Enhancement and Integration of Natural Resource Information Systems in Support of Illinois' Comprehensive Wildlife Conservation Plan

Project: T-17-P-1 (Amendment #2)

Final Progress Report 2009
September 30, 2005 – June 30, 2009

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Tari Tweddale – Illinois Natural History Survey
Lisa Demeule – University of Illinois

September 30, 2009

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Project Extension

During this project, a 1-year time extension was requested and approved. Staff shortages and departures, protracted family illness, hiring issues, and difficulties in obtaining data from Federal Programs due to Privacy Rights issues resulted in uncontrollable time delays for all 3 projects, necessitating the extension.

Project Budget

All projects were completed at estimated budget costs.

Key Project Staff

Project 1: Tara Kieninger (IDNR), Chris Phillips (INHS)
Project 2: Tari Tweddale (INHS), Charles Foor (IDNR)
Project 3: Debbie Bruce (IDNR), Gary Schnitkey (UofI), Lisa Demeule (UofI)

Project 1 – Updating the Biological Tracking and Conservation System (Biotics 4) and the Natural Areas Tracking System (NATS)

Tara Kieninger

Background

Biotics 4

The Biological Tracking and Conservation System, otherwise known as Biotics 4, is the information system used by the Illinois Department of Natural Resources' (IDNR) Natural Heritage Database Program to track all locational data and descriptive information on state and federally listed threatened and endangered species, natural areas, nature preserves, and other high quality features. The data within Biotics 4 are a critical component of Illinois' state Comprehensive Wildlife Habitat Conservation plan, and necessary for plan implementation, and monitoring.

The Natural Heritage Database Program originally used a database system called the Biological and Conservation Database (BCD) to track significant resources throughout the state. BCD was a DOS-based relational database with very little spatial capabilities. In order to utilize more current and powerful software and integrate spatial tracking, the Database Program upgraded to the Oracle-based Biotics 4 (Biological Tracking and Conservation System) database in February 2003. Biotics 4, which was developed by NatureServe, combines geographic information systems (GIS) and powerful relational database technologies to organize, map, and analyze data.

NATS

The Natural Areas Tracking System (NATS) is the information system used by IDNR's Natural Areas Program to track tabular information on Illinois Natural Areas Inventory (INAI) sites in the state and their significant features. NATS, which was developed in-house by IDNR roughly 6 years ago, is an Access database custom-designed for INAI tracking needs.

Procedures and Results

Data managers were initially hired in mid- to late-June of 2006 to log, enter, and map threatened & endangered (T&E) faunal data and other resource data received by the Illinois Natural Heritage Database Program into the Biotics 4. This was part of a multi-year effort to provide accurate, timely information to those involved in management planning, as well as those charged with implementing and monitoring the Illinois Wildlife Action Plan. During the span of the project, the number of Data Specialists on staff varied from one to three.

1) Data pertaining to threatened & endangered (T&E) faunal species observations will be entered and mapped in Biotics 4. Existing T&E faunal point records will be remapped as polygons.

Tabular data pertaining to T&E faunal species observations, including reports of new observations and updates to known populations, were entered and their spatial locations were mapped in Biotics 4. All existing T&E faunal species records, which were brought in as large buffered points during the database conversion to Biotics 4 in 2003, were remapped into meaningful polygons based on the original data submitted. All T&E data was mapped using the polygon mapping methodology developed by NatureServe and underwent a quality assurance/quality control check to minimize data entry and mapping errors. During this project, a total of 3,411 T&E records were handled by Data Specialists & IDNR staff on match time. This exceeded our estimate of 2,000-2,800 records, mainly

because INAI data entry fell short of our estimates (see below), thereby allowing more time for T&E data entry and mapping.

2) *Data pertaining to Illinois Natural Areas Inventory (INAI) sites will be entered and mapped in Biotics 4. Additional INAI data will be entered into NATS.*

Information on INAI sites was received from various sources by the Natural Heritage Database, then entered and mapped in Biotics 4. This data includes information on the status of the natural areas and their significant features, site descriptions, land use history, conservation intentions, threats, and management needs. All INAI data underwent a quality assurance/quality control check to minimize data entry and mapping errors. During this project, a total of 3,218 INAI site records were handled by Data Specialists & IDNR staff on match time. We did not meet our estimate of 5,000-6,000 records as the amount of incoming data severely declined due to IDNR staff shortages and resulting heavy workloads.

We had anticipated added additional INAI such as community acreage and grade, species lists, ownership, and dominant species present, none of which are tracked in Biotics 4, into the Natural Areas Tracking System (NATS). Unfortunately the NATS system underwent a major overhaul under a separate INAI Update project and the changes were not completed by the end of this project.

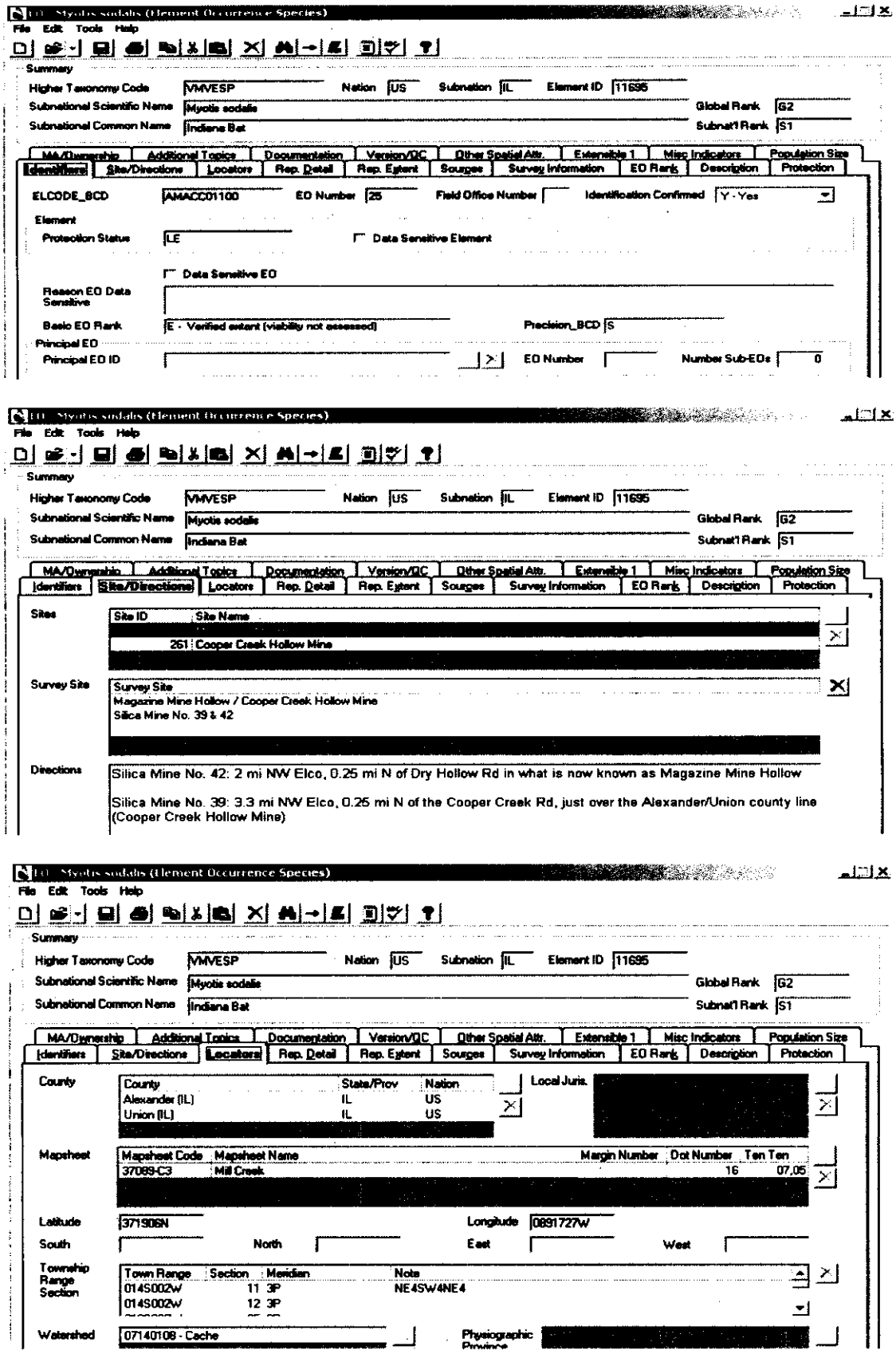
3) *Data pertaining to high quality natural communities will be entered and mapped in Biotics 4. Existing natural community point records will be remapped as polygons.*

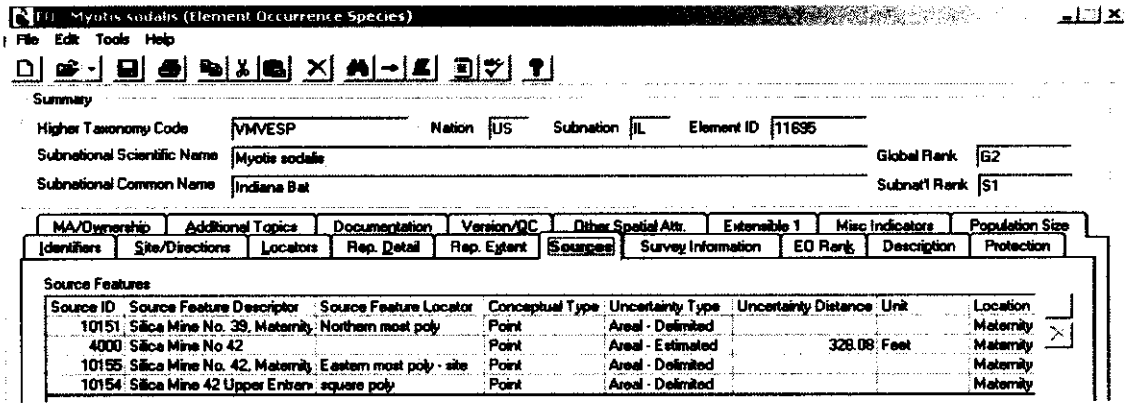
New high quality natural community information associated with INAI sites was entered and their spatial locations mapped in Biotics 4. In addition, existing high quality natural community records, represented by buffered points, were remapped using NatureServe's polygon mapping methodology. All natural community data underwent a quality assurance/quality control check to minimize data entry and mapping errors. During this project, a total of 975 high quality natural records were handled by Data Specialists & IDNR staff on match time. This exceeded our estimate of 600-800 records, mainly because INAI data entry fell short of our estimates (see above), thereby allowing more time for high quality natural community data entry and mapping.

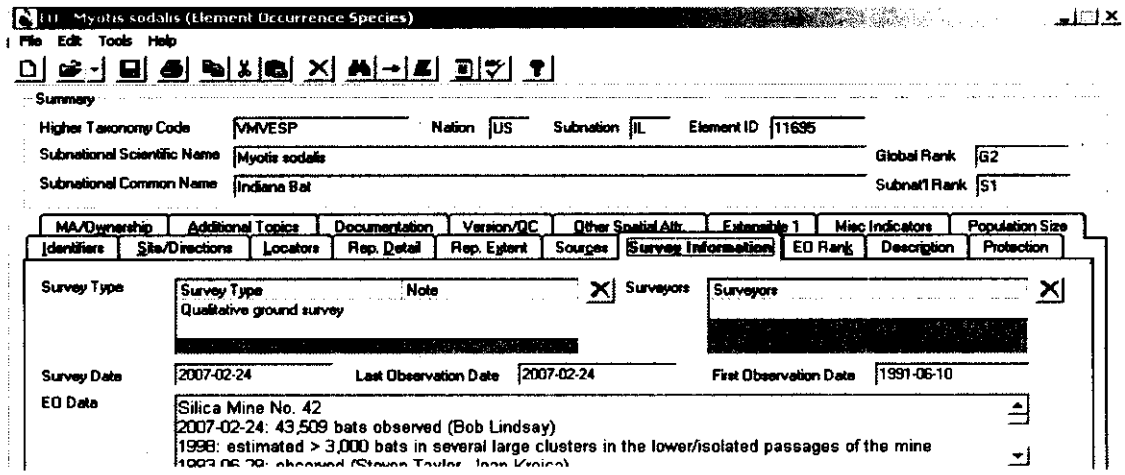
4) Biotics 4 & NATS will be used to respond to requests for information, conduct data analysis, and generate reports, particularly those related to Illinois' Comprehensive Wildlife Conservation Plan.

Biotics 4 was used to respond to requests for information, conduct data analysis, and generate reports, particularly those related to the Illinois Wildlife Action Plan. We had anticipated using the Natural Areas Tracking System as an additional source of information for these requests, but due to an overhaul of NATS, that was not possible. During this project, a total of 78 information requests related to the IWAP were handled by Data Specialists & IDNR staff on match time. This exceeded our estimate of 40-60 requests simply because we had underestimated the number of requests that we would receive.

Figure 1. Biotics 4 T&E Data Entry Screen Shots.




