and presence; increase water quality problems, alter views and soundscapes, and degrade nocturnal habitat and air quality. The infrastructure of highways, roads, railroads, bridges, power lines, pipelines, and trails all intersect with the park and can threaten the preservation of all cultural and natural resources. Two power plants are located near the park. Although one power plant has shut down and the other is scheduled to shut down in 2028, there are concerns about what industrial use might replace them.	Wildlife; vegetation; water resources; historic structures; cultural landscapes; scenic views; natural soundscape; night skies; air quality; ethnographic resources; archeological resources; soil

Table 1. Key Issues, Stressors, and Threats; Potential Implications; and Affected Resources (continued)

ISSUE, STRESSOR, OR THREAT	POTENTIAL IMPLICATIONS	RESOURCE TYPES AFFECTED
HABITAT FRAGMENTATION	Fragmentation occurs through right of ways and roads bisecting individual sites and residential, industrial, and other developed areas disrupting the connectivity of natural areas across the landscape, with resulting declines in population density and species richness and significant alterations to community composition, species interactions, and ecosystem functioning.	Fish and wildlife; vegetation; ecological processes; ethnographic resources; rare species; soil
LACK OF RESOURCE INFORMATION	Lack of baseline information limits detection of deteriorating resource conditions and promotes inadequate or misguided decisions. For example, new developments can adversely affect archeological and ethnographic resources, particularly plants, in areas with scant or dated baseline knowledge.	Across most cultural and natural resources
AIR POLLUTION	Visual range is reduced from about 115 miles (without the effects of pollution) to about 50 miles. Ground-level ozone sometimes reaches levels that exceed the EPA human health standard and cause injury to over 50 ozone sensitive plants. Natural communities are at risk for harmful effects of nutrient enrichment and acidification from excess deposition of nitrogen and sulfur. Nitrogen deposition is above critical loads for lichen and forest vegetation, and sugar maple is particularly sensitive to acidification. Mercury and PCBs accumulate in the food chain and can affect both wildlife and human health.	Vegetation; fish and wildlife; Lake Michigan; rivers and creeks; scenic views; historic structures; cultural landscapes; ethnographic resources
SOCIAL TRAILS AND OFF-TRAIL USE	Trampling on steep dune slopes and overuse of steep unauthorized trails have contributed to the obliteration of stabilizing vegetation, initiating soil erosion and eventual wind erosion and blowout formation. Several areas within the park have been impacted by unauthorized all-terrain vehicle use, which can cause ground disturbances that damage archeological resources, destroy plant communities, disrupt wildlife, and impact ecological processes.	Vegetation; soil; dunes; fish and wildlife; federally listed species; globally rare plant communities/wetlands; archeological resources; cultural landscapes
WILDLAND FIRE SUPPRESSION/ ALTERED FIRE REGIMES	Reduced frequency of fire in the region has been associated with a reduction in the quality and extent of disturbance dependent habitats such as dune and swale, savanna, woodland, and prairie complexes. Native vegetation communities increase in woody plant cover and begin to lose the structure that defines those unique habitats.	Vegetation; wildlife; cultural landscapes; ethnographic resources; ecological processes
WATER POLLUTION	INDU water resources are exposed to an extensive suite of anthropogenic stressors, including seepage from industrial and municipal landfills, agricultural runoff, highway runoff, leakages from septic systems, and deposition of airborne pollutants. These stressors degrade water quality, alter vegetation communities, and impact aquatic species.	Water quality; vegetation; aquatic species; ethnographic resources

Table 1. Key Issues, Stressors, and Threats; Potential Implications; and Affected Resources (continued)

ISSUE, STRESSOR, OR THREAT	POTENTIAL IMPLICATIONS	RESOURCE TYPES AFFECTED
NUISANCE WILDLIFE	Beaver dams have impacted resource management projects and threatened park infrastructure. In addition, beaver activity may be threatening wild rice populations and overall water quality in wetlands. A large deer population has led to negative impacts on herbaceous species and shrub species.	Vegetation; wildlife; wetlands; hydrology; ethnographic resources; water quality
LIGHT POLLUTION	Chronic sky glow from urban lights, as well as direct glare and intermittent lights such as car headlights, can create “ecological light pollution” that is known to affect behavior, including navigation, reproduction, communication, competition, and predation in some species.	Dark night skies; wilderness character; wildlife
LEGACY CONTAMINANTS	Legacy contaminants are the result of previously less-regulated industry pollutants that persist in natural resources. For example, fly ash was deposited and left uncapped adjacent to Cowles Bog and drained into the wetland complex, which raised water levels and impacted native vegetation.	Vegetation; wildlife; water quality; ethnographic resources; soil
TRANSPORTATION OF HAZARDOUS MATERIALS THROUGH PARK	Seven percent of all natural gas used in the United States travels through the park, and there are eight places where pipelines go underneath the Little Calumet River. A pipeline spill could result in contamination of water and soil, impacting native vegetation and wildlife.	Vegetation (including ethnographic resources); wildlife; water resources; soil



PRIORITY RESOURCES AND COMPONENTS

Priority resources drive the entire RSS process by focusing attention on those park resources that are critical and could most benefit from management direction within the next 3 to 5 years. Typically, the priority resources for a resource stewardship strategy may include those that are defined in a foundation document as fundamental or other important resources, as well as additional resources that park staff believes are necessary to maintain the park’s purpose and significance, address policy or legal mandates, or address scholarly and scientific research needs. Certain priority resources are standalone, while others may be subdivided into one or more components. The identification of priority resources and components guides the development of stewardship goals and activities in subsequent steps of RSS development. Parsing out the components of each priority resource helps resource managers tailor these goals and activities to more directly target the resource condition or understanding of its constituent parts. Collectively, this component-level stewardship works to improve the condition or understanding of the broader, “umbrella” priority resource.

Table 2 includes a list of priority resources and their components for the INDU resource stewardship strategy.

Table 2. Priority Resources and Their Components

PRIORITY RESOURCE	COMPONENT(S)
BIOLOGICAL DIVERSITY	<ul style="list-style-type: none"> - West Beach - Cowles/Howes Complex - Pinhook Bog - Miller Woods - Hobart Prairie Grove - Tolleston Dunes - Keiser - Furnessville Woods - Tamarack - Bailly - Heron Rookery - Rivers and streams - Lake Michigan shoreline
ARCHEOLOGICAL RESOURCES	- Archeological resources
CULTURAL LANDSCAPES	- Cultural landscapes
ETHNOGRAPHIC RESOURCES	- Ethnographic resources
HISTORIC STRUCTURES	<ul style="list-style-type: none"> - Historic structures – overall - Bailly Homestead - Swedish Properties of Baillytown - Good Fellow Club Youth Camp - 20th-century Architecture
HISTORY	- History
MUSEUM COLLECTIONS	- Museum collections
PARKWIDE RESOURCES	- Parkwide resources



PRIORITY RESOURCE SUMMARIES

The following brief descriptions of the park priority resources were adapted from the park's foundation document, draft Natural Resource Condition Assessment (NRCA), draft Cultural Resource Stewardship Assessment (CRSA), management plans, and NPS Natural Resource Reports.

BIOLOGICAL DIVERSITY

Biological diversity is a fundamental resource and value for Indiana Dunes and was one of the primary reasons for the creation of the park. The moderating effect of Lake Michigan, along with the great variety of habitats within a small area, explain much of the plant and animal diversity. Forty-six species of mammals, 18 species of amphibians, 23 species of reptiles, 71 species of fish, 60 species of butterflies, and 60 species of dragonflies and damselflies can be found here. Common wildlife at the park include bats, eastern chipmunks, mice, squirrels, white-tailed deer, coyotes, raccoons, northern water snakes, Chicago garter snakes, redback salamanders, and the midland painted turtle. A variety of wading birds, shorebirds, gulls, raptors, woodpeckers, and other migratory songbirds are also found at the park. Three hundred and fifty-two species of birds have been identified, with 113 of these being regular nesters. Nearshore waters of Lake Michigan serve as habitat for fish, wildlife, and aquatic organisms that support their production. The shoreline is a critical migratory bird stopover site.

The park contains exceptional biological diversity in plant communities, with more than 1,100 native plant species occurring across 15,000+ acres. This diversity is many times greater than that of most areas of similar size because Indiana Dunes is in several ecological transition zones. The mosaic of dunes and interdunal areas gave rise to eastern deciduous forests, prairies, oak savannas, wetlands, pannes, rivers, and remnants of boreal forests, on which dune successional stages and processes can be observed in a relatively



small area. Plant communities at the park include those typical of the Eastern Deciduous Forest, Northern Boreal Forest, Atlantic Coastal Plain, and tall grass prairies. The vegetation at Indiana Dunes National Park varies substantially from one unit to another in both type and quality.

To protect biological diversity and ecosystem function across the wide variety of habitats present at the park—from freshwater ecosystems to globally rare pannes—NPS staff have taken a holistic, parkwide and region-wide approach to resource management. Cooperative management with partners and neighboring landowners to improve landscape-scale conservation has included implementing cross-boundary wetlands restoration projects and establishing regional committees to improve wildland fire management. Direct park efforts to support biological diversity include management of invasive species, the use of prescribed fire, and direct support through seed collection/sowing and greenhouse operations/planting. These efforts also protect ethnobotanical resources of interest to the affiliated tribes.

In addition, staff undertook a prioritization exercise based upon unit size, condition, amount of disturbance (fragmentation), stressors, species and habitat rarity, and professional opinion to ensure the most important resources of the park were being cared for. These “high value natural resource areas” did not include Lake Michigan nor the park streams and rivers, so those have been added to ensure all elements of biological diversity are included. Areas that have rich diversity of species and habitats have ranked as the most critical to manage, as well as habitats that support federally listed species such as Pitcher’s thistle (*Cirsium pitcheri*), piping plover (*Charadrius melodus*), northern long-eared bat (*Myotis septentrionalis*), eastern massasauga rattlesnake (*Sistrurus catenatus*), and Indiana bat (*Myotis sodalis*). These areas were organized as ‘components’ for the RSS development process and include the following:

WEST BEACH: Pannes are a globally imperiled wetland plant community occurring at West Beach and Miller Woods. Rare Fowler’s toads and 25 rare plant species are present within the pannes. Primary stressors are invasive vegetation and social trails that erode sand from the adjacent dunes into the pannes. For this resource stewardship strategy, the project team focused on developing strategies to protect the pannes/interdunal wetlands as well as the beach/foredunes area surrounding pannes and *Cirsium pitcheri* habitat. Globally imperiled Cottonwood Dune/Open Woodland habitat also occurs adjacent to the pannes of West Beach and is a priority.





COWLES/HOWES COMPLEX: Cowles Bog and Dunes/Howes Prairie/Lupine Lane Unit includes a National Natural Landmark, Atlantic coastal plain relicts, mounded fen, and *Cirsium pitcheri* habitat. It also borders Indiana Dunes State Park, making it the largest natural area in the park. Stressors include overabundant wildlife that negatively impact plant communities, invasive vegetation, and climate change.

PINHOOK BOG: Pinhook Bog is a National Natural Landmark. The unit is large, and the bog itself is surrounded by forest. The bog itself is a rare wetland type and contains numerous rare plants, including several carnivorous species. For this resource stewardship strategy, the project team focused on developing strategies to protect the bog portion. Stressors acting upon the bog are plant theft, nitrification from air pollutants, climate change, and invasive vegetation including overabundant blueberry shrubs planted by the previous owner.

MILLER WOODS: Miller Woods is a large oak savanna/wetland unit with high habitat heterogeneity in relatively good condition. Rare species/habitats include mud puppies, dune and swale, cottonwood dune, oak savanna, Piping plover migrants, Blanding's turtles, pannes, and federally listed Pitcher's thistle. The area has minimal social trails with the exception of northern beach/foredune areas. Other stressors include climate change, nitrification of soils from air pollutants, and invasive species.

