

Singing Sands ALMANAC

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for Indiana Dunes National Lakeshore

and Indiana Dunes State Park

Shipwrecks on the Indiana Shore

by John R. Reed

The gentle waves lapping Indiana's sand dune shores on a warm summer day give no hint of the terror and tragedy Lake Michigan has wrought on more than 3,000 ships and tens of thousands of human lives.

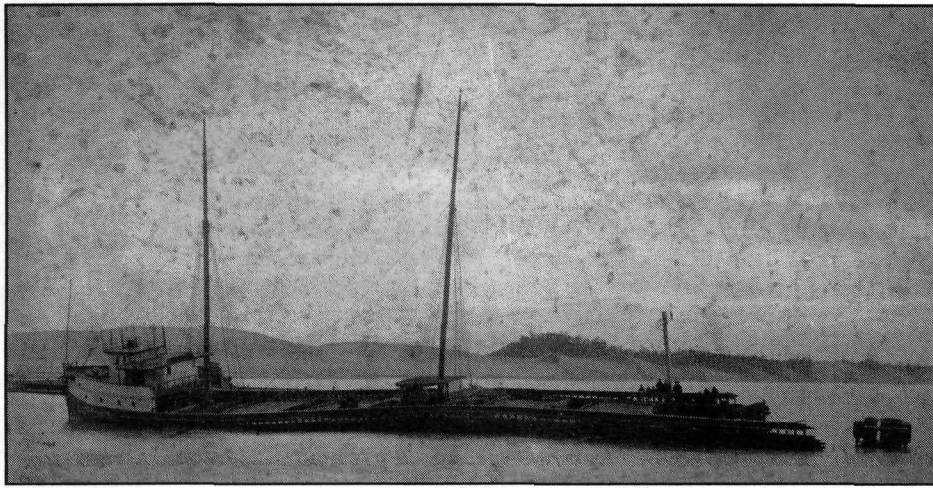
So gentle on a calm day, the lake hides more than 3,000 shipwrecks—more than the rest of the Great Lakes combined. More than half a hundred wrecks lie off Indiana shores of this 6th largest of the world's lakes. Two wrecks near Indiana Dunes National Lakeshore, the *J.D. Marshall* and the *Muskegon*, are officially protected as historic landmarks.

While wrecks such as that of the Edmund Fitzgerald (on Lake Superior) catch the public's imagination, the archives of the Old Lighthouse Museum in Michigan City hold the stories of others, often less-known. One such has been called the "Tale of Tuttle" or "The Corning of Michigan City."

Shortly after 3 p.m. on Wednesday, October 26, 1898, the steel steamer *Horace A. Tuttle* missed the narrow Michigan City harbor entrance during a storm and became grounded. Hundreds watched as four crewmen leaped to safety and life-saving crews rescued nine others, including the cook's wife. Efforts to move the wreck were unsuccessful and by the next Monday she had broken up. It was to be the following May before wreckage was cleared away.

Local people took advantage of the wreck; tons of timber ended up in fireplaces; wheelbarrows and wagons carted away the sodden corn for livestock fodder.

But almost as if in retribution, the *Tuttle* continued to discharge her cargo for many springs, and rotting corn



October 1898, the steamer *Tuttle* grounded near Michigan City

washed up on beaches, Michigan City took on the heady odor of a brewery.

Even ocean-going sailors, who become seasick on Lake Michigan, give its weather a wary respect. Of the world's lakes, she is held to be the most vicious, as the testimony of one shipwreck for every seven square miles of water surface bares mute testimony.

Shipwreck authority William Ratigan offers some explanations for the lake's violent temper: Whereas ocean waves are predictable, Michigan's are not. Ocean waves "role and swell" but Michigan's "jump and tumble"; the waters become storehouses of heat in the summer, to be released explosively when cold winds swirl in. Storm fronts swirl down from the Arctic to meet fronts from the Southwest, producing storm winds racing up to 70 mph. Storm waves routinely reach 20 to 30 feet. Lastly, there are few natural harbors for refuge, and ships often become caught in north-south troughs of waves.

Storms, navigation problems, age and other factors have led to many of the shipwrecks, of which a sampling includes:

- The steamer *F.W. Wheeler*, carrying 2,100 tons of coal, foundered three miles east of Michigan City on December 3, 1893, in a howling snowstorm. The captain, who thought he was near Waukegan, Illinois, and crew were the object of a daring rescue by Michigan City's Life-Saving crew.

- Four crewmen died when the tug *Martha* smashed to pieces near the lighthouse in December, 1933.

- The lake tug *Crowell* sank in 1893 while enroute to help rescue the *Wheeler*.

