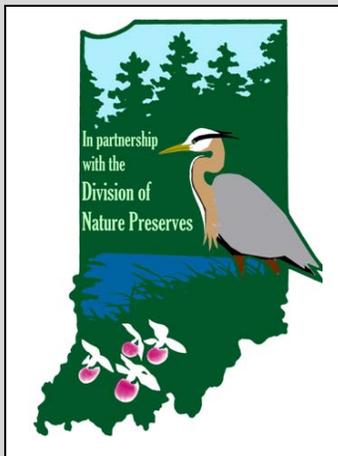


IDNR Division of Nature Preserves

2012 Annual Report

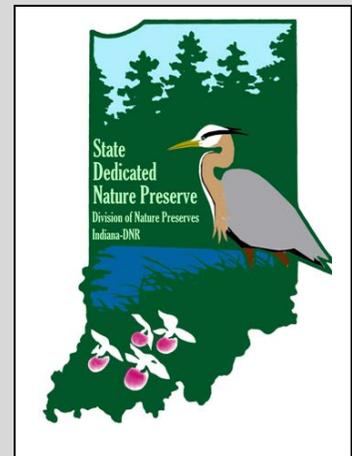


LOBLOLLY MARSH, INDIANA'S 250TH NATURE PRESERVE
- VERONICA'S TRAIL



DNP: Mission and Staff

- Natural Heritage Data Center
- Indiana's Nature Preserve System
- Nature Preserve Dedications
- Heritage Trust Land Acquisition
- Nature Preserve Management
- Lake Michigan Coastal Program



Division of Nature Preserves Annual Report for 2012

Executive Summary

The Division of Nature Preserves is charged with finding, protecting, and managing examples of Indiana's natural communities, coastal resources, and rarest species for the benefit of present and future generations. It is comprised of four primary components: Nature Preserve Protection, Nature Preserve Management, the Natural Heritage Data Center, and the Lake Michigan Coastal Program. The Division is funded by a variety of funding sources, including trust funds, grants, and general funds. Approximately half of the staff are paid by non-general fund sources, and all of the remaining staff receive a portion of their funding from non-general fund sources (See Figures 1 and 2). Division staff work in nine locations scattered around the State, including the Central Office in Indianapolis.

The Division works with numerous partners, utilizing grants and donations to protect, manage and restore natural areas. For example, a Great Lakes Restoration Initiative Grant through the Army Corps of Engineers is restoring 150 acres of Calumet Prairie. The Bicentennial Nature Trust, a new program in 2012, combined with the Indiana Heritage Trust program, enabled partnerships with numerous partners, to protect 16 natural areas in 14 counties.

Division staff was involved with numerous publications and outreach activities. These included 41 presentations, 30 partner projects, 34 technical assists to partners, 114 interagency projects, 348 outreach activities and numerous projects to improve access and trails for visitors. A public dedication ceremony was held at Loblolly Marsh in Jay County, celebrating the 250th dedicated nature preserve with Governor Daniels providing the keynote. The fourth Coastal Ecosystem Poster was produced, celebrating Dune & Swale. The 2012 iteration of the nature preserve Directory was published.

During 2012, some of the field inventory work included monitoring of known occurrences and new finds of some extremely rare plants, including filmy fern, Deam's phlox, black-stemmed spleenwort, short-beaked bald-rush and long-beaked bald-rush. Staff also monitored nearly 75 occurrences of endangered and threatened plants.

The Natural Heritage Database now contains 16,899 element occurrences (rare plants, animals, natural community locations), and during 2012, 270 new records were entered and 12,450 records were updated. Staff answered 729 information requests and conducted 141 environmental reviews, 120 floodway permit application reviews, 143 public lake permit application reviews, and 19 coal permit application reviews. Forty-eight collecting and research permits were issued. The certified ginseng harvest was 1,946 pounds; and twenty-six ginseng dealers were licensed.

There is at least one nature preserve in every natural region in Indiana except the "Black Swamp" Region, located in eastern Allen County. Nature preserves contain at least one example of all but two of the 58 natural community types known to occur in the State. Of the 213 state-endangered plants, there is at least 1 protected example of 179 of them. All but 3 of the 88 state threatened species have at least 1 population protected, and only 2 of the 115 rare plant species have no protected populations.

To date, 251 nature preserves have been dedicated. They are owned by 46 different owners, which include 5 different DNR landholding divisions, 14 land trusts, 18 city/county governments, and 4 colleges/universities. Nature preserves protect some of Indiana's most diverse landscapes, including dunes, sand prairies and savanna, wetland complexes, lakes, rivers, forested ecosystems, glades, karst features, prairies, fens, bogs, swamps, and geologic features. In 2012, nine new preserves were dedicated including Back Creek in Lawrence County, Elliott Woods in Vigo County, Glacial Esker within Chain O'Lakes State Park, Noble County, the Loblolly Marsh in Jay County, Mouth of Blue River within O'Bannon State Park in Harrison County, Ouabache Flatwoods within Ouabache State Park in Wells County, Sauga Swamp in Noble County, Shakamak Prairie within Shakamak State Park in Sullivan County, and Smith-Crisler in Henry County. There were also four additions to nature preserves that were dedicated in 2012, Big Walnut in Putnam County, Brock-Sampson in Floyd County, Hall Woods in Putnam County, and Section Six Flatwoods in Posey County.

Regional ecologists managed over 4,721 acres in 2012, removing invasive species, installing and repairing trails, restoring wetlands, and planting prairie and wetland species. Large restoration projects funded through the Great Lakes Restoration Initiative continue at several areas in Lake County. Regional ecologists were involved with prescribed burns

at 22 different properties encompassing over 1,740 acres. Technical assistance was provided to a number of agencies, and conservation planning efforts helped with the creation of Vermillion Rise Mitigation Bank at the now closed Newport Chemical Depot in Vermillion County. Conservation planning was also provided for Governor Daniels' Healthy Rivers Initiative projects along the Sugar Creek, the Muscatatuck, and the Wabash Rivers.

The Lake Michigan Coastal Program released the fourth poster in the "Ecosystems of the Indiana Coastal Region" series. LMCP funded a number of projects in 2012 through its matching grant program, passing through funds from NOAA. LMCP also focused on the development of a management plan for Indiana's shipwrecks along with a new website for shipwrecks.

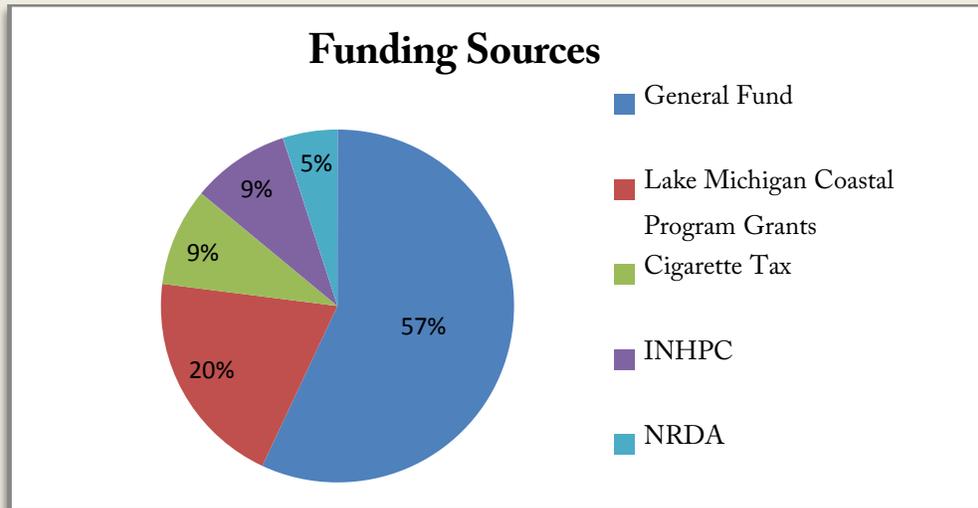


Figure 1. Funding sources for the Division of Nature Preserves.

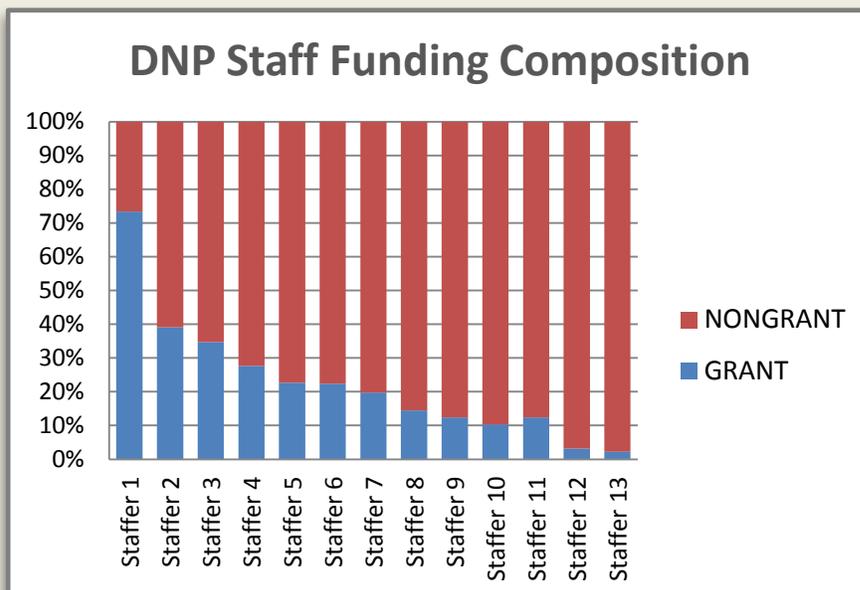


Figure 2. Composition of funding sources.

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I. Introduction

The Division of Nature Preserves (DNP) is made up of four components: the Nature Preserve Program, Preserve Management Program, Natural Heritage Data Center, and the Coastal Program. The Nature Preserve Program works with numerous partners to protect natural areas through acquisition and other protection actions and dedication into the State Nature Preserve System. The Preserve Management Program takes care of DNP owned Nature Preserves and assists partners with their nature preserves by using many restoration and management activities, including prescribed burning and control of invasive species; the program also provides access to DNP managed Nature Preserves by providing parking and trails where appropriate. The Natural Heritage Data Center collects and manages data on rare species and high quality natural communities which are used in two primary ways. The Department's environmental review process uses the data and coordinates with other agencies to avoid impacts to important natural features. The data are also used to guide conservation efforts of agencies and organizations across Indiana. The Coastal Program is responsible for coastal activities including natural, cultural, and historic resource activities in the Indiana Lake Michigan Coastal Zone, providing grant funding for a variety of projects, as well as being a central clearinghouse for natural resource conservation and planning.

MISSION

The Indiana Legislature passed the Nature Preserves Act in 1967, creating the Division of Nature Preserves, charging it to work with partners to set aside and preserve areas of unusual natural significance for the benefit of present and future generations. Since that time, Division staff has worked with colleagues in the Department of Natural Resources, and with partners throughout Indiana, to catalogue Indiana's flora, fauna, and natural areas, striving to set up a system of nature preserves that includes examples of all the natural areas and rare species habitats that occur in Indiana. While not totally complete, much progress has been made. At least one example of 56 out of 58 types of natural communities found in Indiana at the time of settlement is included in Indiana's nature preserve system. Ninety percent of the 416 plants considered endangered, threatened, or rare have viable populations in Indiana nature preserves.

The mission of the Division of Nature Preserves is to identify, protect, and manage an array of nature preserves and natural areas in sufficient numbers and sufficient sizes to maintain viable examples of all of Indiana's natural communities. Nature Preserves will also manage and maintain viable populations of endangered, threatened and rare species. These activities will be conducted for the benefit of the natural communities, and their representative species, as well as for the benefit of future generations of mankind.