HOBART PRAIRIE GROVE: Hobart Prairie Grove contains a combination of habitat types with unique plant communities. A portion of the unit has potential to be managed as North-Central Bur Oak Openings, which is considered critically imperiled globally.

TOLLESTON DUNES: Inland Marsh/Tolleston Dunes is a highly heterogeneous area including oak savanna, forested dune, mesic forest, mesic prairie, sedge meadow, marsh, and shrub swamp habitats. It contains potential habitat for the long-eared bat and was formerly occupied by the Karner blue butterfly.

KEISER: The southern end of the Keiser Unit in the Great Marsh area contains rare wetland and vegetation types including beech-maple forest, swamp white oak-dominated hydromesophytic forest and black-ash swamp. Numerous rare plant species occur in the unit. The northern end of the Keiser Unit contains a population of federally threatened Pitcher's thistle in the open dune area along Kemil Road.



FURNESSVILLE WOODS: The Furnessville Unit contains unique and diverse flora within a mature oak forest. High-quality, mature oak forest is not common within the park and the understory vegetation contains dozens of plant species that are rare and uncommon.

TAMARACK: The Tamarack Unit is home to many rare plant species including five that occur only in this unit. The Crescent Dune area contains a panne-like wetland that contains panne vegetation. This unit is threatened by high lake levels, shoreline erosion, invasive vegetation, and hydrologic modification.

BAILLY: The Bailly Unit contains Mnoké Prairie, a portion of which is targeted for management as globally critically imperiled Midwest Mesic Tallgrass Prairie. Prairie is rare in the region, and thus, Mnoké Prairie is one of the only areas in the park that support rare grassland birds such as Henslow's sparrow. The Bailly Unit also contains some of the only free flowing, unditched portion of the East Branch of the Little Calumet River and has a high potential for restoration of native mussels because of recent regional water quality improvements.

HERON ROOKERY: Heron Rookery was a nesting area for great blue herons along the Little Calumet River and is the only location within the park where federally endangered Indiana bat has been identified. The unit contains a rich diversity of spring ephemerals and has high potential for hydrological restoration benefiting the watershed (and Lake Michigan) through storm water retention and improved native fish habitat. Resource stressors include ditching, nutrients from upstream, nitrification of soils from pollutants, and invasive species.

RIVERS AND STREAMS: The Little Calumet River is the principal river flowing through the park and has been identified as a significant resource within the park. The river consists of the east and west branches and contains 83 miles of tributary streams, including Salt, Coffee, Sand, and Reynolds creeks and numerous drainage ditches. Dunes Creek is one of three perennial streams that flow from the Great Marsh system into Lake Michigan. Tributaries include the Great Marsh tributary from the east and the West Branch tributary, which drains Cowles Bog. Water quality is an issue of concern because of the many sources of contamination that exist within the watershed and in proximity to the park, including heavy industry, transportation corridors, residential development, and agricultural lands.





LAKE MICHIGAN SHORELINE: The park's beaches and the primary dunes were created by the dynamic interface between the waters of Lake Michigan and the shoreline. Littoral drift and sediment deposition have created beach ridges of various complexities, which have resulted in a wide range of natural communities. Historically, nearshore waters served primarily as habitat for fish, wildlife, and aquatic organisms that supported their production. A large number of Lake Michigan fish use the nearshore waters for one or more critical life stages or functions.

ARCHEOLOGICAL RESOURCES

Indiana Dunes National Park contains most of the last remaining duneland in northwest Indiana and provides the opportunity to preserve and learn from the archeological record at the southern tip of Lake Michigan. Information about the archeological record of the area is not only derived from a wide variety of circumstances, including intensive and systematic inventory, testing, and data recovery projects, but also from incidental discoveries and numerous monitoring projects. Data indicate that human use of the area has occurred over much of the last 10,000 years as some areas were occupied and reoccupied over thousands of years. Intact topography offers a rare opportunity to learn more about prehistoric and historic land use and cultural relations around Lake Michigan and the mid-continent.

CULTURAL LANDSCAPES

There is a high overlap between Indiana Dunes National Park's cultural landscapes and historic structures. The historic structures and their corresponding cultural landscapes reflect the settlement and recreation in the dunes. The National Park Service identified ten cultural landscapes within the park: Bailly Homestead; Good Fellow Youth Camp; Chellberg Farm; Oscar & Irene Nelson Site; Peter Larson Site; Charles P. Nelson Site; Century of Progress District; Dr. John Meyer House; Solomon Enclave; and Reed Dunes House. Cultural landscape reports have been completed for Bailly Homestead, Chellberg Farm, and Good Fellow Youth Camp.



ETHNOGRAPHIC RESOURCES

Roots Eternal and Unshakable: An Ethnographic Overview of the Indiana Dunes National Lakeshore was completed in 2000 and includes profiles of tribes associated with northwest Indiana and other various ethnic groups that have connections to northwest Indiana and the dunes. The Miami people occupied the area that includes the park prior to the 1700s, but population shifts throughout the 17th and 18th centuries led the Potawatomi to become the primary occupants of the areas that is now Indiana Dunes National Park. Other tribes that used resources from or travelled through Northwest Indiana include the Ojibwa, Ottawa, Menominee, Meskwaki, Winnebago, Delaware, Shawnee, Kickapoo, Mascouten, Missisauga, Mohegan, Piankeshaw, Sauk-Fox, Wesa, and Wyandot. Ethnobotany studies have been completed for plant relationships of the Miami and Potawatomi people (2006) and the Ojibwa people (2009). These studies include tribal ecological perspectives gathered from fieldwork, ethnobotanical catalogs of species found in the park and their current and traditional uses, and management recommendations. NPS management of plant gathering for individuals from federally recognized tribes is guided by 2016 federal regulations; individual plant gathering processes and collection amounts will be outlined through formal agreements between tribes and the National Park Service.



HISTORIC STRUCTURES

Historic structures at the park represent over two hundred years of Euro American settlement, architectural design, and recreation in northwest Indiana and include the following:

BAILLY HOMESTEAD: Bailly Homestead, a national historic landmark, was home of Honore Gratien Joseph Bailly de Messein, an independent fur trader that was one of the earliest settlers in northern Indiana and played a role in developing the Calumet Region. The building is not currently open to the public because of structural issues.



SWEDISH PROPERTIES OF BAILLYTOWN: Chellberg Farm, established by Swedish immigrant Anders and Johanna Chellberg in 1869, is one of the few intact farmsteads from the Swedish enclave of Baillytown, Indiana. The brick Chellberg house dates to 1885 and is open during special events and ranger-led tours. The Charles P. Nelson House, located across Mineral Springs Road from the Chellberg Farm, is another example of a Swedish homestead developed as part of Baillytown. Other Swedish settlement sites in the park boundary include the Oscar and Irene Nelson Site, the Peter Larson Site, and the Gust Lindstrom Site.

GOOD FELLOW CLUB YOUTH CAMP: Good Fellow Club Youth Camp operated as a youth summer camp by the Good Fellow Club of U.S. Steel's Gary Works from 1941 to 1976. The National Park Service took ownership of the property in 1977, but funding for maintenance and repairs was not available until the 1990s. Portions of the camp are now used by residential environmental education nonprofit Dunes Learning Center, although the main lodge building is vacant.

20TH-CENTURY ARCHITECTURE: Indiana resort developer Robert Bartlett relocated 16 buildings from the Chicago Century of Progress Exposition of 1933 to his development at Beverly Shores, Indiana. Five prototype houses survive within the park: Cypress Log Cabin, Armco-Ferro House, Wieboldt-Rostone House, Florida Tropical House, and the House of Tomorrow. Together, the Century of Progress homes were once listed on the Historic Landmarks Foundation of Indiana's ten most endangered sites in Indiana. Since 1996, Historic Landmarks Foundation of Indiana (now Indiana Landmarks) has managed the sites through long-term leases with Indiana Dunes National Park. The leasing program, which finds private subleasees to preserve the buildings with nonfederal funds, has expanded to include other 20th century structures.

Additional 20th-century houses within the park are related to the residential development of the area. The Read Dunes House, a 1952 Prairie School-style house, was designed for Chicago dunes preservationists Philo and Irene Read by their architect son Herbert Read. It is listed on the National Register of Historic Places for its association with the Reads and the mid-20th century dunes conservation movement that culminated in the establishment of the Indiana Dunes National Park. Other notable residential properties within the park include the Dr. John and Gerda Meyer House, a National Register-listed International style home; the Solomon Enclave, a National Register-listed collection of three homes that are examples of residential development and International Style; and prefabricated, porcelain enamel steel Lustron homes that represent the building boom following World War II.



HISTORY

Efforts to create a national park to protect Indiana’s dunes started in the early 1890s, but it wasn’t until 1966 that Indiana Dunes National Lakeshore was officially established as a unit of the national park system. The park’s historic resource study was prepared in 1979; however, an updated study is needed to connect park cultural resources to regional historic contexts and identify additional historic themes that would help interpretation and management. An administrative history detailing the first two decades of park management was completed by the NPS Midwest Regional Historian in 1988, but the document should be updated to include management decisions and acquisitions of the last 20 years. The park previously recorded oral histories with former employees and individuals instrumental in the conservation of the dunes, and additional oral histories of recent retirees, long-time park employees with institutional memory, and local park advocates would support an updated administrative history and document the rationale and context surrounding key park decisions.





MUSEUM COLLECTIONS

The Indiana Dunes National Park museum collection contains over 117,000 items related to the park's resources, persons, and events commemorated by the park. The park's cultural resources collection includes archeological collections, fur trade items, and 19th-century farming and settlement items. The park's natural history collection includes a herbarium of 1,900 plant specimens, approximately 750 biological specimens, and two entomology collections. Collections are stored at park facilities, the Midwest Archeological Center (MWAC), and two nonfederal repositories. There is no space dedicated to exhibiting museum collections within the park. Onsite museum collection storage space is limited, and the park's museum management plan should be reviewed and updated to ensure the collections fit within the scope and support the park's mission.

PARKWIDE RESOURCES

This priority resource captures parkwide resource issues and needs, including topics such as habitat connectivity, shoreline management, integrated resource management, information sharing and data management, research integration, interpretation, and climate change.



STEWARDSHIP GOALS

Stewardship goals are essential to the RSS process because they articulate what managers are working to achieve for a park’s natural and cultural resources and provide both the framework to structure activities later in the RSS process and the time frame needed to reach them. Long-term goals are defined as those that park staff wish to accomplish in a 10- to 20-year time frame. Short-term goals are those that are attainable in a 3- to 5-year time frame.

Stewardship goals focus on

1. improving quality and/or completeness of current resource information and documentation of one or multiple priority resources;
2. improving or maintaining the conditions of one or multiple priority resources;
3. reducing issues, stressors, or threats that are adversely affecting priority resources; or
4. addressing other management needs for resource stewardship, such as increasing collaboration with partners or expanding education and interpretation related to the park’s priority resources.

An important consideration in establishing goals is to determine the appropriate level of knowledge and information and the desired condition for each priority resource and component. Long-term stewardship goals typically bear a strong relationship to broad, qualitative direction for resource management that are set forth in legal mandates, NPS mandates, or established park management documents. For long-term goals, the RSS project team focused on identifying desired future conditions, i.e. resource conditions that the National Park Service aspires to achieve and maintain over time. Short-term goals tier off long-term goals and set more specific targets for resource management. Short-term goals help drive the development of stewardship activities.

The RSS project team identified a wide array of stewardship goals, based upon the current and desired status of information and resource conditions, as well as key issues, stressors, and threats, and other management considerations. For the priority resource ‘biological diversity’, park staff identified desired conditions, short-term goals, and stewardship activities for specific areas within the park. See appendix A for desired future conditions, short-term goals, and activities organized by habitat type. Long-term and short-term goals are also included in the RSS desktop application, in addition to this summary document (table 3a-3h).