- The schooner *Post Boy* exploded and sank in Buffington Harbor in 1841, with 10 lives lost.

- The schooner *H.P. Baldwin* capsized one mile north of Indiana Shoals in August, 1908. There are many others, but all shipwreck stories are eclipsed by the excursion to death of the *Eastland*. On the morning of July 24, 1915, thousands of Western Electric employees crowded aboard the *Eastland*, *Theodore Roosevelt* and other boats at Chicago's Clark Street docks.

The giant crowd's party atmosphere (they were going to a picnic at Michigan City) turned to sorrow as the *Eastland* sagged to port and rolled over. Frantic rescue efforts as the ship lay on her side saved many, but the six minute-long tragedy left 835 dead and signaled the beginning of the end for lake excursion boats. ■

John R. Reed is Curator of the Old Lighthouse Museum in Michigan City. The Old Lighthouse Museum has exhibits on shipwrecks, the lake's first submarine, excursion boats and local history. It is open everyday Tuesday through Sunday, 1-4 p.m. Closed February.

DUNELAND CHRONICLES: A look at Pinhook Bog

by Laura Gundrum

Pinhook Bog in Indiana Dunes National Lakeshore can be a fascinating place to visit. The bog is located on the east side of Wozniak Road about four miles south of Waterford, in Laporte County. The summer is an excellent time to see the pink lady's slipper which blooms in early June, or to observe the insect-consuming pitcher plant and sundew, or to be teased by the hopes of tasting the bountiful ripe July blueberries.

For many years, people have been attracted to Pinhook Bog. Jack Jackman, who bought a portion of the bog from its original owner around 1940, recalled when "people used to come from Chicago with their babies and spend the whole day picnicking in the bog." The main attraction of the bog, along with its unique habitat, was its blueberries that Jack Jackman said were "as big as half a thumb." During the summer he opened the bog to those who wanted to pick and pay for the berries selling up to 1000 quarts some summers.

News about the bog spread. In 1965, Pinhook Bog was declared a National Natural Landmark. One year later, when Indiana Dunes National Lakeshore was authorized by Congress as a National Park, portions of the bog were included within the park's boundaries. The

park bought approximately 32 acres from Jack Jackman and about 176 acres from other landowners. In 1976, an additional 198 acres were added to make the Pinhook Bog purchase complete.

Visitors often wonder how this unique Indiana feature formed. A bog is an ecosystem that has no ground water and primarily receives water from precipitation. The bog was created approximately 14,000 years ago when the glaciers were gradually receding from what is now northwestern Indiana. A chunk of ice was left behind from this glacier. As the area warmed, a "kettle-hole" lake formed where the ice chunk once rested. Glacial till, collected by the glacier, was deposited to form an impermeable clay layer below the lake. No surface streams fed into the lake and the clay lining prevented ground water from entering; rainfall was the major source of water. In time, as sphagnum moss invaded, the water acidity increased and only certain kinds of life could survive in this low nutrient, acid environment.

The acidic conditions caused peat to form from dead sphagnum and plants. Because very little oxygen diffuses through the stagnant water and saturated peat, bacteria responsible for plant and animal decay can not live. Therefore, bogs become excellent museums. Materials deposited in the bog remain there permanently, enabling scientists to extract

peat samples that tell what types of plants and trees grew there thousands of years ago. In some bogs, remains of prehistoric mastodons have been found.

Today visitors can marvel at the many unique features of the bog along the short boardwalk trail. Sphagnum moss carpets the bog's floor. Beneath this moss, there is a thick, floating mat of peat. The layers of spongy peat have formed a "floor" on the bog surface which supports trees, shrubs, plants, and humans. Stunted tamaracks, white pines and red maples rise from the bog. Below them, there is a shrub layer of leatherleaf, black chokeberry, huckleberry, blueberry, poison sumac, and bog rosemary. A multitude of plants grow nestled in the clumps of sphagnum moss, such as the cranberry and the orange fringed orchid that typically bloom in July and August. Unique to the bog are the carnivorous pitcher plant and sundew which obtain nutrients by trapping and digesting insects.

Because the bog is such a fragile environment, it is only open to the public for Open Houses from 1-4 p.m. on Saturdays during the summer and for scheduled ranger-led tours which require reservations. Tour times are listed in the Ranger Guided Activity Schedule. Groups of up to fifteen individuals can arrange for a special tour by calling (219) 926-7561 ext. 265 or (219) 938-0947 between 9:00 a.m. and 4:00 p.m., Monday through Friday.