The purpose of the Indiana Lake Michigan Coastal Program is to enhance the State's role in planning for and managing natural and cultural resources in the coastal region and to support partnerships between federal, state and local agencies and organizations. The Indiana Lake Michigan Coastal Program relies upon existing laws and programs as the basis for achieving its purposes.

Funding

For a number of years, the Division's Operating Budget was funded solely through the Indiana General Fund, and its Capital Funds alternately were either Cigarette Tax or General Fund. Starting in the 1980's, as new staff positions were added to the Division to meet increasing demands, they were paid for with alternate funding sources. Currently, 43% of Division staff is paid through a variety of non-general fund sources: INHPC Endowment, Coastal Program, Natural Resources Damages Account, and Cigarette Tax.; 57% are paid with General Fund monies (Figure 1). For General Fund paid staff, all have a portion of their salaries paid by non-state funds. These funds come from Office of Surface Mining, US Fish and Wildlife Service (USFWS), and other sources, since a portion of the work being done by these employees is for projects desired by both the Division of Nature Preserves and those entities. A portion of the time of most of these employees also serves as match for employees paid for with NOAA Coastal Program funds. Additionally, all seasonal division employees have at least a portion of their salaries paid for by federally funded projects, which further enhance taxpayer funds, enabling more natural resource work to be accomplished with less state funding (Figure 2). See Appendix A for a listing of Nature Preserves staff.

Public Relations and Outreach Activities

Outreach activities are documented into 6 broad categories: Presentations, Partner Projects, Technical Support, Inter-Agency Projects, Public Access Projects, and Outreach Activities (Table 1).

Nature Preserves staff made **41 Presentations** to a variety of partners with the majority to Non-Profit Environmental Groups. Those groups ranged from our partner land trusts, wildflower groups, community organizations and a few academic partners. The topics included conservation design, multi-use trail design, Indiana wildflowers, invasive species control, and a historic shipwreck!

Nature Preserves' Regional Ecologists were involved in **30 Partner Projects** that included land trusts with 17 projects, 3 counties, 2 cities, and 10 non-profit groups. There was a wide variety of projects from habitat restoration, historic cemetery restoration, public dedications of several nature preserves, trail maintenance, invasive species management, monitoring of butterflies and hemlock mortality. Our newest land trust partner, Red-tail Land Conservancy, celebrated its first State Dedicated nature preserve, Smith-Crisler Nature Preserve in Henry County.

An additional **34 partners** received **Technical Assistance** with their own projects from nature preserves staff. The bulk of these were for invasive species grants, removal or monitoring, from all sectors of partnerships. DNP staff also provided comments on restoration plans, mitigation projects, streambank stabilization, erosion control, dam repairs, and the removal of trees killed by the emerald ash borer beetle (EAB). There were also several large projects with industry that dealt with construction and installation of infrastructure, like culverts, and sewer and power line placement.

There were at least **114 Inter-Agency Projects** that occurred in 2012. Some of the largest were ongoing multi-agency projects at the Vermillion Rise Mitigation Bank, the GLRI or Great Lakes Restoration Initiative at Calumet Prairie, the mitigation issues associated with the Gary airport expansion, the Grand Calumet River & Roxanna Marsh and adjacent wetlands restorations, and the Governor's Initiative along Sugar Creek has continued to progress.

The Division of State Parks and Reservoirs set a goal of dedicating at least one nature preserve in every State Park. This ensures that a core portion of each park will always remain a natural area set aside for passive visitor recreation. In 2012, that project was completed with a dedication of new nature preserves in Chain O'Lakes, O'Bannon, Ouabache, and Shakamak State Parks. DNP staff also worked with various state agency personnel on invasive species control, placement of trails, rare plant surveys, forestry inventory, prescribed burns, breeding bird counts, deer monitoring and reduction, and tornado clean-up in Clark State Forest.

There were **300+ Outreach Activities** in 2012. This category includes a major overhaul of the DNP website with 100+ updates that incorporate a digital Directory of open preserves, an interactive map, contributions to the DNR Facebook page and a DNP Twitter account. DNP staff led 35 hikes on nature preserves, attended 73+ meetings, wrote 14 articles, answered numerous public requests for information, and interacted with visitors at nature preserves. The DNP logo was updated and posted on most of our partner land trust websites. Materials produced include the 2012 Nature Preserve Directory; the 4th Coastal Ecosystem poster was produced and distributed along with a 250th Nature Preserve Loblolly Marsh poster that was presented to the Governor at the dedication ceremony (Figure 3). And thanks to the support of the Limberlost Friends Group, a bookmark was produced and distributed at the State Fair in support of the Loblolly Marsh Nature Preserve and DNP (Figure 4). Also, part of the proceeds from the sale of 'Wildflowers and Ferns of Indiana Forests' by Mike Homoya go to the Indiana Department of Natural Resources for land protection and stewardship (Figure 5).

60 Public Access Projects include activities that most directly affects a visitor's experience in a nature preserve: improvement to 26 trails systems, 10 parking lots, installation of signs at 7 preserves, 6 trail structures, 1 gate, 4 new bridges, 2 boardwalk systems, 2 access roads, 3 hunter registration stations, and 6 deer reduction hunts. Many nature preserves, in a variety of ownership types, are open and have trails that provide an excellent opportunity for nature study and outdoor recreation. See our website for information and maps at www.in.gov/dnr/naturepreserve.

Follow DNR Nature Preserves at:
Facebook
Twitter

Table 1. 2012 Outreach Numbers

| Activities | Count |
|------------------------|-------|
| Presentations | 41 |
| Partner Projects | 30 |
| Technical Support | 34 |
| Inter-Agency Projects | 114 |
| Public Access Projects | 60 |
| Outreach | Count |
| Hikes | 35 |
| Articles | 14 |
| Website Updates | 100+ |
| Meetings | 73 |
| Materials | 8 |
| All Others | 118 |

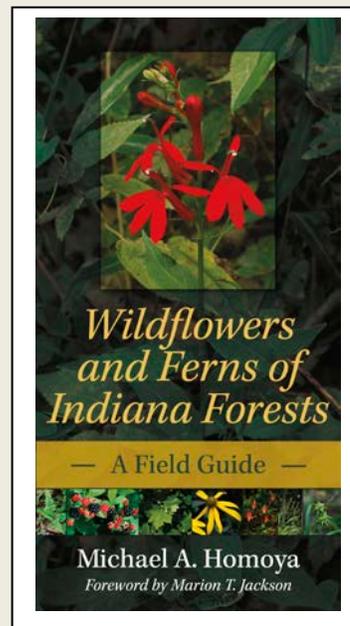


Figure 5. Book published by M.A. Homoya, 2011.



Figure 4. Bookmark –front and back, printed by partner, the Limberlost Friends Group, 2012.

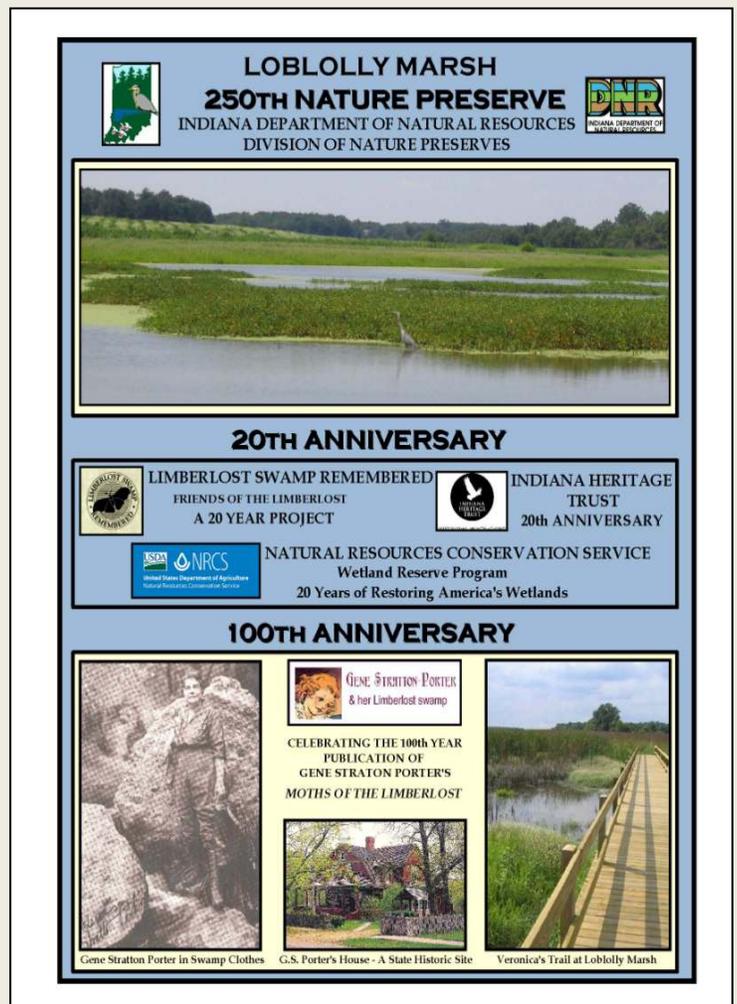


Figure 3. Poster created by DNP and presented to the Governor at the dedication ceremony, printed by partner, the Limberlost Friends Group, 2012.

II. INDIANA NATURAL HERITAGE DATA CENTER

The Indiana Natural Heritage Data Center collects and manages natural resource data, including rare plants, rare animals, and natural community information; this information is used to conserve the State's biological diversity. Division ecologists conduct field surveys to find and monitor endangered, threatened, and rare plants and rare and/or high quality natural communities. Information on Indiana's plants and animals is also gathered from biologists statewide; then managed using the program's Biotics software. The data are used by public and private conservationists to help guide protection efforts. The data are also used in the Department of Natural Resources environmental regulatory process to help avoid or minimize impacts to significant natural communities, rare species, and nature preserves.

Nature Serve

Nature Serve is an international organization which serves as the umbrella structure for the network of natural heritage programs and conservation data centers in the United States, Canada, Central and South America. The organization helps to insure data consistency across the network, and also serves to provide natural heritage data to clients who need it across state and country boundaries. Nature Serve's website is broadly recognized as the best source of summary data on plant associations, plant, animal and insect species and their global significance.

Monitoring

Similar to the previous year, most of the Natural Heritage Data Center's efforts during the latter part of 2011 and the 2012 growing season were focused on reverifying previous records of our rarest plant species, updating their status, and gathering additional habitat information. This work was primarily accomplished for plants considered state threatened and state endangered. Also, while reverifying and monitoring previously known populations additional new records were occasionally discovered.

Natural Heritage Data Center's staff updated or recorded new discoveries for approximately 75 plant occurrences. Additional records were submitted by other staff or outside sources to our data manager. Below are just a few of the highlights during the period.

During a survey of known populations for the state endangered filmy fern (*Trichomanes boschianum*) in southern Indiana in early spring, at least two new populations of French's shooting star (*Dodecatheon frenchii*) were discovered. This state rare species is restricted to southern Indiana where it generally occurs near the base of cliffs or rock outcrops.

A new location along a rural county road in southern Indiana's Perry County turned up a population of the state endangered Deam's phlox (*Phlox pilosa* ssp. *deamii*). This is only the second location known in the state for this subspecies. It also occurs in Kentucky and Tennessee.

This rare phlox is named for pioneer Hoosier botanist, Charles Deam who authored the *Flora of Indiana*, among other books and publications.

While surveying for other previously known rare plants in Ripley County, a new population of the state endangered Schreber aster (*Aster schreberi*) was found on a high wooded bluff near Laughery Creek. A new population of the fern, black-stem spleenwort (*Asplenium resiliens*) was found on a rocky limestone slope above the Ohio River in Harrison County, while monitoring the state's only previously known population of buckthorn (*Bumelia lycioides*), a small southern tree. A thorough search for the buckthorn turned up many more trees than was previously known in this population.