Table 3a. Long-Term and Short-Term Stewardship Goals for Priority Resource—Biological Diversity

COMPONENT	LONG-TERM GOAL	SHORT-TERM GOAL
WEST BEACH (PANNES/ INTERDUNAL WETLANDS AND BUFFER AREA)	No loss of native species diversity and composition within the West Beach Unit. 219 acres of beach/foredune and 23.5 acres of wetlands within the West Beach Unit are managed according to the desired conditions identified for those habitat types identified in appendix A, including G1-listed Cottonwood Dune habitat.	<ul style="list-style-type: none"> - By 2024, <i>Cirsium pitcheri</i> populations within the West Beach Unit are monitored annually and are stable or increasing. - By 2024, 100% of pannes/interdunal wetlands and surrounding beach/fordune areas within the West Beach Unit is visited and treated for invasive plants annually to achieve and maintain a nonnative plant cover of <1%. - By 2024, reduce the 2014 baseline of 8.7 miles of social trails to 5 miles. - By 2024, an evaluation of, and plan to mitigate unacceptable nuisance wildlife impacts, if needed (including beaver impacts) within the West Beach pannes/interdunal wetlands are completed.

Table 3a. Long-Term and Short-Term Stewardship Goals for Priority Resource—Biological Diversity (continued)

COMPONENT	LONG-TERM GOAL	SHORT-TERM GOAL
<p>COWLES/HOWES COMPLEX (COWLES BOG AND DUNES, HOWES PRAIRIE, AND LUPINE LANE)</p>	<p>No loss of native species diversity and composition. 239 acres of beach/foredune, 55 acres of prairie, 661 acres of savanna/woodland, 201 acres of forest, and 469 acres of wetlands within the Cowles Unit are managed according to the desired conditions identified for those habitat types identified in appendix A.</p>	<ul style="list-style-type: none"> - By 2024, a plan exists for the management of wetlands and vernal pools that includes consideration of climate factors. - By 2024, <i>Cirsium pitcheri</i> populations within the Cowles Unit are monitored annually and are stable or increasing. - By 2024, known populations of federal and Indiana state listed endangered, threatened, and rare species within the Cowles Unit are evaluated and a plan is developed to stabilize those believed to be declining (include bat surveys). - By 2024, 100 acres within the Cowles Unit are visited and treated to achieve and maintain a nonnative plant cover of <1%. - By 2024, there are no unacceptable impacts to vegetation from deer browse. - By 2024, an action strategy is developed to implement the Shoreline Management Plan to protect <i>Cirsium pitcheri</i> populations. - By 2024, hydrological restoration of Cowles Bog complex, Tansley Slough, and 20 acres of the Pepoon units is completed.
<p>PINHOOK BOG (BOG PORTION)</p>	<p>No loss of native species diversity and composition. 102 acres of wetlands within the Pinhook Bog Unit are managed according to the desired conditions identified for those habitat types identified in appendix A.</p>	<ul style="list-style-type: none"> - By 2024, known populations of federal and Indiana state listed endangered, threatened, and rare species within the bog portion of the Pinhook Bog Unit are evaluated, and a plan is developed for those believed to be declining. - By 2024, 5 acres within the bog portion of Pinhook Bog are visited and treated annually to achieve and maintain <i>Vaccinium corymbosum</i> cover of <10%. - By 2024, 5 acres within the bog portion of Pinhook Bog are visited and treated annually to achieve and maintain cattail and buckthorn cover of <1 %.

Table 3a. Long-Term and Short-Term Stewardship Goals for Priority Resource—Biological Diversity (continued)

COMPONENT	LONG-TERM GOAL	SHORT-TERM GOAL
MILLER WOODS	No loss of native species diversity and composition. 92 acres of beach/foredune, 11 acres of prairie, 555 acres of savanna/ woodland, 380 acres of wetland, and 2 acres of pannes/interdunal wetland habitat within the Miller Woods Unit are managed according to the desired conditions identified for those habitat types identified in appendix A.	<ul style="list-style-type: none"> - By 2024, <i>Cirsium pitcheri</i> populations within the Miller Woods Unit are monitored annually and are stable or increasing. - By 2024, 100% of pannes/interdunal wetlands and surrounding beach/foredune areas within the Miller Woods Unit is visited and treated for invasive plants annually to achieve and maintain a nonnative plant cover of <1%. - By 2024, 40 acres of the wetlands (non-pannes/ interdunal) receive initial treatment for invasive species. - By 2024, 500 acres of savanna within the Miller Woods Unit are monitored and maintained with a tree canopy cover of 5%-30% and a shrub cover of 10%-60%. - By 2024, 400 acres within the Miller Woods Unit are visited and treated to achieve and maintain a nonnative plant cover of <1%. - By 2024, there are no unacceptable impacts to vegetation from deer browse or beaver activity. - By 2024, an evaluation of, and plan to mitigate unacceptable nuisance wildlife impacts (including beaver impacts) within the Miller Woods Unit are completed. - By 2024, a plan to monitor and manage cottonwood dune habitat is initiated.
HOBART PRAIRIE GROVE (BUR OAK OPENINGS PORTIONS)	No loss of native species diversity and composition. 24 acres of savanna within the Hobart Prairie Grove Unit are managed according to the desired conditions identified for that habitat type identified in appendix A.	<ul style="list-style-type: none"> - By 2024, a plan is developed to reduce the canopy cover to 70% within the bur oak openings portions of the Hobart Prairie Grove Unit. - By 2024, 15 of 24 acres of the bur oak openings portions of the Hobart Prairie Grove Unit are visited and treated to achieve and maintain a nonnative plant cover of <1%. - By 2024, invasive species surveys are completed and plans for treatment are established, particularly adjacent to Indiana Dunes Ecosystem Alliance (IDEA) partner sites to support landscape scale restoration efforts.
TOLLESTON DUNES (INLAND MARSH UNIT)	No loss of native species diversity and composition. 42.5 acres of prairie, 411 acres of savanna/woodland, and 86 acres of wetland habitat within the Tolleston Dunes Unit are managed according to the desired conditions identified for those habitat types identified in appendix A.	<ul style="list-style-type: none"> - By 2024, 100 acres of savanna within the Tolleston Dunes Unit are monitored and maintained with a tree canopy cover of 5%-30% and a shrub cover of 10%-60%. - By 2024, 50 acres within the Tolleston Dunes Unit are visited and treated to achieve and maintain a nonnative plant cover of <1%. - By 2024, there are no unacceptable impacts to vegetation from deer browse. - By 2024, 10 acres of wetlands within the Tolleston Dunes Unit are visited and treated to achieve and maintain a nonnative plant cover of <10%.

Table 3a. Long-Term and Short-Term Stewardship Goals for Priority Resource—Biological Diversity (continued)

COMPONENT	LONG-TERM GOAL	SHORT-TERM GOAL
<p>KEISER (GREAT MARSH PORTION AND PITCHER'S THISTLE POPULATION)</p>	<p>No loss of native species diversity and composition. 9.7 acres of beach/foredune and 500 acres of wetland habitat within the Keiser Unit are managed according to the desired conditions identified for those habitat types identified in appendix A.</p>	<ul style="list-style-type: none"> - By 2024, <i>Cirsium pitcheri</i> populations within the Keiser Unit are monitored annually and are stable or increasing. - By 2024, 50 acres within the Great Marsh portion of the Keiser Unit are visited and treated to achieve and maintain a nonnative plant cover of <1%. - By 2024, an evaluation of, and plan to mitigate unacceptable nuisance wildlife impacts (including beaver impacts) within the Keiser Unit are completed. - By 2024, the park has initiated development of a plan to restore historic hydrology of Great Marsh.
<p>FURNESSVILLE WOODS</p>	<p>No loss of native species diversity and composition. 49 acres of forest and 6.4 acres of wetlands within the Furnessville Unit are managed according to the desired conditions identified for those habitat types identified in appendix A.</p>	<ul style="list-style-type: none"> - By 2024, the Furnessville Woods portion of the Furnessville Unit is evaluated and a plan for invasive plant control is developed. - By 2024, there are no unacceptable impacts to vegetation from deer browse. - By 2024, 20 acres of the Furnessville Woods portion of the Furnessville Unit are visited and treated to achieve and maintain a nonnative plant cover of < 20%.
<p>TAMARACK (RARE PLANT AREAS AND PANNE)</p>	<p>No loss of native species diversity and composition. 410 acres of wetland and 22.2 acres of pannes/interdunal wetland habitat within the Tamarack Unit are managed according to the desired conditions identified for those habitat types identified in appendix A.</p>	<ul style="list-style-type: none"> - By 2024, 100% of panne/interdunal wetlands and surrounding beach/foredune areas within the Tamarack Unit is visited and treated for invasive plants annually to achieve and maintain a nonnative plant cover of <1%. - By 2024, known populations of federal and Indiana state listed endangered, threatened, and rare species within the Tamarack Unit are evaluated, and a plan is developed to stabilize those believed to be declining. - By 2024, an action strategy is developed to implement the Shoreline Management Plan to protect pannes/interdunal wetlands. - By 2024, a plan is implemented to restore hydrology over 315 acres associated with Brown Ditch.

Table 3a. Long-Term and Short-Term Stewardship Goals for Priority Resource—Biological Diversity (continued)

COMPONENT	LONG-TERM GOAL	SHORT-TERM GOAL
<p>BAILLY (GRASSLAND BIRD AND PRAIRIE COMMUNITY)</p>	<p>No loss of native species diversity and composition. 84 acres of prairie within the Bailly Unit are managed according to the desired conditions identified for that habitat type identified in appendix A.</p>	<ul style="list-style-type: none"> - By 2024, 50 acres of the Mnoké Prairie portion of the Bailly Unit are monitored and maintained with a tree canopy cover of <5% and a shrub cover of <5%. - By 2024, artificial drainage within the Mnoké Prairie portion of the Bailly Unit is mitigated. - By 2024, there are no unacceptable impacts to vegetation from deer browse. - By 2024, 50 acres within the Mnoké Prairie portion of the Bailly Unit are visited and treated to achieve and maintain a nonnative plant cover (black locust, olive, oriental bittersweet, Rubus) of < 5%. - By 2024, the structure of the prairie is defined for a 5-year time period and activities to establish target structure are identified.
<p>HERON ROOKERY</p>	<p>No loss of native species diversity and composition. 460 acres of forest and 1.3 river miles within the Heron Rookery Unit are managed according to the desired conditions identified for those habitat types identified in appendix A.</p>	<ul style="list-style-type: none"> - By 2024, 20 acres within the Heron Rookery Unit are visited and treated to achieve and maintain a nonnative plant cover of <1%. - By 2024, the channelized portion of the Little Calumet River within the Heron Rookery Unit is evaluated for restoration potential. - No loss of habitat for native bat species.
<p>RIVERS AND STREAMS</p>	<p>10.3 miles of rivers and streams within the park are managed according to desired future conditions identified in appendix A.</p>	<ul style="list-style-type: none"> - By 2024, 75% of park stream miles meets Clean Water Act standard Index of Biotic Integrity score (fish) >32. - Rivers meet all Clean Water Act standards 100% of the time. - By 2024, eDNA tools for rare species detection (ellipse and plain pocketbook mussels, mottled sculpin, American brook lamprey, and long-nosed dace) are developed.
<p>LAKE MICHIGAN SHORELINE</p>	<p>15 miles of Lake Michigan shoreline are managed according to the desired future conditions identified in appendix A.</p>	<ul style="list-style-type: none"> - By 2024, >80% of monitoring samples taken from Lake Michigan during the recreational swimming season have <i>E. coli</i> counts <235 cfu.