What plans lie ahead for the bog? There is a proposal for an expanded boardwalk trail and for the relocation of the parking lot to the north of the bog. Also, as succession continues, the bog will eventually become a mature hardwood forest. This process will take a hundred years or more. Until then, we invite visitors to discover the subtle treasures of this seemingly harsh and sterile environment. For Pinhook Bog is truly a nature sanctuary, a haven for rare plants! ■

Laura Gundrum is the Public Programs Manager for the National Lakeshore.



MARGUERITE DOMSIC Volunteer on the Go!!!

by Carol Costakis

"I tell people where to go," says Marguerite Domsic when asked to describe her volunteer work at the Indiana Dunes National Lakeshore. She smiles as she explains that as a receptionist at the Dorothy Buell Memorial Visitor Center her job is to greet visitors and answer their questions ...most of which concern where to go and how to get there. She says the most asked question is "Where are the dunes?...I have to explain that they are already in dunes country."

Marguerite has been greeting visitors every Thursday morning for the past three years. "Marguerite is extremely reliable," says Weekend Supervisory Park Ranger Cliff Goins. "Knowing she is here, I don't even worry about the front desk on Thursdays." Cliff adds, "We are very grateful that she is here. This then frees up a ranger to work on other projects and interpretive programs. I would love to have more like her everyday at the front desk."

From answering questions to handling the bookstore Marguerite graciously manages the job. "She always has a smile on her face and is willing to help visitors," notes Cliff. Marguerite comments on how she truly enjoys her position with the national lakeshore. "This is such a nice place to volunteer and the staff is such a good group of people." Working with people is nothing new for this retired librarian. Marguerite worked in the Gary and Chesterton public library systems for over 23 years.

Marguerite came to Indiana Dunes National Lakeshore via the Retired Senior Volunteer Program (RSVP). The lakeshore solicits for volunteers through RSVP and when Marguerite saw the notice she decided to add this to her weekly volunteer itinerary.

Marguerite became involved with the RSVP six years ago, after her husband passed away. She initially joined for companionship and finds it beneficial in other ways too. "I believe that getting out with people makes you feel better ... it's good for your health." She adds "You can never be bored while there are people around." She is so involved that her children tease her about never being home.

In addition to her work at the national lakeshore Marguerite volunteers as an aide with the Porter County Headstart program. She has a special fondness for working with children. "It is fun to be with people of all ages especially little kids," she adds, "they're so forgiving." Her secret to working with children is that she treats them like people. Her little friends at Headstart respond to her kindness with hugs and affectionately



refer to her as "Grandma".

Since 1988 Marguerite has volunteered at the Porter County Visitor Commission...another place where she "tells people where to go". As a receptionist and unofficial ambassador she helps visitors and potential visitors find their way around Porter County. Living in Chesterton for the past 28 1/2 years she is quite familiar with dunes country.

Marguerite also takes time to help other senior citizens. She volunteers at the Duneland Senior Center and serves on an advisory council for the Porter County Council on Aging.

When she is not volunteering Marguerite spends time with her four children and their families, which include five grandchildren. She is very close to her children and modestly boasts "what a great bunch" of kids she has. "We have a lot of fun together." She will even take a little time off from volunteering this summer to join them on a family vacation to Washington, D.C.

Marguerite shows no sign of quitting this advocacy of hers and would encourage others to volunteer. As she says, "I find in my experience most (people) volunteer because it makes them feel good...and it's about being useful." ■

If you are interested in volunteering your time or talents to the national lakeshore contact Bruce Rowe at 926-7561.

Volunteers Interpret Fashion History

by Marti Pizzini

Fashion is a potent tool in helping park visitors get a special sense of time and place. Volunteers, Pat Scott, Myrna Newgent, and Charlene Hill, have been working to provide other Indiana Dunes National Lakeshore volunteers staffing the Bailly Homestead and Chellberg Farm with resources and information to help them develop their costuming. They have been reading, prowling libraries, and attending conferences of the Midwest Open-Air Museum Coordinating Council to learn what costumes are appropriate. They are also locating patterns, materials and other resources to make available to volunteers.

"I was in the library in Fort Wayne going through Godey's Ladies Book," says Pat Scott. "Back then, if it was in Godey's, you did it!" She sparkles with enthusiasm as she describes ruffled blouses, parasols and muffs. Pat, Myrna and Charlene led workshops for volunteers in May, utilizing the first edition of a book on fashion guidelines that they have developed. "We have material on fashions for both men and women," Pat says, "And there is information on styles appropriate for both the farm and the homestead."



Costuming for the Bailly Homestead will be set in the 1835-1840 era. Andrew Jackson was President, succeeded by William Henry Harrison in 1837. The first statehouse was completed in Indianapolis in 1835. Gentlemen were wearing tight fitted jackets with tails and high beaver hats.