Following a nearly 20 year hiatus, plants that are believed to be stout-ragged goldenrod (*Solidago squarrosa*) were re-found in Clark County. Only the basal leaves were present and thus a confirmation could not be made. However, the site and plants will be closely monitored to confirm the identification, search for additional individuals, and further assess habitat needs for this state endangered plant.

An additional highlight from the northwest part of the state was the discovery of a separate, new location for long-beaked bald rush (*Rhynchospora scirpoides*), a state threatened plant in the sedge (Cyperaceae) family.

Field Notes Botanical Re-Discoveries

The long extirpated sedge, short-beaked bald rush (*Rhynchospora nitens*) formerly known in Indiana only from Porter County had not been observed there since 1959. It was rediscovered in sand flat (coastal plain marsh) wetland communities in the general vicinity of its last known location. This species is more commonly expected on the Atlantic and Gulf Coastal Plains and is disjunct in the Great Lakes Region. Indeed it is restricted here to only two sites: one in Michigan and the rediscovered Indiana population. The wetlands where *R. nitens* was found included a plethora of other Coastal Plain species and rarities including long-beaked bald rush (*Rhynchospora scirpoides*), tall beaked-rush (*Rhynchospora macrostachya*), weakstalk bulrush (*Schoenoplectus purshianus*), reticulated nutrush (*Scleria reticularis*), warty panic grass (*Panicum verrucosum*), and globe-fruited false-loosestrife (*Ludwigia sphaerocarpa*).

48 Permits

80 Nature Preserves
60% issued to University / Non-Profit
33% issued to State and Federal Agencies
27% issued to Out of State Organizations

48% Vegetation Studies
13% Soils
13% Herptile Studies
15% Bird Studies
10% Mammals, Fish, Entomology
6% Public Access

Highlights: Year of Research

There were 48 permits issued for 80 different preserves; however, 38 permits were studies for multiple locations.

The range of study subjects covered a diversity of subjects. The bulk was still in vegetation studies and ranged from genetic sampling of several species, seed collection for restoration, an increase in tree studies, and deer browsing impacts. The other subjects included soil sampling, herpetology, invertebrate surveys, bat acoustic surveys and many bird counts.

Research and Collecting Permits

Because most of Indiana's original landscape has been so altered, few natural areas exist today as they did in presettlement times. Fortunately, the Nature Preserves System has protected in perpetuity a number of high quality natural areas that link us to the past and at the same time, protect significant biological features, many of which are irreplaceable. Because nature preserves are reservoirs of biological diversity, they also serve not only as important areas for passive recreation, but also for unequalled opportunities for scientific research. A total of 48 Research and Collecting Permits were issued to researchers to permit work on 80 different dedicated nature preserves in 2012.

Rare Animal Species Highlights

Reptiles and Amphibians

Purdue University in cooperation with the DNR Division of Fish and Wildlife's Wildlife Diversity Section is working to enhance dwindling populations of Eastern hellbender (*Cryptobranchus alleganiensis*), a state endangered species in southern Indiana. The Eastern hellbender is North America's largest salamander that can attain a length of two feet. The salamanders are being captively raised and released into the wild where they are known to occur. Initial releases occurred in September 2012. Additional releases are also planned at known sites for this species and new sites are also being considered.

Birds

Field work for the second Indiana Breeding Bird Atlas was completed in 2011 and analysis begun in 2012. Division of Fish and Wildlife's Wildlife Diversity Section reports that comparisons in numbers of occurrences are being made to the previously conducted 1985-1990 atlas results. Reclaimed minelands provide important grassland and shrubland habitats for Indiana's birds. For bird species typically found on minelands, significant declines were noted for Northern Bobwhite, Short-eared Owl, Loggerhead Shrike, Field Sparrow, Vesper Sparrow, Grasshopper Sparrow, and Eastern Meadowlark. Species showing statistically significant increases include Bell's Vireo, Sedge Wren, Lark Sparrow, Henslow's Sparrow, Blue Grosbeak, Dickcissel, and Orchard Oriole. More minor declines were observed for Northern Harrier, Upland Sandpiper, Horned Lark, and Savannah Sparrow.

Ginseng Conservation

There was a total of **1946 lbs.** and **7.84 oz.** of wild ginseng certified in Indiana this year; 3 lbs. and 12 oz. of cultivated ginseng was reported. This season, Indiana had a total of 26 licensed dealers, 2 fewer than 2011. This annual harvest total was anticipated to be lower than average due again to extreme weather conditions. Reports that ginseng was "up" began in early May following a summer like spring. This was immediately followed by one of the most severe droughts on record for the state that ran through August in many areas of the state's ginseng range. Anecdotal comments were consistent that the plants had senesced by mid-summer in most areas. Unsolicited comments from several digger, dealer, and inspector sources indicated a very high quality crop, perhaps due in part to the early senescence drawing the fluids and energy back below ground. The overall total weight and consistency county weight trends, consideration of the number of dealers and the county abundance data all seem to correspond to the drought conditions as well.

There were no efforts to make serious revisions to Indiana law due to a new administration's desire to limit new regulations. Information regarding the poaching of plants in parks, nature preserves, and on private property, generally well before the Sept. 1 season opening, as well as information from the dealer's logs will lead to future proposals. The changes to be considered include the licensing of diggers, the regulatory separation of cultivated ginseng, and establishing penalties for poaching equivalent to penalties for violation of small game laws. Plans to revive the changes in law are under advisement for future opportunities, with potential Administrative Rule action remaining under consideration.

Environmental Review

Lands Unsuitable Database

Element Occurrences (EOs)

Statistics

EOs in the INHDC database: 16,889
New records entered: 270
EO records updated: 12,450

The Natural Heritage Data Center Database serves as DNR's Land Unsuitable Database, for the Division of Reclamation. We continuously update and quality control the database.

Natural Heritage Database Usage

Information requests: 729
Early Coordination: 641
Floodway Permit Applications: 120
Public Lake Permit Applications: 143

The database is used for permit reviews in several DNR Programs and aids in planning and site development, while minimizing impact to sensitive natural resource features.

Coal Permit Application Reviews

| | |
|-------------------------|---|
| New Permit Applications | 1 |
| Permit Amendments | 3 |
| Permit Renewals | 8 |
| Permit Transfers | 5 |
| AML Construction Grants | 2 |

III. Nature Preserve Program

There are **251** nature preserves dedicated under state law, Indiana Code 14-31-1. This represents more than **44,359 acres** spread throughout Indiana. We work closely with many others in dedicating significant natural areas, including DNR Divisions of State Parks and Reservoirs, Forestry, and Fish and Wildlife, as well as Indiana State Museum and Historic Sites, The Nature Conservancy, local land trusts, local county park systems, and colleges and universities. Our newest land trust partner, Red-tail Land Conservancy, celebrated its first State dedicated nature preserve, Smith-Crisler Nature Preserve in Henry County.

The first dedicated nature preserve was **Pine Hills Nature Preserve** in Shades State Park dedicated in 1969. Since then, the nature preserve system has grown to be the most widely distributed system of protected lands in the state. Seventy-one counties contain a nature preserve. More than any other reason, nature preserves are set aside to protect the plants, animals, and natural communities which are found on them, providing in perpetuity protection for the benefit of future generations. Visitation is allowed to the extent that the features can tolerate it without deterioration. For a list of community types and a nature preserve example, please see Appendix D.

Overview of Indiana's Nature Preserve System as of 2012

Number of nature preserves: 251

Number of acres: 44,359

Average size: 178

Number of Owners

46 different owners: 4 colleges and universities; 13 land trusts; 18 city/county/local governments; 1 federal agency; 2 private conservation groups/organizations; 2 state agencies. Within the Department of Natural Resources, nature preserves are owned by 6 divisions.

Ownership Information

134 nature preserves are owned by DNR (64 by Division of Nature Preserves; 35 by State Parks and Reservoirs; 18 by Forestry; 8 by Fish and Wildlife; 7 jointly owned by Fish and Wildlife and Nature Preserves; 2 by State Museum and Historic Sites. Of land trusts, 28 are owned by The Nature Conservancy; 27 by ACRES; 5 by Shirley Heinze; 5 by CILTI; 4 by Whitewater Valley; 3 by NICHES; 2 each by Oak Heritage and Indiana Karst Conservancy, 1 by Red-tail Land Conservancy and 4 by colleges and universities. See Appendix C for complete listing of owners.

Interesting Statistics

| | | |
|----------------------------|-----------------------------------|-------------|
| Smallest Nature Preserves: | German Methodist Cemetery Prairie | 1.01 acres |
| | Smith Cemetery Prairie | 1.10 acres |
| | Orangeville Rise | 3.02 acres |
| Largest Nature Preserves: | Ten O'clock Line | 3,339 acres |
| | Rocky Hollow-Falls Canyon | 1,608 acres |
| | Fourteenmile Creek | 1,602 acres |
| | Dunes | 1,530 acres |
| | Minton | 1,301 acres |
| | Whip-poor-will Woods | 908 acres |
| | Thousand Acre Woods | 933 acres |
| Thomastown Bottoms | 888 acres | |

Gap Analysis ~ Protecting Natural Communities

There are nature preserves in every **Natural Region** in Indiana except the *Black Swamp Natural Region*, (Appendix D, Map 2). A natural region is a major, generalized unit of the landscape where a distinctive assemblage of natural features is present. It is part of a classification system that integrates several natural features, including climate, soils, glacial history, topography, exposed bedrock, presettlement vegetation, species composition, physiography, and flora and fauna distribution to identify a natural region. A section is a subunit of a Natural Region where sufficient differences are evident such that recognition is warranted. The map (Appendix D, Map 2) illustrates the twelve natural regions and twenty-five sections determined in 1984 (Homoya, et al., 1984).

A **Natural Community** is a group of organisms, flora and fauna, that are interrelated with each other and their environment. They are identified by such natural features as soil moisture and reaction, substrate, species composition, vegetation structure and topographic position. Some natural community types can be distributed across multiple regions, for example mesic prairies or upland forests. This distribution may represent the limits of these communities that provide habitat for species not commonly found in a natural region or section.

ETR'S The Division of Nature Preserves and Indiana Natural Heritage Data Center (INHDC) are responsible for tracking, monitoring, and recording Indiana's natural

communities, and the *endangered, threatened, and rare (ETR)* plants, vertebrate and invertebrate animals. The number of native populations of a plant is used to assign the ranking of ETR; endangered has 1 – 5 populations, threatened has 6 – 10 populations, and rare has 11 – 20 populations. Botanists and ecologists scour the state every year, searching for new and previously known populations of ETR plants. When field scientists from around the state return from their searches, they bring with them “records” of their findings which are added to the Indiana Natural Heritage Database's 16,000+ existing records. The DNP seeks to protect and/or purchase lands supporting natural communities with populations of ETR plants.

The Division undertook a **Gap Analysis** last year to identify the ‘gaps’ of high quality natural communities by Natural Region and Section that have not yet been protected. In 2012, four ‘gap’ communities were protected in State Dedicated Nature Preserves. A mesic prairie in the Shakamak Prairie NP is the only occurrence of this community in the Southwestern Lowland Natural Region. The Brock-Sampson Addition, which straddles two Natural Region Sections, the Knobstone Escarpment and the Mitchell Karst Plain within the Highland Rim Natural Region, protects the only documented examples of siltstone glades in those Sections. While Loblolly Marsh, the 250th Nature Preserve, protects the only documented examples of three communities found in the Bluffton Till Plain Section of the Central Till Plain Natural Region: wet prairie, mesic prairie, and a marsh.