Table 3b. Long-Term and Short-Term Stewardship Goals for Priority Resource—Archeological Resources

COMPONENT	LONG-TERM GOAL	SHORT-TERM GOAL
<p>ARCHEOLOGICAL RESOURCES</p>	<p>Conduct representative archeological inventory in all areas identified as high-priority for ecological restoration.</p>	<ul style="list-style-type: none"> - Collaborate with MWAC to develop Archeological Resources Management Plan. - Develop a comprehensive context statement to define significance for late-19th- and 20th-century archeological resources in the park. - Increase interdisciplinary and proactive resource management concerning park archeology. - Complete remaining inventories for the park Reservation of Use (ROU) program as needed; continue to incorporate resultant data into parkwide GIS. - Ensure all current technical information is disseminated to managers, planners, interpreters, and other NPS specialists and uploaded to a digital repository.
<p>ARCHEOLOGICAL RESOURCES</p>	<p>Conduct representative inventory in developed and use areas of the park.</p>	<ul style="list-style-type: none"> - Complete archeological inventories for Good Fellow Camp. - Complete archeological inventory and evaluation at Chellberg Farm and Nelson Site. - Inventory and evaluation of Baillytown related resources—Bailly Homestead and Cemetery, Wicker sawmill, tavern, ephemeral trading site, and five Swedish sites. - Complete archeological inventories for East Branch of Little Calumet. - Review extent of campground archeological survey; complete additional survey for area if necessary for potential campground expansion.
<p>ARCHEOLOGICAL RESOURCES</p>	<p>Conduct representative archeological inventory in areas of the park identified as important for their research potential.</p>	<ul style="list-style-type: none"> - Conduct inventories to identify any City West-related resources within the park. - Conduct systematic investigation of sites with Middle Woodland components including that identified at Honerkamp.
<p>ARCHEOLOGICAL RESOURCES</p>	<p>Conduct interdisciplinary study of the human ecosystem as a holistic concept to better understand how humans have influenced the Indiana Dunes landscape over time.</p>	<ul style="list-style-type: none"> - Initiate first phase of cultural history research related to interdisciplinary study of the human ecosystem of the Indiana Dunes.
<p>ARCHEOLOGICAL RESOURCES</p>	<p>Integrate archeological knowledge into interpretation and education at key areas</p>	<ul style="list-style-type: none"> - Provide current, active, and non-sensitive information to include in public programming and interpretation.

Table 3c. Long-Term and Short-Term Stewardship Goals for Priority Resource—Cultural Landscapes

COMPONENT	LONG-TERM GOAL	SHORT-TERM GOAL
CULTURAL LANDSCAPES	Cultural landscapes reports and/or NRHP nominations are completed for all landscapes identified in the park Cultural Landscapes Inventory.	<ul style="list-style-type: none"> - Ensure cultural landscape features are included in NRHP documentation for: Chellberg Farm; Charles P. Nelson Farm; Gust Lindstrom Site; Peter Larson Site; and Oscar & Irene Nelson Site. - Recognize Cowles Bog as a cultural and natural landscape for park management. - Implement landscape rehabilitation recommendations for leased properties.
CULTURAL LANDSCAPES	Cultural landscape features are evaluated and prioritized for preservation treatment that aligns with CLR treatment recommendations.	<ul style="list-style-type: none"> - Prioritize cultural landscape preservation treatment projects included in the park cultural landscape report.
CULTURAL LANDSCAPES	Up-to-date information related to the location, condition, and significance of cultural landscape features is readily available through the NPS cultural resource, facilities, and operations databases.	<ul style="list-style-type: none"> - Cultural landscape inventories are included in NPS management and project databases.
CULTURAL LANDSCAPES	Invasive plant species are not encroaching on defined cultural landscapes.	<ul style="list-style-type: none"> - Work with park natural resource staff to ensure that the preservation of the Cultural Landscapes is a parkwide resource management priority.

Table 3d. Long-Term and Short-Term Stewardship Goals for Priority Resource—Ethnographic Resources

COMPONENT	LONG-TERM GOAL	SHORT-TERM GOAL
ETHNOGRAPHIC RESOURCES	Park complies with federal regulations regarding plant collection; park can adequately respond to all requests for plant collecting and meet the needs of the tribes in a sustainable way.	<ul style="list-style-type: none"> - The park has a standard process for responding to tribal plant collection requests. - The park and tribe(s) actively monitors plants that are collected by tribes to ensure sustainable gathering practices and species health.
ETHNOGRAPHIC RESOURCES	Cultural and natural resource discussions and management decisions are integrated.	<ul style="list-style-type: none"> - The park's natural and cultural resource teams actively collaborate on ethnobotany.
ETHNOGRAPHIC RESOURCES	Park management is aware of ethnographic resources of traditionally associated people.	<ul style="list-style-type: none"> - Relationship of the park's ethnographic resources to the cultural context(s) for the park is adequately documented and required compliance is completed.

Table 3e Long-Term and Short-Term Stewardship Goals for Priority Resource—Historic Structures

COMPONENT	LONG-TERM GOAL	SHORT-TERM GOAL
HISTORIC STRUCTURES— Overall	Baseline documentation for the park’s historic structures is complete and up-to-date.	- Update existing National Register of Historic Places documentation for listed park historic properties to reflect recent scholarship.
HISTORIC STRUCTURES— Overall	Treatment plans for park historic structures are informed by completed historic structure reports and/or rehabilitation plans and reflect current condition assessments.	- Implement historic structure treatment recommendations included in completed historic structure reports and rehabilitation plans. - Continue current partnerships and pursue additional leasing opportunities with community organizations.
BAILLY HOMESTEAD	Rehabilitation of Bailly Homestead is complete, allowing for safe visitor access to the interior of the historic structure.	- Implement high-priority treatment recommendations to improve the condition of Bailly Homestead.
SWEDISH PROPERTIES OF BAILLYTOWN	Chellberg Farm and Charles P. Nelson site are maintained and accessible to the public.	- Implement high-priority treatment recommendations to improve the condition of the Chellberg and Nelson farms. - Determine future uses for the Chellberg Farm and Charles P. Nelson Farm.
CHELLBERG FARM AND CHARLES P. NELSON FARM	Enhance and support long-term health and sustainability of maple sugar bushes at Chellberg Farm and Nelson Farm.	- Manage Chellberg and Nelson sugar bushes in good condition as both a natural resource and cultural resource, potentially in partnership with partners and community organizations.
GOOD FELLOW CLUB YOUTH CAMP	The Good Fellow Club Youth Camp site is maintained and used; the structures are in good condition.	- Identify a compatible use that will help preserve and rehabilitate the Good Fellow Lodge.
20TH-CENTURY ARCHITECTURE	Read Dunes House is maintained and accessible to the public.	- Identify appropriate use and begin implementing approved rehabilitation plan for Read Dune House.



Table 3f. Long-Term and Short-Term Stewardship Goals for Priority Resource—History

COMPONENT	LONG-TERM GOAL	SHORT-TERM GOAL
HISTORY	Up-to-date administrative history and historic resource study is accessible to park management and staff and is used to inform all divisions for project planning and program development.	<ul style="list-style-type: none"> - Update the park’s administrative history (1988) and historic resource study. - Document oral histories of current, former, and retired park staff, partners, volunteers, and former park residents.
HISTORY	A completed, up-to-date park historic resource study is accessible to park staff and integrated into interpretation, maintenance, and resource management.	<ul style="list-style-type: none"> - Complete park historic resource study update, and share document with staff.
HISTORY	Collaboration with interpretation/ education to ensure historic research is used to inform programming and is actively shared with the public.	<ul style="list-style-type: none"> - Incorporate current historic information into interpretation and public programming.

Table 3g. Long-Term and Short-Term Stewardship Goals for Priority Resource—Museum Collections

COMPONENT	LONG-TERM GOAL	SHORT-TERM GOAL
MUSEUM COLLECTIONS	Cultural Resources are highlighted in park exhibit space and in community institutions.	<ul style="list-style-type: none"> - Continue relationship with local museums and galleries to develop temporary exhibits.
MUSEUM COLLECTIONS	Address backlog, including Natural Resource archival materials, superintendent’s files, and natural history specimens.	<ul style="list-style-type: none"> - Address museum collection backlog accessioning and cataloging. - With the assistance of MWR Museum Program, the Natural Resource Chief, and the Research Coordinator, initiate survey of existing collections at non-federal repositories.
MUSEUM COLLECTIONS	Management of Museum Collection, including archives, will be reflected in appropriate planning documents to comply with NPS management policies.	<ul style="list-style-type: none"> - Implement Museum Management Program recommendations.



Table 3h. Long-Term and Short-Term Stewardship Goals for Priority Resource—Parkwide Resources

COMPONENT	LONG-TERM GOAL	SHORT-TERM GOAL
PARKWIDE RESOURCES	Park contains a heterogeneity of native community types as controlled by hydrologic, eolian, and fire processes.	<ul style="list-style-type: none"> - Promote connectivity of habitat for native species within and beyond park boundaries. - Begin implementing the Shoreline Management Plan to stabilize the shoreline and to protect rare species and pannes/ interdunal wetlands. - Present an invasive vegetation-free view to the public in high visitor use areas to promote the science and implementation of ecological restoration
PARKWIDE RESOURCES	Enhance integrated resource management across the broader landscape through strong partnerships and interdisciplinary park teams.	<ul style="list-style-type: none"> - Collaborate with partners to leverage organizational strengths, build capacity, and/ or manage priority resources at landscape and regional scales. - Increase use of interdisciplinary teams to guide management of natural and cultural resources.
PARKWIDE RESOURCES	Improve park and partner knowledge of natural and cultural resources to help guide management at the landscape level.	<ul style="list-style-type: none"> - Disseminate information on park resources and resource management to all park staff and volunteers. - Improve data quality and management to support project management and inform resource management. - Improve knowledge of cultural and natural resources parkwide by integrating park, regional, partner, and program research.
PARKWIDE RESOURCES	Target communications with diverse audiences to improve stewardship of natural and cultural resources.	<ul style="list-style-type: none"> - Enhance interpretive programming around the history of research, environmental education, conservation, and restoration in the Indiana Dunes and region.
PARKWIDE RESOURCES	Integrate climate change science into natural and cultural resource management.	<ul style="list-style-type: none"> - Identify historical impacts and future vulnerabilities of climate change on priority resources. - Improve museum collection storage facilities to protect collections from the influences of climate change—humidity, flooding, and temperature extremes.



HIGH-PRIORITY STEWARDSHIP ACTIVITIES

Stewardship activities represent the primary product of the RSS development process, providing the park with a roadmap for investing both human and financial resources in the stewardship of natural and cultural resources. They are logically organized, based on science and/or scholarship, well documented and reviewed by subject-matter experts. Activities are aimed at achieving short-term goals and may also strive to reduce stressors on priority resources and components.

The RSS project team identified a wide array of management activities to consider over the next 3- to 5-year horizon. Whenever possible, activities were designed with integrated resource stewardship in mind, both in terms of their potential to improve the condition or understanding of multiple resources and/or their potential for efficient deployment through the integrated efforts of multiple staff. In addition, many of the activities developed include components that involve partnerships or coordination with regional NPS staff. For example, many activities related to archeological resources would be funded and organized by the Midwest Archeological Center. The park made an effort to consider and document integrated resource management efforts within these activities and will seek to carry them out as described.

While the RSS desktop application includes all of the activities identified for each priority resource component, the following table presents only those activities that park staff determined to be high priority in the next 3 to 5 years, along with associated short-term goals. The team considered a variety of factors when determining priorities, including feasibility and impact of the management activity, urgency, potential funding opportunities, and sequencing in relation to other activities. Medium and low priority activities are still valuable approaches for achieving resource objectives, but they are generally less urgent or represent secondary approaches. Many of the medium and low priority activities may rise to the level of high priority in the coming years, as stewardship activities are implemented, stewardship goals are achieved, and resource conditions change over time.