Pat Scott models a turn-of-the-century blouse and skirt.

Their country cousins wore loose pantaloons, loose straight coats, vests, and a broad rimmed hat that later evolved into the cowboy hat. Ladies (and every woman tried to look as much a lady as her budget would allow) wore tight bodices, often dipping to a point below the waist. Multiple petticoats filled out the full skirt. The sleeves were huge puffs above the elbow and tight below. A poke bonnet framed her face. Underneath it all, a corset, tightly laced to emphasize a small waist, kept all in order.

Fashions changed considerably from year to year, even back in the "good old days". By the 1895-1905 era of the Chellberg Farm, gentlemen were wearing dark frock coats for business wear and tweedy casually cut suits for leisure wear. Bowlers, top hats or boaters completed their outfit, depending on the occasion. Their country cousins were wearing more denim but clung to their vests and white shirts. The ladies were emerging from the excesses of hoops and crinolines that they had worn in the ensuing years and were effecting the Gibson girl. High neck white blouses and long dark skirts were almost a uniform for daytime wear. As women were becoming more active, the walking skirt came into fashion. Modest but trimmer than its predecessor and just a little shorter in the front to allow a lady to step into a carriage or climb a dune.

"I love wearing the old costumes," says Suzanne Keldsen of the Ladies Auxiliary, a musical duo that performs regularly in Victorian fashions. "You really get a sense of how people lived in other times if you dress like them. We know that one reason the Victorian Ladies look so nice and straight is that they were trying to keep their hats from falling off! And it was such a difference when we got our walking skirts; they are really liberating compared to the more cumbersome fuller skirts."

A special exhibit of turn-of-the-century fashions is being prepared by Myrna Newgent for display at the Chellberg Farm on July 18 & 25.

The public is invited to attend and admire the handiwork of days gone by as well as to see the progress of the volunteer staff as they develop their own interpretations of "What I would have worn a hundred years ago." ■

Marti Pizzini is a member of the Save the Tunes Council and enjoys researching costuming as a hobby.

Dunes NewsBriefs

- The national lakeshore welcomes the return of seasonal interpreters Julie Larson, Christie Kaylor, Henry Jones and Vicky Prusinski. They provide assistance for visitors at the information desks, as well as presenting a variety of general public and environmental education programs.

- It's not too late to lend your assistance in helping the national lakeshore conduct a survey of visitors this summer. Information gathered from the survey will be used to help identify visitor needs, as well as visitor perception of lakeshore resources and facilities. Volunteer workers are needed to distribute survey forms at five lakeshore locations and the State Park. The survey will be conducted during the week of July 12 through July 18. If you can help, call Jean-Pierre Anderson or Bruce Rowe at 219-926-7561, ext. 265.

- Highlight the weekend of September 18 & 19 as "must attend" during the 17th Annual Duneland Harvest Festival at Chellberg Farm and Bailly Homestead. It's not too early to volunteer your help. Contact Jude Rakowski at 219-926-7561, ext. 240, for more information.

- Guided hikes and walks will be conducted in the woods around the Dunewood Campground for the first time this summer. We invite you to explore this new area of the park by joining us on one of these nature hikes. Check the activity schedule for details.

- The Dorothy Buell Memorial Visitor Center was formally dedicated on May 2, in a brief ceremony co-sponsored by the National Park Service and the Save the Dunes Council. The Council's annual spring meeting and luncheon at the Spa was well attended.

Resource Management Update

This summer looks as if it will be busy and productive one for the Resource Management staff at Indiana Dunes National Lakeshore. Additional seasonal employees have been hired to work mainly on three projects; homesite restoration, exotic species removal, and boundary marking.

The homesite restoration work will involve removal of non-native plants from former homesites and establishment of native species. Homesite restoration is important to the natural communities of the national lakeshore because this restoration effort will reduce fragmentation of habitat.

The exotic species removal effort is also important to native species because exotic species often out compete natives and degrade the quality of the natural landscape. Many exotic species have the potential to change the entire makeup of the natural ecosystem and extirpate native species.

To further the effort of conquering exotic species, a volunteer group is now formed to work on exotic species control. The group is meeting Tuesday evenings through the summer to pull, dig, cut, and remove the species which pose the greatest threat to the national lakeshore's native species. The first species targeted is garlic mustard at the Heron Rookery. This European import has invaded many forested natural areas throughout Indiana. If left unchecked, garlic mustard will take over the Heron Rookery's understory and crowd out many native species. If you would be interested in helping with this program or if you would like more information, please call Resource Management Specialist Randy Knutson at 219-926-7561 ext.334.