2012 Nature Preserve Dedications

3,166.435 Total Acres

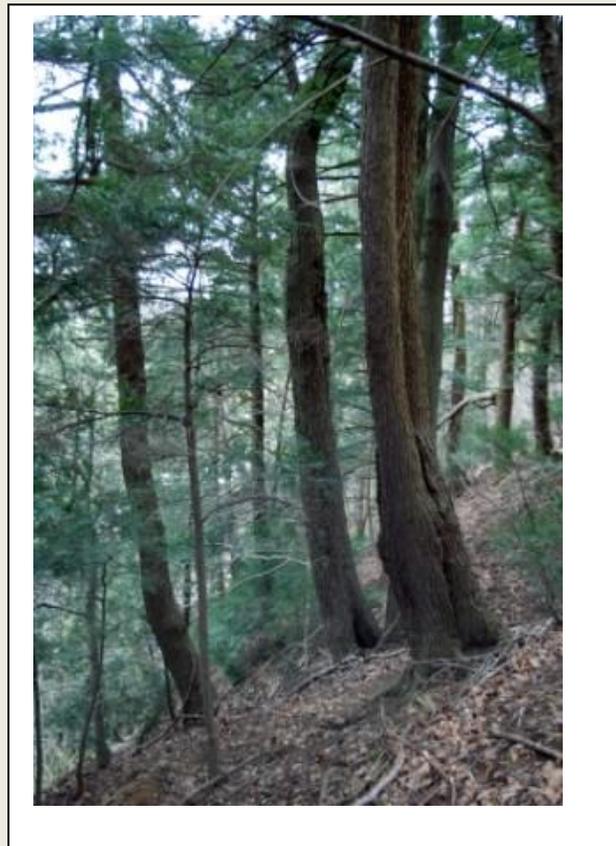
There were 13 dedications in 2012 with nine new preserves and four additions to existing preserves for a total of 3,166.435 acres. Among those new preserves, protection has included 13 high quality natural communities, 13 plants that are endangered, threatened, rare, or on the watch list, 15 birds and 16 invertebrates that are state endangered or of special concern, 2 mammals of the same ranking, and 10 herptiles also state endangered or of special concern.

Nine New Nature Preserves in 2012

Totaling = 1,927.103 acres

Back Creek (Laura Hare) Nature Preserve

This nature preserve is a **42.7** acre property that is in the eastern portion of Lawrence County, approximately 8.0 miles east of the town of Bedford. It protects an example of mesic/dry mesic upland forest in the Norman Upland within the Brown County Hills Section of the Highland Rim Natural Region. This Nature Preserve consists of topography that has a discrete and disjunct stand of eastern hemlock – *Tsuga canadensis* – occurring on the steep sheltered west-facing slope. The eastern hemlock is one of Indiana's rarest and most interesting tree species. A previous study conducted by Carroll Ritter estimated over 3800 hemlocks at this site in a stable population, with extensive reproduction evident. Approximately 14 acres of the site are dominated by the hemlock stands, while the remaining 28.7 acres is mainly upland forest. Approximately one acre lies beneath the bluff on the creek, and contains a variety of bottomland hardwood species. This nature preserve is owned and managed by the Sycamore Land Trust.



Elliott Woods Nature Preserve

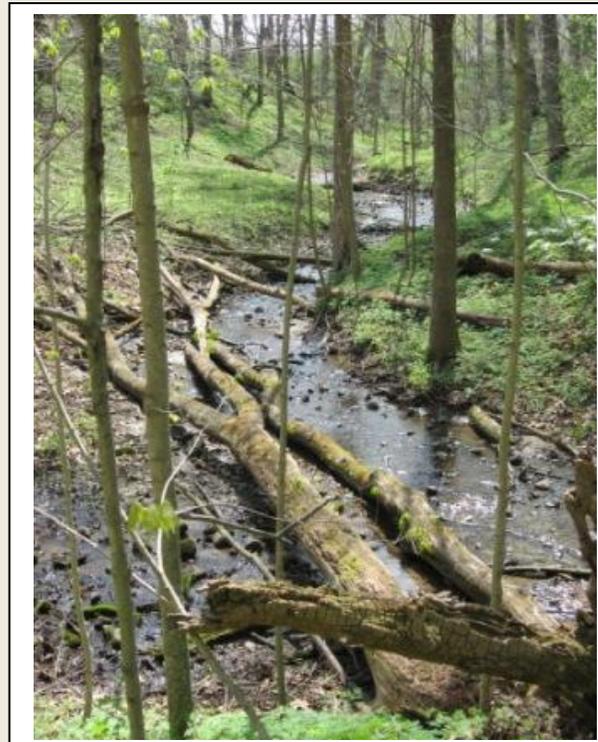
This nature preserve is a **69.3** acre property in southwestern Vigo County, 7 miles south of Terre Haute, and contains high quality mesic and dry-mesic upland forests and a small prairie restoration. Present is a great display of spring wildflowers. The tract was acquired by the Vigo County Parks Department in a bargain sale from the Elliott family who had owned it since James Polk was President of the US. The original deed was made out on sheepskin. Preservation and protection of the tract was of primary concern to the family. This tract is owned and managed by the Vigo County Park Board.



Glacial Esker Nature Preserve

This nature preserve is a **731.56** acre area within Chain O' Lakes State Park in Noble County. There are two units within the nature preserve, the Glacial Esker Unit in the eastern portion of the park, and the Big Woods Unit in the western portion of the park. This nature preserve primarily protects glacial features and the associated communities, including an esker, which is a long winding ridge of stratified sand and gravel of peculiarly uniform shape that was deposited under a glacier. There was a tunnel conducting the meltwater out of the glacier and as the meltwater flow waned it deposited the esker. It is considered the best example of this geological feature in the state.

The nature preserve consists of topography that is glacial containing flat-bottom lowlands occupied by channels that were cut by glacial meltwater interconnecting a series of kettle lakes by shallow wetlands, creeks, and floodplain forests with scattered 'erratics'. Those are rocks that were carried by the glacier from its parent source and dropped 'erratically'. The esker itself provides an area for upland forests, a ridge top and ravines. The nature preserve also contains several lakes, runs along several lakeshores, and the associated emergent and submersed wetland communities. All the described community types along with their expected component flora and fauna contain many species that are area-sensitive wetland and forest interior plants and animals dependent upon large, unfragmented wetland and forest ecosystems.



Loblolly Marsh Nature Preserve

This nature preserve is a **440.1** acre located near Bryant in Jay County. This preserve protects former floodplains that connect to the Wabash River, an associated wetland complex, prairie communities, mature woodland and restored forest land. This area originally was floodplain forest and marshland, and was drained by a steam powered dredge during the period 1888 to 1910. During these years of drainage, Gene Stratton-Porter wrote most of her most successful novels about the Limberlost area. The Loblolly Marsh was the heart of the Limberlost. Once the wetlands were converted to farmland, the area was cropped from 1910 until restoration began in 1992. During this period of agriculture, crop losses from periodic flooding plagued the landowners almost yearly. But the biggest losses were the many species of plants and animals documented in Porter's books.

Starting in 1992, the Friends of the Limberlost, the Department of Natural Resources, and the Natural Resources Conservation Service (NRCS) have worked with landowners who enrolled their lands into the Wetland Reserve Program, restoring their farmland into

250th Preserve!

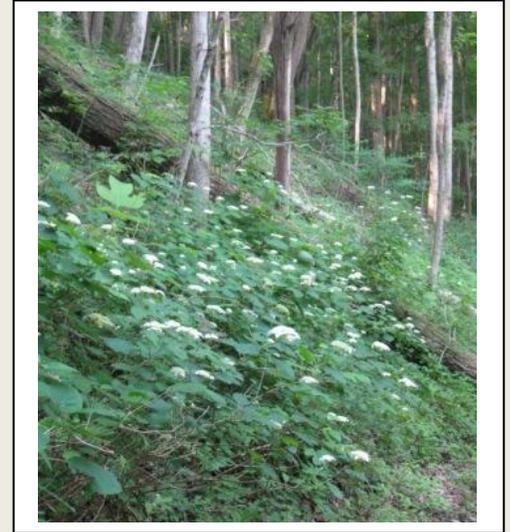
wetlands. The Loblolly Marsh is one of the largest and most successful wetland restorations in Indiana, as the partners work together to bring back the wetlands so eloquently described in Gene Stratton Porter's writings.

This nature preserve consists of topography that is a wetland complex containing emergent bur reed and cattail marshes, which serve as excellent waterfowl reproduction areas. During drier times of the year, the marsh may have large mudflats exposed and shorebirds visit the area. Fall months are primed for the many migrating birds that feed on the abundant growth of annual plants. Winter months are a flurry of activity with all of the northern migrants and an occasional snowy owl. In the spring, small potholes serve as mating areas for several species of amphibians. Sedge meadows and wet meadows are deafening with the calls of several frog species including northern leopard frogs. The woodland has a wide array of plants and the colors begin early. Waterfowl find nesting sites in the prior year's growth of tall grass prairie. In late summer and early fall, the prairies explode with native plants that show off their flowers throughout the area.

Front Cover Image

Mouth of Blue River Nature Preserve

This is a **469.97** acre area within the southwest portion of O'Bannon State Park, approximately 2 miles southeast of the town of Leavenworth. This nature preserve is located in the Escarpment Section of the Shawnee Hills Natural Region and consists of topography that has several knobs, deep ravines, and steep bluffs along the Blue River and the Ohio River. Several high quality natural communities are found in the preserve including a glade, a white oak dominated mesic upland forest, and limestone outcroppings along the steep slopes above the rivers.



Ouabache Flatwoods Nature Preserve

This is a **38.16** acre area within the Ouabache State Park, approximately 2.5 miles southeast of the town of Bluffton. This nature preserve is located in the Bluffton Till Plain Section of the Central Till Plain Natural Region and primarily consists of an oak flatwoods natural community, on relatively level terrain with poorly drained soils. The woods is dominated by large specimens of swamp white oak, burr oak, and pin oak, with a diversity of tree species including black walnut, American beech, Ohio buckeye, black cherry, and several species of hickory. The forest is considered old second growth, and is the highest quality forest remaining in Wells County.



Sauga Swamp Nature Preserve

This nature preserve is a **67.89** acre property that is in the northern portion of Noble County, approximately 2.0 miles east of the town of Wolcottville and protects an example of high quality wetlands and 1/3 of a natural lake in Indiana's Northern Lakes Natural Region. This nature preserve consists of primarily floodplain topography with surrounding upland, the floodplain contains two communities that are globally and state ranked ecosystems: a freshwater marl substrate lake, which has not been dredged or altered in any way, and a high-quality fen that is surrounded by oak uplands. This preserve is also 2.0 miles north of Swamp Angel Nature Preserve, an expansive, diverse fen/bog/lake complex, and will be an important contribution to regional conservation of these high-quality wetlands. These community types, along with their expected component flora and fauna contain many species that are hydro-sensitive plants and animals, will play an important role in maintaining regional populations of these species.