EO Myotis sodalis (Element Occurrence Species)
File Edit Tools Help
Summary
Higher Taxonomy Code VMVESP Nation US Subnation IL Element ID 11695
Subnational Scientific Name Myotis sodalis Global Rank G2
Subnational Common Name Indiana Bat Subnat'l Rank S1
MA/Ownership Additional Topics Documentation Version/QC Other Spatial Attr. Extensible 1 Misc Indicators Population Size
Identifiers Site/Directions Locators Rep. Detail Rep. Extent Sources Survey Information EO Rank Description Protection
Source Features
Source ID Source Feature Descriptor Source Feature Locator Conceptual Type Uncertainty Type Uncertainty Distance Unit Location
10151 Silica Mine No. 39, Maternity Northern most poly Point Areal - Delimited Maternity
4000 Silica Mine No 42 Point Areal - Estimated 328.08 Feet Maternity
10155 Silica Mine No. 42, Maternity Eastern most poly - site Point Areal - Delimited Maternity
10154 Silica Mine 42 Upper Entrance square poly Point Areal - Delimited Maternity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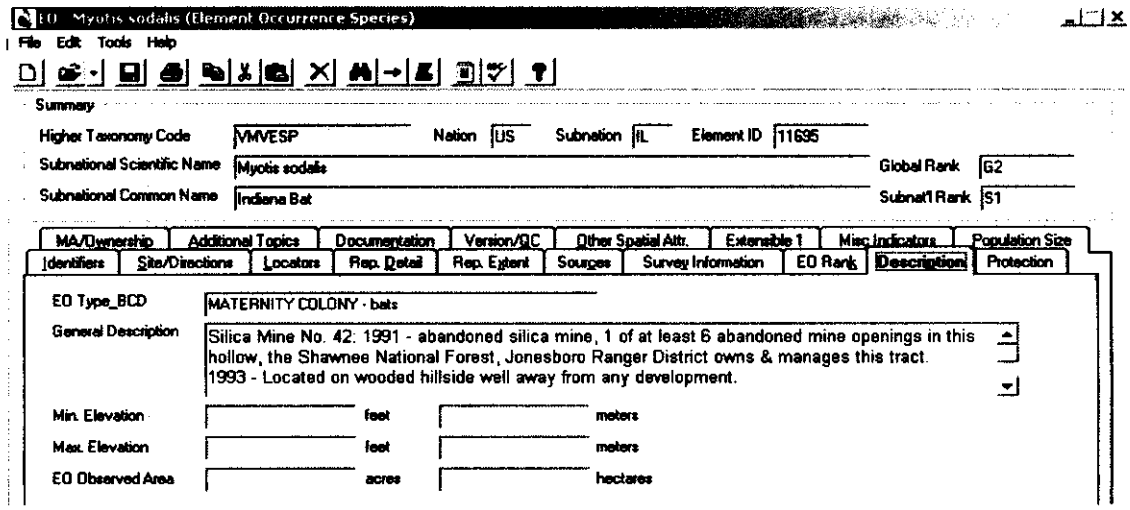
Identifiers Site/Directions Locators Rep. Detail Rep. Extent Sources Survey Information EO Rank Description Protection
Survey Type
Survey Type Note
Qualitative ground survey
Surveyors
Surveyors
Survey Date 2007-02-24 Last Observation Date 2007-02-24 First Observation Date 1991-06-10
EO Data
Silica Mine No. 42
2007-02-24: 43,509 bats observed (Bob Lindsay)
1998: estimated > 3,000 bats in several large clusters in the lower/isolated passages of the mine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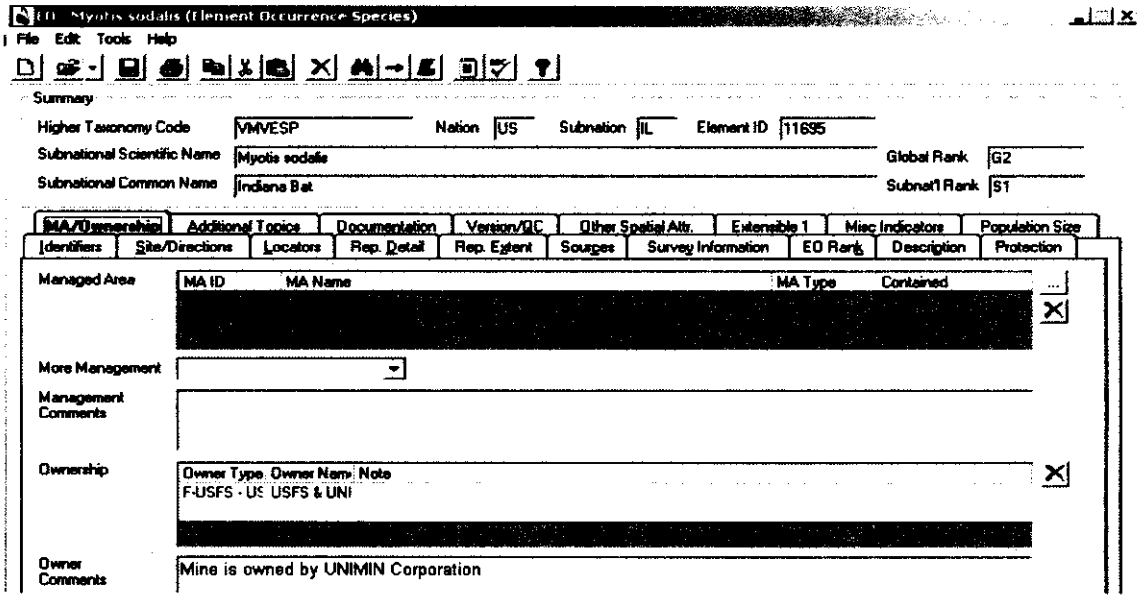
Identifiers Site/Directions Locators Rep. Detail Rep. Extent Sources Survey Information EO Rank Description Protection
EO Type_BCD MATERNITY COLONY - bats
General Description
Silica Mine No. 42: 1991 - abandoned silica mine, 1 of at least 6 abandoned mine openings in this hollow, the Shawnee National Forest, Jonesboro Ranger District owns & manages this tract.
1993 - Located on wooded hillside well away from any development.
Min. Elevation feet meters
Max. Elevation feet meters
EO Observed Area acres hectares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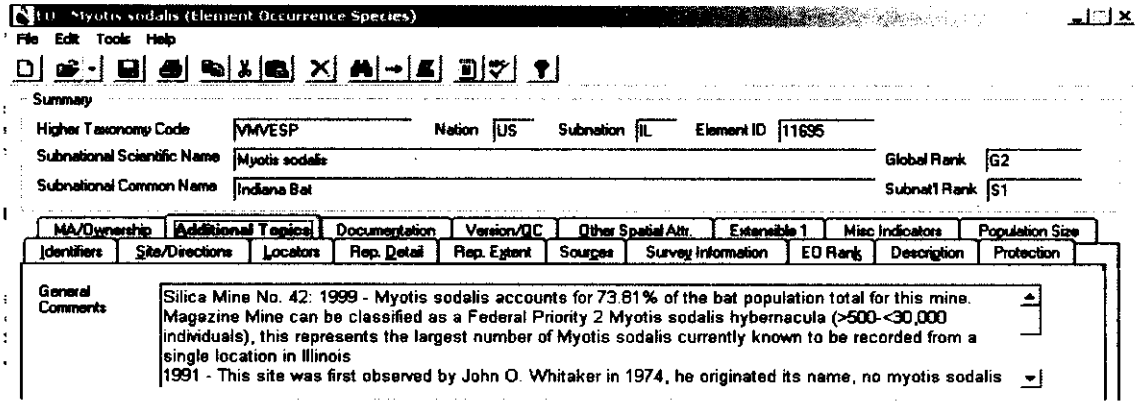
Rep. Detail
Rep. Extent
Sources
Survey Information
EO Rank
Description
Protection
Managed Area
MA ID
MA Name
MA Type
Contained
More Management
Management Comments
Ownership
Owner Type
Owner Name
Note
F-USFS - US USFS & UNI
Owner Comments
Mine is owned by UNIMIN Corporation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Extensible 1
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Population Size
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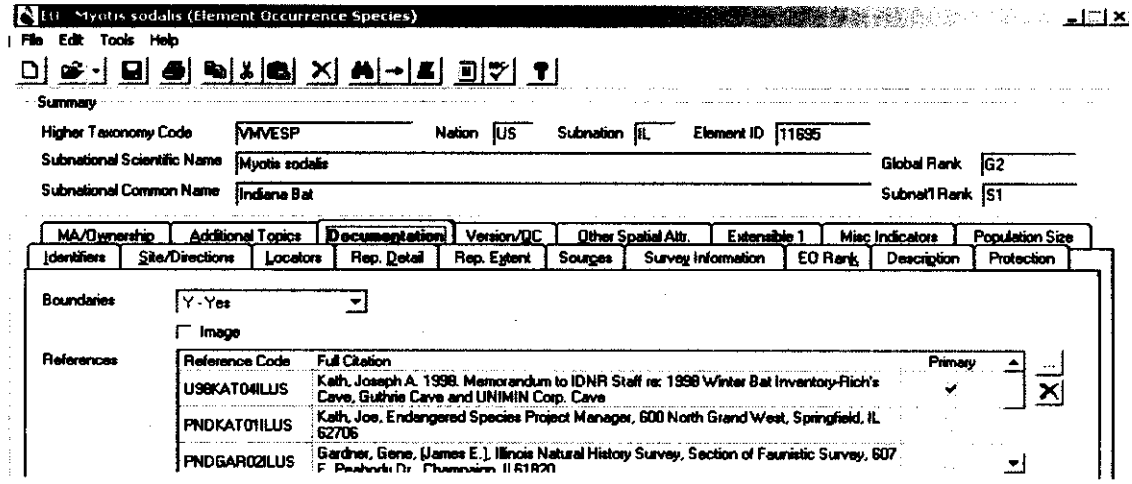
Rep. Detail
Rep. Extent
Sources
Survey Information
EO Rank
Description
Protection
General Comments
Silica Mine No. 42: 1999 - Myotis sodalis accounts for 73.81% of the bat population total for this mine. Magazine Mine can be classified as a Federal Priority 2 Myotis sodalis hybernacula (>500-<30,000 individuals), this represents the largest number of Myotis sodalis currently known to be recorded from a single location in Illinois
1991 - This site was first observed by John O. Whitaker in 1974, he originated its name, no myotis sodalis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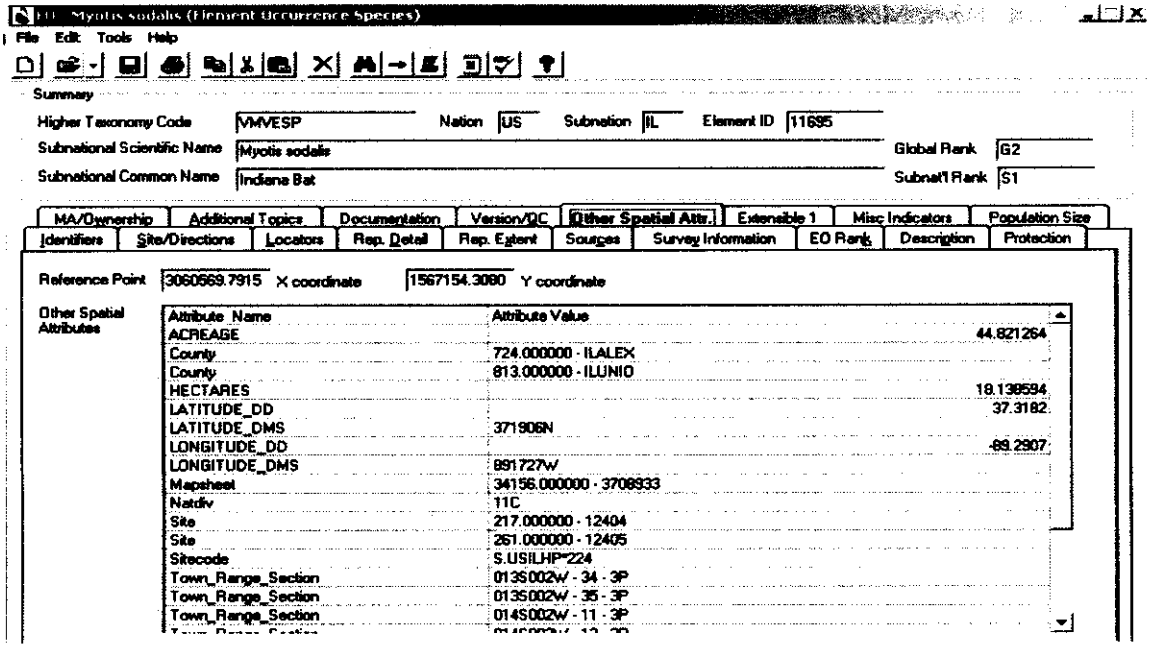
Misc Indicators
Population Size
Identifiers
Site/Directions
Locators
Rep. Detail
Rep. Extent
Sources
Survey Information
EO Rank
Description
Protection
Boundaries
Y - Yes
Image
References
Reference Code
Full Citation
Primary
U98KAT04ILUS
Kath, Joseph A. 1998. Memorandum to IDNR Staff re: 1998 Winter Bat Inventory-Rich's Cave, Guthrie Cave and UNIMIN Corp. Cave
PNDKAT01ILUS
Kath, Joe, Endangered Species Project Manager, 600 North Grand West, Springfield, IL 62706
PNDGAR02ILUS
Gardner, Gene, (James E.), Illinois Natural History Survey, Section of Faunistic Survey, 607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Population Size
Identifiers
Site/Directions
Locators
Rep. Detail
Rep. Extent
Sources
Survey Information
EO Rank
Description
Protection
Reference Point 3060569.7915 X coordinate 1567154.3080 Y coordinate
Other Spatial Attributes
Attribute Name
Attribute Value
ACREAGE 44.821264
County 724.000000 - ILALEX
County 813.000000 - ILUNIO
HECTARES 18.139594
LATITUDE_DD 37.3182
LATITUDE_DMS 371906N
LONGITUDE_DD -89.2907
LONGITUDE_DMS 891727W
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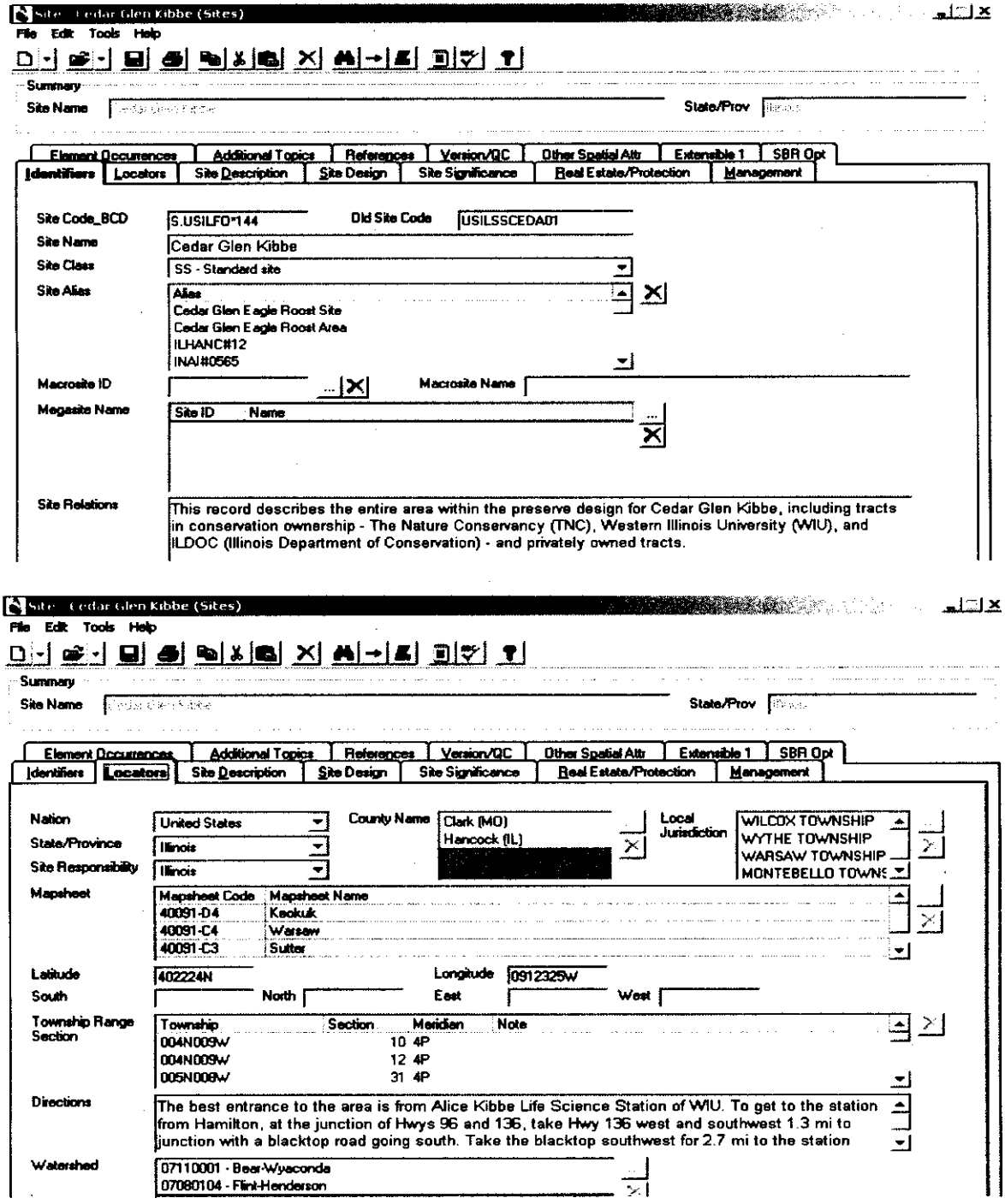
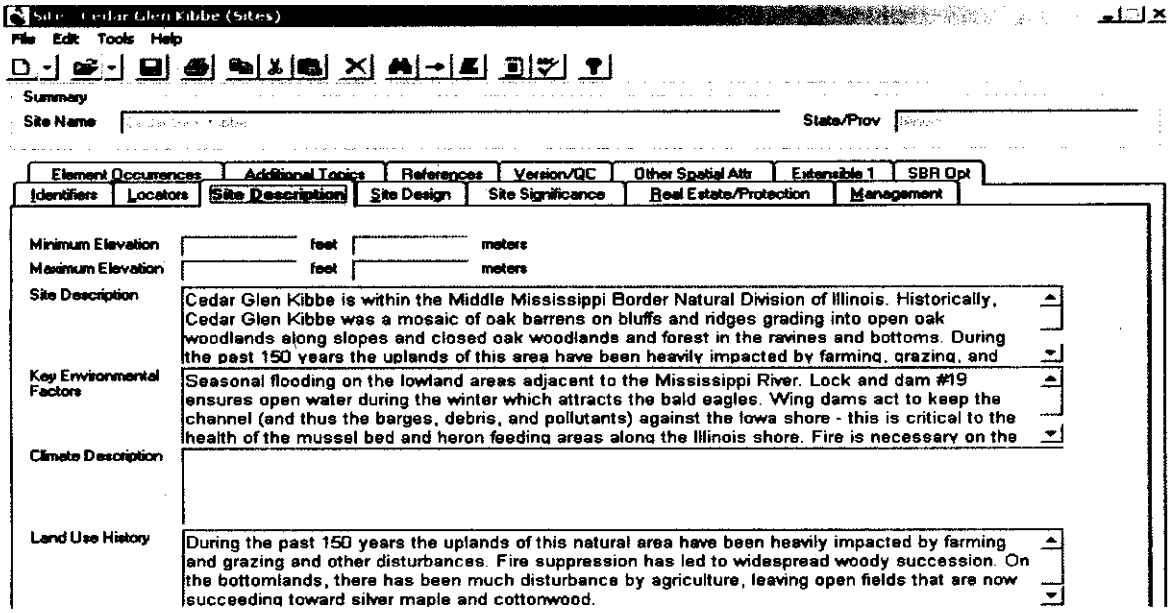
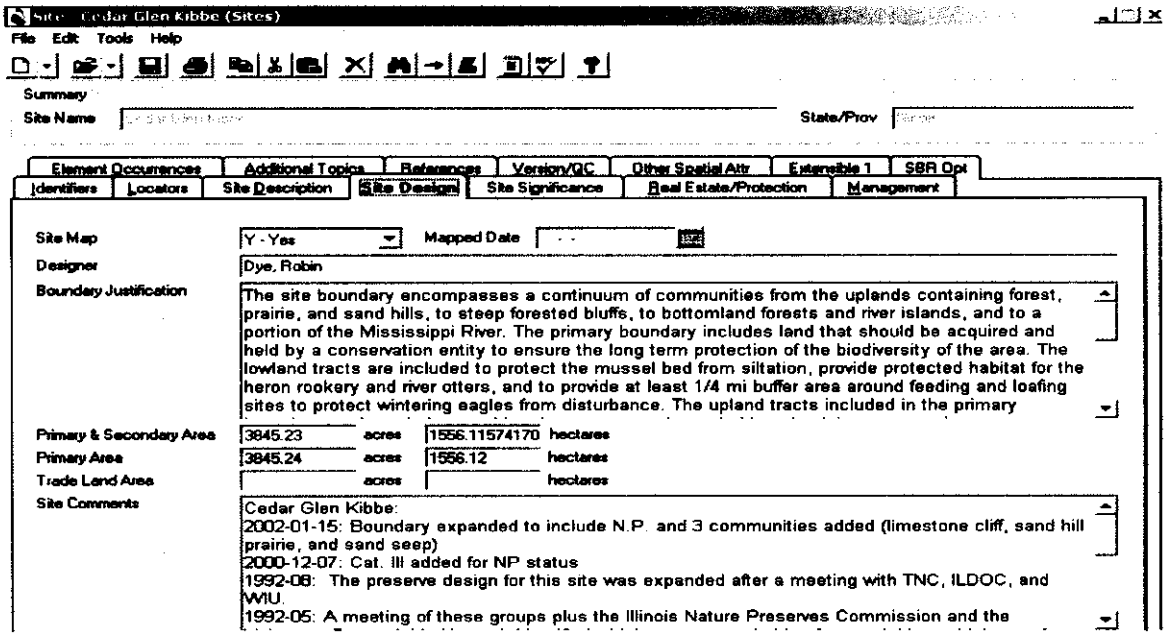
Natdiv 11C
Site 217.000000 - 12404
Site 261.000000 - 12405
Sitecode S.USILHP224
Town_Range_Section 013S002W - 34 - 3P
Town_Range_Section 013S002W - 35 - 3P
Town_Range_Section 014S002W - 11 - 3P

Figure 2. Biotics 4 INAI Data Entry Screen Shots.