Table 4a. High-Priority Stewardship Activities for Priority Resource—Biological Diversity

COMPONENT	SHORT-TERM STEWARDSHIP GOAL	HIGH-PRIORITY STEWARDSHIP ACTIVITIES
<p>WEST BEACH (PANNES/ INTERDUNAL WETLANDS AND BUFFER AREA)</p>	<ul style="list-style-type: none"> - By 2024, <i>Cirsium pitcheri</i> populations within the West Beach Unit are monitored annually and are stable or increasing. - By 2024, 100% of pannes/interdunal wetlands and surrounding beach/foredune areas within the West Beach Unit is visited and treated for invasive plants annually to achieve and maintain a nonnative plant cover of <1%. - By 2024, reduce the 2014 baseline of 8.7 miles of social trails to 5 miles. - By 2024, an evaluation of and plan to mitigate nuisance wildlife impacts within the West Beach pannes/interdunal wetlands are completed. 	<ul style="list-style-type: none"> - Continue invasive plant control at West Beach unit. - Conduct studies to determine the most effective techniques for managing dune erosion, particularly erosion caused by social trails. - Continue working with partners to keep consistent messaging across Indiana shoreline. - Pursue funding to maintain signs and fences deterring social trails. - Evaluate impacts from nuisance wildlife on the West Beach pannes/interdunal wetlands. - Develop a plan to mitigate impacts from nuisance wildlife such as beaver within the West Beach unit. - Continue deer management at West Beach unit to reduce unacceptable impacts to vegetation, especially <i>Cirsium pitcheri</i>. - Continue <i>Cirsium pitcheri</i> monitoring within the West Beach Unit. - Continue <i>Cirsium pitcheri</i> seed collection within the West Beach Unit. - Continue <i>Cirsium pitcheri</i> seed protection from predation within the West Beach Unit. - Continue <i>Cirsium pitcheri</i> seed multiplication in nursery setting. - Continue <i>Cirsium pitcheri</i> population augmentation through seed installation within the West Beach Unit.



Table 4a. High-Priority Stewardship Activities for Priority Resource—Biological Diversity (continued)

COMPONENT	SHORT-TERM STEWARDSHIP GOAL	HIGH-PRIORITY STEWARDSHIP ACTIVITIES
<p>COWLES/HOWES COMPLEX (COWLES BOG AND DUNES, HOWES PRAIRIE, AND LUPINE LANE)</p>	<ul style="list-style-type: none"> - By 2024, a plan exists for the management of wetlands and vernal pools that includes consideration of climate factors. - By 2024, <i>Cirsium pitcheri</i> populations within the Cowles Unit are monitored annually and are stable or increasing. - By 2024, known populations of Federal and Indiana state listed endangered, threatened, and rare species within the Cowles Unit are evaluated and a plan is developed to stabilize those believed to be declining (include bat surveys). - By 2024, 100 acres within the Cowles Unit are visited and treated to achieve and maintain a nonnative plant cover of <1%. - By 2024, there are no unacceptable impacts to vegetation from deer browse. - By 2024, an action strategy is developed to implement the Shoreline Management Plan to protect <i>Cirsium pitcheri</i> populations. - By 2024, hydrological restoration of Cowles Bog complex, Tansley Slough and 20 acres of the Pepoon units is completed. 	<ul style="list-style-type: none"> - Continue invasive plant control within the Cowles Units. - Continue partnership with Dune Acres to conduct invasive plant control. - Continue prescribed fire activities within the Cowles Unit. - Document, characterize, and evaluate vernal pools and wetlands within the Cowles Unit. - Continue <i>Cirsium pitcheri</i> monitoring within the Cowles Unit. - Continue <i>Cirsium pitcheri</i> seed collection within the Cowles Unit. - Continue <i>Cirsium pitcheri</i> seed protection from predation within the Cowles Unit. - Continue <i>Cirsium pitcheri</i> seed multiplication in nursery setting. - Continue <i>Cirsium pitcheri</i> population augmentation through seed installation within the Cowles Unit. - Continue rare plant monitoring within the Cowles Unit. - Develop a plan to stabilize and increase rare plant populations within the Cowles Unit. - Continue native species planting within the Cowles Unit. - Continue trillium and lupine monitoring within the Cowles Unit for deer browse impacts. - Continue deer management within the Cowles Unit as needed to prevent negative impacts to vegetation. - Seek restoration of native plant assemblages through mitigation projects originating outside of the park. - Review the Shoreline Management Plan and identify actions to protect <i>Cirsium pitcheri</i> populations. - Continue activities to restore the hydrology of the Cowles Bog complex, Tansley Slough, and Pepoon unit.

Table 4a. High-Priority Stewardship Activities for Priority Resource—Biological Diversity (continued)

COMPONENT	SHORT-TERM STEWARDSHIP GOAL	HIGH-PRIORITY STEWARDSHIP ACTIVITIES
<p>PINHOOK BOG (BOG PORTION)</p>	<ul style="list-style-type: none"> - By 2024, known populations of federal and Indiana state listed endangered, threatened, and rare species within the bog portion of the Pinhook Bog Unit are evaluated and a plan is developed for those believed to be declining. - By 2024, 5 acres within the bog portion of Pinhook Bog are visited and treated annually to achieve and maintain <i>Vaccinium corymbosum</i> cover of <10%. - By 2024, 5 acres within the bog portion of Pinhook Bog are visited and treated annually to achieve and maintain cattail and buckthorn cover of <1%. 	<ul style="list-style-type: none"> - Continue invasive plant control within the Pinhook Bog Unit. - Conduct mechanical removal of red maple within the Pinhook Bog Unit. - Develop cooperative agreement with Shirley Heinze Land Trust to replace boardwalk. - Research different boardwalk designs and configurations. - Conduct plant rescue during boardwalk replacement. - Continue rare plant monitoring within the Pinhook Bog Unit. - Continue hand-pollinating rare orchids within the Pinhook Bog Unit. - Continue <i>Vaccinium corymbosum</i> control within the Pinhook Bog Unit. - Initiate pollinator study within the Pinhook Bog Unit. - Communicate with adjacent landowners on pollinator issues within the Pinhook Bog Unit. - Clean up environmental damage liability (EDL) sites.
<p>MILLER WOODS</p>	<ul style="list-style-type: none"> - By 2024, <i>Cirsium pitcheri</i> populations within the Miller Woods Unit are monitored annually and are stable or increasing. - By 2024, 100% of pannes/interdunal wetlands and surrounding beach/foredune areas within the Miller Woods Unit is visited and treated for invasive plants annually to achieve and maintain a nonnative plant cover of <1%. - By 2024, 40 acres of the wetlands (non-pannes/interdunal) receive initial treatment for invasive species. - By 2024, 500 acres of savanna within the Miller Woods Unit are monitored and maintained with a tree canopy cover of 5%-30% and a shrub cover of 10%-60%. - By 2024, 400 acres within the Miller Woods Unit are visited and treated to achieve and maintain a nonnative plant cover of <1%. - By 2024, there are no unacceptable impacts to vegetation from deer browse. - By 2024, an evaluation of, and plan to mitigate, nuisance wildlife impacts (including beaver impacts) within the Miller Woods Unit are completed. 	<ul style="list-style-type: none"> - Continue invasive plant control within the Miller Woods Unit. - Conduct pilot study to evaluate impacts of nuisance wildlife on wetlands. - Continue prescribed fire activities within the Miller Woods Unit. - Seek restoration of native plant assemblages through mitigation projects originating outside of the park.

Table 4a. High-Priority Stewardship Activities for Priority Resource—Biological Diversity (continued)

COMPONENT	SHORT-TERM STEWARDSHIP GOAL	HIGH-PRIORITY STEWARDSHIP ACTIVITIES
<p>HOBART PRAIRIE GROVE (BUR OAK SAVANNA PORTIONS)</p>	<ul style="list-style-type: none"> - By 2024, a plan is developed to reduce the canopy cover to 70% within the bur oak openings portions of the Hobart Prairie Grove Unit. - By 2024, 15 of 24 acres of the bur oak savanna portions of the Hobart Prairie Grove Unit are visited and treated to achieve and maintain a nonnative plant cover of <1%. - By 2024, invasive species surveys are completed and plans for treatment are established, particularly adjacent to IDEA partner sites to support landscape scale restoration efforts. 	<ul style="list-style-type: none"> - Coordinate with partners on planning initiative for larger area around Hobart Prairie Grove. - Complete invasive species surveys and develop treatment plans with a focus on areas adjacent to IDEA partner sites.
<p>TOLLESTON DUNES (INLAND MARSH UNIT)</p>	<ul style="list-style-type: none"> - By 2024, 100 acres of savanna within the Tolleston Dunes Unit are monitored and maintained with a tree canopy cover of 5%-30% and a shrub cover of 10%-60%. - By 2024, 50 acres within the Tolleston Dunes Unit are visited and treated to achieve and maintain a nonnative plant cover of <1%. - By 2024, there are no unacceptable impacts to vegetation from deer browse. - By 2024, 10 acres of wetlands within the Tolleston Dunes Unit are visited and treated to achieve and maintain a nonnative plant cover of <10%. 	<ul style="list-style-type: none"> - Continue invasive plant control within the Tolleston Dunes Unit. - Continue prescribed fire activities within the Tolleston Dunes Unit. - Continue mechanical/chemical maintenance of tree and shrub cover within the Tolleston Dunes Unit. - Evaluate impacts of beaver activity on vegetation and hydrology and develop a plan to mitigate impacts. - Seek restoration of native plant assemblages through mitigation projects originating outside of the park.
<p>KEISER (GREAT MARSH PORTION AND PITCHER'S THISTLE POPULATION)</p>	<ul style="list-style-type: none"> - By 2024, <i>Cirsium pitcheri</i> populations within the Keiser Unit are monitored annually and are stable or increasing. - By 2024, 50 acres within the Great Marsh portion of the Keiser Unit are visited and treated to achieve and maintain a nonnative plant cover of <1%. - By 2024, an evaluation of, and plan to mitigate nuisance wildlife impacts (including beaver impacts) within the Keiser Unit are completed. - By 2024, the park has begun development of a plan to restore historic hydrology of Great Marsh. 	<ul style="list-style-type: none"> - Initiate invasive plant control in the Keiser unit. - Complete hydrology studies at Great Marsh. - Seek restoration of native plant assemblages through mitigation projects originating outside of the park. - Re-initiate discussion of the need/desire to remove Derby Ditch. - Continue monitoring beaver activity to protect park and local infrastructure.

Table 4a. High-Priority Stewardship Activities for Priority Resource—Biological Diversity (continued)

COMPONENT	SHORT-TERM STEWARDSHIP GOAL	HIGH-PRIORITY STEWARDSHIP ACTIVITIES
FURNESSVILLE WOODS	<ul style="list-style-type: none"> - By 2024, the Furnessville Woods portion of the Furnessville Unit is evaluated and a plan for invasive plant control is developed. - By 2024, there are no unacceptable impacts to vegetation from deer browse. - By 2024, 20 acres of the Furnessville Woods portion of the Furnessville Unit are visited and treated to achieve and maintain a nonnative plant cover of <20%. - By 2024, initiate a plan for restoration of hydrology associated with Weiland Ditch. 	<ul style="list-style-type: none"> - Evaluate current status of invasive plants within the Furnessville Woods portion of the Furnessville Unit. - Collect data necessary for Weiland Ditch hydrological restoration plan.
TAMARACK (RARE PLANT AREAS AND PANNE)	<ul style="list-style-type: none"> - By 2024, 100% of panne/interdunal wetlands and surrounding beach/ fordune areas within the Tamarack Unit is visited and treated for invasive plants annually to achieve and maintain a nonnative plant cover of <1%. - By 2024, known populations of Federal and Indiana state listed endangered, threatened, and rare species within the Tamarack Unit are evaluated and a plan is developed to stabilize those believed to be declining. - By 2024, a plan is developed to implement the Shoreline Management Plan to protect pannes/ interdunal wetlands. - By 2024, a plan is implemented to restore hydrology over 315 acres associated with Brown Ditch. 	<ul style="list-style-type: none"> - Complete and implement plan/Environmental Assessment to restore hydrology. - Review the Shoreline Management Plan and identify actions to protect pannes/ interdunal wetlands. - Seek restoration of native plant assemblages through mitigation projects originating outside of the park. - Initiate actions associated with the Environmental Assessment for Eastern Great Marsh. - Treat invasive shrubs in rare plant areas (boreal relicts). - Continue monitoring and collaborating with the USACE sand nourishment within the Tamarack Unit.
BAILLY (GRASSLAND BIRD AND PRAIRIE COMMUNITY)	<ul style="list-style-type: none"> - By 2024, 50 acres of the Mnoké Prairie portion of the Bailly Unit are monitored and maintained with a tree canopy cover of <5% and a shrub cover of <5%. - By 2024, artificial drainage within the Mnoké Prairie portion of the Bailly Unit is mitigated. - By 2024, there are no unacceptable impacts to vegetation from deer browse. - By 2024, 50 acres within the Mnoké Prairie portion of the Bailly Unit are visited and treated to achieve and maintain a nonnative plant cover of < 5%. - By 2024, the structure of the prairie is defined for a 5-year time period and activities to establish target structure are identified. 	<ul style="list-style-type: none"> - Proactively work with organizations on planning for new trail through Mnoké Prairie to suggest routing and mitigation measures, with the goal of protecting remnant prairie. - Continue prescribed fire activities within the Mnoké Prairie portion of the Bailly Unit. - Identify target structure for the Mnoké Prairie and implement management actions to create and maintain desired conditions.