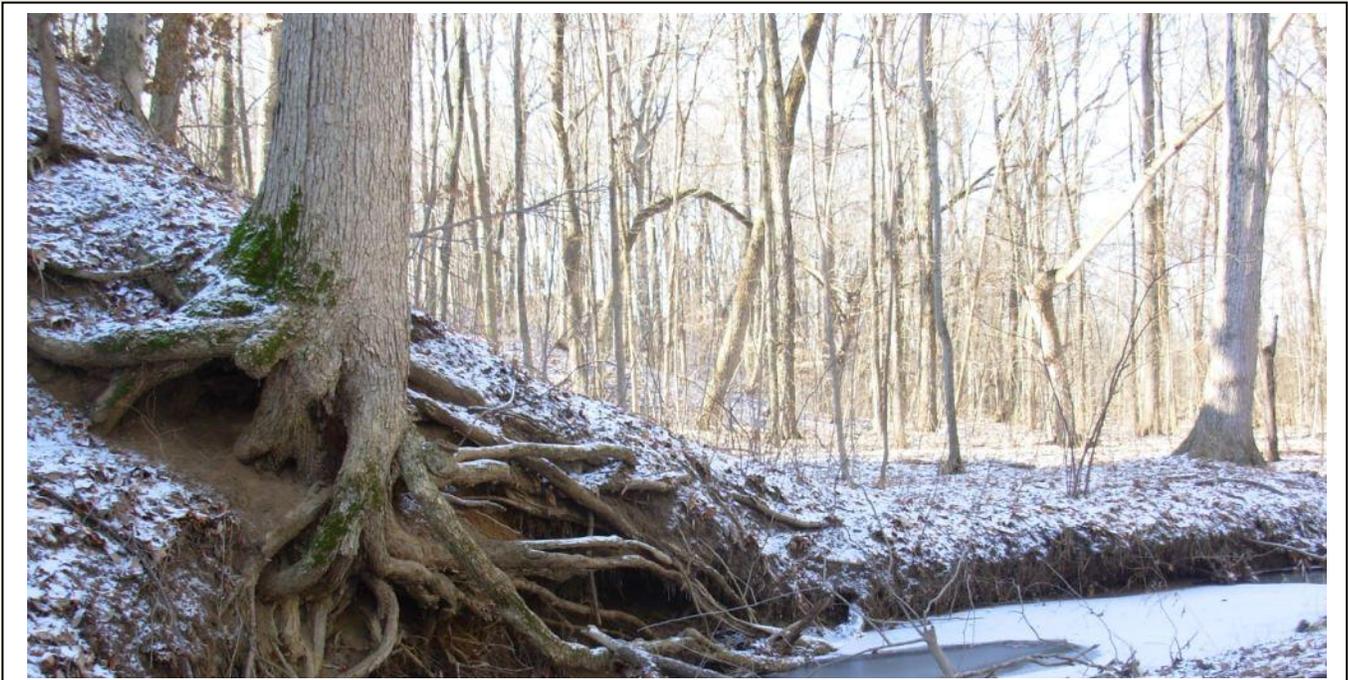
Shakamak Prairie Nature Preserve

This nature preserve is a **27.3** acre property that is in the western portion of Shakamak State Park, approximately 5.0 miles west of the town of Jasonville, and protects an example of prairie grassland in the Glaciated Section of the Southwestern Lowlands Natural Region. The nature preserve hosts a mesic prairie, the only protected example of a prairie natural community type in this entire natural region. Although it is believed that in presettlement times the Southwestern Lowlands Natural Region contained the greatest amount of prairie south of the Wisconsin glacial border, most of the prairie has long been lost and today is restricted primarily to isolated prairie patches, such as might be found in a few pioneer cemeteries and along select railroad lines.



Smith-Crisler Nature Preserve

This nature preserve is a **40.0** acre property that is in the western portion of Henry County, approximately 1.0 mile north of the town of Mechanicsburg and 1.0 mile east of the Madison County line. It protects an example of mesic/dry mesic upland forest within the Tipton Till Plain Section of the Central Till Plain Natural Region and occurs on an interesting landform as it is the eastern bluff of Fall Creek and is incised by two tributaries to this stream. It is these elevational changes that lend the site such aesthetic and botanic variety and interest. The mixed-mesophytic forests are impressive and diverse; the site is noted for abundant spring wildflowers. The Crisler family generously contributed a charitable donation through a bargain sale. This tract is owned and managed by the Red-tail Land Conservancy.

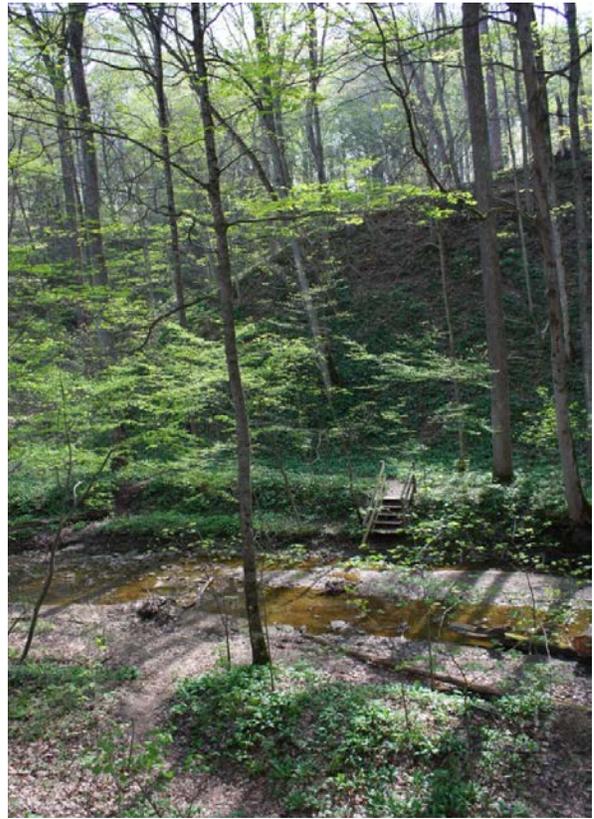


Four Additions to Existing Preserves

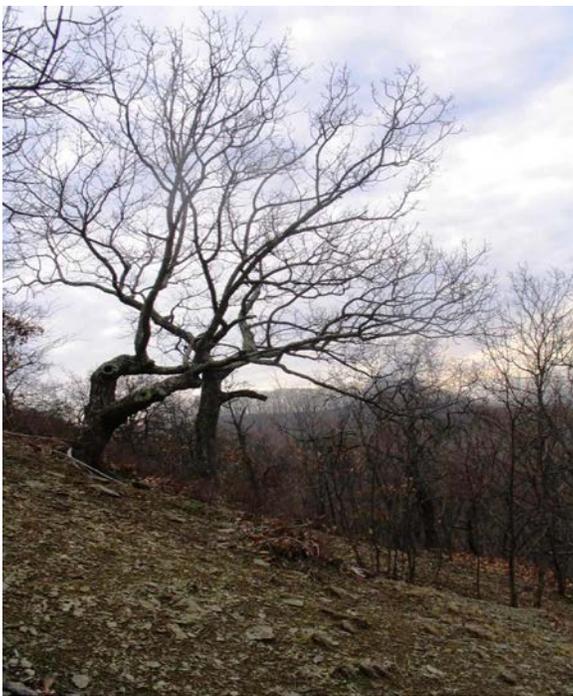
1,239.332 acres

Big Walnut Addition Nature Preserve

This addition is a **777.097** acre property comprised of several tracts, located in southwestern Putnam County, 1 mile east of Bainbridge and is an addition to the original 281.38 acre preserve. It is part of a large block of high quality forested habitats along the Big Walnut Creek watershed, a designated National Natural Landmark. The stream provides documented water quality improvement as it passes through the preserve. This large block of forest in the Central Indiana agricultural area is helping to preserve rural values and quality of life in the area. The addition is part of a much larger conservation effort in partnership with The Nature Conservancy and the Central Indiana Land Trust.



**BIG WALNUT ADDITION
TALL TIMBER TRAIL**



**SILTSTONE GLADE
AT BROCK-SAMPSON ADDITION**

Brock-Sampson Addition Nature Preserve

This nature preserve is a **231.33** acre property that is an addition to an original 355.29 acre preserve in the southern portion of Floyd County, approximately 7.0 miles southwest of the town of New Albany. Protecting an example of Southern Indiana Knobs and an important block of forested habitat in Indiana's Highland Rim Natural Region, it consists of topography that has heavily dissected slopes and ravine forests along with a number of bedrock outcrops which are unusual in this region. Siltstone glades are found on the south-facing slopes and xeric upland forests dominated by Virginia pine and chestnut oak are found around these glades and on the ridgetops. Moisture ravine forests are also found in the preserve. These community types along with their expected component flora and fauna contain many species that are area-sensitive forest interior plants and animals dependent upon large, unfragmented forest ecosystems.

Hall Woods (Oscar and Ruth) Addition Nature Preserve

This nature preserve is a **28.905** acre property in the northeast corner of Putnam County, 1.1 mile east of the town of Bainbridge and is an addition to the original 92.63 acre preserve and protects the stream corridor of the Big Walnut Creek and an important block of forested habitat in Indiana's Central Till Plain. It consists of topography that has several ridges, deep ravines, and steep bluffs along the west bank of Big Walnut Creek, along with several high quality natural communities that are found in the preserve. The mesic upland forest is characterized by an unusually high degree of dominance by white oak. The mesic floodplain forest is characterized by a cottonwood-ash-sycamore community. These community types along with their expected component flora and fauna contain many species that are area-sensitive forest interior plants and animals dependent upon large, unfragmented forest ecosystems.



**HALL WOODS (OSCAR AND RUTH) ADDITION
- LOOKING UPSTREAM**



**INDIAN PINK (*SPIGELIA MARILANDICA*) ON
THE FOREST FLOOR
SECTION SIX FLATWOODS ADDITION**

Section Six Flatwoods Addition Nature Preserve

This nature preserve addition is a **202.0** acre property in southwestern Posey County, 8 miles southwest of Mount Vernon, adjacent to the original 235.0 acre preserve. Acting as a corridor between Section Six Flatwoods Nature Preserve and Wabash Lowlands Nature Preserve, this addition consists of a forested restoration block and a significant and high quality southern lowland flatwoods forest community dominated by post oak, swamp white oak, southern red oak, pin oak, and shellbark hickory. The variety of state-listed species occurring at this site, including a variety of plants, as well as the state endangered Indiana Bat and evening bat, is indicative of the relatively undisturbed nature of this forest community. Many of the plant and animal species found on this property have a southern affinity and are only in a few similar remaining sites in the southwest corner of the state. These community types along with their expected component flora and fauna contain many species that are area-sensitive forest interior plants and animals dependent upon large, unfragmented forest ecosystems.

Bicentennial Nature Trust And Indiana Heritage Trust Program

In 2012, Governor Daniels initiated a new conservation program, the Bicentennial Nature Trust (BNT). This program encourages local conservation projects all around Indiana, as a way to celebrate Indiana's upcoming bicentennial. The Bicentennial Nature Trust is an excellent companion to the Indiana Heritage Trust. In many cases in 2012, funds from both programs were used to help protect significant areas. Funding from the environmental license plate is the source of funds for the Indiana Heritage Trust (Figures 6 and 7); funding for the Bicentennial Nature Trust comes from other sources including a generous contribution from the Lilly Endowment.

Land Acquisition

In 2012, the Division of Nature Preserves forged IHT and BNT partnerships with a number of partners to help acquire sixteen parcels of ground with significant features. Those sites, their ecological features, locations and sizes, and the partners involved, are shown in the following Table 2.