The boundary marking project is important to the natural resources of the national lakeshore because the location of the boundary line must be clearly marked to assist with its management and protection. A clearly marked boundary is also beneficial to our

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The Singing Sands Almanac is published quarterly by the Friends of Indiana Dunes, an Indiana not-for-profit organization with offices at the Visitor Center, Indiana Dunes National Lakeshore, P.O. Box 166, Beverly Shores, IN 46301.

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small wonders

by Mark Bluell

Found in the jungles of the Amazon, the caves of Kentucky, the ice of the Arctic, the sewers of New York, and certainly in your own backyard, are insects. Why do these six-legged creatures inspire both admiration and loathing with equal passion by we humans? Perhaps it is their resiliency, remarkable adaptations, or their innate capability for survival, which forever challenges our ability to control the environment? They have had over 250 million years to develop lifestyles which never fail to fascinate even the most casual entomologist.

Surely, entomology is a science relevant to both geology, and anthropology. By studying insects, we have a better understanding of our own history. Scientists can draw definite comparisons between insect species of Siberia and Alaska, near the Bering Strait. The evidence demonstrated by "bugs" has helped to credit the concept of our ancestors' movement over the Bering land bridge.

The history of Indiana Dunes includes an insect curiosity. As the glaciers retreated, they left behind some species of plants which were the favorite foods of insects found in colder climates. Artic bearberry is the food source for the bearberry aphid (*Tamalia coweni*) and the bearberry leafhopper (*Texanus cumulatus*) both indigenous to the dunes today.

For many visitors along the shoreline we have our own mystery. The beaches of Indiana Dunes near Michigan City have disconcerting numbers of beetles washed ashore from July through September. Females of the western rootworm beetle (yellow-green with black stripes) emigrate from a second year corn crop in search of a first year corn crop to infest at a predictable time each year. When these movements occurred in conjunction with the arrival of a cold front correlations of an increased population on shore were observed in past years. The exhausted beetles are waylaid by prevailing winds and deposited in the lake currents along the southern Lake Michigan shoreline.

Another duneland occurrence are the common small funnel-like depressions found in the sand in the spring. Is there some natural phenomena that creates these miniature meteoric holes? These funnels are linked to the antlion (Family Myrmeleontidae). They appear in the spring when the antlion larvae are active. The small larvae possesses a grossly oversized pair of mandibles used in excavating a trap in the sand where unsuspecting ants search for food. The antlion burrows down into the bottom of the funnel with its mouth parts barely covered. The hapless ant stumbles into the hole only to find that there is no escape. Small insects tumble down the sloping sides and are snatched up by the spiny jaws and eaten. The larvae pupate in a parchment-like cocoon in the sand and eventually emerge as adults with the appearance of a damselfly.

The praying mantis, another insect common to the dunes, forests and grassy areas, known for its benefits to man and rumored to be protected by law, may be an ideal subject to cut your entomological teeth on. My father knew that the mantis could be used to control aphids and Japanese beetles. He sent me out of the house in search of "bug" control. So, began my introduction to cannibalism, mating rituals, camouflage, hunting techniques and survival of the fittest. After discovering a headless male mantis mounted on a patient female it was time to investigate....and so I began a career as an amateur entomologist.

For better or worse insects play a vital role in the world and there is much to be learned about them. Join us for a closer look at these six-legged curiosities on a bug walk this summer. Look for details in the national lakeshore's summer activities schedule. ■

Mark Bluell is a Supervisory Park Ranger.



by Margie Ortiz

New Sense of Freedom Discovered in National Parks

Whether rafting on the Colorado River, rock climbing in the Grand Tetons or backpacking along the Appalachian Trail, we all face different challenges as determined by our physical abilities. Unfortunately, there are those in our society who believe that only able-bodied individuals can fully experience and enjoy outdoor recreational activities. Those who foster such stereotypes may be surprised to learn that over the past few decades, there has been a marked increase in the number of citizens with disabilities participating in a wide variety of recreational endeavors.

It is estimated that over 37 million Americans, over one-sixth of our population, have some type of major disability that severely limits one or more major life activities. Included in this group are individuals who have varying degrees of mobility limitations, those who possess visual, hearing and speech impairments and those who are developmentally disabled, having emotional problems or learning limitations. This number, however, does not reflect an additional 20 percent of our population, 10% of whom suffer from some form of temporary disability, such as a fractured limb or eye injury, and the remaining 10% of whom are elderly individuals.