Table 4a. High-Priority Stewardship Activities for Priority Resource—Biological Diversity (continued)

COMPONENT	SHORT-TERM STEWARDSHIP GOAL	HIGH-PRIORITY STEWARDSHIP ACTIVITIES
HERON ROOKERY	<ul style="list-style-type: none"> - By 2024, 20 acres within the Heron Rookery Unit are visited and treated to achieve and maintain a nonnative plant cover of <1%. - By 2024, the channelized portion of the Little Calumet River within the Heron Rookery Unit is evaluated for restoration potential. - No loss of habitat for native bat species. 	<ul style="list-style-type: none"> - Identify habitat requirements of native bat species and prevent habitat loss.
RIVERS AND STREAMS	<ul style="list-style-type: none"> - By 2024, 75% of park stream miles meets Clean Water Act standard Index of Biotic Integrity score >32. - Rivers meet all Clean Water Act standards 100% of the time. - By 2024, eDNA tools for rare species detection (ellipse and plain pocketbook mussels, mottled sculpin, American brook lamprey, and long-nosed dace) are developed. 	<ul style="list-style-type: none"> - Continue efforts at partnership building and look for creative ways to leverage technical resources to engage upstream landowners—e.g., working with agricultural landowners to achieve 60% cover crops. - Continue water quality monitoring in the Little Calumet River and other streams.
LAKE MICHIGAN SHORELINE	<ul style="list-style-type: none"> - By 2024, >80% of monitoring samples taken from Lake Michigan during the recreational swimming season have <i>E. coli</i> counts <235 cfu. 	<ul style="list-style-type: none"> - Continue water quality monitoring during swimming season. - Maintain and enhance the park’s capability to respond to water quality issues in Lake Michigan. - Assess potential of closing Derby Ditch and Kintzel Ditch to reduce <i>E. coli</i> input to shoreline. - Continue partnering with sister agencies on large-scale Great Lakes issues.

Table 4b. High-Priority Stewardship Activities for Priority Resource—Archeological Resources

COMPONENT	SHORT-TERM STEWARDSHIP GOAL	HIGH-PRIORITY STEWARDSHIP ACTIVITIES
ARCHEOLOGICAL RESOURCES	Collaborate with MWAC to develop Archeological Resources Management Plan.	- <i>No high-priority, park-led activities identified. See RSS desktop application for complete list of activities identified.</i>
ARCHEOLOGICAL RESOURCES	Develop a comprehensive context statement to define significance for late 19th and 20th century archeological resources in the park.	- Identify areas of the park under consideration for future restoration or development projects.
ARCHEOLOGICAL RESOURCES	Increase interdisciplinary and proactive resource management in regards to park archeology.	- Develop a strategy for collaborative planning and communication between the park, MWAC, and other MWR programs.
ARCHEOLOGICAL RESOURCES	Complete remaining inventories for the park ROU (Reservation of Use) program as needed; continue to incorporate resultant data into parkwide GIS.	- <i>No high-priority, park-led activities identified. See RSS desktop application for complete list of activities identified.</i>
ARCHEOLOGICAL RESOURCES	Ensure all current technical information is disseminated to managers, planners, interpreters, and other NPS specialists and uploaded to a digital repository.	- <i>No high-priority, park-led activities identified. See RSS desktop application for complete list of activities identified.</i>
ARCHEOLOGICAL RESOURCES	Complete archeological inventories for Good Fellow Camp.	- <i>No high-priority, park-led activities identified. See RSS desktop application for complete list of activities identified.</i>
ARCHEOLOGICAL RESOURCES	Complete archeological inventory and evaluation at Chellberg Farm and Nelson Site.	- <i>No high-priority, park-led activities identified. See RSS desktop application for complete list of activities identified.</i>
ARCHEOLOGICAL RESOURCES	Inventory and evaluation of Baillytown related resources - Bailly Homestead and Cemetery, Wicker sawmill, tavern, ephemeral trading site, and five Swedish sites.	- <i>No high-priority, park-led activities identified. See RSS desktop application for complete list of activities identified.</i>
ARCHEOLOGICAL RESOURCES	Complete archeological inventories for East Branch of Little Calumet.	- <i>No high-priority, park-led activities identified. See RSS desktop application for complete list of activities identified.</i>
ARCHEOLOGICAL RESOURCES	Review extent of campground archeological survey; complete additional survey for area if necessary for potential campground expansion.	- <i>No high-priority, park-led activities identified. See RSS desktop application for complete list of activities identified.</i>
ARCHEOLOGICAL RESOURCES	Conduct inventories to identify any City West related resources within the park.	- <i>No high-priority, park-led activities identified. See RSS desktop application for complete list of activities identified.</i>
ARCHEOLOGICAL RESOURCES	Conduct systematic investigation of sites with Middle Woodland components including that identified by Honerkamp.	- <i>No high-priority, park-led activities identified. See RSS desktop application for complete list of activities identified.</i>
ARCHEOLOGICAL RESOURCES	Initiate first phase of cultural history research as part of interdisciplinary study of the human ecosystem related to the Indiana Dunes.	- <i>No high-priority, park-led activities identified. See RSS desktop application for complete list of activities identified.</i>
ARCHEOLOGICAL RESOURCES	Provide current, active, and nonsensitive information to parks to include in public programming and interpretation.	- <i>No high-priority, park-led activities identified. See RSS desktop application for complete list of activities identified.</i>

Table 4c. High-Priority Stewardship Activities for Priority Resource—Cultural Landscapes

COMPONENT	SHORT-TERM STEWARDSHIP GOAL	HIGH-PRIORITY STEWARDSHIP ACTIVITIES
CULTURAL LANDSCAPES	Ensure cultural landscape features are included in NRHP documentation for: <ul style="list-style-type: none"> · Chellberg Farm · Charles P. Nelson Farm · Gust Lindstrom Site · Peter Larson Site · Oscar & Irene Nelson Site 	<ul style="list-style-type: none"> - Midwest Regional Program review cultural landscape features already included in the National Register of Historic Places.
CULTURAL LANDSCAPES	Recognize Cowles Bog as a cultural and natural landscape for park management	<ul style="list-style-type: none"> - <i>No high-priority activities identified. See RSS desktop application for complete list of activities identified.</i>
CULTURAL LANDSCAPES	Implement landscape rehabilitation recommendations for leased properties	<ul style="list-style-type: none"> - <i>No high-priority activities identified. See RSS desktop application for complete list of activities identified.</i>
CULTURAL LANDSCAPES	Prioritize cultural landscape preservation treatment projects included in the park cultural landscape report	<ul style="list-style-type: none"> - Submit a technical assistance request to the Air Resources Division for a visual resource inventory to establish baseline condition of selected views.
CULTURAL LANDSCAPES	Include cultural landscape inventories in NPS management and project databases	<ul style="list-style-type: none"> - Support MWRO effort to update LCS/FMSS to include cultural landscape features.
CULTURAL LANDSCAPES	Work with park natural resource staff to ensure that the preservation of the cultural landscapes is a parkwide resource management priority	<ul style="list-style-type: none"> - Continue defensible space/wildland-urban interface efforts with fire management team. - Restore natural areas bordering cultural landscapes to allow the public to see restoration in progress.

Table 4d. High-Priority Stewardship Activities for Priority Resource—Ethnographic Resources

COMPONENT	SHORT-TERM STEWARDSHIP GOAL	HIGH-PRIORITY STEWARDSHIP ACTIVITIES
ETHNOGRAPHIC RESOURCES	The park has a standard process for responding to tribal plant collection requests.	<ul style="list-style-type: none"> - Park superintendent and resource manager to work with MWR/WASO to draft plant collection agreement according to WASO service-wide process. (Ongoing) - Prepare EA for plant gathering in locations and for plants identified in agreement.
ETHNOGRAPHIC RESOURCES	The park actively monitors plants that are collected by tribes to ensure sustainable gathering practices and species health.	<ul style="list-style-type: none"> - Consider list of species that can be gathered under federal regulations and plant gathering activities in updated fire management plan.
ETHNOGRAPHIC RESOURCES	The park’s natural and cultural resource teams actively collaborate with natural resource team on ethnobotany.	<ul style="list-style-type: none"> - Determine location for park ethnobotany trail. (Ongoing) - Work with Interpretation/Education Division and tribes on determining stories told on the ethnobotany trail. (Ongoing) - Implementing MWR recommended consultation procedures with tribes. (Ongoing)
ETHNOGRAPHIC RESOURCES	Relationship of the park’s ethnographic resources to the cultural context(s) for the park is adequately documented and required compliance is completed.	<ul style="list-style-type: none"> - <i>No high-priority activities identified. See RSS desktop application for complete list of activities identified.</i>

Table 4e High-Priority Stewardship Activities for Priority Resource—Historic Structures

COMPONENT	SHORT-TERM STEWARDSHIP GOAL	HIGH-PRIORITY STEWARDSHIP ACTIVITIES
HISTORIC STRUCTURES—OVERALL	Update existing National Register of Historic Places documentation for listed park historic properties to reflect recent scholarship.	<ul style="list-style-type: none"> - Update the NR/NHL nomination for Bailly Homestead to include recent research gathered for completed historic structure report and archeological surveys.
HISTORIC STRUCTURES—OVERALL	Implement historic structure treatment recommendations included in completed Historic structure Reports and rehabilitation plans.	<ul style="list-style-type: none"> - Prioritize historic structure treatment projects from baseline treatment documents in FMSS and seek funding.
HISTORIC STRUCTURES—OVERALL	Continue current partnerships and pursue additional leasing opportunities with community organizations.	<ul style="list-style-type: none"> - Finalize lease with Indiana Landmarks for seven subleased sites currently under MOU. (in progress) - Prepare leases for the next phase of leasing properties: Schulhof Lustron, Meyer, Solomon, and Read.
BAILLY HOMESTEAD	Implement high-priority treatment recommendations to improve the condition of Bailly Homestead.	<ul style="list-style-type: none"> - Enter deferred maintenance costs for Bailly Homestead in FMSS and prioritize Bailly projects within the park PMIS. (in progress) - Organize internal park conversation to discuss funding strategy for Bailly restoration work.
SWEDISH PROPERTIES OF BAILLYTOWN	Implement high-priority treatment recommendations to improve the condition of the Chellberg and Nelson farms.	<ul style="list-style-type: none"> - Determine deferred maintenance for Charles Nelson farm structures. - Enter cost estimates for Charles Nelson projects into NPS facilities and project databases so amounts can be added to the park’s deferred maintenance total.
SWEDISH PROPERTIES OF BAILLYTOWN	Determine future uses for the Chellberg Farm and Charles P. Nelson Farm.	<ul style="list-style-type: none"> - Organize internal park conversation to discuss future use of Chellberg Farm and fields and possible related use of Nelson Farm.
SWEDISH PROPERTIES OF BAILLYTOWN	Manage Chellberg and Nelson sugar bushes in good condition as both a natural resource and cultural resource.	<ul style="list-style-type: none"> - No high-priority activities identified. See RSS desktop application for complete list of activities identified.
GOOD FELLOW CLUB YOUTH CAMP	Identify a compatible use that will help preserve and rehabilitate the Good Fellow Lodge.	<ul style="list-style-type: none"> - Determine deferred maintenance cost for Good Fellow Lodge. - Upload Good Fellow Lodge cost estimate data into NPS facility and project databases.
20TH-CENTURY ARCHITECTURE	Identify appropriate use and begin implementing approved rehabilitation plan for Read Dune House.	<ul style="list-style-type: none"> - No high-priority activities identified. See RSS desktop application for complete list of activities identified.