Site: Cedar Glen Kibbe (Sites)
File Edit Tools Help
Summary
Site Name
State/Prov
Element Occurrences
Additional Topics
References
Version/QC
Other Spatial Attr
Extensible 1
SBR Opt
Identifiers
Locators
Site Description
Site Design
Site Significance
Real Estate/Protection
Management
Minimum Elevation
feet
meters
Maximum Elevation
feet
meters
Site Description
Cedar Glen Kibbe is within the Middle Mississippi Border Natural Division of Illinois. Historically, Cedar Glen Kibbe was a mosaic of oak barrens on bluffs and ridges grading into open oak woodlands along slopes and closed oak woodlands and forest in the ravines and bottoms. During the past 150 years the uplands of this area have been heavily impacted by farming, grazing, and
Key Environmental Factors
Seasonal flooding on the lowland areas adjacent to the Mississippi River. Lock and dam #19 ensures open water during the winter which attracts the bald eagles. Wing dams act to keep the channel (and thus the barges, debris, and pollutants) against the Iowa shore - this is critical to the health of the mussel bed and heron feeding areas along the Illinois shore. Fire is necessary on the
Climate Description
Land Use History
During the past 150 years the uplands of this natural area have been heavily impacted by farming and grazing and other disturbances. Fire suppression has led to widespread woody succession. On the bottomlands, there has been much disturbance by agriculture, leaving open fields that are now succeeding toward silver maple and cottonwood.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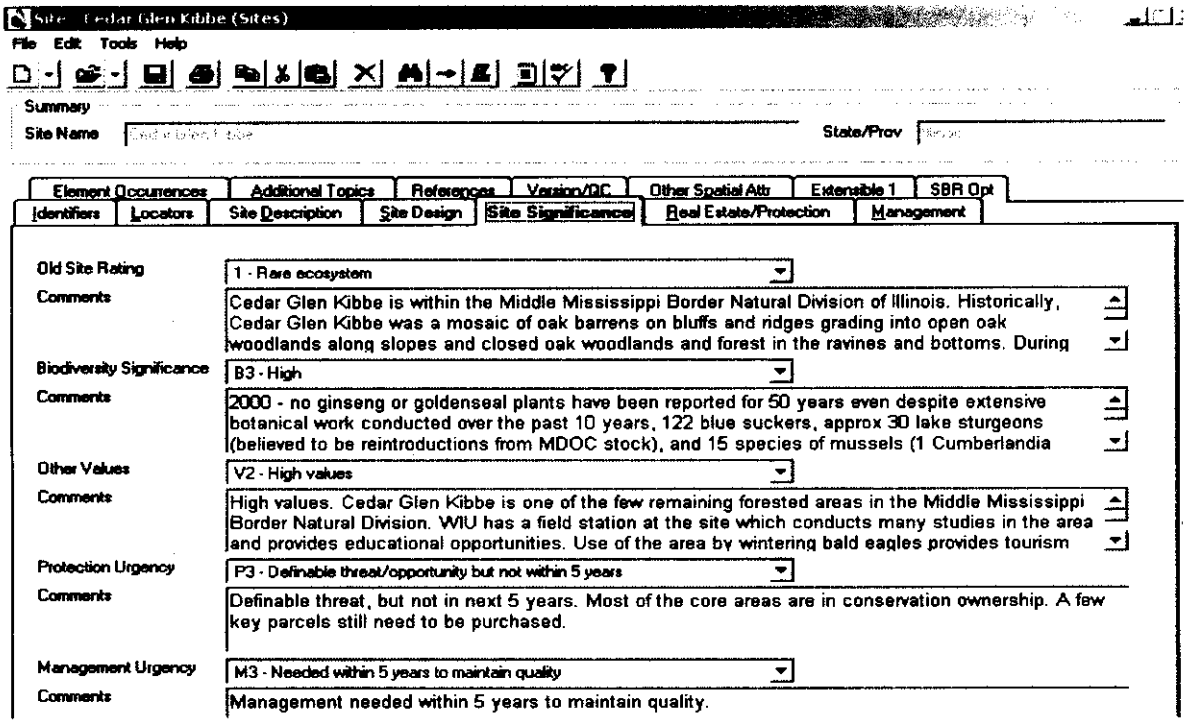
File Edit Tools Help
Summary
Site Name
State/Prov
Element Occurrences
Additional Topics
References
Version/QC
Other Spatial Attr
Extensible 1
SBR Opt
Identifiers
Locators
Site Description
Site Design
Site Significance
Real Estate/Protection
Management
Site Map
Y - Yes
Mapped Date
Designer
Dye, Robin
Boundary Justification
The site boundary encompasses a continuum of communities from the uplands containing forest, prairie, and sand hills, to steep forested bluffs, to bottomland forests and river islands, and to a portion of the Mississippi River. The primary boundary includes land that should be acquired and held by a conservation entity to ensure the long term protection of the biodiversity of the area. The lowland tracts are included to protect the mussel bed from siltation, provide protected habitat for the heron rookery and river otters, and to provide at least 1/4 mi buffer area around feeding and loafing sites to protect wintering eagles from disturbance. The upland tracts included in the primary
Primary & Secondary Area
3845.23
acres
1556.11574170
hectares
Primary Area
3845.24
acres
1556.12
hectares
Trade Land Area
acres
hectares
Site Comments
Cedar Glen Kibbe:
2002-01-15: Boundary expanded to include N.P. and 3 communities added (limestone cliff, sand hill prairie, and sand seep)
2000-12-07: Cat. III added for NP status
1992-08: The preserve design for this site was expanded after a meeting with TNC, ILDOC, and WIU.
1992-05: A meeting of these groups plus the Illinois Nature Preserves Commission and the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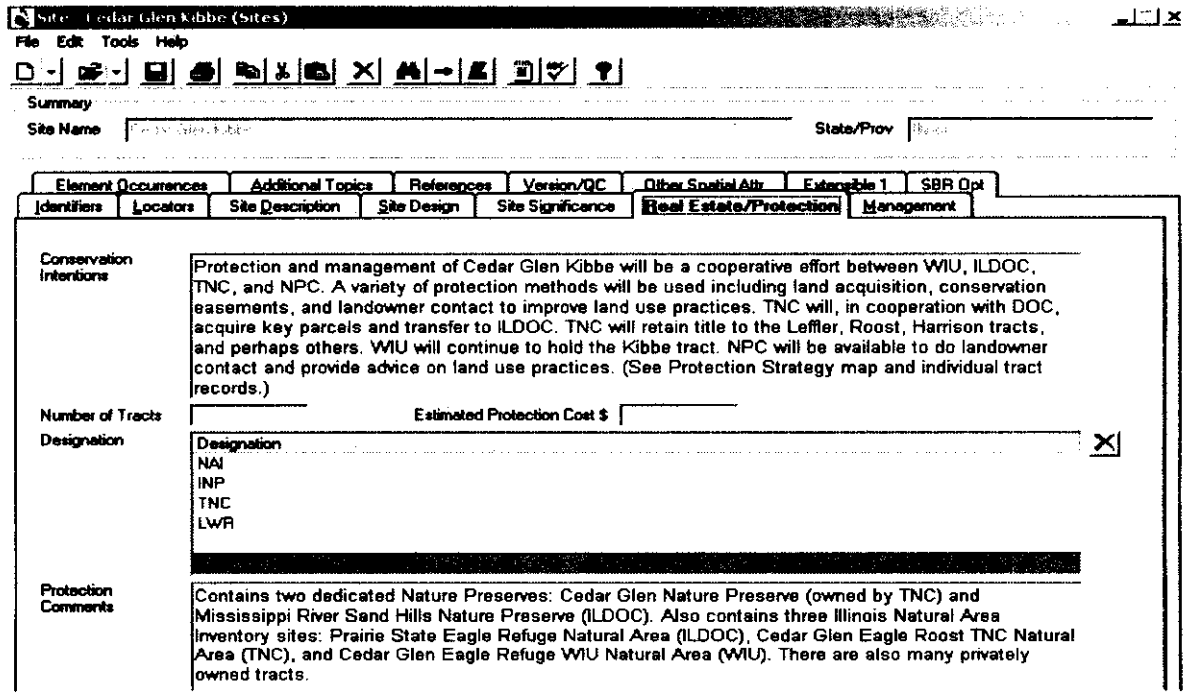
Summary
Site Name
State/Prov
Element Occurrences
Additional Topics
References
Version/QC
Other Spatial Attr
Extensible 1
SBR Opt
Identifiers
Locators
Site Description
Site Design
Site Significance
Real Estate/Protection
Management
Old Site Rating
1 - Rare ecosystem
Comments
Cedar Glen Kibbe is within the Middle Mississippi Border Natural Division of Illinois. Historically, Cedar Glen Kibbe was a mosaic of oak barrens on bluffs and ridges grading into open oak woodlands along slopes and closed oak woodlands and forest in the ravines and bottoms. During
Biodiversity Significance
B3 - High
Comments
2000 - no ginseng or goldenseal plants have been reported for 50 years even despite extensive botanical work conducted over the past 10 years, 122 blue suckers, approx 30 lake sturgeons (believed to be reintroductions from MDOC stock), and 15 species of mussels (1 Cumberlandia
Other Values
V2 - High values
Comments
High values. Cedar Glen Kibbe is one of the few remaining forested areas in the Middle Mississippi Border Natural Division. WIU has a field station at the site which conducts many studies in the area and provides educational opportunities. Use of the area by wintering bald eagles provides tourism
Protection Urgency
P3 - Definable threat/opportunity but not within 5 years
Comments
Definable threat, but not in next 5 years. Most of the core areas are in conservation ownership. A few key parcels still need to be purchased.
Management Urgency
M3 - Needed within 5 years to maintain quality
Comments
Management needed within 5 years to maintain quality.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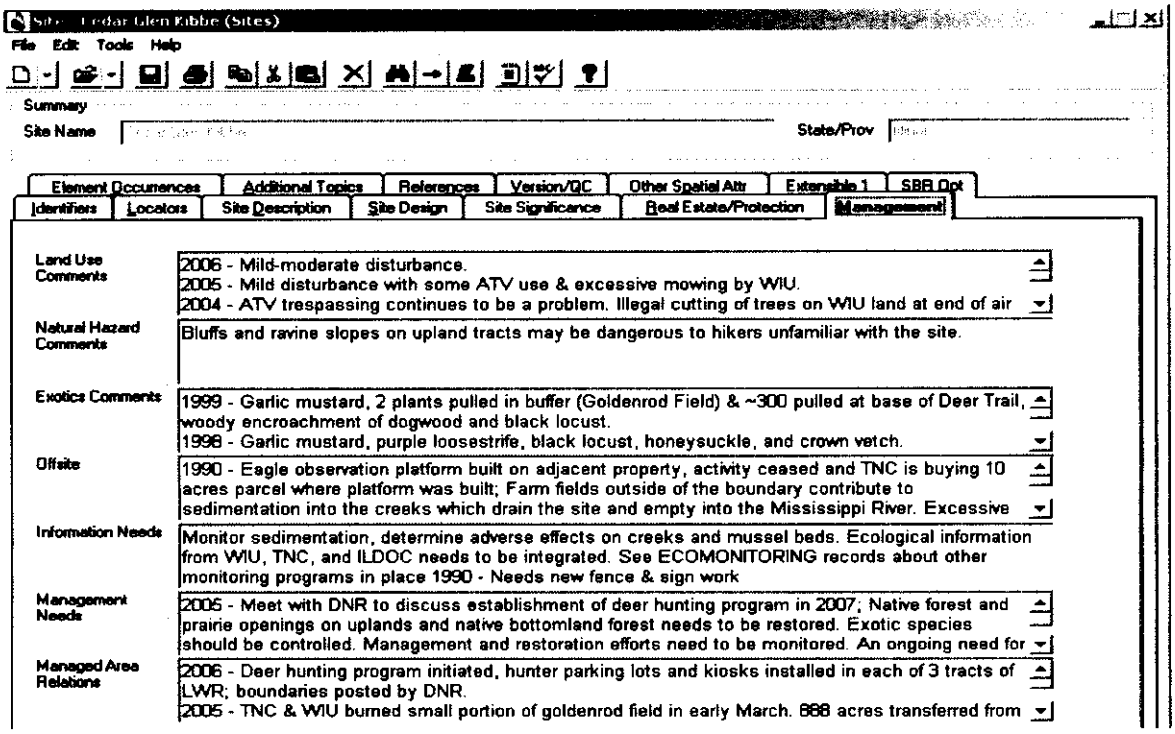
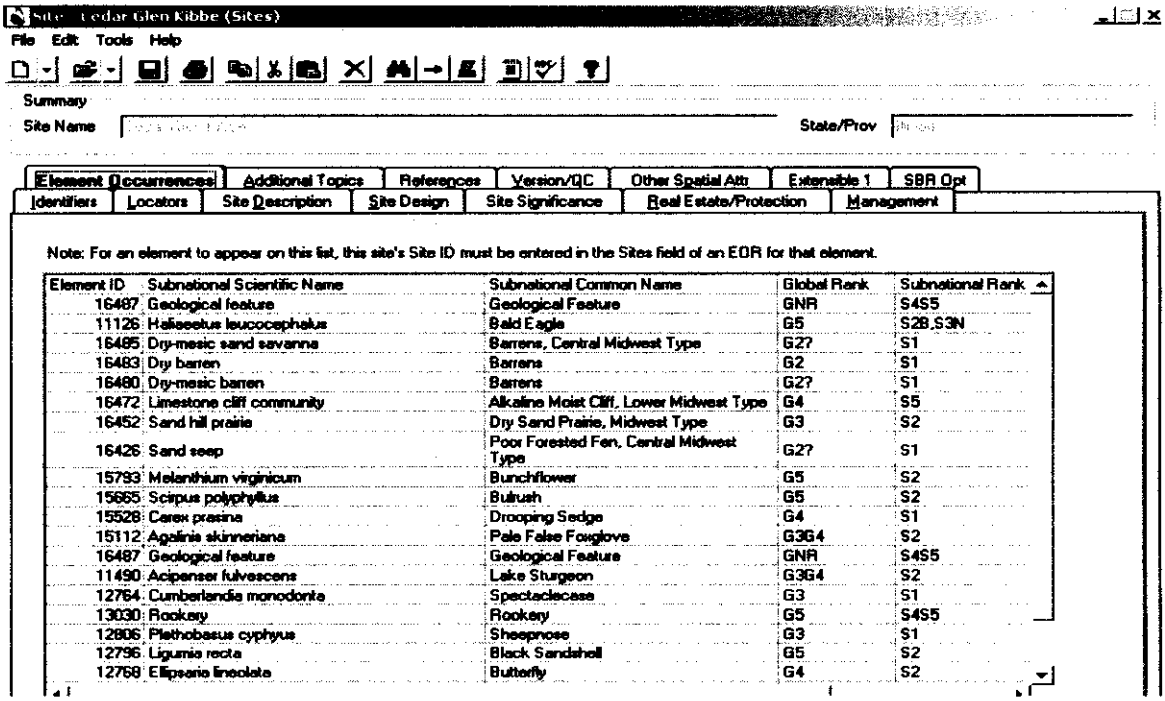
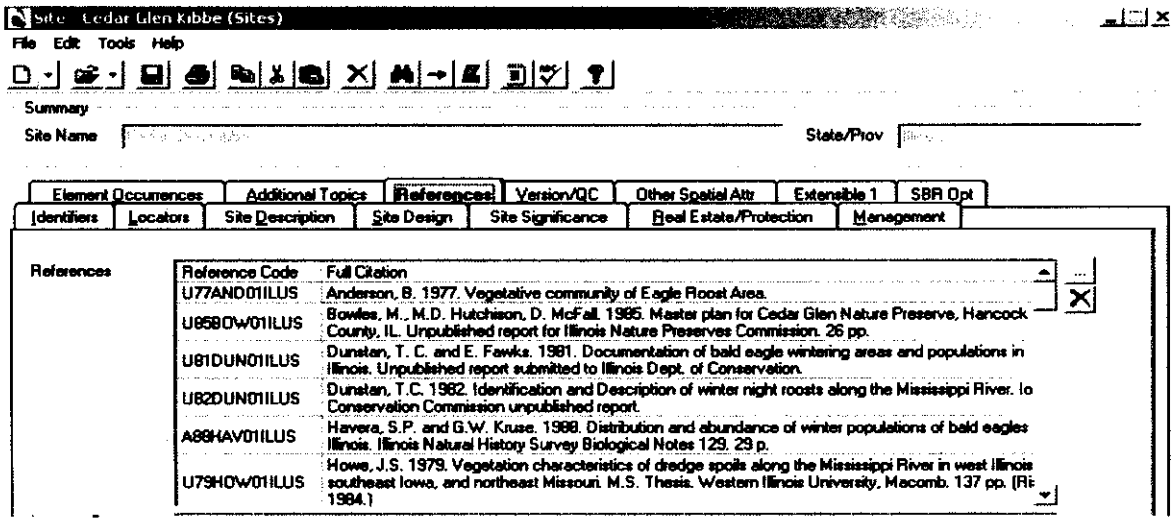
File Edit Tools Help
Summary
Site Name
State/Prov
Element Occurrences
Additional Topics
References
Version/QC
Other Spatial Attr
Extensible 1
SBR Opt
Identifiers
Locators
Site Description
Site Design
Site Significance
Real Estate/Protection
Management
Conservation Intentions
Protection and management of Cedar Glen Kibbe will be a cooperative effort between WIU, ILDOC, TNC, and NPC. A variety of protection methods will be used including land acquisition, conservation easements, and landowner contact to improve land use practices. TNC will, in cooperation with DOC, acquire key parcels and transfer to ILDOC. TNC will retain title to the Leffler, Roost, Harrison tracts, and perhaps others. WIU will continue to hold the Kibbe tract. NPC will be available to do landowner contact and provide advice on land use practices. (See Protection Strategy map and individual tract records.)
Number of Tracts
Estimated Protection Cost $
Designation
Designation
NAI
INP
TNC
LWR
Protection Comments
Contains two dedicated Nature Preserves: Cedar Glen Nature Preserve (owned by TNC) and Mississippi River Sand Hills Nature Preserve (ILDOC). Also contains three Illinois Natural Area Inventory sites: Prairie State Eagle Refuge Natural Area (ILDOC), Cedar Glen Eagle Roost TNC Natural Area (TNC), and Cedar Glen Eagle Refuge WIU Natural Area (WIU). There are also many privately owned tracts.





Element ID	Subnational Scientific Name	Subnational Common Name	Global Rank	Subnational Rank
16487	Geological feature	Geological Feature	GNR	S4S5
11126	Haliaeetus leucocephalus	Bald Eagle	G5	S2B,S3N
16485	Dry-mesic sand savanna	Barrens, Central Midwest Type	G2?	S1
16483	Dry barren	Barrens	G2	S1
16480	Dry-mesic barren	Barrens	G2?	S1
16472	Limestone cliff community	Alkaline Moist Cliff, Lower Midwest Type	G4	S5
16452	Sand hill prairie	Dry Sand Prairie, Midwest Type	G3	S2
16426	Sand seep	Poor Forested Fen, Central Midwest Type	G2?	S1
15793	Melanthium virginicum	Bunchflower	G5	S2
15665	Scirpus polyphyllus	Bulrush	G5	S2
15528	Carex prasina	Drooping Sedge	G4	S1
15112	Agalinis skinneriana	Pale False Foxglove	G3G4	S2
16487	Geological feature	Geological Feature	GNR	S4S5
11490	Acipenser fulvescens	Lake Sturgeon	G3G4	S2
12764	Cumberlandia monodonta	Spectaclecase	G3	S1
13030	Rookery	Rookery	G5	S4S5
12806	Plethobasus cyphyus	Sheepnose	G3	S1
12796	Ligumia recta	Black Sandshell	G5	S2
12768	Elliptoideus lineolata	Butterfly	G4	S2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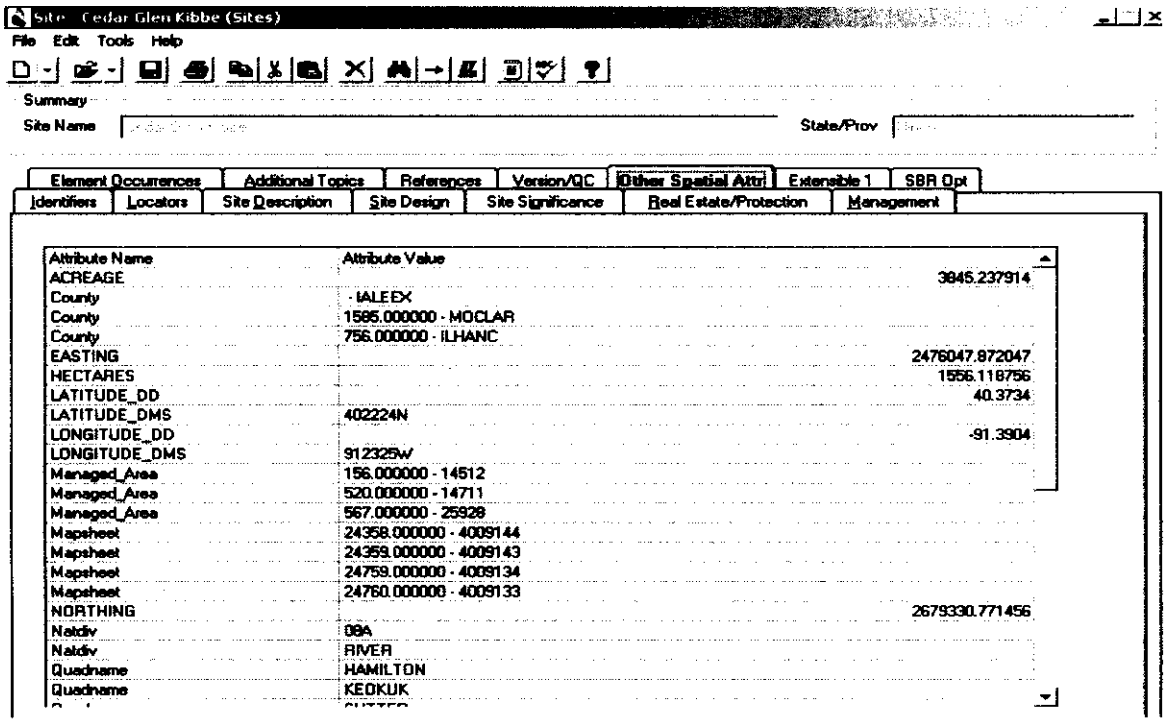
Identifiers | Locators | Site Description | Site Design | Site Significance | Real Estate/Protection | Management
References
Reference Code | Full Citation
U77AND01ILUS | Anderson, B. 1977. Vegetative community of Eagle Roost Area.
U85BOW01ILUS | Bowles, M., M.D. Hutchison, D. McFall. 1985. Master plan for Cedar Glen Nature Preserve, Hancock County, IL. Unpublished report for Illinois Nature Preserves Commission. 26 pp.
U81DUN01ILUS | Dunstan, T. C. and E. Fawks. 1981. Documentation of bald eagle wintering areas and populations in Illinois. Unpublished report submitted to Illinois Dept. of Conservation.
U82DUN01ILUS | Dunstan, T.C. 1982. Identification and Description of winter night roosts along the Mississippi River. Io Conservation Commission unpublished report.
A88HAV01ILUS | Havera, S.P. and G.W. Kruse. 1988. Distribution and abundance of winter populations of bald eagles Illinois. Illinois Natural History Survey Biological Notes 129. 29 p.
U79HOW01ILUS | Howe, J.S. 1979. Vegetation characteristics of dredge spoils along the Mississippi River in west Illinois southeast Iowa, and northeast Missouri. M.S. Thesis. Western Illinois University, Macomb. 137 pp. (Ri 1984.)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State/Prov
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Identifiers | Locators | Site Description | Site Design | Site Significance | Real Estate/Protection | Management
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County | 1595.000000 - MOCLAR
County | 756.000000 - ILHANC
EASTING | 2476047.872047
HECTARES | 1556.118756
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Natdiv | RIVER
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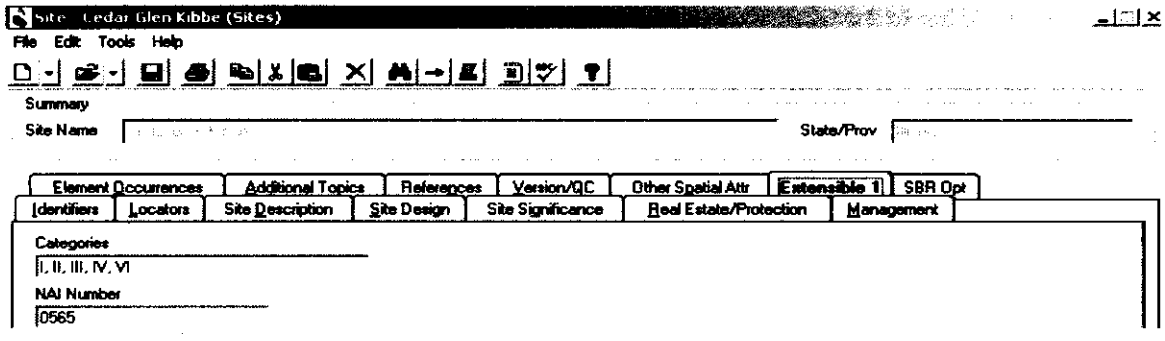
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Site Name
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Element Occurrences | Additional Topics | References | Version/QC | Other Spatial Attr | Extensible 1 | SBR Opt
Identifiers | Locators | Site Description | Site Design | Site Significance | Real Estate/Protection | Management
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NAI Number
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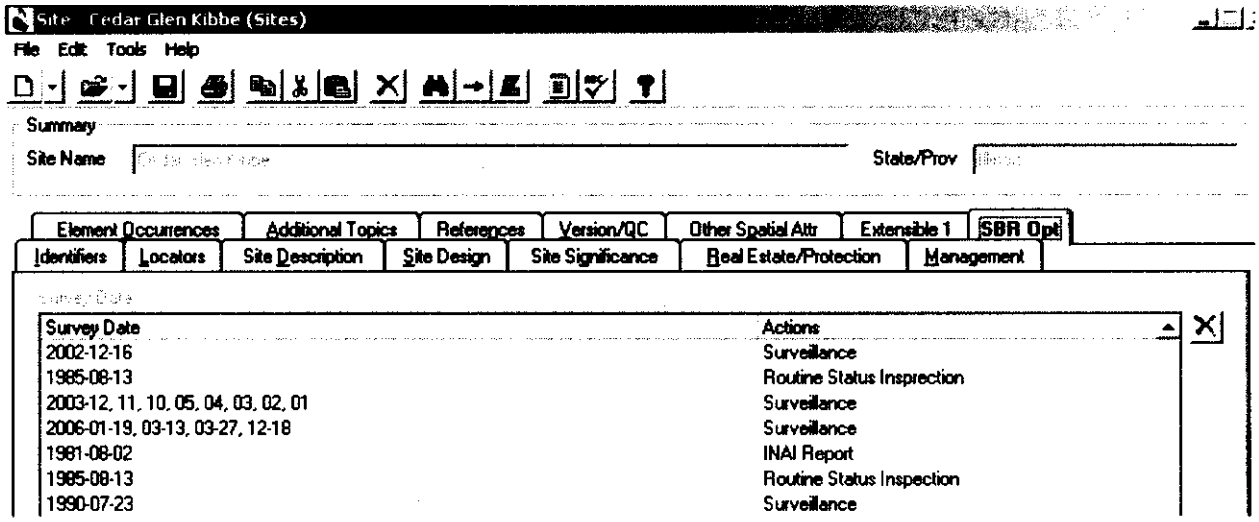
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File Edit Tools Help
Summary
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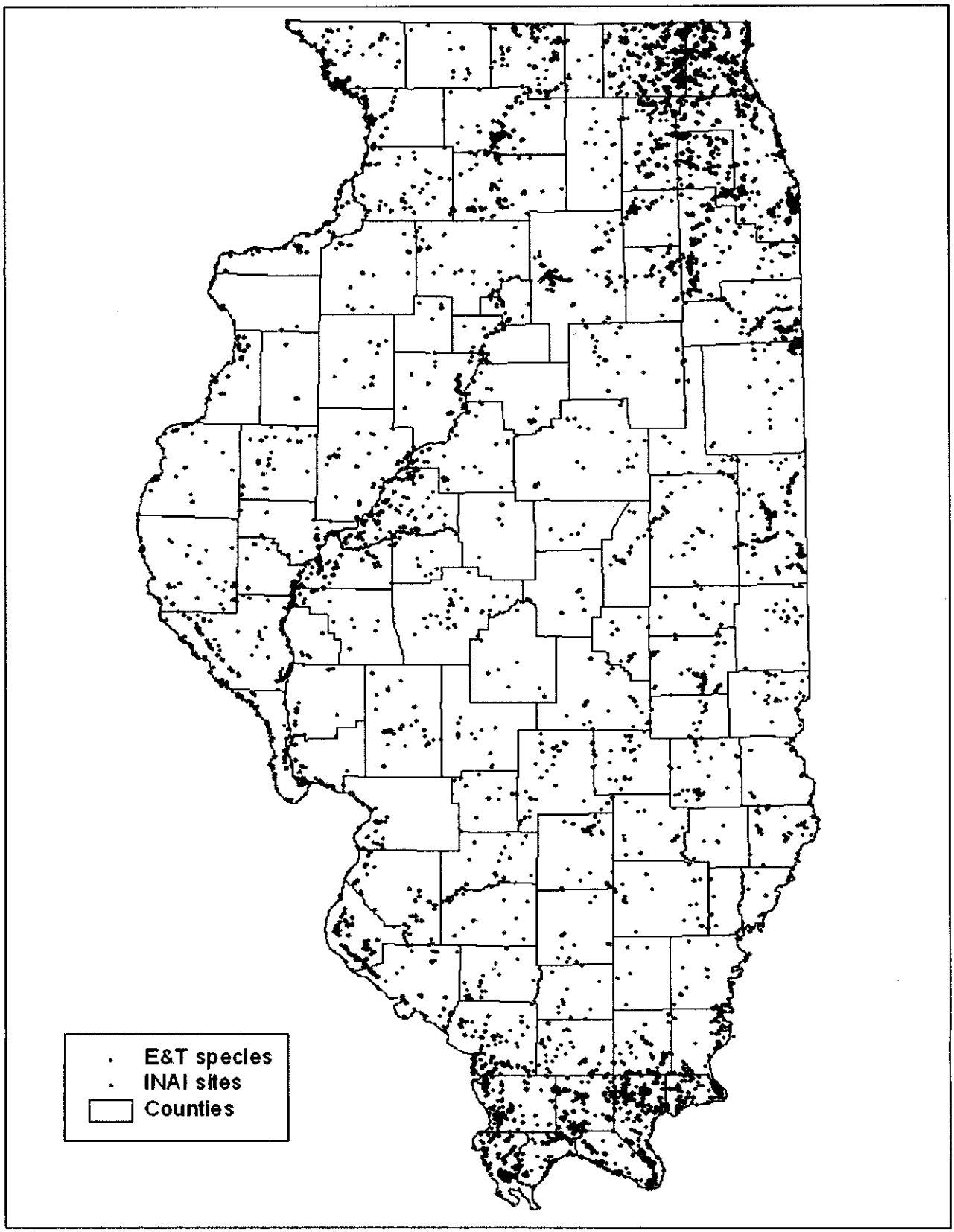
References
Version/QC
Other Spatial Attr
Extensible 1
SBR Opt
Identifiers
Locators
Site Description
Site Design
Site Significance
Real Estate/Protection
Management
Survey Date
Actions
2002-12-16
Surveillance
1985-08-13
Routine Status Inspection
2003-12, 11, 10, 05, 04, 03, 02, 01
Surveillance
2006-01-19, 03-13, 03-27, 12-18
Surveillance
1981-08-02
INAI Report
1985-08-13
Routine Status Inspection
1990-07-23
Surveillance