Table 2. Indiana Heritage Trust and Bicentennial Nature Trust partners, the ecological features, county of location and acreage of project sites.

| SITE | PARTNERS | ECOLOGICAL FEATURES | COUNTY | ACREAGE |
|-------------------------------|-------------------------------------|--|---------------|---------|
| Trevlac Bluff Addition | Sycamore Land Trust | Hemlock, River Bluff, Mesic Upland Forest | Brown | 36.6 |
| Abington Yankeetown | Whitewater Valley LT | Stream, Upland Forest, Floodplain Forest | Union & Wayne | 120 |
| Coffman Bluff | Whitewater Valley LT | Mesic Upland Forest, Pond, Springs | Wayne | 69 |
| Moon Valley | Save The Dunes | Sand Dunes, Inter-dunal Ponds, Rare Species | LaPorte | 57.4 |
| Camp Meadowbrook | Heinze Land Trust | Springs, Upland Forest | Porter | 64 |
| Oak Ridge Prairie Addition | Lake County Parks | Dry-mesic Sand Forest, Shrub Swamp | Lake | 5 |
| Center Lakes | Blue Heron Ministries | Lake, Marsh, Swamp, Upland Forest | Steuben | 122 |
| Stoutsburg Savanna | TNC, NICHES, Jasper Foundation | Sand Savanna, Sand Prairie | Jasper | 160 |
| Blue Cast Springs | ACRES Land Trust | River Frontage, Floodplain Forest, Upland Forest | Allen | 83 |
| Peccary Cave | TNC, DNR State Parks and Reservoirs | Cave | Crawford | 26 |

| SITE | PARTNERS | ECOLOGICAL FEATURES | COUNTY | ACREAGE |
|-----------------------------------|---|--|----------|---------|
| Bruner Nature Preserve | ACRES Land Trust | Pond, Wetlands, Upland Forest, Floodplain Forest | Steuben | 43 |
| CSX Addition to Oak Ridge Prairie | Lake County Parks | Dry-mesic Sand Forest, Dry-mesic Sand Savanna | Lake | 97 |
| Black Rock Addition | NICHES | Siltstone Barrens, Xeric Upland Forest | Warren | 40 |
| Spring Lake Woods and Bog | ACRES Land Trust | Lake, Bog, Upland Forest, Rare Species | Allen | 110 |
| Pond Lil | LaGrange County Parks, DNR Outdoor Recreation | Rare Animals, Pond, Marsh | LaGrange | 44 |
| Flowers Creek | ACRES Land Trust | Forested Wetlands, Sedge Meadow | Miami | 140 |



Figure 6. Indiana Heritage Trust License Plate.



Figure 7. The new IHT logo!

IV. NATURE PRESERVE MANAGEMENT

Managing and caring for a nature preserve is one of the most important functions of the Division of Nature Preserves. The eight regional ecologists are kept busy with this work all across Indiana (Appendix D, Map 1). They care for numerous preserves found within large geographic areas covering many counties, working with many partners. This report addresses public lands that are owned by the Department of Natural Resources, as well as nature preserves owned by our private and local government partners.

Regional ecologists integrate expertise in many fields, and decades of natural areas experience, to offer innovative restoration and management to Indiana's nature preserve system. This includes conservation biology, fire ecology, forest health issues, wildland firefighting, wetland, forest and prairie restoration, herbicide techniques, botany, and recreational trail design and installation.

The regional ecologists also supervise and manage a specialized team of restoration and property management staff in the use of heavy equipment, chain saws, herbicide application, wildland firefighting, trail maintenance, and safety and health issues associated with outdoor professionals. Stewardship activities include eradicating invasive species, successional control of woody plants, and restoration of native ecosystems. Collectively, in 2012 the regional ecologists have conducted stewardship activities on over 4,721 acres at 142 properties (Table 3).

Property management staff implemented recreational trail projects and improvements to provide better and safer access to Indiana’s beautiful nature preserves. Ongoing is the work of securing our boundaries, including signing and fencing projects. Restoration includes streambank stabilization, reconstructing presettlement natural communities, and long-term planning incorporating the native planting of wetlands, trees, prairie, and riparian systems. Monitoring of these systems and the invasive pressures are the key to long-term success of rare species and the natural communities upon which they depend. Staff are also heavily involved with conservation planning and public outreach. Conservation planning has contributed to multiple partner projects and provided technical assistance to partner DNR divisions and agencies.

Table 3. Stewardship activities and acreage.

| Invasive Species Controlled | | Woody Species Controlled | |
|-----------------------------|------------|--------------------------|------------|
| Acreage | Properties | Acreage | Properties |
| 2,345 | 89 | 2,376 | 53 |

Invasive Species Control

Numerous invasive species continue to invade natural areas and the list of species of concern seems to grow every year. Control does not mean eradicate, control means to maintain invasive species at a level where they do not threaten the natural communities of the preserve. Complete eradication is practically impossible and prohibitively expensive unless the population to be controlled is relatively small. Sometimes, a species is an extreme threat and risk outweighs cost, for example the woolly adelgid and the threat to native hemlock stands. Fortunately, woolly adelgid has not yet been found in Indiana’s native hemlock stands.

This year, Regional Ecologists aimed eradication and control efforts at 2,345 acres on 89 properties for the following species, at numerous nature preserves: garlic mustard, Canada thistle, glossy buckthorn, bush honeysuckle, Japanese honeysuckle, teasel, phragmites, white sweet clover, yellow sweet clover, autumn olive, knapweed, crown vetch, sericea lespedeza, Japanese stiltgrass, reed canary grass, moneywort, bouncing bet, brome grass, ground ivy, privet, purple loosestrife, oriental bittersweet, multiflora rose, amur cork tree, tall fescue, Johnson grass, scurf pea, burning bush, hybrid cattail and Japanese chaff flower.

Emerald Ash Borer

The spread of emerald ash borer is having the following effects on nature preserve management. Death of ash trees will change the composition (no more ash) and

openness of the forest canopy. Where invasive shrubs, such as multiflora rose, are present in small quantities, increasing light reaching the forest floor will favor these species in the short run. We are increasing efforts to control those species so they do not fill in the gaps before the native species have a chance.

Where ash trees are near heavily used areas and structures they have to be felled for safety. Where ash is not in heavily used areas they are being left to fall on their own. Ash trees are dying in large quantities at Binkley Bog, Olin Lake, Crooked Lake and Lagrange County Nature Preserves. A systematic survey would be sure to turn up many more preserves. Regional Ecologist’s have assisted with the emerald ash borer response at Spring Mill State Park and the associated Nature Preserves. Monitoring is ongoing in collaboration with the Division of Entomology and will advise as to any assistance needed in 2013.

Woody Species Control

Woody succession of, and invasion into, prairies, glades, wetlands, and other types of natural communities continually needs to be addressed. Typically, this is done by prescribed fire, mowing, and applying herbicide to cut stems. The regional ecologists did woody control work on at least 2,376 acres on 53 nature preserves, up significantly from 2011. The typical species of concern vary from region to region but primarily include autumn olive, honeysuckle, mulberry, locust, glossy buckthorn, cedar, sassafras, black cherry, aspen, cottonwood, tree-of-heaven, and in certain areas redbud, river birch and shagbark hickory.

Prescribed Burns

Historically, Indiana's natural areas burned frequently due in part to natural causes such as lightning strikes, especially savannas and grasslands. Soil samples and tree-ring analyses reveal that Indiana's grasslands burned, on average, every two years, while savannas appear to have burned at least once every three to five years. There is strong evidence that Native Americans encouraged habitat productivity by deliberately setting fire to their hunting and gathering grounds.

European settlement altered the natural fire cycle by replacing native plants with cultivated crops as well as suppressing wildfires. Because fire is a critical component to healthy Indiana ecosystems maintaining an early successional state and what is known as "nutrient cycling", the face of natural areas has changed in its absence. The Division of Nature Preserves, charged with maintaining the ecological integrity of some of Indiana's most valuable natural areas, employs a system of prescribed burning mimicking regenerative, pre-settlement fires.

The Fall 2012 and Spring 2013 burn season was a remarkably successful burn season. We always have a big wish list of sites to burn, and never seem to come close to getting everything done. But this time, even though the wish list was big, our results were very respectable! The wish list included nearly 2500 acres on 49 separate burn blocks at 27 different properties. For a change, we had a decent fall burn season. The summer drought eased in September with welcome rain which ended concerns that fall could end up being too dry and volatile. Thoughts of burn bans crossed our minds, but they never materialized, and we took advantage of some good burning weather during November. Wetlands were dry, and sites burned very well without being overly volatile. We managed to burn 212 acres on 8 burn blocks at 6 different properties, giving us the best fall burn season we've had in many years!

Mild winters in recent years have gotten us accustomed to beginning the spring burn season during February. In spite of an overall lack of snow statewide this winter, a long series of wet days with few drying days in between

kept us from getting fire on the ground. We became concerned that good weather would hit everyone equally statewide, and that competition for burn crews would keep us from getting as many burns done as possible. The way things worked out, slightly better weather in the south gave the guys in the south the head start that they normally have, and competition for crews was not as bad as anticipated. Overall, spring tended to have wet weather systems coming through that would give us two or three successive days of rain or poor drying conditions and only a day or so of decent drying weather. It simply was not allowing us to squeeze burns in.

Thankfully, the first week in April helped make up for many of the other shortcomings in the spring weather. All of DNR was out burning that week!!! Nature Preserves burned 936 acres on 13 burn blocks at 11 different properties just that one week alone. That is surely a record for us. We ended with our most successful burn season ever with 1740 acres burned. Our previous high had been in 2009-2010 when the total was 1430, and that included a 122-acre wildfire of suspicious origin. Acreage burned by contractors this year was also our highest ever with a total of 129 (The previous high had been 121 acres in 2008-2009; our contract burn totals tend to run between 50 and 75 acres).

Cooperation among different Divisions in the Department continues to be an excellent story. Several of our burns were made up of multi-division DNR crews. And non-government partners and volunteers also made up part of the crews on several burns. It's often a lot of work to assemble those crews, but it results in some excellent teamwork, and allows some burns to get done that couldn't be done with smaller crews. We sincerely appreciate the help!!

In conclusion, hats off to everyone who helped us have a very successful burn season. The dedication, cooperation, and hard work definitely make an impact. Thank you!!!

SUMMARY:

Burns done with DNP in charge, or DNP oversight: 34 blocks, 22 properties, 1611 acres

Burns done by others, through contract: 11 properties, 129 acres

TOTAL ACRES BURNED: 1740

DNP SECURES PITTMAN-ROBERTSON WILDLIFE RESTORATION GRANT

Thanks to the Division of Fish and Wildlife, the Division of Nature Preserves received a continuation of a Pittman-Robertson grant which started in July, 2012 and will run through June, 2014. The grant, entitled "**Wildlife Restoration Activities on Natural Areas**", focuses on wildlife habitat restoration activities, including prescribed burning as well as invasive species and woody plant succession control methods on several nature preserves where hunting is permitted as part of the preserves' management plans.

With roughly one half of the grant completed, there have been more than 1,500 acres of wildlife habitat that have benefitted from prescribed fire and invasive species/woody plant succession control activities; these activities having been completed on 15 nature preserves. Grant funds have helped DNP significantly offset budget shortfalls, helped DFW meet grant match goals, and helped restore some very important natural areas throughout the state.

Restoration Projects

There were a variety of restoration projects taking place across the state. Regional ecologists were very busy with new and ongoing restoration projects on nature preserves. Some of these projects are in conjunction with our partners. The following is a brief listing of those projects.

Northeast Region

Staff supported state wide purple loosestrife biological control efforts, documented the spread of *Galerucella* from northeast Allen County through Fort Wayne to the southwest side. Also, helped the Southern Indiana Weed Management District set up rearing of *Galerucella* for release in southern Indiana.

The Division of Nature Preserves Northeast Region were partners in a Sustain Our Great Lakes Grant that funded natural area restoration in northeast Indiana and southwest Michigan. Partners included the Division of State Parks and Reservoirs, Division of Fish and Wildlife, Lagrange County Parks, and several land trusts, and parallel organizations in southwest Michigan. The grant funded thousands of dollars worth of restoration on nature preserves and other natural areas owned by both the state and by land trusts.

Coastal Region

Staff coordinated with the US Army Corps of Engineers to complete a 5 year restoration project funded by the Great Lakes Fishery and Ecosystem Restoration grant at Calumet Prairie, Lake County.

Great Lakes Restoration Initiative (GLRI) projects included the Hoosier Prairie NORCO restoration and the Pine Station restoration with tree removal and shrub control.

Worked on chainsaw crew for tornado cleanup and relief at Clark State Forest and Henryville in March of 2012.

Assisted Save the Dunes Conservation Fund with the control of herbaceous invasive plants in Hobart, including a portion of 31 Acre Prairie.

Hoosier Prairie NORCO Project - staff managed a tree removal contract as part of the GLRI project.

Cooperative Weed Management Area Project – Staff controlled common reed north of Pine Station Nature Preserve by working with contractors through bidding and inspections of work completed.