Table 4f. High-Priority Stewardship Activities for Priority Resource—History

COMPONENT	SHORT-TERM STEWARDSHIP GOAL	HIGH-PRIORITY STEWARDSHIP ACTIVITIES
HISTORY	Update the park’s Administrative History (1988) and historic resource study.	- Update existing request for historic resource study funding through NPS project management database.
HISTORY	Document oral histories of current, former, and retired park staff, partners, and volunteers, and former park residents.	- No high-priority activities identified. See RSS desktop application for complete list of activities identified.
HISTORY	Complete park historic resource study update and share document with staff.	- Update existing request for historic resource study funding through NPS project management database.
HISTORY	Incorporate current historic information into interpretation and public programming.	- Organize ongoing interpreter training related to historic resources/historic sites. Training could include ongoing conversations about updated information related to park myths, importance of partner contributions.

Table 4g. High-Priority Stewardship Activities for Priority Resource—Museum Collections

COMPONENT	SHORT-TERM STEWARDSHIP GOAL	HIGH-PRIORITY STEWARDSHIP ACTIVITIES
MUSEUM COLLECTIONS	Continue relationship with local museums and galleries to develop temporary exhibits.	- Ensure cultural resources and historically accurate information is included in new visitor center exhibits through conversations with the Convention and Visitors Bureau, park management, interpretation division, and resource management.
MUSEUM COLLECTIONS	Address Museum Collection backlog accessioning and cataloging.	- No high-priority activities identified. See RSS desktop application for complete list of activities identified.
MUSEUM COLLECTIONS	With the assistance of MWR Museum Program, the Natural Resource Chief, and the Research Coordinator, initiate survey of existing collections at non-federal repositories.	- No high-priority activities identified. See RSS desktop application for complete list of activities identified.
MUSEUM COLLECTIONS—OVERALL	Implement Museum Management Program recommendations.	- Research large objects in museum collection that are outside the Scope of Collection, and begin deaccession process with assistance from MWR Museum Program. (In progress)

Table 4h. High-Priority Stewardship Activities for Priority Resource—Parkwide Resources

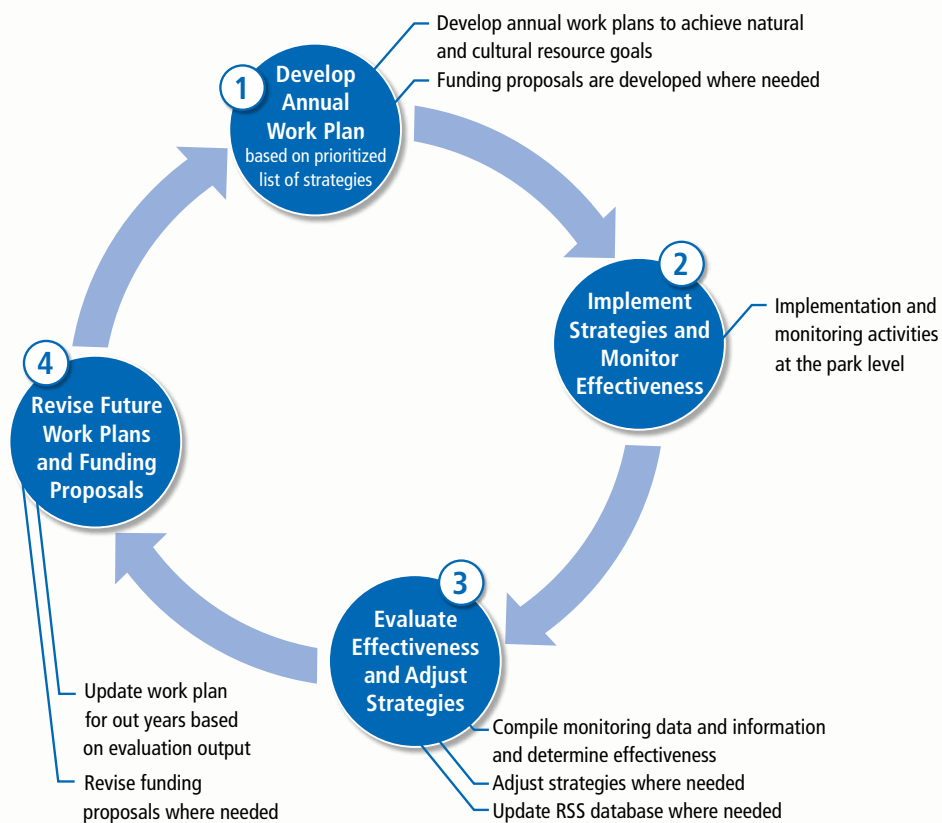
COMPONENT	SHORT-TERM STEWARDSHIP GOAL	HIGH-PRIORITY STEWARDSHIP ACTIVITIES
PARKWIDE RESOURCES	Promote connectivity of habitat for native species within and beyond park boundaries.	<ul style="list-style-type: none"> - Develop connectivity maps for priority species. - Encourage Cooperative Weed Management Area to continue to work with neighboring communities / private landowners / municipalities on invasive species control on right-of-ways and lands adjacent to the park.
PARKWIDE RESOURCES	Begin implementing the Shoreline Management Plan to stabilize the shoreline and to protect rare species and pannes/interdunal wetlands.	<ul style="list-style-type: none"> - Implement Shoreline Management Plan as funding becomes available.
PARKWIDE RESOURCES	Present an invasive vegetation-free view to the public in high visitor use areas to promote the science and implementation of ecological restoration	<ul style="list-style-type: none"> - Remove invasive vegetation in high visitor use areas using staff, volunteers, and wetland mitigation as tools.
PARKWIDE RESOURCES	Collaborate with partners to leverage organizational strengths, build capacity, and/or manage priority resources at landscape and regional scales.	<ul style="list-style-type: none"> - Conduct annual meeting to “update” RSS and discuss regional issues with leadership and resource managers at park and partner organizations.
PARKWIDE RESOURCES	Increase use of interdisciplinary teams to guide management of natural and cultural resources.	<ul style="list-style-type: none"> - Use interdisciplinary workgroup (e.g., resource management and facilities) to improve process for trail, visitor use, and development planning. - Develop projects for frontcountry areas that use integrated teams.
PARKWIDE RESOURCES	Disseminate information on park resources and resource management to all park staff and volunteers.	<ul style="list-style-type: none"> - Present targeted resource management messages at maintenance staff morning meetings.
PARKWIDE RESOURCES	Improve data quality and management to support project management and inform resource management.	<ul style="list-style-type: none"> - Develop a system for archiving resource management activities.
PARKWIDE RESOURCES	Improve knowledge of cultural and natural resources parkwide by integrating park, regional, partner, and program research.	<ul style="list-style-type: none"> - No high-priority activities identified. See RSS desktop application for complete list of activities identified.
PARKWIDE RESOURCES	Enhance interpretive programming around the history of research, environmental education, conservation, and restoration in the Indiana Dunes and region.	<ul style="list-style-type: none"> - Work with interpretation division to keep messaging/waysides up-to-date and relevant. - Continue citizen science/volunteer project at the Chellberg and Nelson maple sugar bushes.
PARKWIDE RESOURCES	Identify historical impacts and future vulnerabilities of climate change on priority resources.	<ul style="list-style-type: none"> - Review Climate Adaptation Plan and current I&M monitoring and conduct a Gap analysis.
PARKWIDE RESOURCES	Integrate existing climate change information into specific management decisions.	<ul style="list-style-type: none"> - Annually review, revise and implement recommendations from Climate Change Action Plan.
PARKWIDE RESOURCES	Improve museum collection storage facilities to protect collections from the influences of climate change—humidity, flooding, temperature extremes.	<ul style="list-style-type: none"> - Discuss needed improvements to onsite museum collection storage facilities that would help address threats from climate change and develop strategic approach to implementation.

ONGOING IMPLEMENTATION OF THE RESOURCE STEWARDSHIP STRATEGY

The stewardship goals, activities, and other pertinent information of the resource stewardship strategy is managed and updated regularly using the RSS desktop application. This information will assist resource managers in determining what, how, when, and where resource management occurs in the park and will assist the parks' resource management staff in developing annual work plans. These work plans will be an important planning tool for park staff to determine what they will be able to realistically tackle over the coming years.

Long-term implementation of the resource stewardship strategy includes park managers monitoring resource information and conditions in order to evaluate the effectiveness of resource stewardship strategies over time. Regular monitoring of RSS progress will provide park managers an opportunity to evaluate whether the stewardship activities are making progress towards identified goals and consider whether adjustments are needed. See figure 2 for more information on the cyclical nature of this process. In addition, routine communication with the public is another important aspect of the implementation process. These outreach efforts are intended to improve public awareness about the science and strategies used to protect the park's diverse resources and values over time.

Figure 2. RSS Implementation Process



REFERENCES BY PRIORITY RESOURCE

BIOLOGICAL DIVERSITY

Chicago Wilderness

- 1999 *Biodiversity Recovery Plan*; Chicago Region Biodiversity Council: Chicago, IL.

National Park Service

- 2012 *White-Tailed Deer Management Plan / Environmental Impact Statement*. U.S Department of Interior, National Park Service.
- 2012 *Shoreline Restoration and Management Plan / Environmental Impact Statement*. U.S Department of Interior, National Park Service.
- 2012 *Great Lakes Invasive Plant Management Plan / Environmental Assessment*. U.S Department of Interior, National Park Service.
- 2014 *2014*. Unpublished Digital Geologic Map of Indiana Dunes National Lakeshore and Vicinity, Indiana (NPS, GRD, GRI, INDU, INDU digital map) adapted from Indiana Geological Survey digital data by Thompson and Johnson (2014). National Park Service (NPS) Geologic Resources Inventory (GRI) program. Available online at <https://irma.nps.gov/NPSpecies/>
- 2015 *Oak savanna thinning guidelines and best practices adaptive management plan*. On file at Indiana Dunes National Park Resource Management Division
- 2016 *Foundation Document – Indiana Dunes National Lakeshore*. U.S Department of Interior, National Park Service.
- 2019 *NPSpecies, Information of Species in National Parks: Indiana Dunes National Lakeshore*. Available online at <https://irma.nps.gov/NPSpecies/>
- n.d. National Park Service - SRI - Soil Survey Geographic (SSURGO) for Indiana Dunes National Lakeshore, Indiana. 2007-2013. Available online at <https://irma.nps.gov/NPSpecies/>

United States Fish and Wildlife Service

- 2002 *Pitcher's Thistle (Cirsium pitcheri) Recovery Plan*. U.S. Fish and Wildlife Service, Fort Snelling, Minnesota.
- 2003 *Final Recovery Plan for the Karner Blue Butterfly (Lycaeides melissa samuelis)*. U.S. Fish and Wildlife Service, Fort Snelling, Minnesota.

ARCHEOLOGICAL RESOURCES

National Park Service

- 2008 *An Archeological Overview and Assessment of Indiana Dunes National Lakeshore, Indiana*. Prepared by Dawn Bringelson and Jay T. Sturdevant. Midwest Archeological Center Technical Report No. 97.
- 2018 *Cultural Resource Stewardship Assessment – Indiana Dunes National Lakeshore (Draft)*.