Figure 3. Locations of Endangered & Threatened Species (E&T) and Illinois Natural Areas Inventory (INAI) records in Illinois.



Project 2 – Mapping of Illinois Department of Natural Resources' Owned, Managed, and Leased Properties

Tari Tweddale

Background

The Owned, Managed, and Leased Properties (OMLP) project was initiated in the fall of 2003 and is an on-going effort. The main tasks during the first two phases of the OMLP project, initiated under State Wildlife Grants T-03-P-001 and T-02-P-001, were to establish procedures and standards for data capture and management into a GIS framework, and to create a geospatial geodatabase for IDNR properties acquired with federal and dedicated funds (e.g. Habitat, Pheasant, Migratory Waterfowl Stamp and Furbearer funds). This early focus was needed as no way existed that would guide the planning of conservation practices allowable on those properties. Once the special funds' properties are completed, mapping work will be continued on the remaining state properties.

The geodatabase created for the OMLP project contains property boundaries at the parcel level and has been designed with the capability of mapping outer extent property boundaries, interior parcel lines, easement boundaries, lease boundaries, and land use information. A large portion of the mapping project has involved the thorough researching of existing paper and database records for each property. Extensive paper records have been collected over the years and each file has to be reviewed for relevant and critical historical information concerning appropriate uses and limitations on conservation practices inherent in each property. Most properties consist of multiple parcels; some of the more complex properties have hundreds of parcels.

Under this proposal, the GIS mapping of the IDNR OMLP data will continue as work progresses on recording of all remaining properties into the standardized and accurate geodatabase structure that was developed during the first two phases of the mapping project. Properties that were prioritized lower in the immediate needs schedule will be mapped during this third Phase of the project. As part of this project, a procedure manual outlining methodology and associated protocols using ESRI's ArcGIS software has been developed. This procedure manual will institutionalize the maintenance of the OMLP database and the inputting of new property acquisitions into the existing geodatabase. This will ensure that the OMLP information will be kept current and accurate, as existing IDNR staff will have their workloads adjusted to accommodate the OMLP database day-to-day housekeeping tasks. This institutionalization is critical to maintaining up-to-date property boundaries for the accurate tracking of conservation management practices on all IDNR owned and leased properties. The procedure manual will be updated as needed, during additional phases of this project.

To maximize its usefulness as information and planning tool, the OMLP database has been designed for integration with other agency databases. This will facilitate coordinated conservation management activity efforts within IDNR in support of the Comprehensive Wildlife Conservation Plan.

Procedures and Results

An OMLP GIS database with property boundaries and associated management information was created using ArcGIS software. Appendix A shows the basic design structure of the OMLP GIS database. The geodatabase is a parcel-based mapping system with legal boundary descriptions obtained mainly from paper records housed and maintained in the Office of Realty and Environmental Planning

at the IDNR office in Springfield. While many properties have fully documented boundary descriptions, some property acquisitions (generally those prior to the mid 1960s) were difficult to fully document and were therefore digitized using best available information or legal description. The OMLP geodatabase is housed on an IDNR computer in Springfield and managed by Charlie Foor. The geodatabase with IDNR properties completed through this third Phase of the project has been copied to a CD and provided to IDNR and USFWS with this report. Version 1.0 of the OMLP User Manual is also included on this CD. During subsequent phases of the project, additional properties will be added to the OMLP geodatabase.

Each property required thoroughly researching existing paper and database records for relevant and critical historical information at the offices of IDNR in Springfield. Personnel had to become familiar with the organization and format of the property documents. A data source checklist for researching realty paper files for each site is listed in Appendix B. An outline for the OMLP input methodology is listed in Appendix C. A step-by-step procedure for accurately and consistently digitizing all aspects of each property has been developed and implemented (see User Manual, Version 1.0 included on CD). The methodology and procedure process is continuously changing as new properties are completed and new data sources are made available. These changes and updates will be incorporated in the additional phases of the OMLP geodatabase as well as updated versions of the user manual.

Federal Geographic Data Committee (FGDC) compliant metadata has been created for the GIS data layers and will be updated as necessary as additional phases of the OMLP project are completed in the future. Metadata is included on the CD provided to IDNR and USFWS. Some of the metadata provided on the CD will be modified as needed as work continues in the next phase of the project. An initial quality assurance, quality control (QA/QC) methodology was developed to insure the data created meets the accuracy standards defined in the OMLP project data input methodology. Changes and updates to the QA/QC methodology will be incorporated in the additional phases of the OMLP Project.

The IDNR Land and Water Report for June 30, 2007 lists 338 conservation-related properties which the department owns, manages, or leases, including state parks (66), conservation areas (20), fish facilities (4), natural areas (112), fish and wildlife areas (47), wildlife areas (2), trails and greenways (5), memorials (1), boat access areas (7), recreation areas (5), forests (7), game propagation centers (3), tree nurseries (2), habitat areas (36), other departmental properties (17) and museum properties (4). A total of 146 IDNR sites (43%) have been completed by the end of this phase of the project, T-17-P-001. This includes 95 federal or special interest sites and 51 non-federal interest sites (Appendix D). Sixty-five sites were completed under T-03-P-001 and T-02-P-001 and 81 sites were completed under T-17-P-001. Appendix E lists the status and reason or issue for the 15 remaining federal interest sites not yet completed. The first priority during the next phase of the project (T-17-P-002) is to complete the remaining federal interest sites. Once all federal interest sites are completed, the next priority will be given to sites which fall within the 31 Conservation Opportunity Area's (COAs) and have not already been completed. A lot of time and effort will also be spent trying to complete the QA/QC process on the completed sites.

Figure 4. OMLP Geodatabase Structure.

Source: GIS and Land Records: The ArcGIS Parcel Data Model by Nancy von Meyer, 2004.

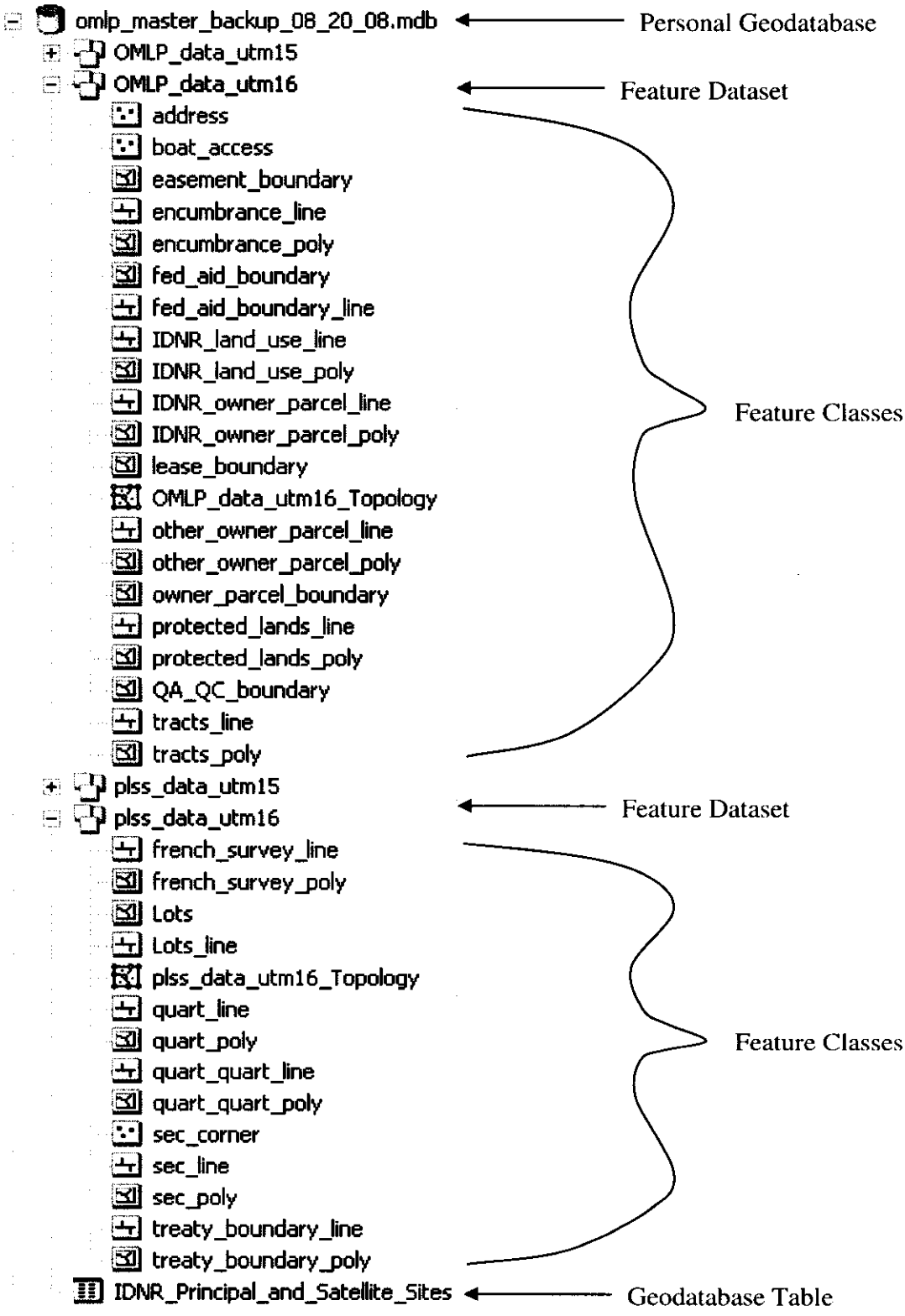


Figure 5. Data Source Checklist for Researching Realty Paper Files for Each Site.

- ❑ Lands Acquisition Database – Print land card report for each site. NOTE: Check report to determine if parcels acquired prior to 6-30-65 are lumped together. If so, then extra effort will be required to determine if all conveyances are found.
- ❑ Check list of DOQ sites produced by Bob Sandidge in OREP to see if georeferenced CAD files based on DOQQ's have been created.
- ❑ Checking list of sites produced by Don Moles in OREP to see if georeferenced or survey grade GPS CAD files have been created.
- ❑ Check list of sites which have completed or partially completed Project Land Maps.
- ❑ Realty Central File Index - All correspondence and documents for each parcel reflecting entire acquisition process (list is in a binder in Kevin's office, files on individual parcels are in central copier area - moving shelves)
- ❑ Realty Central Files – Deed file. Check Central File Index to determine what has been microfilmed. (in central copier area – moving shelves)
- ❑ Microfilm of Acquisition Files – NOTE: Only need to look on microfilm if no paper copy is located. (microfilm machine is located in Kevin's office)
- ❑ Site files – NOTE: May contain more deeds than the deed file in central files. (by windows, on either side of the copier).
- ❑ Acquisition Plats – NOTE: If prepared by B.L. Sandidge in 1997, or after, or by Don Moles, there should be a CAD file. If reference to land survey then plat of survey should be in the file. (by windows in labeled cabinet)
- ❑ Boundary Maps – NOTE: Scale is an indication of accuracy. Compare date of map to acquisition date to determine if it is up to date. (by windows, next to acquisition plats)
- ❑ Plats of Survey Index and File – Any large maps or surveys that were conducted for a site. (in cabinets and tubes in drafting room)
- ❑ Technical Reference Materials – Check index content and determine if file contains helpful information. (in drafting room)
- ❑ ORC Paper or Microfiche files for Federal Funds Acquisition Records - NOTE: only need to look on microfiche if no paper copy is located. (3rd floor central copier area and SE corner)
- ❑ Nature Preserve and Land and Water Reserve Dedications - Only need to get documents and legal descriptions if a site contains a Nature Preserve and Later and Water Reserve. (INPC master files located 3rd floor central area by copier)
- ❑ Land and Water Report – Compare total acreage on in report to Access database report (land card). NOTE: If they do not match it raises a red flag.
- ❑ State Archives – NOTE: May need to go to the archives if no deed information was located in Realty files.
- ❑ County Recorders Office - NOTE: May need to go to the county recorder's office if no deed information was located in Realty files or the State Archives.

Figure 6. OMLP Input Methodology Outline.

1 All property data will be created from UTM NAD83 DOQQs or from CADD data developed from survey grade GPS or existing survey work.
2 Property data will be constructed from 1.) PLSS TRS data adjusted to the DOQQs by sight when corners are clearly visible on the DOQQ, 2.) measured from distances acquired from original GLO plats, or 3.) extrapolated from corners on the DRGs as a last resort.
3 All relevant OREP and Fed Aid documents will be reviewed as a part of the pre-input procedure for each site or property. Copies of deeds and other relevant documents will be made by the site technician.
4 A site technician will be assigned to each site or property to carry out all research and data input tasks for that site from beginning to completion.
5 All ownership parcels will be researched and digitized within each property boundary for all Fed Aid associated properties.
6 The complete exterior boundaries of all ownership parcels for a property will be topologically coincident and be used to construct the finished site or property boundary.
7 A scale of 1:3,000 will be used for all heads-up digitizing on DOQQ-based work. This is especially important for the placement of PLSS-TRS section corners and the creation of boundaries created by tracing road centerlines or stream centerlines.
8 The OMLP Geo-databases are constructed in the UTM meter projection, using the NAD83 datum, with one database in UTM Zone 16 and another based in UTM Zone 15. This was done to maximize accuracy and transferability into more accurate coordinate systems in the future.
9 Please refer to the itemized list of research documents for a detailed account of the research trail pursued for each site.
10 The first priority for the OMLP project will be to digitize all ownership parcels, property boundaries, use parcels, and federally defined project boundaries for all sites where federal funds were used to purchase parcels.
11 The second priority will involve digitizing sites where "special funds" were used to purchase parcels.
12 The third priority will be to digitize all sites with federal interest but not federal purchased.
13 A forth priority will be to digitize any sites that DNR manages but does not own and that has federal interests.
14 Backups of personal Geo-databases (both Champaign and Springfield) must done daily. One backup copy should go to a designated location on the DNR network hard drives and one backup should go to CD for storage off site.
15 Proposed changes to one of the personal Geo-databases must be relayed to SDE / Data Manager ASAP so that the changes can be oked and then applied to the other database, maintaining 100% capability between to two.
16 Both personal Geo-databases will be reconciled to 100% coincidence on a weekly basis by the SDE / Data Manager.