Recent movements in our society which have, in turn, influenced the passage of various federal legislative initiatives have compelled agencies, businesses and other entities to seek ways to enable persons with disabilities to become a more integral part of society's mainstream. This recognition of the right to participate more fully in social activities has resulted in large numbers of disabled persons to actively seek out opportunities to attend programs as well as experience and engage in a wide array of activities in our national parks.

In 1980, The National Park Service (NPS) was the first federal agency to make accessibility a matter of policy.

As a result, opportunities to experience the magnificent splendors of our national parks are now afforded to all people, including those who are differently-abled.

To many, the National Park Service conjures up images of valleys, mountains, rivers, beaches, dunes and forests. Our national treasures include more than is suggested by these topographical features alone. They include visitor centers, campgrounds, hiking trails, interpretive programs, concession areas, parking lots and park staff. It is the policy of the NPS, therefore, to provide access throughout the system to all of these facilities and services as well as contact with park rangers.

The National Park Service has internal policies and legal mandates, according to the Rehabilitation Act of 1973, which requires it to make programs accessible to disabled visitors. It is also mandated by the Architectural Barriers Act of 1968, that any building financed with federal money be designed and constructed so as to be usable by the physically challenged.

Efforts are currently under way at the Indiana Dunes National Lakeshore to provide all visitors an equal opportunity to participate in various programs and services, including interpretive and recreational programs, concession-operated activities and the creation of various publications. Establishing access to facilities and barrier-free parking areas permit greater availability to all of these programs and services.

An accessibility brochure highlighting particular areas of the Indiana Dunes National Lakeshore will soon be available at the park's various visitor centers and contact stations.

For more information on the bulletin, call 219-926-7561 VOICE/TDD. ■

Margie Ortiz is the Environmental Education Programs Supervisor.

An Endangered Species In Our Midst

by Ralph Grundel

In December 1992 the Karner blue butterfly was listed as a federally endangered species. It thus became the only recognized endangered species resident at Indiana Dunes National Lakeshore.

Many people think of large showy animals, such as grizzly bears, when endangered species are mentioned. While the disappearance of smaller animals or plants might not be as readily recognized, and while human emotional attachment to this "silent majority" of creatures might be less, the ecological significance of the decline of a plant, a snail, a snake, or an insect is often great. This is true in the case of the Karner blue butterfly.

The Karner blue butterfly is an historical resident of the area surrounding the southern Great Lakes through central New York and into southern New Hampshire. In the Midwest it is most often found in oak savanna ecosystem.

A savanna is defined by its widely spaced trees and by an even, low undergrowth. Just as we often think of showy animals when we think of endangered species we usually think of the great African savanna when we imagine a savanna. While Indiana Dunes' oak savanna might lack the lions and the magnificent migrating herds of large mammals of the African savanna, the conservation challenges facing both ecosystems are great. An Illinois researcher estimated that thirty million acres of oak savanna existed in the Midwest in the early nineteenth century. Today only about 6500 acres of oak savanna, or 0.02% of the original acreage, exist in a substantially intact condition. The other 99.98% has either been lost or significantly degraded.

In many ways conservation of the Karner blue butterfly is a mechanism for conservation of the oak savanna community. This is entirely fitting. While you think of the Endangered Species Act principally as an effort to salvage declining populations of specific animals or plants its primary goal is actually somewhat different. The first stated goal of the Endangered Species Act is to "...provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved..." In other words, the Act is rightfully thought of as an endangered ecosystem conservation act as well as an endangered species conservation act. In trying to conserve the rare Karner blue butterfly we are trying to conserve the rare oak savanna ecosystem.

How precarious is the position of the Karner blue butterfly and how did it arrive at that position? It has been estimated that fewer than 1% of the number of Karner blues present in the 1800's are present today.

About 90% of that decline seems to have occurred in the past two to three decades.

Some of the reasons for the Karner blue decline are readily guessed. The Karner blue butterfly caterpillar feeds exclusively on wild lupine plants and adults obtain nectar from wildflowers. As a society we have converted land containing lupine and other wildflowers to human uses.

Other reasons for the butterfly's decline are more subtle. The oak savanna ecosystem is critically dependent on periodic fires for maintenance. As fires are suppressed on a regular basis the oak trees in the open oak savanna increase in size and number and turn the open landscape into an oak forest with a closed canopy. While the oak forest has its own appeal, the decreased sunlight infiltrating through its canopy is incompatible with the survival of many plants and animals, including the Karner blue butterfly.