Southwest Region

Collected seeds at Barrens Cemetery for planting at Perseverance Barrens, along with the removal of cedar trees for expansion of the restoration.

Native seeds were planted at Leavenworth Barrens in spring of 2012 on fifteen acres of restoration.

Planting of prairie willow and clustered poppy mallow at Prairie Creek Barrens to increase diversity.

The tree buffer around Hemmer Woods Nature Preserve was mowed. The regional ecologist also received mine safety training in 2011 to enable him to safely work within 300 feet of an active mine, thus allowing future stewardship activities at Hemmer Woods.

East Central Region

Staff assisted developing plan and restoring Duffy Hawbaker and Friends' areas by ordering trees and native plants for small prairie and sedge meadow and seeding other native plant areas.

Restored 65 acres of wetlands on Rainbow Bend, 27 acres on the Shelter property and assisted wetland restoration and tree plantation on 125 acres of the Jean Duffy property, a 95 acre tree plantation on the Lynn Hawbaker property and 120 acres of Kahr WRP land restored privately.

Problem areas were repaired on two Wetland Restoration Program projects and an addition was surveyed for repair in 2013.

Southeast Region

Staff continues to work with partners from The Nature Conservancy on access to a kudzu infestation at Minton Nature Preserve in Floyd County and secured herbicide for Kudzu treatment.

Conducted woody succession control at the *Solidago squarrosa* site.

Worked on chainsaw crew for tornado cleanup and relief at Clark State Forest and Henryville in March of 2012.

Grand Calumet Region

Staff participated in restoration of Roxanna Marsh, Calumet Prairie, Lake George Branch Wetlands, the East Branch of the Grand Calumet River, and the CN Railroad's Kirk Yard mitigation area, including attendance of meetings, providing technical advice for the projects, and monitoring results of restorations.

Cleaned up trash along North Clark Road adjacent to the Clark and Pine and Pine Station Nature Preserves.

Worked with CN Railroad to get accumulated trash pile at Pine Station removed.



Figure 6. Central Region field staff operating tree planting equipment during Big Walnut reforestation project.

Central Region

The Big Walnut reforestation project continues. Over 200 acres of former agricultural fields have been restored to native woodland at this large forested preserve. This reduces forest fragmentation and provides big gains in water quality. There were 32 acres seeded with native Virginia wild rye and planted with seedling trees (over 50% oak). Early April planting enabled these resilient trees to survive the record drought in 2012 with very high numbers.

Vermillion Rise Mitigation Bank – (former Newport Chemical Depot). Staff continued working with the ReUse Authority in implementing the site's plan calling for the creation of a large (200 acres) wetland mitigation bank. DNP staff played an integral role in the selection of qualified environmental consultants, the creation of a mitigation plan, a series of public meetings, and final coordination with the regulatory agencies including US Army Corps of Engineers and US Fish and Wildlife Service. The resultant proposal was submitted to the regulatory agencies for review and approvals. The Mitigation Bank is set to open in 2014.

Prophetstown State Park/INDOT Wetland Mitigation, staff spent many hours working with consultants and State Parks & Reservoirs staff to oversee the installation of fens, prairies, and emergent marshes that recreate the 1810 landscape.

Northwest Region

NIPSCO's GoGreen program offered to donate \$10.00 to The Nature Conservancy for each customer who chose to go paperless for monthly billing. The resultant funds, \$50,000, were to be used in the service area of customer donation and towards a visible conservation effort. The project chosen was restoration of a portion of Hoosier Prairie. Thirteen acres of brush removal and

treatment were conducted in 2011. Follow-up treatment in the spring of 2012 was completed.

NORCO 12 acres of savanna restoration at Hoosier Prairie was funded by NiSource and TNC and consisted of cutting and removal of woody species, treating the stumps with herbicide, and a prescribed burn.

Mitchell's Satyr Butterfly

Mitchell's satyr butterfly is a federally endangered butterfly with the bulk of its populations restricted to southern Michigan. Indiana historically had several sites, but is down to one known site on privately owned property in LaGrange County. The butterflies are generally found in sedge dominated prairie fen natural communities. Those communities are rare and declining in the lower Great Lakes Region.

A group called the Mitchell's Satyr Working Group meets once a year in the spring in Lansing, Michigan. The group is a diverse group representing federal and state agencies, land trusts, universities, and others interested in the fate of this butterfly.

The Working Group is interested in doing introductions and/or re-introductions of the butterfly into suitable habitat in Michigan and Indiana to see if populations can be successfully expanded. The Toledo Zoo will raise butterflies in controlled conditions for release as adults into suitable habitats. They have been successfully doing this with Karner blue butterflies for approximately ten years now, and they have successfully raised Mitchell's satyrs in preparation for doing releases of them in the future. Plans are progressing for releases in Michigan and Indiana, and it is hoped that the first release can be done in 2015 in Michigan. Plans for an Indiana release of captive-reared or the transplanting of butterflies from the Indiana site are under consideration.

Monitoring and Management

Deer Monitoring

Deer hunting is open to the regular public hunting seasons (less archery) at three nature preserves in Posey County, Point Township. Twin Swamps, Section Six and Wabash Lowlands are located in the very southwest corner of the State. They contain 1400 plus acres of the best upper terrace flatwoods in the area. Thus, it is some of the best deer habitat in the area.

It is always difficult to determine the true number of hunter efforts, but this year we had more than 700 signatures on the sign-in sheets and it appeared that most of the sheets were still in the boxes. A point of interest, we had 85 signatures for the special antlerless hunt. We had no reported take. We have given up on trying providing cards to report harvest and this year the sign-in sheets did not have a spot to report the number of deer taken. The sign-in sheets also did not designate a nature preserve and were returned to us as one

submission, so visitation at the three separate locations could not be determined.

This year we provided opportunities for two disabled hunters on the Twin Swamps property.

Deer exclosures have been installed in a number of nature preserves and state parks. Regional ecologists monitor them annually, comparing deer browse on vegetation inside and outside the exclosure to determine whether deer browse on vegetation is excessive. Many nature preserves are open to deer hunting, which has resulted in recovery of vegetation that has been over-browsed by deer. Monitoring helps document these changes.

2012 deer hunts were held at: Twin Swamps, Wabash Lowlands, Section Six Flatwoods, Olin Lake, and Conrad Savanna, as well as many nature preserves within State Parks, Forests, and Fish and Wildlife Areas.

Eastern Hemlock Monitoring

Eastern hemlock is a rare coniferous species known from only a few populations in Indiana. White-tailed deer favor this species, and deer browsing has caused its decline in certain areas. Additionally, the woolly adelgid, an invasive insect pest, has decimated hemlock populations in the southeastern United States. DNP ecologists, and many of our partners, annually monitor

hemlock populations, to ascertain whether the woolly adelgid has arrived in Indiana. It has been detected in one area in Northwest Indiana in a residential yard. Early detection is hoped to eradicate it before it is able to destroy our native hemlock populations.

Personnel changes during 2012

Emily Stork started as the Grand Calumet Regional Ecologist.

Breana Sowers accepted the Operations Manager position with the Lake Michigan Coastal Program.

Jenny Orsburn LMCP Grants Specialist has moved to be Director of Portage Parks. The Grants Specialist position was filled by Maggie Byrne.

See Appendix A.

LAKE MICHIGAN COASTAL PROGRAM - LMCP

The U.S. Congress makes available to states and territories with approved coastal zone management programs, funds for competitive grants for community-based coastal activities. Funding and oversight are provided by the National Oceanic and Atmospheric Administration (NOAA), Office of Ocean and Coastal Resource Management (OCRM). Projects must be consistent with the goals and objectives of the Coastal Zone Management (CZM) Act of 1972 (CZMA, 16 U.S.C. §1451 et seq.) and meet the requirements of the CZM Program administered by OCRM.

The vision of the LMCP is to provide technical, financial and programmatic assistance to ensure that the Lake Michigan coastal area is thriving for future generations. In so doing the LMCP staff participated in a number of events, oversaw projects, and provided funding to empower partner initiatives.

Coordination, Education, and Training Events Sponsored by LMCP:

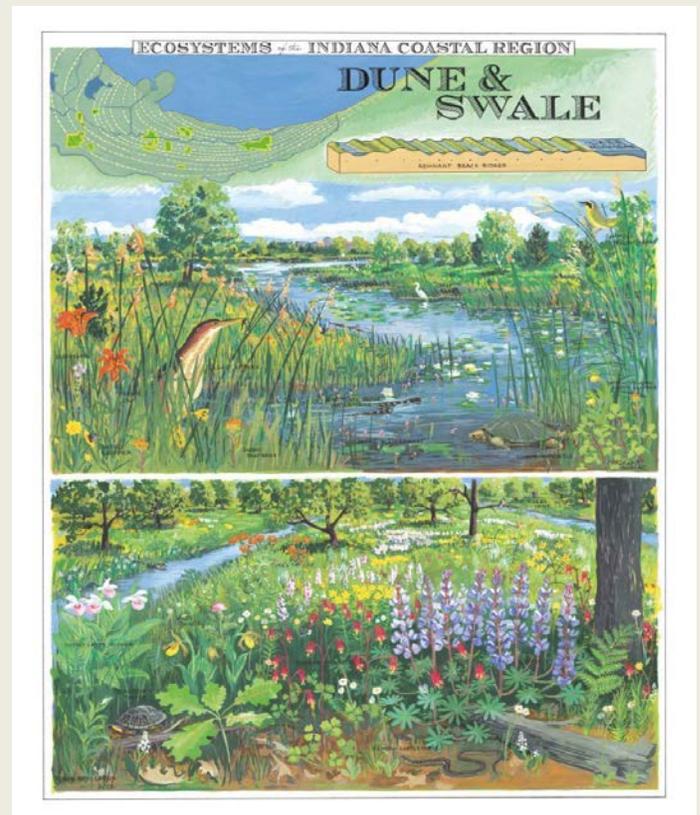
| Measure | Number | Participants |
|--------------|--------|--------------|
| Coordination | 35 | 135 |
| Education | 26 | 7202 |
| Training | 2 | 24 |

| Category | Amount |
|--|--------------|
| Government Coordination | \$355,206.28 |
| Public Access | \$268,348.96 |
| Coastal Habitat | \$548,050.95 |
| Coastal Hazards | \$78,648.76 |
| Community Dependent Uses and Community Development | \$190,203.43 |

Dune and Swale Poster Released

The LMCP commissioned and released the fourth poster in the *Ecosystems of the Indiana Coastal Region* series. The unveiling event was coordinated with the Great Lakes Regional Coastal meeting in October. Staff from the Ohio CMP attended the poster unveiling and participated in the guided hike at Gibson Woods Nature Preserve. Funding from the 2010 NOAA Cooperative Agreement was used to pay for artist commission and printing costs. Over two thousand posters have been distributed to date. Posters can be picked up at the Dunes State Park Nature Center, Gibson Woods Nature Preserve, and the DNR Office in Michigan City.

The LMCP plans to begin work on the next poster in fall of 2013 for release in 2014.



Shipwrecks in Lake Michigan

The LMCP identified Underwater Archaeological Resources as an area for improvement in the 2006-2010 and 2011-2015 Section 309 Program Assessment and Improvement Strategy process.

The Phase 1 project scope included two main parts: Reassessment of known resources, and development of management plan/process for known and unknown resources. The last major effort to locate and identify underwater archaeological resources (a.k.a. shipwrecks) in Indiana's portion of Lake Michigan occurred in the mid to late 1980s. At that time the staff identified fourteen known and unknown shipwrecks. The 2009 funded work sought out the wrecks identified in the early efforts and positively located nine sites with a suspected tenth. The remaining four sites are thought to be covered with sand and sediment at this time. The project used remote and direct sensing methods to investigate sites.