(Created February 3, 2004 by Charlie Foor)

Figure 7. Completed IDNR Owned, Managed, and Leased Sites.

1 Anderson Lake [1 4 7 8]
2 Apple River Canyon
3 Argyle Lake [9]
4 Banner Marsh [8 9]
5 Beaver Dam [1]
6 Berryville Shale Glade
7 Big Bend [2 4]
8 Big River [9]
9 Birkbeck [3] (New site as of 6-21-06)
10 Black Crown Marsh
11 Bradford [3]
12 Briscoe Mounds
13 Brown Barrens
14 Burnham Greenway
15 Cache River [4 7]
16 Campbell Pond [1 4]
17 Chain-O-Lakes State Park [1 9]
18 Channahon
19 Chauncey Marsh
20 Clifton [3]
21 Clinton Lake [7 9]
22 Coffeen Lake [8 9]
23 Copperhead Hollow
24 Cypress Pond
25 Deer Pond
26 Des Plaines
27 Des Plaines Game Propagation Center [8]
27 Dickson Mounds Museum
28 Donnelly [8]
29 Double "T" [7]
30 Dublin Highlands [3]
31 Edward R. Madigan
32 Emiquon [4]
33 Fort Massac [9]
34 Friends Creek [2]
35 Fults Hill Prairie
36 Gebhard Woods
37 Giant City

38 **Gifford** [3] **(New site as of 6-21-06)**
39 Goose Lake Prairie
40 Gooseberry Island
41 **Green River** [1 8]
42 Guthrie Cave
43 **Hallsville** [3]
44 Harlem Hills
45 Harry "Babe" Woodyard
46 **Hegewisch Marsh** [6]
47 **Heidecke Lake Fish and Wildlife Area** [9]
48 **Hennepin-Hopper Lake** [6 7]
49 Henry Allan Gleason
50 **Herschel Workman** [3]
51 **Hindsboro** [2 3]
52 Hitts Siding Prairie
53 **Horseshoe Lake - Alexander** [1 8 9]
54 **Hurricane Creek** [2]
55 **Iroquois County** [8]
56 **Iroquois Woods**
57 Jake Wolf Memorial Fish Hatchery
58 **James H. Helfrich Game Propagation Center** [8]
59 **Johnson-Sauk Trail** [9]
60 **Kankakee River** [9]
61 Kankakee River Dam
62 **Kickapoo** [9]
63 **Kidd Lake Marsh** [7] **(New site as of 6-21-06)**
64 **Kinkaid Lake** [9]
65 **Lake DePue** [4]
66 **Lake Le-Aqua-Na** [9]
67 **Lake Murphysboro** [9]
68 Lake Renwick Heron Rookery
69 **Lincoln Trail** [9]
70 **Little Grassy Fish Hatchery** [9]
71 **Little Rock Creek** [2] **(New site as of 6-21-06)**
72 Long Run Seep
73 **Mackinaw River** [8]
74 **Manito** [3]
75 Manito Prairie
76 **Marshall** [1 7 8]
77 Mason State Tree Nursery
78 Matthiessen
79 **Maytown** [3]

80 Mazonia-Braidwood [8]
81 McClure School Shale Glades
82 Mermet [1 8]
83 Middle Fork
84 Milk's Grove [2] (New site as of 6-21-06)
85 Millhurst Dam
86 Millhurst Fen
87 Milroad Marsh [4]
88 Mississippi Palisades [9]
89 Momence Wetlands [9]
90 Moraine Hills
91 Moraine View
92 Morrison-Rockwood [9]
93 Mt. Vernon Game Propagation Center [8]
94 Newton Lake [8 9]
95 Old Plank Road
96 Peabody River King [8]
97 Perdueville [3]
98 Pere Marquette [9]
99 Prairie Bluff
100 Prairie Ridge – Jasper [11]
101 Prairie Ridge – Marion [11]
102 Pyramid [9]
103 Randolph County [9]
104 Ray Norbut [2 8]
105 Red Hills [9]
106 Rice Lake [1 8]
107 Rock Cut [9]
108 Rockton Bog
109 Sahara Woods
110 Saline County [9]
111 Sam Dale Lake [1]
112 Sam Parr
113 Sand Prairie [3]
114 Sand Ridge [2] (New site as of 6-21-06)
115 Sangamon River [2]
116 Sanganois [1 7 8]
117 Sangchris Lake [2 3 4 9]
118 Saybrook [3]
119 Shabonna Lake [1 9]
120 Siloam Springs [9 10]
121 Silver Springs

122 Snakeden Hollow [8]
123 Sparks Pond
124 Spring Lake [7 8 9]
125 Starved Rock
126 Stephen A. Forbes [1 9]
127 Steward [3]
128 Ten Mile Creek [8]
129 Thorn Creek Woods
130 Trail of Tears
131 Tunnel Hill
132 Turkey Bluffs [1]
133 Union County [1 8]
134 Union State Tree Nursery
135 Victoria [3]
136 Walnut Point [9 10]
137 Washington County [9]
138 Weldon Springs
139 Whitefield [3]
140 Wildcat Hollow [2]
141 William G. Stratton [9]
142 William W. Powers
143 Willow Creek [2]
144 Wilmington Shrub Prairie
145 Woodford [8]
146 Yorkville Prairie

NOTE: Sites in BLUE indicate non-federal interest sites.

Priority Ranking of Federal Interest Sites
[1] IDNR Lands with Federal Interest (PR/DJ)
[2] Illinois Habitat Fund
[3] State Pheasant Fund
[4] State Migratory Waterfowl Stamp Fund
[5] State Furbearer Fund
[6] Non-DNR owned Lands with Federal Interest (Land Rights)
[7] IDNR Lands with Federal Interest - (NAWCA)
[8] 100% Wildlife and Fish Eligible Sites
[9] Lake Developments and Major Construction Project (Boat Access) with Federal Participation (DJ only)
[10] Hunter Heritage Funds
[11] Land and Water Conservation Fund (LAWCON)

Figure 8. Status of Remaining Federal Interest Sites.

Site Name	Status	Reason/Issues
Carlyle Lake [4 8 10]	In progress. IDNR ownership parcels and boundary completed.	Majority of this site is leased from the US Army Corp of Engineers (USACE). A great deal of time and effort was spent obtaining paper records from the USACE office in St. Louis, MO during this phase of the project. Need to determine the current lease boundary from agreements and maps. This site will be completed during the next phase of the project.
Eldon Hazlett [9]	In progress. IDNR ownership parcels and boundary completed.	Majority of this site is leased from the US Army Corp of Engineers (USACE). A great deal of time and effort was spent obtaining paper records from the USACE office in St. Louis, MO during this phase of the project. Need to determine the current lease boundary from agreements and maps. This site will be completed during the next phase of the project.
Frinfrock [9] (New site as of 7-17-08)	Not started.	Newer site and just haven't completed yet. This site will be completed during the next phase of the project.
Havana Field Headquarters [9]	Not started.	Haven't completed yet. This site will be completed during the next phase of the project.
Henderson Creek [10] (New site as of 7-17-08)	Not started.	Newer site and just haven't completed yet. This site will be completed during the next phase of the project.
Illini State Park [9]	In progress.	This site will be completed during the next phase of the project.

Kaskaskia River [1 8]	In progress. Federally purchased parcels completed.	None, but site is very large and complex. This site will be completed during the next phase of the project.
LaSalle Lake [9 10]	In progress.	This site will be completed during the next phase of the project.
Lincoln Trail Homestead [9]	In progress.	This site will be completed during the next phase of the project.
Mississippi River [2 4 5 7 8]	In progress.	Majority of this site is leased from the US Army Corp of Engineers (USACE). A great deal of time and effort was spent obtaining paper records from the USACE office in St. Louis, MO during this phase of the project. Need to determine the current lease boundary from agreements and maps. This site will be completed during the next phase of the project.
Rend Lake [8 9]	In progress.	Majority of this site is leased from the US Army Corp of Engineers (USACE). A great deal of time and effort was spent obtaining paper records from the USACE office in St. Louis, MO during this phase of the project. Need to determine the current lease boundary from agreements and maps. This site will be completed during the next phase of the project.
Putney's Landing [9]	Not started.	Site leased from the US Army Corp of Engineers (USACE), Rock Island, IL office. CAN'T COMPLETE SITE UNTIL DETAILED LEASE INFO IS OBTAINED FROM USACE.

Shelbyville [8 9]	In progress. Owned parcels researched and digitized.	Majority of this site is leased from the US Army Corp of Engineers (USACE). A great deal of time and effort was spent obtaining paper records from the USACE office in St. Louis, MO during this phase of the project. Need to determine the current lease boundary from agreements and maps. This site will be completed during the next phase of the project.
Wayne Fitzgerrell [9]	In progress. IDNR ownership parcels and boundary completed.	Majority of this site is leased from the US Army Corp of Engineers (USACE). A great deal of time and effort was spent obtaining paper records from the USACE office in St. Louis, MO during this phase of the project. Need to determine the current lease boundary from agreements and maps. This site will be completed during the next phase of the project.
World Shooting Complex [9]	Not started.	Haven't completed yet. This site will be completed during the next phase of the project.

Federal Priority Ranking of Sites

[1] IDNR Lands with Federal Interest (PR/DJ)
[2] Illinois Habitat Fund
[3] State Pheasant Fund
[4] State Migratory Waterfowl Stamp Fund
[5] State Furbearer Fund
[6] Non-DNR owned Lands with Federal Interest (Land Rights)
[7] IDNR Lands with Federal Interest - (NAWCA)
[8] 100% Wildlife and Fish Eligible Sites
[9] Lake Developments and Major Construction Project (Boat Access) with Federal Participation (DJ only)
[10] Hunter Heritage Funds
[11] Land and Water Conservation Fund (LAWCON)

Project 3 – Mapping in Support of the Comprehensive Wildlife Conservation Plan and Wildlife Conservation Strategies.

Lisa Demeule

Background

Conservation mapping is a valuable and necessary component to natural resources planning by displaying the distribution of conservation practices and data on practice type and size. The mapped practices can then be used both for monitoring as well as targeting future areas. This job will build upon past mapping within the Illinois River Basin to identify conservation easements and the associated practice information in counties not mapped to date. Mapping will be consistent with past protocols, and compliment efforts of federal agencies such as USDA -NRCS and FSA in their mapping efforts on conservation practices. This will allow for data sharing and expansion of the Illinois Conservation Practices Tracking System (ICPTS).

Data in the ICPTS data set are essential for satisfying one of the eight elements of the CWCP required by Congress, specifically monitoring the effectiveness of the conservation actions (Element 5).

This project expands the Illinois Conservation Practices Mapping System (ICPTS) to all of Illinois. As a fundamental component of any natural resources planning, the ICPTS will provide field managers, administrators, and planners with critical information on current conservation easements.

OBJECTIVES:

1. Update and expand the Illinois Conservation Practices Mapping System (ICPTS) to cover the entire State of Illinois. This will include assessment of current mapping, initiating mapping in sequential order based on a prioritized listing, and working with individual counties to implement standard mapping protocols as defined in ICPTS. Multiple counties will be mapped as prioritized by staff utilizing the CWCP within the IDNR Regional Offices.

2. Maintain and update all State Conservation Reserve Enhancement Program sites and include all federal CRP and CREP sites, other Federal farm program sites as made available, Federal Corps of Engineers Habitat Rehabilitation and Enhancement Project (HREP) sites and other Corps sites as available, and projects sites available through cooperative agreements with state natural resource agencies. Initial activities will be focused on acquisition of Corps HREP sites and expansion into the Kaskaskia Watershed.

3. The IDNR Habitat Team has been establishing habitats on private lands and public sites since 1998. Operating from 4 locations, the Habitat Team Program offers assistance in establishing and managing optimum wildlife habitat. Assistance includes providing seed and/or equipment, planting, spraying herbicides, site preparation, mowing and prescribed burning. When fully staffed for the entire planting season, approximately 350 cooperators are assisted covering 3,500 - 4,000 acres in 40 or more counties. These sites have never been geo-referenced or mapped on a statewide basis. We will initiate development of a complete, accurate, and fully metadata-attributed GIS data set of all historical and current properties having wildlife habitat created or enhanced by the IDNR Habitat Team including the GPS citing and recording of practice locations and relevant data. It is estimated that 7 counties will be completed within the grant period.

Expected Results and Benefits

Mapping will show conservation practices and their spatial relationships between various programs. Data on the sites will document habitat availability for wildlife, as well as potential water quality management capabilities.

Information gathered from this mapping will assist in targeting critical habitat needs for future program initiatives.

Procedures and Results

The Department will work with all counties in a sequential, prioritized manner to implement ICPTS. The focus has historically been in the Illinois River Basin, but has begun to incorporate other critical areas of the state such as the Kaskaskia River Basin and the Upper Little Wabash Basin where significant conservation planning and/or activities are taking place. Given that USDA-funded conservation easement data are maintained in paper format by county USDA Service Center offices, generally without delineation by watershed, and that ICPTS is being developed incrementally as a statewide database, the data gathering activities under this job are planned as countywide efforts. However, where particular basins are of special interest, such as the Kaskaskia or Illinois, and where feasible, the gathering and entry of new and historical data records into ICPTS for a given county will be prioritized by watershed.

USDA Farm Bill Conservation Programs

The use of conservation easements as a resource management tool for protecting soil, water quality and providing wildlife benefits has grown substantially nationwide in recent years. A notable example of this trend is Illinois' Conservation Reserve Enhancement Program (CREP) where over 150,000 acres of conservation easements have been established since the implementation of the program in 1998. The intent of this extensive conversion of agricultural land is to address four major natural resource goals highlighted in the CREP agreement between the USDA and the State of Illinois. These goals include:

- Reduce silt and sediment entering the mainstem Illinois River by 20 percent
- Reduce phosphorus and nitrogen in the Illinois River by 10 percent
- Increase in the Illinois River watershed, by 15 percent, the populations of waterfowl
- Increase the native fish and mussel stocks by 10 percent in the lower reaches of the Illinois River (Peoria, LaGrange, and Alton reaches)

Considerable data exist on the numerous enrollments in CREP , such as summaries by county and program of total number of contracts, total acres enrolled, state and federal funds expended, and the types of conservation practices implemented. Yet more data, especially for investigating the influence of these enrollments at various landscape scales, are needed to accurately assess the efficacy of these practices towards achieving the goals established for the program. Knowing exactly where easements are being established, the type of practices implemented, their extent, planned duration, and how relate to other nearby land in conservation is essential information in assessing the conservation program, whether at a site-specific, a local-or at a watershed scale.

One significant attempt to address this need for data has been the development of a geospatial tracking system by the Illinois Department of Natural Resources (IDNR), designed to comprehensively store information on the precise location and nature of various active conservation practices within Illinois The Illinois Conservation Practices Tracking System (ICPTS), initiated in 2000 by IDNR and the University of Illinois Extension, in close cooperation with the USDA-Farm Service Agency (FSA), consists of a geospatial database system coupled with a relational database to document the location,

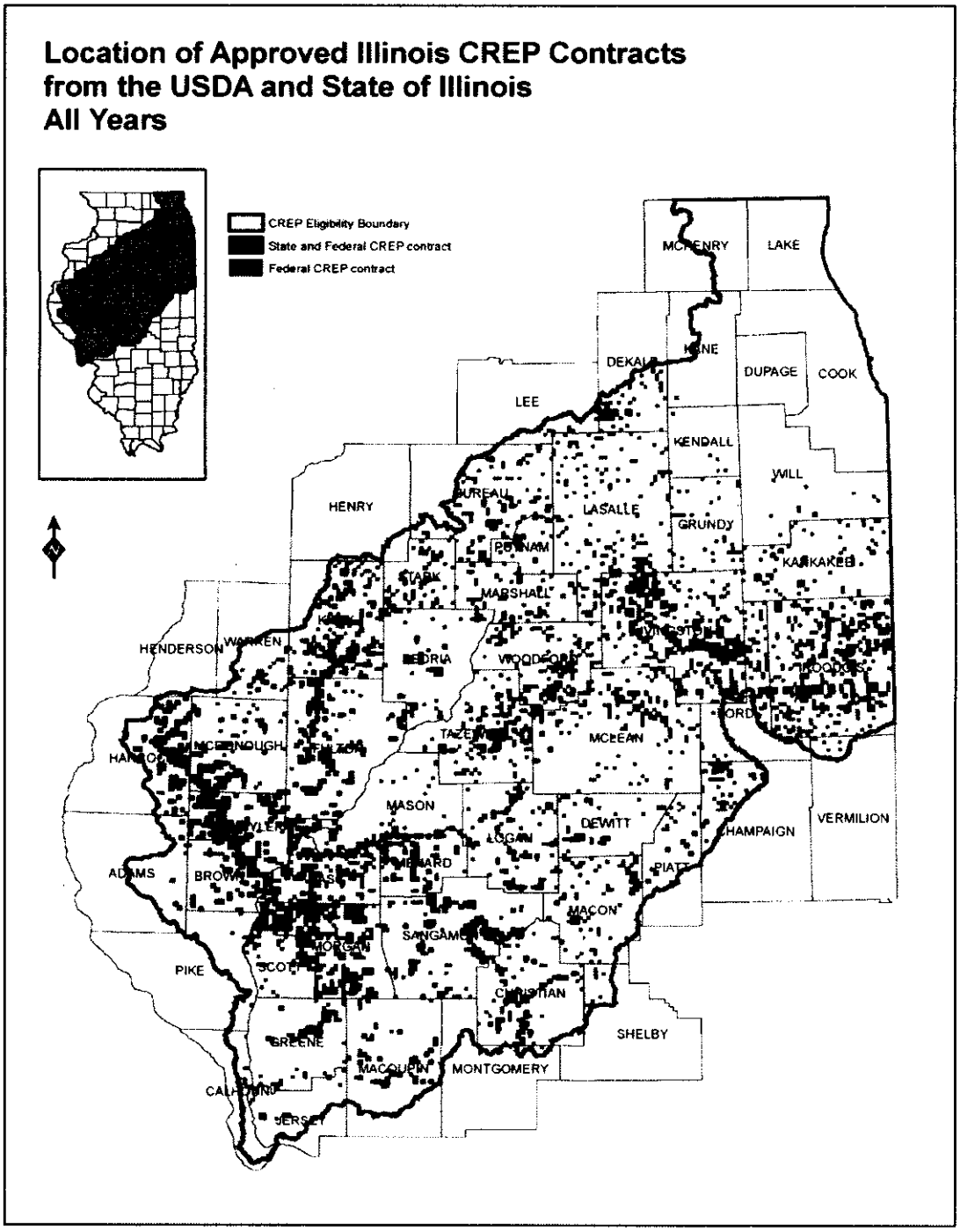
type , and planned longevity of all conservation practices implemented under USDA Farm Bill Conservation Programs: Illinois CREP, Conservation Reserve Program (active and historic), the environmental Quality Incentives Program (EQIP) and the Wetland Restoration Program (WRP) as well as a variety of state sponsored conservation programs.

Tracking Illinois CREP Enrollments

Since the inception of CREP in Illinois in 1998, efforts have been made to document the location and nature of active enrollments in the program as well as that of other active USDA conservation easements (i.e., CRP, EQIP, WRP, WHIP) throughout the Illinois River basin. This effort has employed three information systems managed by the Illinois Department of Natural Resources (IDNR), the earliest of which is the GIS/PC-based CREP Enrollment Database. Unlike the aforementioned Illinois Conservation Practices Tracking System, this database documents the *general* location of all Illinois CREP contracts (USDA and State), based upon the Illinois Public Land Survey System section location(s) of practices implemented under those enrollments. The CREP Enrollment Database was developed primarily as a means to track the progress of enrollments in the Federal and State sides of Illinois CREP by incorporating new enrollment data gathered monthly from CREP signup reports submitted by Illinois' FSA county service center offices to the Illinois State FSA office and subsequently provided to IDNR. Monthly Federal updates are no longer made to the database, as the FSA no longer tracks and provides to us. However, State enrollment updates are still made. The system similarly incorporates like data from all enrollments in the State's side of CREP by culling information from IDNR's more detailed, relational State CREP contract database.

These initial CREP Enrollment databases continue to serve an important role for agencies involved supporting the Illinois CREP by offering the means to visualize and report on the extent of the program's success in the Illinois River basin, through products such as enrollment status maps and tabular summaries. It also continues to be a good source of general conservation easement location data for simulation models, watershed planning, and other analyses relevant to the Illinois River basin and CREP assessment work.