As we build more roads and trails through savanna habitats we break the savanna into numerous small units. This habitat fragmentation can be lethal to the Karner blue and many other animals and plants. Small habitat fragments can only support small, easily eliminated, Karner blue population. Also Karner blue butterflies will typically spend their lifetime within an area about fifty feet wide. High bushes and roads often serve as barriers to the butterfly's movement. These barriers, and small home range of the Karner blue, mean that the butterfly does not readily move out of a shrinking and inadequate piece of habitat.

At Indiana Dunes we have instituted a program of controlled fires to maintain oak savanna. We have also begun a program of research to better understand the biology of the butterfly, the lupine, and the ecosystem which they are a part of.

Establishing an ecosystem perspective is a crucial part of effective conservation. For every species decline we observe there are almost invariably other plants and Karner the same ecosystem whose declines we never notice. Indeed, here at Indiana Dunes National Lakeshore there are assuredly many organisms which have never been named let

alone documented or counted. While we try to preserve intact, expressly for the Karner blue butterfly, the structure of the oak savanna, and the physical and biological processes, such as fire, which maintain that structure, it is our underlying assumption that the fate of this small blue butterfly is linked with the larger fate of many species.

Ralph Grundel is the Research Animal Ecologist with Indiana Dunes National Lakeshore.

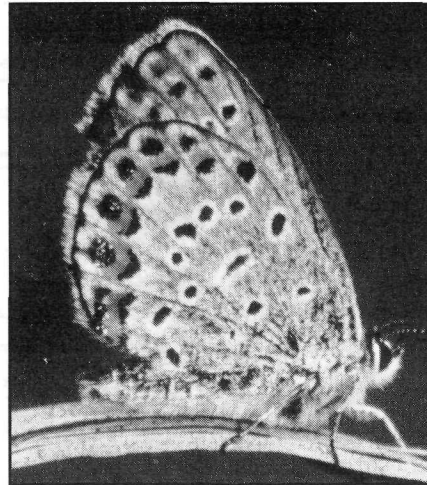
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neighbors by letting visitors know when they are leaving national lakeshore property and entering private property.

Karner blue butterfly monitoring will continue this summer. Resource Management staff will be working with the Research Division to provide location and population data to manage the butterfly. When implementing techniques to maintain open areas for the butterfly's sole food source, lupine, the location of the Karner blue population is very important to insure that the management action will not have long term effects on the overall population. (See An Endangered Species in our Midst).

The Resource management staff will also be field testing a bird monitoring program which was designed by Ken Brock through the Research Division's mini-grant program. The program when fully implemented, will detect changes in breeding bird populations within the national lakeshore. Data population changes will serve as an early warning system for species in trouble and will help guide the implementation of management strategies to maintain natural species diversity and population levels.

These are just some of the activities Resource Management staff will be doing this summer. Resource Management is dedicated to the continuing effort of restoring and preserving the national lakeshore's natural resources. Submitted by Randy Knutson, Resource Management Specialist.



Summer

Services

for our business members

1993

Accommodations

Chesterton Super 8
Off I-94 at Indiana 49 and
Indian Boundary Road
418 Council
Chesterton, IN
(219) 929-5549

Econo Lodge
Off I-94 at Indiana 49 and
Indian Boundary Road
713 Plaza Drive
Chesterton, IN
(219) 929-4416

Star Plaza
U.S. 30 at I-65
Merrillville, IN
(219) 769-3111

Creekwood Inn
U.S. 20/35 at (I-94)
Michigan City, IN
(219) 872-8357

Dunes Shore Inn
1 bl. from Lake Michigan
on Lakeshore County Rd.
near Lake Front Drive
Beverly Shores, IN
(219) 879-9029

Indian Oak Inn
I-94 at Chesterton exit
Chesterton, IN
(219) 926-2200

Entertainment

Star Plaza Theatre
U.S. 30 at I-65
Merrillville, IN
(219) 769-6311

Restaurants

The Spa Restaurant
333 N. Mineral Springs Rd.
(at U.S. 20)
Porter, IN
(219) 926-1654 or
(219) 762-8765

CORPORATE MEMBERS
Friends of Indiana Dunes

We would like to thank the corporate membership for their ongoing support of the Friends of Indiana Dunes.

Bank of Highland
Family Practice Network
First State Bank of Porter
St. Anthony Medical Center
USX
(Sustaining Members)

Caster Maintenance Co., Inc.
Dow Theory Forecasts, Inc.
First National Bank
Hoepfner, Wagner & Evans
Home Mountain Publishing Co., Inc.
INB Banking Company, North
Indiana Federal Bank For Savings
McGill Manufacturing Co., Inc.
Northern Indiana Public Service Co.
Rees Funeral Home, Hobart & Portage
The Harley Snyder Companies
Southlake Mall Merchants
Whiteco Industries
(Regular Members)

Portage Tri Kappa
(Supporting Member)

If you wish to become a corporate sponsor, please contact corporate membership chairman Karl D. Henrichs, (219) 462-4250.