The second part of Phase 1 focused on the development of a management plan for Indiana's shipwrecks. The plan includes site assessment information as well as management and education/outreach recommendations. The State is exploring the development of underwater preserves and other policies for site protection. Among those are potential placement of marker and mooring buoys and interpretive plaques.

In April 2012 the lead consultant and LMCP Program Manager presented at the Indiana Preserving Historic Places Conference in Whiting, Indiana. The session focused on the laws governing shipwreck protection, dos and don'ts for historic professionals, and the current project efforts. The session was well attended and sparked many additional conversations. The shipwreck project was featured in the DNR *Outdoor Indiana* publication and was also featured in a local newspaper.

The project moved forward in 2012. The project team developed materials for a new website – www.indianashipwrecks.org and additional outreach materials. Project work slated for 2013 includes the designation of the first underwater preserve in Indiana and development of an online avocational diver training course. Building on the efforts of this project, the theme for Indiana Archaeology Month 2012 was Underwater Archaeology. The promotional poster and t-shirt featured historic ship/shipwreck photos from the project work.



Appendix A:

Division Staff

Nature Preserves Management

| | |
|--------------|---------------------|
| John Bacone | Division Director |
| Lee Casebere | Assistant Director |
| Cary Floyd | Operations Director |
| Leah Kopp | Office Manager |

Natural Heritage Data Center

| | |
|--------------|------------------------------|
| Cloyce Hedge | Natural Heritage Coordinator |
| Ron Hellmich | Heritage Data Manager |
| Roger Hedge | Heritage Ecologist |
| Mike Homoya | Heritage Botanist |
| Robin Wilson | Protection Director |

Natural Heritage Seasonal Staff

Katie Bacone

Regional Ecologists *

| | |
|---------------|----------------------|
| Tom Swinford | Central |
| Brian Abrell | Southwest |
| Rich Dunbar | Northeast |
| Tom Post | Northwest |
| Ken Brunswick | East Central |
| Derek Nimetz | Coastal |
| Jason Larson | Southeast |
| Emily Stork | Grand Calumet |

*See Appendix B, Map 1: Regionals Service Area

Regional Ecologist Part-time and Intermittent Staff

| | |
|-------------------|----------------|
| Phillip Bieberich | Tina Flanigan |
| Michael Everidge | Paul Osborn |
| Fred Affolder | John Petzl |
| Al Schott | Joshua Purvis |
| Brian Grieger | Nathan Simons |
| Joshua Grubaugh | Dallas Trump |
| David Holliday | Thomas Walstra |
| Timothy Keller | Matthew Wise |
| Taylor Lehman | |

Lake Michigan Coastal Program

| | |
|-----------------|------------------------------|
| Mike Molnar | Program Manager |
| Breana Sowers | Operations Manager |
| Maggie Byrne | Grants Specialist |
| Sergio Mendoza | Coastal Resources Planner |
| Colin Highlands | Coastal Nonpoint Coordinator |

LMCP Seasonal Staff

Open

Appendix B: Natural Community Types found in the Nature Preserve System

Dunes Ecosystem

Lakefront, Beach, Foredune, High Dune, Prairie, Swamp Forest, Savanna and Marsh natural communities are protected in *Dunes Nature Preserve*;

Interdunal Ponds and Dune and Swale complexes are protected at *Pine Station and Clark and Pine Nature Preserves*

Sand Prairie and Sand Savanna complexes: *Bill Barnes, Tefft Savanna, Hoosier Prairie, Stoutsburg Savanna, Liverpool, Beaver Lake, and Conrad Savanna. Kankakee Sands Wetland and Prairie Restoration* connects these complexes.

Dune and Swale complexes are represented at *Gibson Woods, Ivanhoe and Tolleston Ridges*

Coastal Plain Pond: a very rare natural community throughout the entire Midwest, *Coastal Plain Ponds Nature Preserve*

Burr Oak Savanna: a rare community in Indiana, is found at *McCloskey Savanna*

Glacial Morainal Complex

Moraine Nature Preserve includes Pond, Fen, Upland Forest, and Seep;

Spicer Lake protects an excellent Kettle Lake;

Lakes and Wetlands

Chain of Lakes: *Trine; Wing Haven/Seven Sisters/Marsh Lake*

Undeveloped natural Lake: *Olin Lake*

Marl Beach: *Loon Lake*

Bog: *Elkhart Bog*

Fen: *Mongoquinong; Prophetstown; Potawatomi*

Floating Mat: *Pipewort Pond; Boot Lake; Chamberlain Lake*

Northern Forested Swamp: *Marsh Lake; Ropchan; Tamarack Bog*

Sedge Meadow: *Hoosier Prairie; Bill Barnes*

Marsh: *Manitou; Big Chapman Lake*

Seeps: *Jordan Seeps; Wening-Sherrit;*

Springs: *Big Spring; Charles Spring*

Wetland Complexes: *Manitou/Bob Kern/Judy Burton; Ball Wetlands; Swamp Angel*

Glacial Landscape

Potawatomi Marsh contain examples of Pond, Swamp Forest, Fen, Sedge Meadow, Marsh, and Upland Forest

Forested Ecosystems

Large complexes of Upland Forest types are included in *Ten O'Clock Line; Low Gap; Rocky Hollow-Falls Canyon; Brock-Sampson Nature Preserves*

Old Growth Forests: *Donaldson Woods; Kramer Woods; Wesselman Woods; Shrader-Weaver Woods*

Southern Swamp Forest/Cypress Swamp: *Twin Swamps; Wabash Lowlands; Buffalo Pond*

Flatwoods: a forest type in which a shallow hardpan restricts root growth and results in a unique forest type

Flatwoods Types:

Bluegrass Till Plain: *Guthrie Woods, Versailles Flatwoods, Chelsea Flatwoods*

Boreal: *Ambler Flatwoods*

Central Till Plain: *Bryan Woods, Bell-Croft Woods, Stout Woods*

Dry Flatwoods: *Bloomfield Barrens*

Sand Flatwoods: *Bill Barnes*

Southwestern Lowland: *Section Six Flatwoods*

River Landscapes

Tippecanoe River; Fawn River; Fourteen Mile Creek; Pigeon River (Mongoquinong Fen); Blue River Gravel Wash

Sugar Creek Corridor: *Mossy Point; Rocky Hollow-Falls Canyon; Pedestal Rock; Pine Hills* (protects Floodplain and Upland Forest, Seep, Fen, Canyon, Waterfall)

Cedar Creek: *Dustin; Rodenbeck; Barrett*
River Bluff: *Deam's Bluffs*

Karst Landscape

These areas are underlain by limestone, characterized by Sinkholes and Caves: *Mitchell Sinkhole Plain; Donaldson Woods and Donaldson's Cave; Wolf Cave.*

Caves: *Buddha; Donaldson's; Scout Mountain*

Sinkhole Pond – Indiana's rarest natural community – *only 1 known example*: The Nature Conservancy owns 1/3 of this community, *Three-Way Sedge Swamp. Not dedicated*

Glades and Barrens

Limestone Glade: *Mosquito Creek; Teeple Glade; Leavenworth Barrens*

Sandstone Glade: *Armstrong Glade*

Chert Barrens: *Flint Barrens*

Clay Barrens: *Bloomfield Barrens*

Gravel Slope Barrens: *Wea Creek; Lookout Point*

Sand Barrens: *Granville Sand Barrens*

Siltstone Glade and Knobstone Glade: *Minton*

Prairies

Black Soil/Loam Prairie is one of Indiana's rarest natural communities; Gravel Prairies were one of the rarest types of prairies in Indiana even during pre-settlement times.

Mesic Prairie: *German Methodist Cemetery Prairie; Cressmoor Prairie; Smith Cemetery Prairie; Biesecker Prairie*

Gravel Prairie: *Wabash Breaks*

Black Soil Prairie: *German Methodist Cemetery Prairie; Cressmoor Prairie; Biesecker Prairie*

Gravel Prairie: Wabash Breaks

Geologic Features

Natural Bridges/Arches: *Portland Arch; Yellow Birch Ravine*

Waterfalls: *Clifty Canyon; Hathaway Ross Run; Anderson Falls*

Karst: *Orangeville Rise of the Lost River*

Rock Columns: *Jug Rock*

Backbones: *Pine Hills*

Appendix C:

Owners of Nature Preserves

County and City Partners

Allen County Parks and Recreation
Bartholomew County Parks and Recreation
Bloomington Parks Board
City of Elkhart
Evansville Park Board
Ft. Wayne Park Board
Town of Fishers
Harrison County Parks and Recreation
Indy Parks
Jennings County Community Foundation
LaGrange County Parks Board
LaGrange County Parks and Recreation
Lake County Parks and Recreation
LaPorte County Parks and Recreation
LaPorte County Conservation Trust
City of Marion Schools
Muncie YMCA
St. Joseph County Parks and Recreation
Steuben County Parks and Recreation
Terre Haute Park Board
Town of DeMotte
Vigo County Parks and Recreation

Federal Partners

U.S. Fish and Wildlife Service

University Partners

Goshen College
Indiana State University
Purdue University
Wabash College

State Partners

DNR Forestry
DNR Fish and Wildlife
DNR State Museum and Historic Sites
DNR State Parks and Reservoirs
State Board of Health

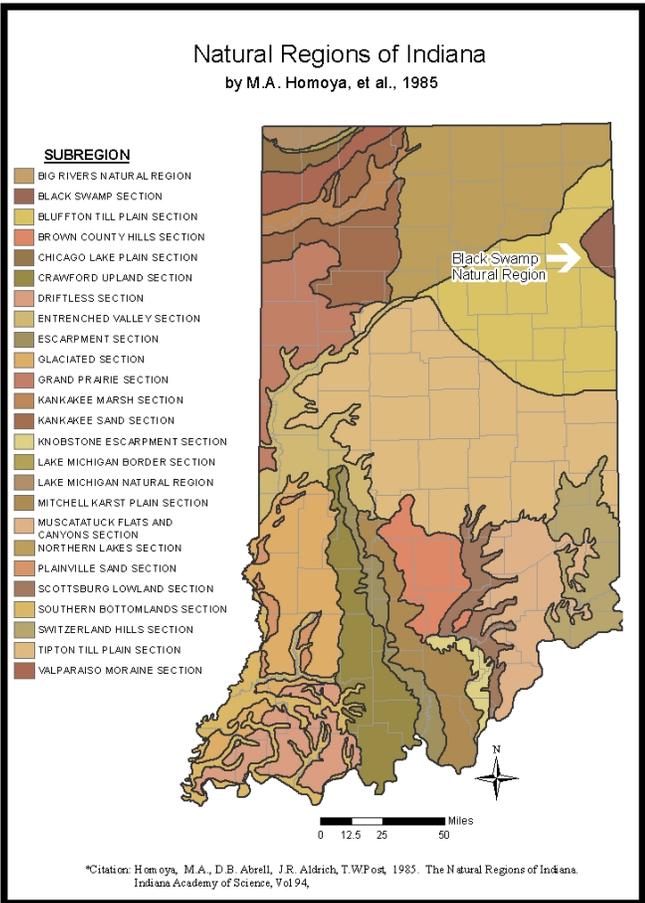
Land Trust and Non-Profit Partners

ACRES Land Trust, Inc.
Central Indiana Land Trust (CILTI)
Indiana Karst Conservancy
Izaak Walton League
NICHES Land Trust
Red-Tail Land Conservancy, Inc
Shirley Heinze Land Trust
Sycamore Land Trust (SLT)
The Nature Conservancy (TNC)
Whitewater Valley Land Trust
Oak Heritage Conservancy
Sycamore Trails RC&D
Ouabache Land Trust
Save the Dunes

Map 1. Geographic area of the Eight Regional Ecologists for the Division of Nature Preserves.



Natural Regions of Indiana
by M.A. Homoya, et al., 1985



Map 2. Natural Regions of Indiana
– Black Swamp Region.