Figure 9. Location of Approved Illinois CREP Contracts from the USDA and the State of Illinois.



CREP contract enrollments for the Illinois River basin. Red squares denote section (1 mile^2) and the area in which one or more enrollments occur.

Development of the Illinois Conservation Practices Tracking System (ICPTS)

While the CREP Enrollment Database has been developed to serve as a comprehensive source of information on the general location of all enrollments (Federal and State) of the Illinois Conservation Reserve Enhancement Program, it's content provides only a limited glimpse into how the entire Illinois River basin landscape is changing through the many conservation programs currently offered by government agencies and non-governmental organizations within Illinois. To address the need for a more comprehensive, consistent, and detailed picture of how conservation programs may be impacting the water quality, habitat, and fish and wildlife within the basin, a comprehensive approach to tracking conservation practices was required for the Illinois River basin.

Following a review of information maintained digitally on CREP and other conservation programs in the Illinois River basin, and based on feedback from partner agencies involved in conservation programs within the Illinois River basin, work began in the summer of 2000 to design and develop the **Illinois Conservation Practices Tracking System (ICPTS)** Prior to this time only one or two county, program-specific efforts had been made to use Geographic Information System software to track the location of conservation easements within the Illinois River. Most data on conservation efforts within the Illinois River basin and throughout Illinois were still maintained in paper files scattered in the county and state offices maintained by agencies such as the USDA and IDNR. The general inaccessibility of these data was one of the critical information gaps that Illinois CREP assessment team identified while developing the monitoring program for Illinois CREP in 1999.

The ICPTS is a PC-based spatial and relational database, designed to individually track the precise location, nature, and duration of all active conservation practices implemented within the Illinois River basin. Since the inception of the ICPTS in 2000, the Illinois Department of Natural Resources and University of Illinois Extension, initially through funding from the State of Illinois portion of CREP and later through this project, have collaborated to design and develop the content of the system. In order to create a comprehensive system, the support of the many partner agencies involved in Illinois River conservation and restoration work was essential. Thus, this effort has been conducted in close cooperation with the Illinois State FSA and county FSA offices, as well as with Illinois Soil and Water Conservation District county offices, who administer enrollments on the State side of CREP, as well as contracts of other state-funded conservation incentive programs.

The process of gathering data on each active conservation contract consisted of reviewing the enrollment contract and associated aerial photograph of the site from a producer or contract file, then digitizing the footprint of each individual conservation practice, as noted on the aerial photograph, using ESRI's ArcGIS9.2 software with statewide DOQQ aerial imagery as a basemap. Attribute data on these practices and the contracts under which they were implemented, were then stored in the ArcGIS shapefile and in a related relational database maintained initially in Corel's Paradox database software and later converted into Microsoft Access under this project. The specific attribute data gathered consists of the program and agency administering the contract, the nature of the practice, the date of enrollment, and planned duration and acreage of each practice as found on file with the USDA or State. Given that the primary objective of ICPTS is to document how Illinois' landscape is changing through conservation activities, potentially sensitive data, such as contract dollar amounts, or landowner contact information were omitted from the information gathered. Furthermore, all data gathered for ICPTS have been treated, from the onset of this project, as information owned by the agency administering the contract, rather than by IDNR or the University of Illinois Extension. Thus, the agencies providing the information to ICPTS possess the ultimate authority in deciding who may

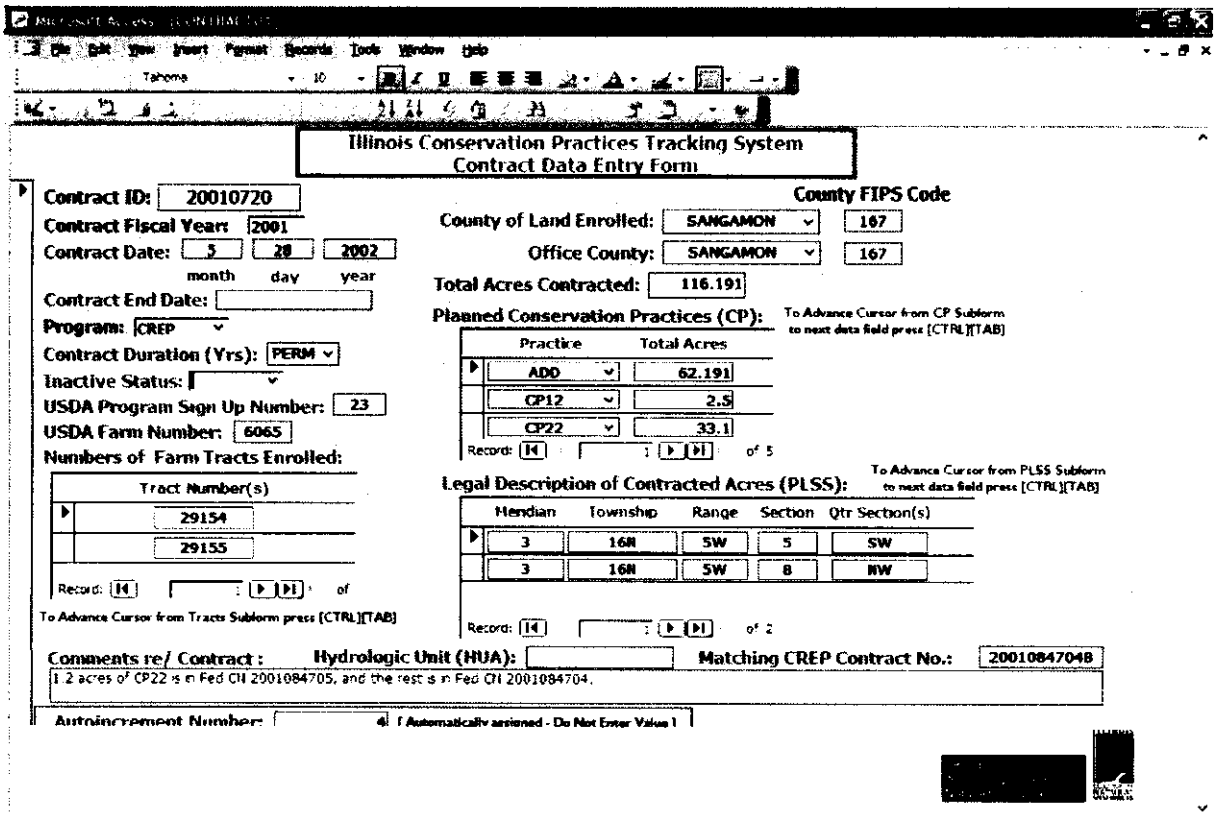
have access to this information once it has been gathered digitally.

A brief summary of data collection and digitizing techniques will be given here to give an idea of how data gets into the ICTPS. The ICPTS training manual provided full details and explanations on how to digitize and data entry.

DataCollection

The data that is collected for the Illinois Conservation Practice Tracking System is entered into GIS software called ArcGIS. To digitize an enrollment you will need to have the following layers in ArcMap: TRS (township range section), qquaadlocator (to locate the quarter quad number of the respective Mr. SID file), the background imagery (in Mr. SID format) and the CREP layer that you will be creating new entries in. In every FSA office there will be a member of the staff, usually the Program Technician (PT) who works specifically with Conservation. This person should be able to answer most of any questions. Counties organize their contract folders in a variety of different ways. Contract folders are arranged by alphabetical order or by contract number order. It is helpful to ask the PT to print out a list of all active CREP contracts. When a contract has been completed it is entered into both components of the database (ArcGIS and MSAccess), then checked off. In addition to displaying every contract by contract number, this list has proven to be helpful to confirm other contract information that is collected such as: farm number, program year, signup number, and acres accepted.

Figure 10. Illinois Conservation Practices Tracking System Data Entry Form in Microsoft Access.



ArcGIS and Access are the two database components comprising the Illinois Conservation Practice Tracking System (ICPTS). ArcGIS is the component that captures the geospatial information related to a conservation contract. Access is the component of the ICPTS for tabular data. ArcGIS and Access share some common fields, such as the contract number, program and the practice. These overlapping fields have proven to be helpful when trying to find a contract where discrepancies might occur in our database due to data entry error. Within Access there are a few fields that have "lookup" tables associated with them with specific parameters. This means that if something is entered into a data entry blank that is not listed in the associated lookup table as an accepted value, Access will not accept it.

The information entered into Access is usually found in one of four places:
To enter a new contract into Access, you will need to move to a blank record. To do this, you will need to use the arrows found in the toolbar at the bottom of the form. The quickest way to query the Access database, you need to click on the "find" icon in the top toolbar. This would be useful to quickly locate a record by searching the contract number. A more efficient query method is to click on the "queries tab" and create your own query by selecting the appropriate fields and criteria.

Entering Data in ArcGIS and Access

The information located within a USDA Service Center office contract folder varies greatly from county to county and often from contract to contract. There are only a few forms from which we need to collect information. The CRP-1, CRP-2 and the contract map (figures 4,5,6) are the three main sources of information that is needed for the Illinois Conservation Practices Tracking System (ICPTS), although you may occasionally find it necessary to access additional file forms to complete the data entry process.

For specific Data Entry methods, please refer to the ICPTS Final Report training Manual, located at the IDNR office. Contact through Lisa Demeule.

ArcGIS and Access are the two database components comprising the Illinois Conservation Practice Tracking System (ICPTS). ArcGIS is the component that captures the geospatial information related to a conservation contract. Access is the component of the ICPTS for tabular data. ArcGIS and Access share some common fields, such as the contract number, program and the practice. These overlapping fields have proven to be helpful when trying to find a contract where discrepancies might occur in our database due to data entry error. Within Access there are a few fields that have "lookup" tables associated with them with specific parameters. This means that if something is entered into a data entry blank that is not listed in the associated lookup table as an accepted value, Access will not accept it.

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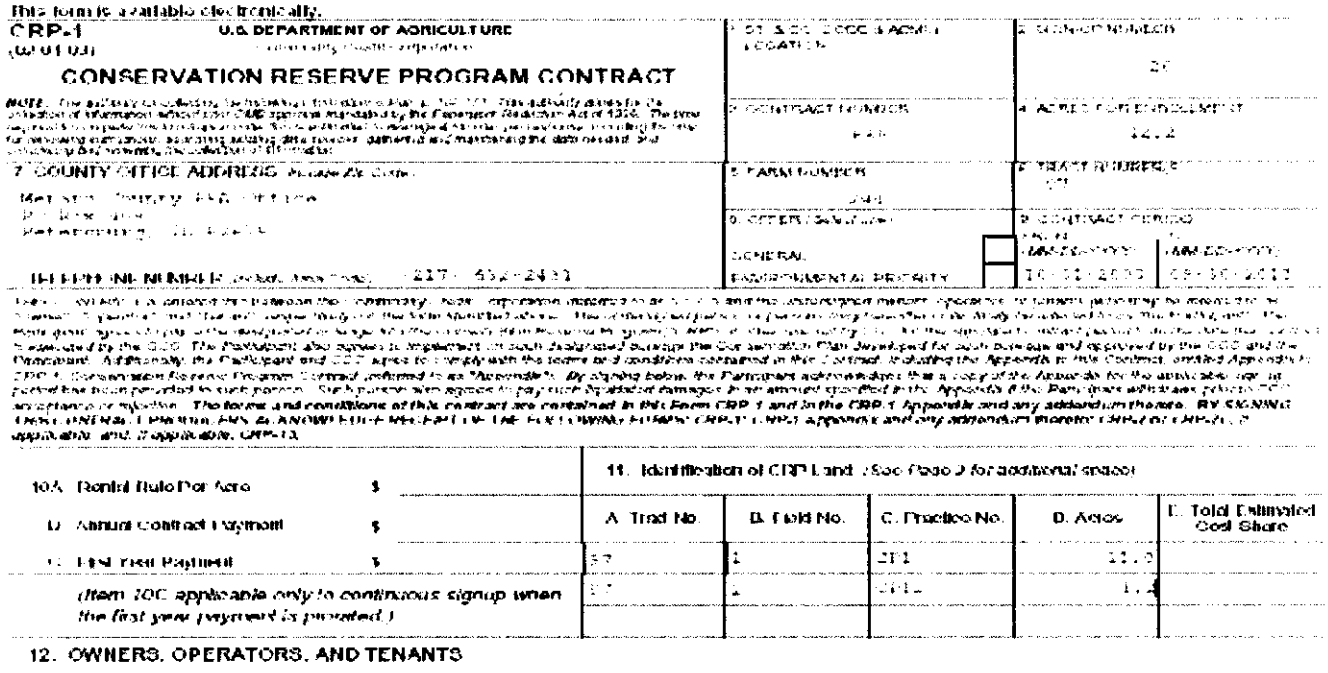
To enter a new contract into Access, you will need to move to a blank record. To do this, you will need to use the arrows found in the toolbar at the bottom of the form. The quickest way to query the Access database, you need to click on the "find" icon in the top toolbar. This would be useful to quickly locate a record by searching the contract number. A more efficient query method is to click on the "queries tab" and create your own query by selecting the appropriate fields and criteria.

Entering Data in ArcGIS and Access

The information located within a USDA Service Center office contract folder varies greatly from county to county and often from contract to contract. There are only a few forms from which we need to collect information. The CRP-1, CRP-2 and the contract map (figures 4,5,6) are the three main sources of information that is needed for the Illinois Conservation Practices Tracking System (ICPTS), although you may occasionally find it necessary to access additional file forms to complete the data entry process. For specific Data Entry methods, please refer to the ICPTS Final Report training Manual, located at the IDNR office. Contact through Lisa Demeule.

Figure 11. Top Half of CRP-1 Form. Contains the majority of information required.



This form is available electronically.

CRP-1 (02-01-03) U.S. DEPARTMENT OF AGRICULTURE

CONSERVATION RESERVE PROGRAM CONTRACT

1. ST. & CO. (CCC & ACME) LOCATION	2. SIGN-UP NUMBER: 26
3. CONTRACT NUMBER: [illegible]	4. ACRES FOR ENROLLMENT: 12.2
5. FARM NUMBER: [illegible]	6. TRACT NUMBER: [illegible]
7. COUNTY OFFICE ADDRESS (Include Zip Code): [illegible]	8. OFFER (Select Type): GENERAL / ENVIRONMENTAL PRIORITY
9. CONTRACT PERIOD: (MM-DD-YYYY) 10-01-2003	(MM-DD-YYYY) 09-30-2013

TELEPHONE NUMBER (Include Area Code): 217-[illegible]

[illegible]

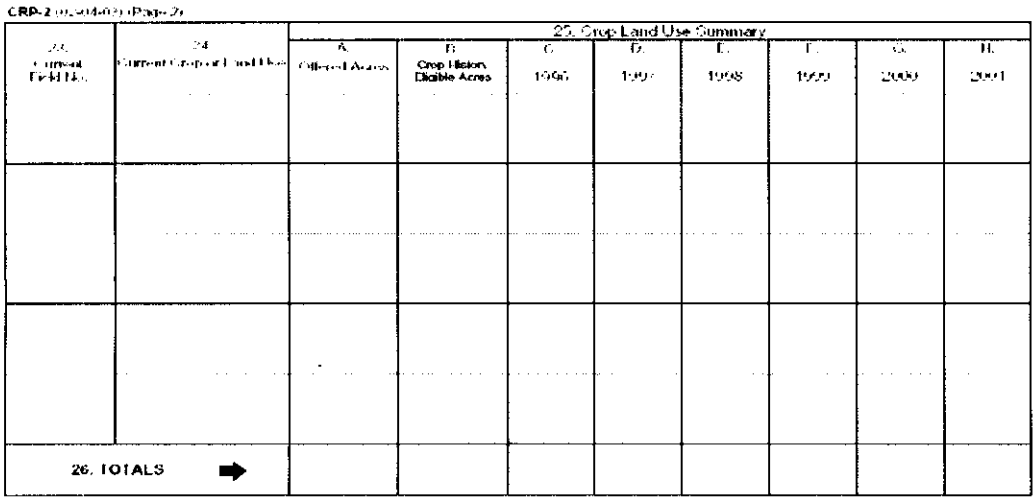
10A. Rental Rate Per Acre	$
D. Annual Contract Payment	$
C. First Year Payment	$
(Item 10C applicable only to continuous signup when the first year payment is prorated.)	

11. Identification of CRP Land (See Page 2 for additional space)

A. Tract No.	B. Field No.	C. Practice No.	D. Acres	E. Total Estimated Cost Share
[illegible]	1	CP1	11.0	
[illegible]	1	CP1	1.2	

12. OWNERS, OPERATORS, AND TENANTS

Figure 12. Top Half of CRP-2 Form. The cropping history for each field in the conservation practice contract can be found here.



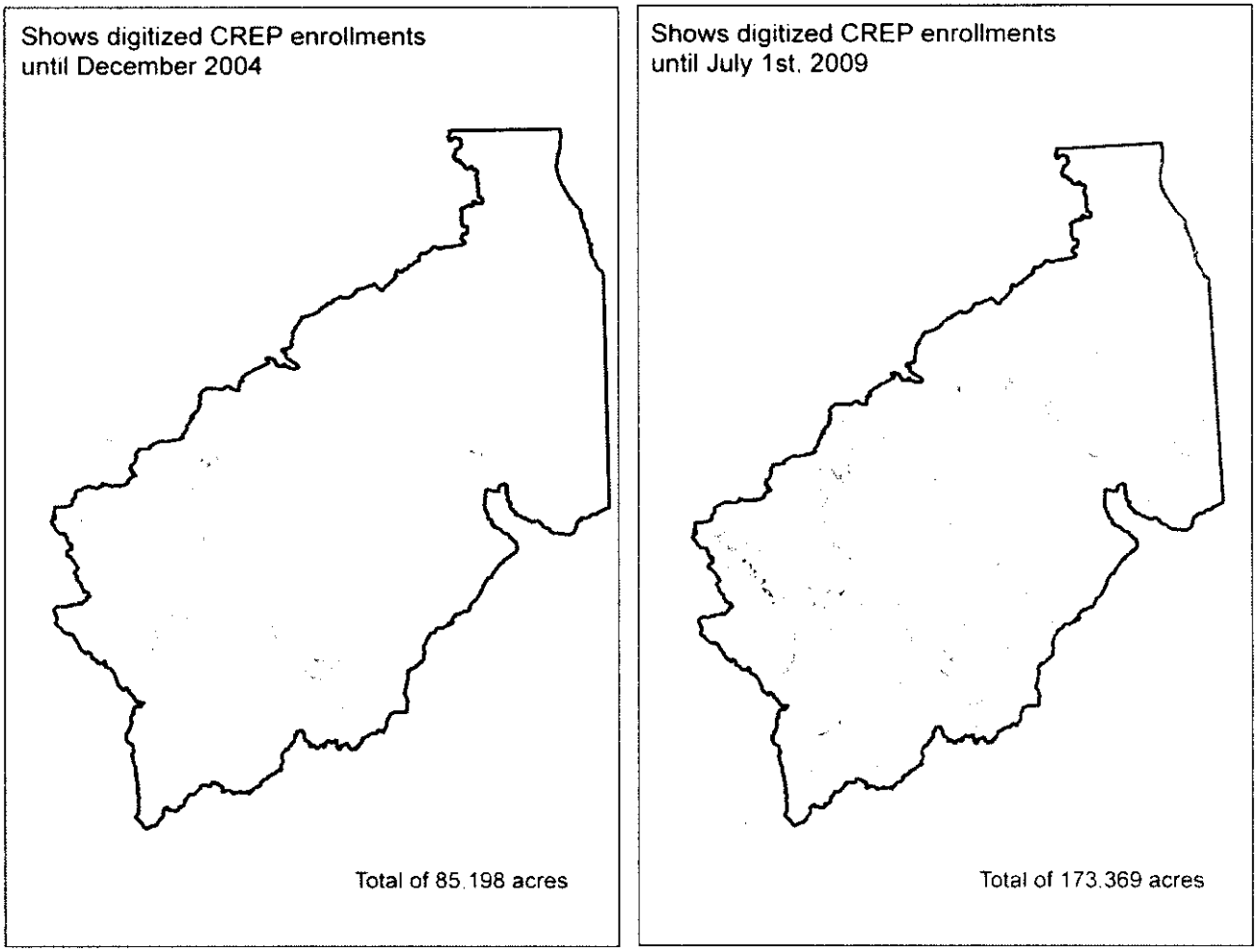
CRP-2 (02-04-03) (Page 2)