CULTURAL LANDSCAPES

National Park Service

- 2000 *Cultural Landscape Report-Chellberg Farm, Indiana Dunes National Lakeshore*. Prepared by Quinn Evans Architects for U.S. Department of Interior, National Park Service.
- 2009 *Historic Structures Report and Cultural Landscape Report for Indiana Dunes National Lakeshore Good Fellow Club Youth Camp*. U.S. Department of Interior, National Park Service.
- 2018 *Bailly Homestead Cultural Landscape and Historic Structures Report*. Department of Interior.
- 2018 *Cultural Resource Stewardship Assessment – Indiana Dunes National Lakeshore (Draft)*.

ETHNOGRAPHIC RESOURCES

National Park Service

- 2018 *Cultural Resource Stewardship Assessment – Indiana Dunes National Lakeshore (Draft).*

Toupal, Rebecca S.

- 2006 *An Ethnobotany of Indiana Dunes National Lakeshore: A Baseline Study Emphasizing Plant Relationships of the Miami and Potawatomi Peoples.* Bureau of Applied Research in Anthropology, University of Arizona. Prepared for National Park Service.

Toupal, Rebecca S. and Kacy Hollenback

- 2009 *An Ethnobotany of Indiana Dunes National Lakeshore: Plant Uses of the Ojibwa People.* Bureau of Applied Research in Anthropology, University of Arizona. Prepared for National Park Service.

White, David R. M.

- 2000 *Roots Eternal and Unshakable: An Ethnographic Overview of the Indiana Dunes National Lakeshore.* Prepared for the National Park Service.

HISTORIC STRUCTURES

National Park Service

- 2009 *Historic Structures Report and Cultural Landscape Report for Indiana Dunes National Lakeshore Good Fellow Club Youth Camp.* U.S. Department of Interior, National Park Service.
- 2018 *Bailly Homestead Cultural Landscape and Historic Structures Report.* Department of Interior.
- 2018 *Cultural Resource Stewardship Assessment – Indiana Dunes National Lakeshore (Draft).*

HISTORY

National Park Service

- 1988 *A Signature of Time and Eternity: The Administrative History of Indiana Dunes National Lakeshore, Indiana.*
- 2018 *Cultural Resource Stewardship Assessment – Indiana Dunes National Lakeshore (Draft).*

MUSEUM COLLECTIONS

National Park Service

- 2018 *Cultural Resource Stewardship Assessment – Indiana Dunes National Lakeshore (Draft).*

APPENDIX A: DESIRED FUTURE CONDITIONS, SHORT-TERM GOALS, AND MANAGEMENT ACTIONS BY HABITAT

In addition to developing stewardship goals and activities for specific units for the park, park staff also identified desired future conditions, short-term goals, and activities by habitat type.

Table A-1. Desired Future Conditions, Short-term Goals, and Management Actions by Habitat

HABITAT	DESIRED FUTURE CONDITION	SHORT-TERM GOAL	MANAGEMENT ACTIONS
BEACH/FOREDUNE	Nonnative plant cover = <1%	By 2024, 100 acres meet desired future condition	Achieve and maintain prescribed nonnative plant cover using mechanical and/or chemical methods
BEACH/FOREDUNE	Federal and Indiana state listed endangered, threatened, and rare species with stable populations = 100%	By 2024, 100 acres meet desired future condition	Monitor populations of federal and Indiana listed species and take action to stabilize populations found to be declining
BEACH/FOREDUNE	Area free of disturbance (unauthorized trails, human caused erosion, trash, campsites) = 99% to 100%	By 2024, 100 acres meet desired future condition	Monitor for disturbance and take action to address causes of disturbance. Plan to implement Shoreline Management Plan
BEACH/FOREDUNE	Deer population = <20 deer per square mile	By 2024, 100 acres meet desired future condition	Monitor deer population and implement deer management plan when necessary to meet target deer population density
BEACH/FOREDUNE	Community is not compromised by nuisance wildlife	By 2024, 100 acres meet desired future condition	Monitor for nuisance wildlife impacts and take appropriate action when impact exceeds acceptable level
PRAIRIE	Heterogeneous canopy cover = 0% to 5%	By 2024, 100 acres meet desired future condition	Achieve and maintain prescribed canopy cover using prescribed fire, mechanical, and/or chemical methods
PRAIRIE	Heterogeneous shrub cover = 0% to 5%	By 2024, 100 acres meet desired future condition	Achieve and maintain prescribed shrub cover using prescribed fire, mechanical, and/or chemical methods
PRAIRIE	Nonnative plant cover = <1%	By 2024, 100 acres meet desired future condition	Achieve and maintain prescribed nonnative plant cover using mechanical and/or chemical methods
PRAIRIE	Federal and Indiana state listed endangered, threatened, and rare species with stable populations = 100%	By 2024, 100 acres meet desired future condition	Monitor populations of federal and Indiana listed species and take action to stabilize populations found to be declining
PRAIRIE	Area free of disturbance (unauthorized trails, human caused erosion, trash, campsites) = 99% to 100%	By 2024, 100 acres meet desired future condition	Monitor for disturbance and take action to address causes of disturbance
PRAIRIE	Deer population = <20 deer per square mile	By 2024, 100 acres meet desired future condition	Monitor deer population and implement deer management plan when necessary to meet target deer population density

Table A-1. Desired Future Conditions, Short-term Goals, and Management Actions by Habitat (continued)

HABITAT	DESIRED FUTURE CONDITION	SHORT-TERM GOAL	MANAGEMENT ACTIONS
PRAIRIE	Community is not compromised by nuisance wildlife	By 2024, 100 acres meet desired future condition	Monitor for nuisance wildlife impacts and take appropriate action when impact exceeds acceptable level
SAVANNA	Heterogenous canopy cover = 5% to 30%	By 2024, 500 acres meet desired future condition	Achieve and maintain prescribed canopy cover using prescribed fire, mechanical, and/or chemical methods
SAVANNA	Heterogeneous shrub cover = 10% to 60%	By 2024, 500 acres meet desired future condition	Achieve and maintain prescribed shrub cover using prescribed fire, mechanical, and/or chemical methods
SAVANNA	Nonnative plant cover = <1%	By 2024, 500 acres meet desired future condition	Achieve and maintain prescribed nonnative plant cover using mechanical and/or chemical methods
SAVANNA	Federal and Indiana state listed endangered, threatened, and rare species with stable populations = 100%	By 2024, 500 acres meet desired future condition	Monitor populations of federal and Indiana listed species and take action to stabilize populations found to be declining
SAVANNA	Area free of disturbance (unauthorized trails, human caused erosion, trash, campsites) = 99% to 100%	By 2024, 500 acres meet desired future condition	Monitor for disturbance and take action to address causes of disturbance
SAVANNA	Deer population = <20 deer per square mile	By 2024, 500 acres meet desired future condition	Monitor deer population and implement deer management plan when necessary to meet target deer population density
SAVANNA	Community is not compromised by nuisance wildlife	By 2024, 500 acres meet desired future condition	Monitor for nuisance wildlife impacts and take appropriate action when impact exceeds acceptable level
WOODLAND	Heterogenous canopy cover = 30% to 80%	By 2024, 100 acres meet desired future condition	Achieve and maintain prescribed canopy cover using prescribed fire, mechanical, and/or chemical methods
WOODLAND	Heterogeneous shrub cover = 10% to 40%	By 2024, 100 acres meet desired future condition	Achieve and maintain prescribed shrub cover using prescribed fire, mechanical, and/or chemical methods
WOODLAND	Nonnative plant cover = <1%	By 2024, 100 acres meet desired future condition	Achieve and maintain prescribed nonnative plant cover using mechanical and/or chemical methods
WOODLAND	Federal and Indiana state listed endangered, threatened, and rare species with stable populations = 100%	By 2024, 100 acres meet desired future condition	Monitor populations of federal and Indiana listed species and take action to stabilize populations found to be declining
WOODLAND	Area free of disturbance (unauthorized trails, human caused erosion, trash, campsites) = 99% to 100%	By 2024, 100 acres meet desired future condition	Monitor for disturbance and take action to address causes of disturbance

Table A-1. Desired Future Conditions, Short-term Goals, and Management Actions by Habitat (continued)

HABITAT	DESIRED FUTURE CONDITION	SHORT-TERM GOAL	MANAGEMENT ACTIONS
WOODLAND	Deer population = <20 deer per square mile	By 2024, 100 acres meet desired future condition	Monitor deer population and implement deer management plan when necessary to meet target deer population density
WOODLAND	Community is not compromised by nuisance wildlife	By 2024, 100 acres meet desired future condition	Monitor for nuisance wildlife impacts and take appropriate action when impact exceeds acceptable level
FOREST	Multi-level canopy cover = 80% to 100%	By 2024, 50 acres meet desired future condition	Achieve and maintain prescribed canopy cover
FOREST	Nonnative plant cover = <1%	By 2024, 50 acres meet desired future condition	Achieve and maintain prescribed nonnative plant cover using mechanical and/or chemical methods
FOREST	Federal and Indiana state listed endangered, threatened, and rare species with stable populations = 100%	By 2024, 50 acres meet desired future condition	Monitor populations of federal and Indiana listed species and take action to stabilize populations found to be declining
FOREST	Area free of disturbance (unauthorized trails, human caused erosion, trash, campsites) = 99% to 100%	By 2024, 50 acres meet desired future condition	Monitor for disturbance and take action to address causes of disturbance
FOREST	Deer population = <20 deer per square mile	By 2024, 50 acres meet desired future condition	Monitor deer population and implement deer management plan when necessary to meet target deer population density
FOREST	Community is not compromised by nuisance wildlife	By 2024, 50 acres meet desired future condition	Monitor for nuisance wildlife impacts and take appropriate action when impact exceeds acceptable level
WETLAND	Nonnative plant cover = <1%	By 2024, 500 acres meet desired future condition	Achieve and maintain prescribed nonnative plant cover using mechanical and/or chemical methods
WETLAND	Federal and Indiana state listed endangered, threatened, and rare species with stable populations = 100%	By 2024, 500 acres meet desired future condition	Monitor populations of federal and Indiana listed species and take action to stabilize populations found to be declining
WETLAND	Area free of artificial drainage = 100%	By 2024, 500 acres meet desired future condition	Plug ditches, construct pool riffle and spillway structures

Table A-1. Desired Future Conditions, Short-term Goals, and Management Actions by Habitat (continued)

HABITAT	DESIRED FUTURE CONDITION	SHORT-TERM GOAL	MANAGEMENT ACTIONS
WETLAND	Area free of disturbance (unauthorized trails, human caused erosion, trash, campsites) = 99% to 100%	By 2024, 500 acres meet desired future condition	Monitor for disturbance and take action to address causes of disturbance
WETLAND	Deer population = <20 deer per square mile	By 2024, 500 acres meet desired future condition	Monitor deer population and implement deer management plan when necessary to meet target deer population density
WETLAND	Community is not compromised by nuisance wildlife	By 2024, 500 acres meet desired future condition	Monitor for nuisance wildlife impacts and take appropriate action when impact exceeds acceptable level
STREAM	Index of Biotic Integrity score (fish) >48	By 2024, 75% (7.7 miles) of all park streams meet the Clean Water Act standard Index of Biotic Integrity score (fish) >32	Continue partnership activities to improve agricultural practices in the watershed and improve water quality (physical and chemical)

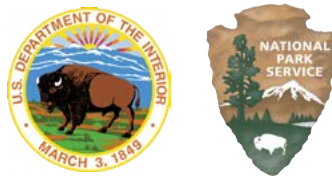
CONTACT INFORMATION

For more information about the Resource Stewardship Strategy for Indiana Dunes National Park, contact indu_superintendent@nps.gov, (219) 395-1882

Or write to:

Superintendent, Indiana Dunes National Park
1100 North Mineral Springs Road
Porter, IN 46304





As the nation’s principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historic places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under US administration.

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RSS

RESOURCE STEWARDSHIP STRATEGIES



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