Strongbow Inn
2405 U.S. 30 East
(east of Carlton Lodge)
Valparaiso, IN
(219) 962-3311

Wingfield's Restaurant & Pub
526 Indian Boundary Rd.
Chesterton, IN
(219) 926-5152

Visitor's Assistance

LaPorte County Convention and Visitors Bureau
I-94 at Exit 40B
1503 S. Meer Rd.
Michigan City, IN
(219) 872-5055
1-800-634-2650

Porter County Convention, Recreation, and Visitor Commission
I-94 at Chesterton exit
586 Indian Oak Mall
Chesterton, IN
(219) 926-2255

Shops

Chesterton Feed & Garden Center
400 Locust St.
Chesterton, IN
(219) 926-2790

Lee's Hallmark Shop
I-94 at Chesterton exit
550 Indian Oak Mall
Chesterton, IN
(219) 926-7776

Save the Dunes Gift Shop
5321 W. U.S. 12
Beverly Shores, IN
(219) 879-3937

Hopkins Ace Hardware & Scandinavian Gifts
320 S. Calumet Rd.
Chesterton, IN
(219) 926-3737

Lighthouse Place
6th and Wabash
Michigan City, IN
(219) 879-6506

If you like the Dunes become a Friend...

Friends of Indiana Dunes
P.O. Box 166
Beverly Shores, IN 46301

The Friends of Indiana Dunes are committed to:

- preserving the natural beauty of this special landscape;
- encouraging an appreciation for the history and cultural diversity of the area;
- ensuring ongoing scientific research education of the fragile dunes ecosystems;
- assisting with environmental education programs for children and adults.

Membership benefits include a mail subscription to the *Singing Sands Almanac*, advance notice of Friends-sponsored field study courses, special outings for members and their families, and many other activities.

To become a part of this unique organization, fill out and return this form to the address above. Make checks payable to Friends of Indiana Dunes.

_____ Yes, I'd like to become a Friend as a *regular member*. My check for \$ _____ is enclosed.
Individual/family - \$15
Senior Citizens (over 60) - \$10
Business/Corporate - \$100
Please note if this is a renewal _____

_____ Yes, I'd like to become a Friend as a *sustaining member*. My check for \$ _____ is enclosed.
Individual/family - \$30
Business/Corporate - \$250
Please note if this is a renewal _____

_____ The regular fee is a little too steep for my budget right now, but I do want to help, so my check for \$ _____ is enclosed.

_____ I'm already a member, but I'd like a gift membership sent to the name and address listed. My check for \$ _____ is enclosed.

Name _____

Donor's name (for gift memberships) _____

Street Address _____ P.O. Box or Office Suite _____

City _____

State & Zip Code _____

area code () _____

Telephone (optional) _____

INDIANA DUNES NATIONAL LAKESHORE
1100 North Mineral Springs Road
Porter, IN 46304
(219) 926-7561

<p>A. MILLER WOODS B. WEST BEACH C. INLAND MARSH D. LITTLE CALUMET RIVER TRAIL E. BAILLY HOMESTEAD/CHELLBERG FARM F. COWLES BOG*</p>	<p>G. LY-CO-KI-WE TRAIL H. KEMIL BEACH I. CENTRAL BEACH J. MOUNT BALDY K. PINHOOK BOG* L. HERON ROOKERY* M. HOOSIER PRAIRIE N. CAMPGROUND</p>
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*area with limited parking and/or access; check with a park ranger
□ Area within National Lakeshore Boundary

0 1 mile 5 10

Griffith

Main Street

M
HOOSIER PRAIRIE

INDIANA DUNES STATE PARK CULTURAL ARTS SCHEDULE

May 29	7 p.m.
The B-Town Jug Stompers, Acoustic Music	
June 19	7 p.m.
Steve Etheridge, Tall Tales	
July 3	3 p.m.
Moonstruck, Popular Variety Music	
July 31	7 p.m.
George & Michele Schricker <i>Music & song interpretation of American Indians</i>	
August 14	7 p.m.
Granny & Rat, Traditional Tunes	
September 4	3 p.m.
Jump Start Band, A little of everything	

Singing Sands
ALMANAC

Summer 1993

Friends of Indiana Dunes
P.O. Box 166
Beverly Shores, IN 46301

Non-Profit Organization
U.S. Postage
PAID
Permit No. 37
Beverly Shores, IN 46301

Indiana Dunes National Lakeshore
1-800-PARK TIP (Emergency)