23. Current Field No.	24. Current Crop or Land Use	25. Crop Land Use Summary: A. Offered Acres	B. Crop History Eligible Acres	C. 1996	D. 1997	E. 1998	F. 1999	G. 2000	H. 2001
26. TOTALS ➡									

Final Reporting

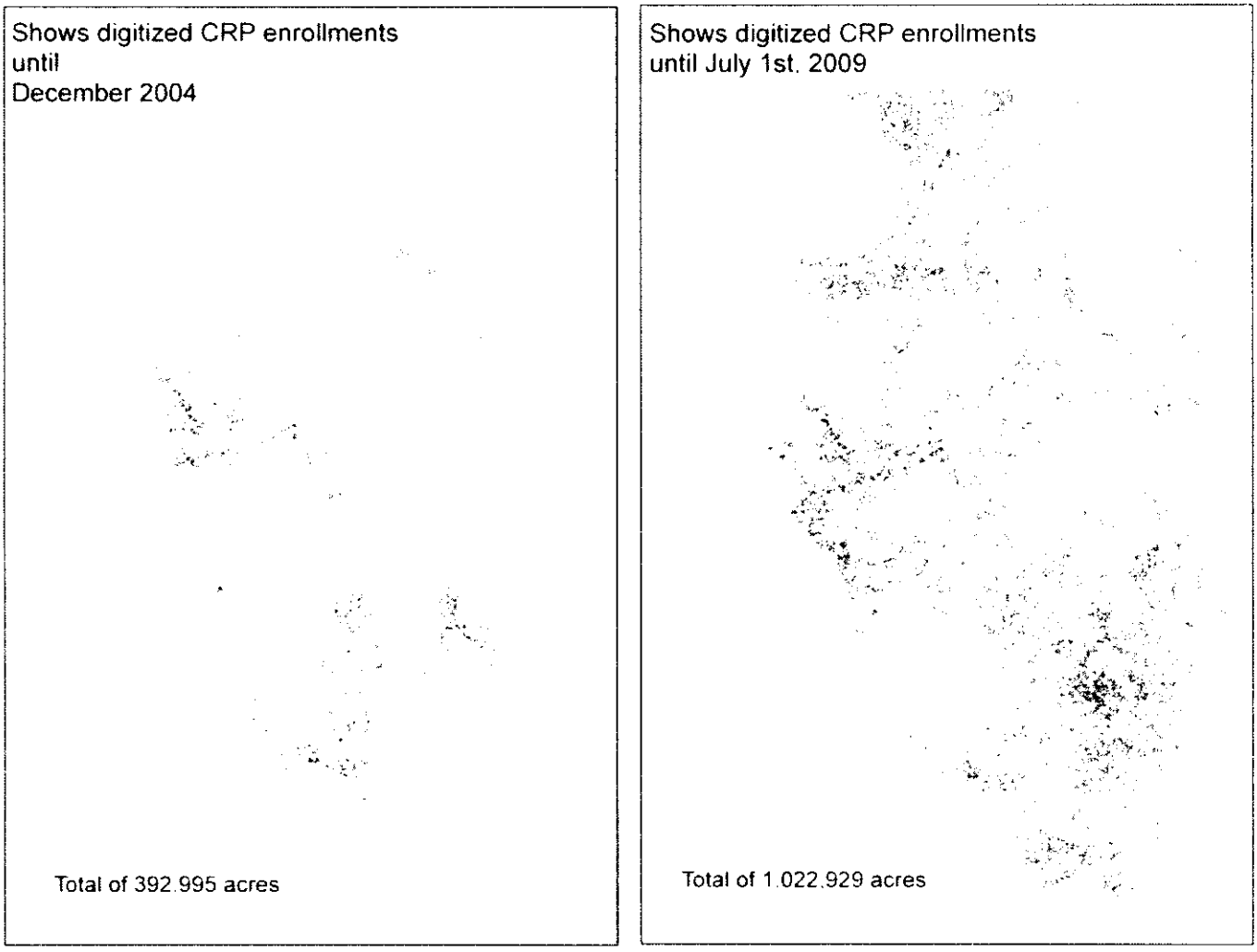
The following 2 maps show what has been mapped for CREP. 88,171 acres were added to the ICPTS.

Figure 13. CREP Enrollments.



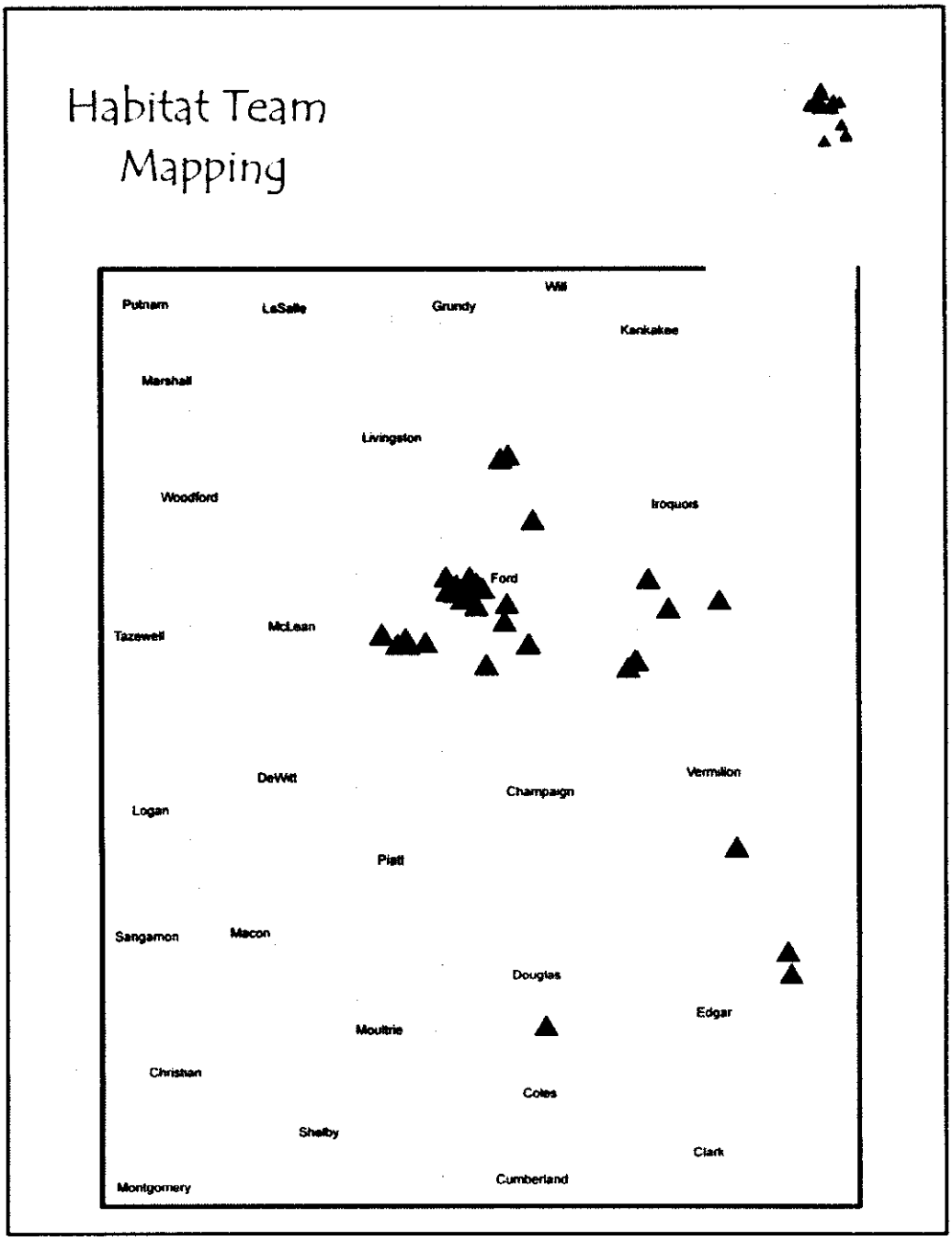
The following 2 maps show what has been mapped over for CRP. Every county was updated, and new records were added to all other counties. 629,934 acres were added to the ICPTS.

Figure 14. CRP Enrollments



The following map shows the start of the creation of the Spatial Database for the Habitat Team Program. Initial digitizing reflects the locations of practices implemented for the period of 2006-2007. The accompanying database tracks the practice type, location, landowner, date, and other relevant information. More progress hasn't been made on this project yet, as the Habitat Team Program underwent some major administrative changes. Future plans are underway to incorporate monthly updates to the database.

Figure 15. Spatial Database for the Habitat Team.



SUMMARY, RECOMMENDATIONS, AND FUTURE OF THE ICPTS

Conservation Practices mapping began in 2000. Currently, all counties have been mapped for Federal Conservation Reserve Program (CRP)), Federal and State Conservation Reserve Enhancement Program (CREP) has been mapped in every county at least once, but needs updating. Illinois' Conservation 2000 Program, Environmental Quality Incentive Program (EQIP) and the Wetland Reserve Program (WRP) have been mapped for a small selection of counties. All counties will need to have Quality Assurance / Quality Control conducted and updates performed before being fully incorporated.

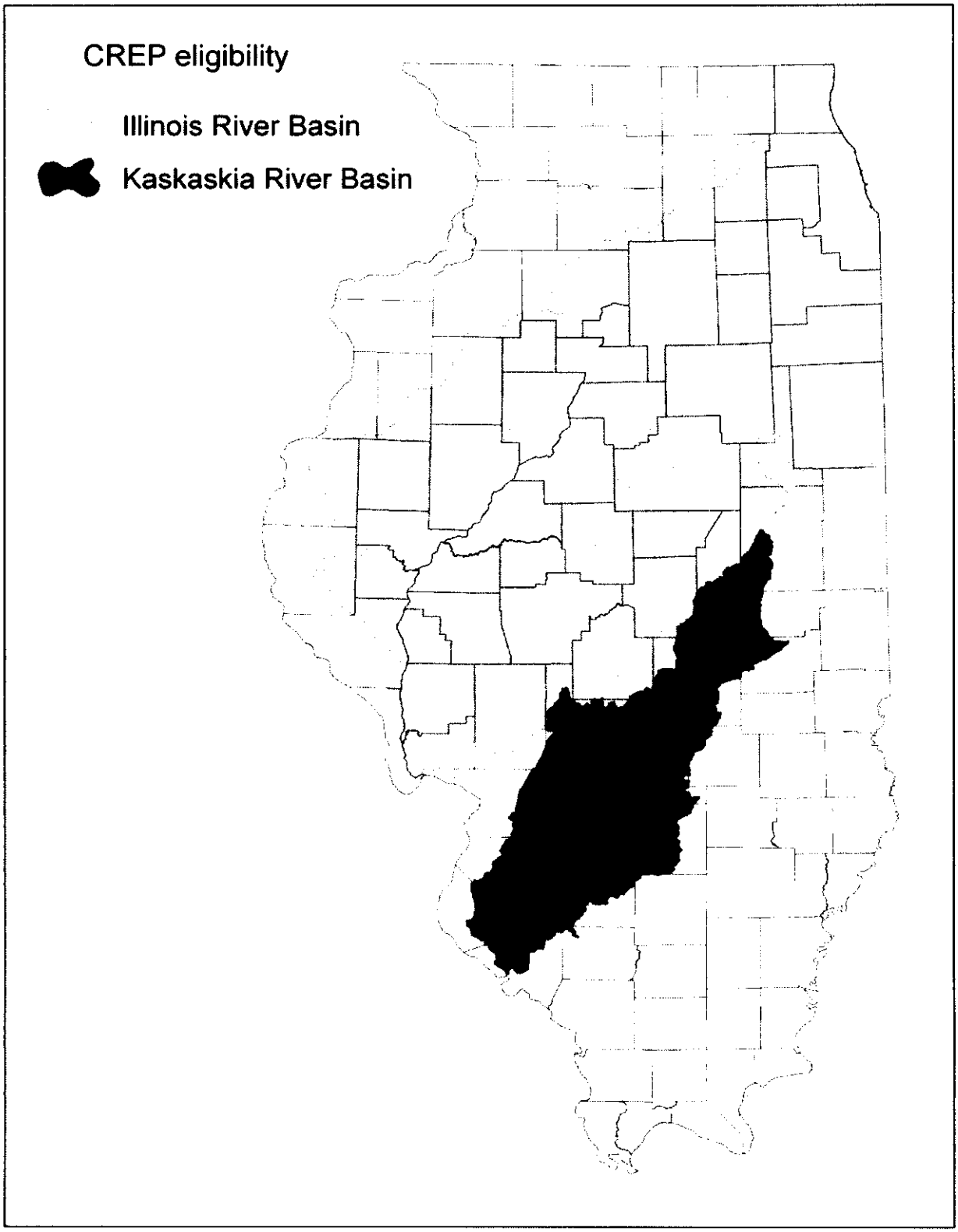
In the future, a focus needs to be on basic data base maintenance tasks needed to keep the ICPTS current with changes in enrollments and growing towards becoming a statewide system. Distribution of the ICPTS data should continue to be coordinated with Illinois FSA's State GIS Specialist to ensure compatibility with FSA's GIS protocols and applications and their Common Land Unit (CLU) data layer. The ICPTS should be modified to improve compatibility with FSA's county GIS protocols. Where, and if possible, the newly certified county CLU data layers and recent FSA digital aerial photography will be used as a more detailed basemap for digitizing new conservation practice boundaries. These and associated efforts should remain priorities of the ICPTS project in order to provide a tool that ideally will significantly add value to the GIS resources available to USDA Service Center staff and make their daily operations more efficient.

In summary, growth in the ICPTS data has greatly accelerated. The system's design has also served as a model for new, complementary conservation tracking systems that, when taken cumulatively, are bringing Illinois conservation program administrators, planners, and researchers closer to a full picture of the extent and impact of conservation work in the Illinois River basin. Data from the ICPTS have also begun to be applied for assessment and research, such as the examination of the wildlife benefits provided by CREP wetland restoration projects, assessment of the sediment loading reduction provided by CREP in the Illinois River basin relative to alternative scenarios for retiring highly erodible land, and the potential of using satellite imagery to detect changes in land cover with possible application towards assessing program compliance.

Thus, the ICPTS is steadily moving towards achieving the project's principal goal of providing researchers, managers, and planners with the necessary baseline data for assessment, as well as a tool that will aid partner agencies in conservation in improved planning, implementation, and coordination of watershed management projects within the Illinois River basin, and provide a means to visualize the extent and cumulative impact of conservation programs within the Illinois River basin.

The need is stronger than ever to have a reliable, up-to-date statewide layer for modeling and targeting purposes. With the addition of CREP into the Kaskaskia River Basin, efforts need to be put forward to try and have enrollments digitized as soon as they become approved.

Figure 16. CREP Eligibility.



State of Illinois
Annual Performance Report

PROJECT NUMBER: T-17-P-001

PROJECT TITLE: ENHANCEMENT AND INTEGRATION OF NATURAL RESOURCE INFORMATION SYSTEMS IN SUPPORT OF ILLINOIS' COMPREHENSIVE WILDLIFE CONSERVATION PLAN.

REPORT PERIOD: September 30, 2007 through September 29, 2008

PROJECT 1: Updating the Biological Tracking and Conservation System (Biotics 4) and the Natural Areas Tracking System (NATS).

During this reporting period, one data specialist continued to log, enter, and map threatened and endangered (T&E) faunal data received by the Illinois Natural Heritage Database Program into the Biological Tracking and Conservation System (Biotics 4) database as part of a multi-year effort to update information for use within the Illinois Wildlife Action Plan. The specialist was responsible for entering faunal data received by the program, as well as for remapping existing occurrences into meaningful polygons under the new Heritage data methodology.

Tthe data specialist processed approximately 546 faunal records including both new T&E faunal population occurrences and updates to existing faunal T&E populations. All records were screened for accuracy under an established quality control process. The data specialist also processed approximately 463 community and miscellaneous (rookery, large forest block, unusual animal concentration) records. Those records were also screened for accuracy.

Data specialists were also responsible for logging, entering data, and mapping information on Illinois Natural Areas Inventory (INAI) sites and high quality natural communities. During this reporting period, data specialists processed 542 INAI site records.

Under match time, IDNR staff completed data entry and/or mapping for 639 E&T records and 823 Illinois Natural Areas Inventory (INAI) site records. IDNR

staff also performed quality control/quality assurance on 657 faunal records and 341 INAI records entered by data specialists.

Status: This project is ongoing.

Project Lead: Tara Kieninger, IDNR
Date Submitted: 12/03/08

PROJECT 2: Mapping of Illinois Department of Natural Resources' Owned, Managed, and Leased Properties.

During the last year, our current staff of two full time, two part time, and one hourly employee have completed a total of 41 sites (6 federal or special interest, 13 second priority sites, and 22 non-federal interest or state sites). Top priority sites included those which have parcels that were acquired using federal funds. The second priority sites include those with lake development and major construction projects (boat access) with federal participation. The next priority listing of sites includes those which are adjacent too or near already complete federal interest sites, are greater than 2,000 acres in size, are highly used by the public (>500,000 people annually), or are satellite or principle sites of already completed sites. To date, a total of 143 out of 355+ IDNR sites have been completed. This included 73 of the now 83 top priority federal or special interest sites, 27 of the 35 second priority federal interest sites, and 43 of 97 priority state sites.

The 10 remaining top priority federal sites contain a portion of land that is leased from a either a private company or other agency (i.e. Army Corps of Engineers, Central Illinois Public Service, Ameren IP) and managed by IDNR. The legal description information for the majority of these sites (which can be difficult to obtain for some of the older sites) has finally been obtained from the leasing agency. These sites are currently being digitized and will be completed by the end of the contract. A digitizing methodology and user manual is has been developed for the project and will be updated as needed. Quality assurance/quality control (QA/QC) methodology and procedures, Federal Geographic Data Committee (FGDC) compliant metadata, database fields, forms, and tables have also been developed and will be further refined as necessary. The emphasis during the remaining time on this contract will be spent on completing the QA/QC for completed sites.

Status: This project is ongoing.

Project Lead: Charlie Foor, IDNR
Date Submitted: 12/15/08

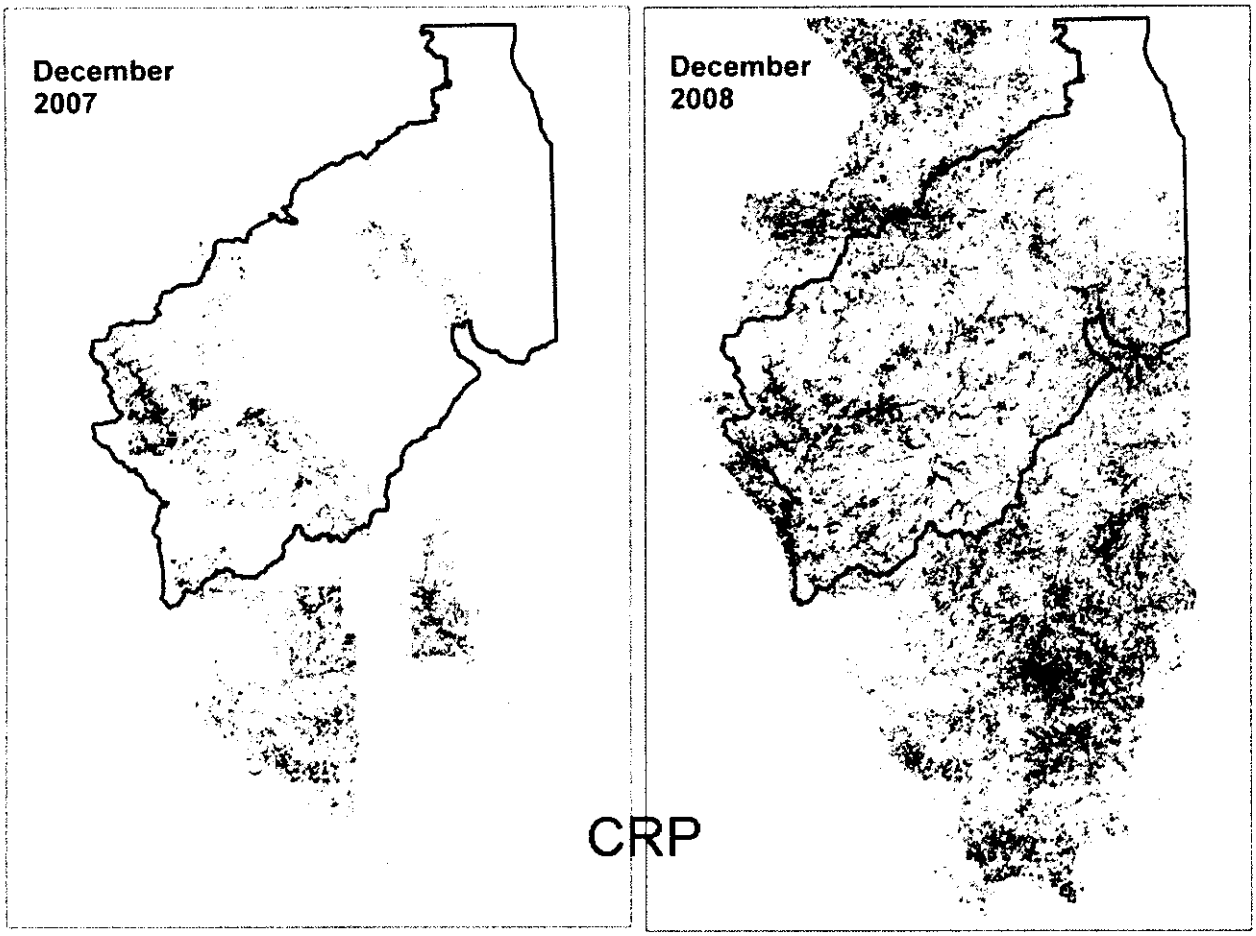
PROJECT 3: Mapping in Support of the Comprehensive Wildlife Conservation Plan and Wildlife Conservation Strategies.

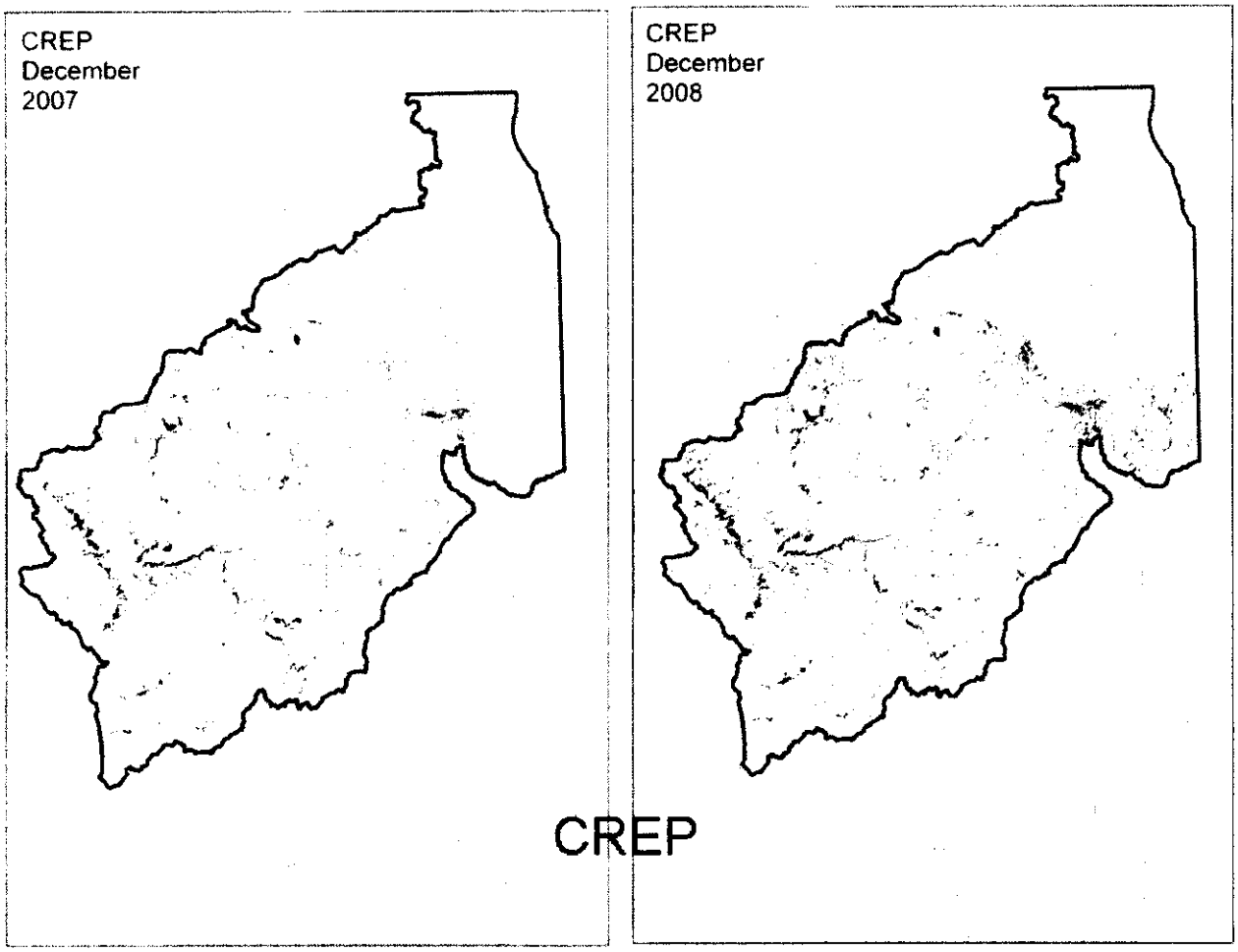
Expand the Illinois Conservation Practices Mapping System (ICPTS) to work towards completed counties within the Illinois River Basin. This will include the assessment of current mapping protocols as previously defined as part of a multi-year effort to update information in the ICPTS

Conservation mapping is a valuable and necessary component to natural resources planning by displaying the distribution of conservation easements and providing associated data on type and size of practices. As a fundamental component of any natural resources planning, the ICPTS will provide field managers, administrators and planners with critical information on current conservation easements. Currently all conservation mapping work through the ICPTS initiative is being accomplished in the Illinois River Basin. Expansions will incorporate other critical areas of the state where significant conservation planning and/or activities are taking place. Given that USDA-funded conservation easement data are maintained in paper format by county USDA Service Center offices, and that ICPTS is being developed incrementally as a statewide database, the data gathering activities are planned as countywide efforts.

This job builds on past mapping within the Illinois River Basin to identify conservation easements and the associated practice information in counties not mapped to date. Mapping shows conservation practices and their spatial relationships between various programs. Data on the sites will document habitat availability for wildlife, as well as potential water quality management capabilities. Information from this mapping project will assist in targeting critical habitat needs for future program initiatives. Mapping will be consistent with past protocols, and compliment efforts of federal agencies such as USDA – NRCS and FSA in their mapping efforts on conservation practices. This will allow for data sharing and expansion of the Illinois Conservation Practices Tracking Systems (ICPTS).

The following images show the mapping progress that has been made:


December
2007
December
2008
CRP



Status: This project is ongoing.

Project Lead: Rick Mollahan, IDNR
Date Submitted: 12/08/08

State of Illinois
Annual Performance Report

PROJECT NUMBER: T-17-P-001

PROJECT TITLE: ENHANCEMENT AND INTEGRATION OF NATURAL RESOURCE INFORMATION SYSTEMS IN SUPPORT OF ILLINOIS' COMPREHENSIVE WILDLIFE CONSERVATION PLAN.

REPORT PERIOD: September 30, 2006 through September 29, 2007

PROJECT 1: Updating the Biological Tracking and Conservation System (Biotics 4) and the Natural Areas Tracking System (NATS).

Data specialists, which were hired in mid- to late-June of 2006, continued to log, enter, and map threatened and endangered (T&E) faunal data received by the Illinois Natural Heritage Database Program into the Biological Tracking and Conservation System (Biotics 4) database as part of a multi-year effort to update information for use within the Illinois Wildlife Action Plan. During this reporting period, there were two data specialists on staff. The data specialists were responsible for entering faunal data received by the program, as well as for remapping existing occurrences into meaningful polygons under the new Heritage data methodology.

For this reporting period, the data specialists processed approximately 1,078 faunal records including both new T&E faunal population occurrences and updates to existing faunal T&E populations. All records were screened for accuracy under an established quality control process.

Some of the processed records were existing faunal occurrences that were remapped under the new Heritage data methodology. In 2002, all original T&E point locations were brought into the new Biotics 4 software via buffering. The size of the buffer was based on the accuracy of the locational data provided. In an effort to establishing more meaningful polygonal locations for existing records, every faunal T&E location is being remapped following a thorough review of all existing data and documentation. During this reporting period, faunal records from 98 of 102 Illinois counties were remapped, completing the

faunal remapping project. Faunal records from the remaining 4 counties (Alexander, Hardin, Johnson, and Massac) were remapped during the last reporting period.

Data specialists were also responsible for logging, entering data, and mapping information on Illinois Natural Areas Inventory (INAI) sites and high quality natural communities. During this reporting period, data specialists processed 195 INAI site records and 365 natural community records.

Under match time, IDNR staff completed data entry and/or mapping for 199 E&T records, 91 Illinois Natural Areas Inventory (INAI) site records, 10 natural community/other features records, and 13 Illinois Nature Preserves Commission records. IDNR staff also performed quality control/quality assurance on 196 faunal records and 129 INAI records entered by data specialists.

Please note: Due to maternity leave and staff turn-over, there were 4 months out of this 12-month reporting period when only one data specialist was on staff.

Status: This project is ongoing.

Project Lead: Tara Kieninger, IDNR
Date Submitted: 11/27/07

PROJECT 2: Mapping of Illinois Department of Natural Resources' Owned, Managed, and Leased Properties.

During the last year, our current staff of two full time, two part time, and one hourly employee have completed a total of 32 sites (22 federal or special interest and 10 non-federal interest). To date, 63 of the 73 top priority federal or special interest sites and 22 of the 37 second priority federal interest sites have been completed. The second priority sites include those with lake development and major construction projects (boat access) with federal participation. The 10 remaining top priority federal sites contain a portion of land that is leased from a either a private company or other agency (i.e. Army Corps of Engineers, Central Illinois Public Service, Ameren IP) and managed by IDNR. The legal description information for the majority of these sites (which can be difficult to obtain for some of the older sites) has been obtained from the leasing agency during the past year. These sites are currently being digitized and will be completed by the end of the contract. A complete digitizing

methodology procedure and user manual has been updated during this contract period and will be further developed as the project continues. Quality assurance/quality control (QA/QC) methodology and procedures, Federal Geographic Data Committee (FGDC) compliant metadata, database fields, forms, and tables are complete and will be further refined and developed as necessary as the work continues. The emphasis during the final year of the contract will be spent on completing the QA/QC for all completed sites.

Status: This project is ongoing.

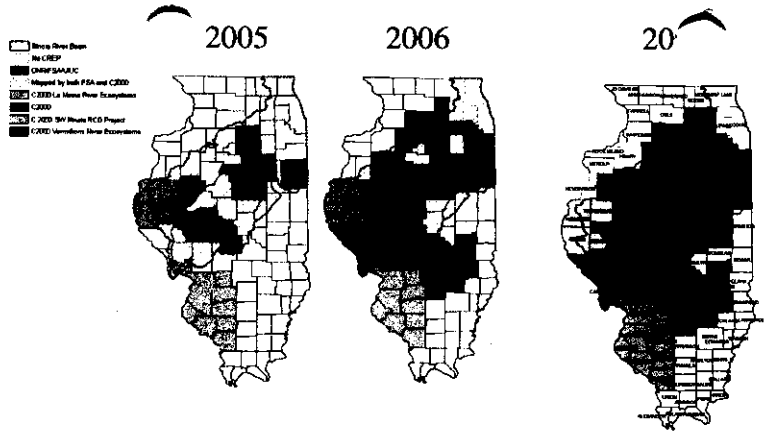
Project Lead: Charlie Foor, IDNR
Date Submitted: 12/14/07

PROJECT 3: Mapping in Support of the Comprehensive Wildlife Conservation Plan and Wildlife Conservation Strategies.

Expand the Illinois Conservation Practices Mapping System (ICPTS) to work towards completed counties within the Illinois River Basin. This will include the assessment of current mapping protocols as previously defined as part of a multi-year effort to update information in the ICPTS

Conservation mapping is a valuable and necessary component to natural resources planning by displaying the distribution of conservation easements and providing associated data on type and size of practices. As a fundamental component of any natural resources planning, the ICPTS will provide field managers, administrators and planners with critical information on current conservation easements. Currently all conservation mapping work through the ICPTS initiative is being accomplished in the Illinois River Basin. Expansions will incorporate other critical areas of the state where significant conservation planning and/or activities are taking place. Given that USDA-funded conservation easement data are maintained in paper format by county USDA Service Center offices, and that ICPTS is being developed incrementally as a statewide database, the data gathering activities are planned as countywide efforts.

This job builds on past mapping within the Illinois River Basin to identify conservation easements and the associated practice information in counties not mapped to date. Mapping shows conservation practices and their spatial relationships between various programs. Data on the sites will document habitat availability for wildlife, as well as potential water quality management



CREP has been digitized in the following counties:

Grundy, Putnam, Marshall, Dewitt, Piatt, Champaign, Macon Warren.

capabilities. Information from this mapping project will assist in targeting critical habitat needs for future program initiatives. Mapping will be consistent with past protocols, and compliment efforts of federal agencies such as USDA – NRCS and FSA in their mapping efforts on conservation practices. This will allow for data sharing and expansion of the Illinois Conservation Practices Tracking Systems (ICPTS).

The following image shows the mapping progress that has been made:

Status: This project is ongoing.

Project Lead: Rick Mollahan, IDNR
Date Submitted: 12/10/07

State of Illinois
Annual Performance Report

PROJECT NUMBER: T-17-P-001

PROJECT TITLE: ENHANCEMENT AND INTEGRATION OF NATURAL RESOURCE INFORMATION SYSTEMS IN SUPPORT OF ILLINOIS' COMPREHENSIVE WILDLIFE CONSERVATION PLAN.

REPORT PERIOD: September 20, 2005 through September 29, 2006

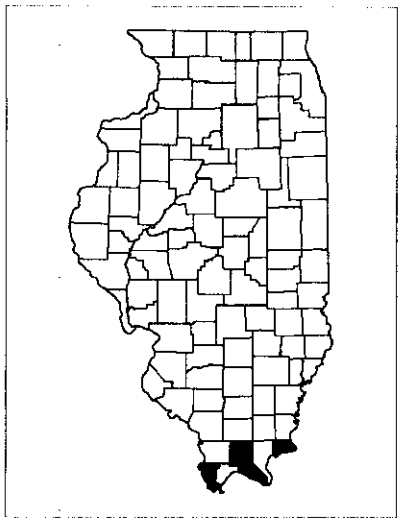
PROJECT 1: Updating the Biological Tracking and Conservation System (Biotics 4) and the Natural Areas Tracking System (NATS).

Data managers were hired in mid- to late-June of 2006 to log, enter, and map threatened and endangered (T&E) faunal data received by the Illinois Natural Heritage Database Program into the Biological Tracking and Conservation System (Biotics 4) database as part of a multi-year effort to update information for use within the Illinois Wildlife Action Plan. During this reporting period, there were two Data Specialists on staff. The data specialists were responsible for entering faunal data received by the program, as well as for remapping existing occurrences into meaningful polygons under the new Heritage data methodology.

During the month or so of their employment, the Data Specialists processed approximately 130 faunal records including both new T&E faunal population occurrences and updates to existing faunal T&E populations. All records were screened for accuracy under an established quality control process.

Some of the processed records were existing faunal occurrences that were remapped under the new Heritage data methodology. In 2002, all original T&E point locations were brought into the new Biotics 4 software via buffering. The size of the buffer was based on the accuracy of the locational data provided. In an effort to establishing more meaningful polygonal locations for existing records, every faunal T&E location is being remapped following a thorough review of all existing data and documentation. During this reporting period, approximately 50 faunal records were remapped from 4 of 102 counties in Illinois, including: Alexander, Hardin, Johnson, and Massac.

The following image shows the counties with remapped faunal records for this reporting period:



Under match time, IDNR staff updated Illinois Natural Areas Inventory (INAI) site records including data entry and mapping for 48 new sites, boundary changes to an additional 114 sites, and updating of tabular data for 187 sites.

Status: This project is ongoing.

Project Lead: Tara Kieninger, IDNR
Date Submitted: 11/03/06

PROJECT 2: Mapping of Illinois Department of Natural Resources' Owned, Managed, and Leased Properties.

This project is a continuation of Job 3 in T-03-P-001 and Job 4.3 in T-02-P-001. To date a total of 69 IDNR sites have been completed researched and digitally mapped under previous FWS grant agreements (57 federal or special interest and 12 non-federal interest). The remaining OMLP properties purchased with federal or special funds, which were not completed under T-03-P-001 or T-02-P-001, were assigned first priority for inclusion in the database. During the first year of this contract period one pending federal interest site was dropped and five new federal or special interest sites were added. This brings the total number of top priority sites up from 69 sites to 73 sites. One thing to note is that there was a one year overlap period (September 2005 –

September 2006) between this contract (T-17-P-001) and the previous contract (T-02-P-001). The majority of the 11 remaining federal sites contain a portion of land that is leased from a either a private company or other agency (i.e. Army Corps of Engineers, Central Illinois Public Service, Illinois Power Company) and managed by IDNR. The legal descriptions for these sites (which can be difficult to obtain for some of the older sites) need to be obtained from the leasing agency in order to complete the paper records and digitize the site. A lot of research time and effort has been spent on both contracts to try and obtain the legal description information from the Army Corps of Engineers for the four reservoir sites that IDNR manages. Progress has been slow; however work on these sites is being continued during the second year of the project. A total of five new sites were completed under this contract. This includes three of the newly added federal interest sites as well as two federal interest sites that had previous problems and issues. A complete digitizing methodology procedure and user manual has been developed during this contract period and will be further developed as the project continues. QA/QC methodology and procedures, Federal Geographic Data Committee (FGDC) compliant metadata, database fields, forms, and tables are being further refined and developed as necessary as the work continues. Not as many sites were completed as originally intended in the first year of this contract due to staffing shortages. In June 2006, a job search was conducted to hire full time GIS/Database Specialist, to be located at INHS in Champaign, to help with the researching and digitizing of IDNR sites on this project. A new staff member was hired and started work on the project on September 5, 2006. Thus, more sites should be completed during the second year of the project to make up for those sites that weren't completed in the first year.

Status: This project is ongoing.

Project Lead: Charlie Foor, IDNR
Date Submitted: 11/27/06

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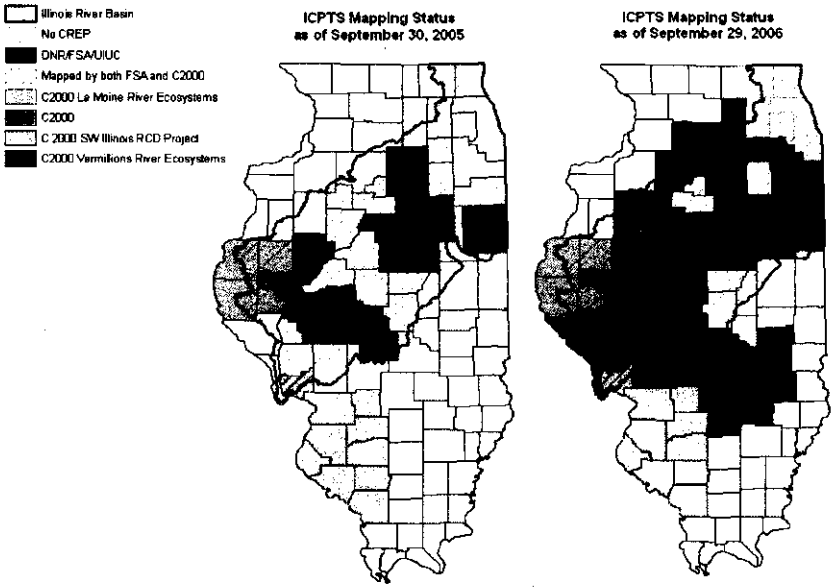
The following image shows the mapping progress that has been made since September of 2005.



CREP has been digitized in the following counties:
Pike, Calhoun, Scott, Greene, Macoupin, Montgomery, Mason, Tazewell, Peoria, Knox, Stark, Logan, Kankakee, Will, Kendall, Lee,

C2000 CRP mapping efforts have been incorporated into ICPTS from the following counties:
Coles, Cumberland, Shelby, Effingham, Fayette,Jasper, Marion, Clay

Status: This project is ongoing.

Project Lead: Rich Mollahan, IDNR
Date Submitted: 11/17/06