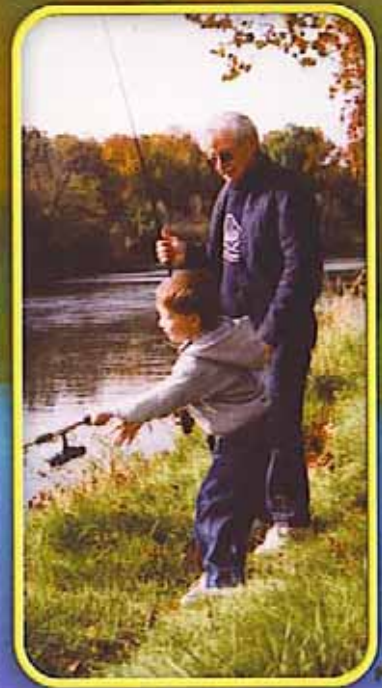


Kishwaukee River Watershed

Strategic Plan for Habitat Conservation and Restoration

January 2006



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**Kishwaukee
River
EcoSystem
Partnership**

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A Project of the Kishwaukee River
Ecosystem Partnership

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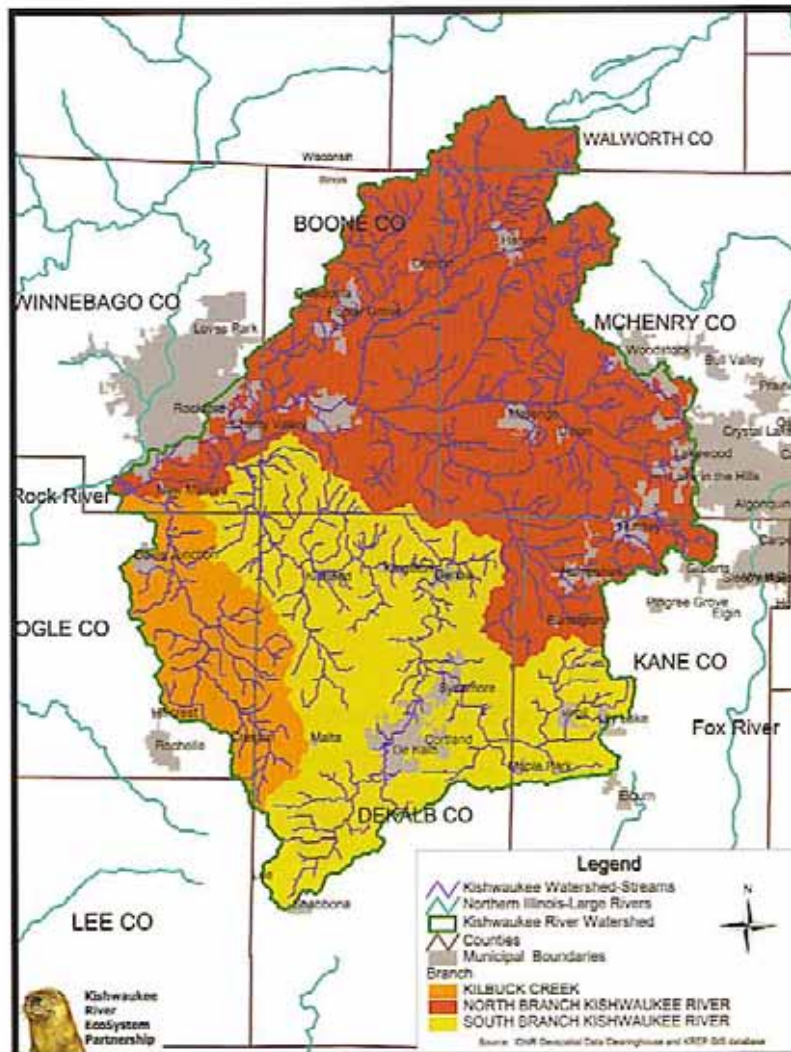


Table of Contents

About This Project	4
Map—Kishwaukee River Watershed	5
Strategic Plan Goal/Recommended Actions	6
Map—Priority Subwatersheds	7
General Recommendations	8
Map—Habitat Restoration Areas	9
Promote Restoration, Management & Long-Term Protection for Stream Corridors	10
Encourage Communities to Require Conservation Development Practices that Protect the Ecological Integrity of the Watershed	12
Work with Local Communities, State and Federal Agencies to Prevent or Correct Impairments of Water Quality in Streams and Rivers	14
Encourage Resource Agencies to Remove Man-Made Obstructions on Perennial Streams to Restore Movement of Aquatic Species, Reduce Habitat Fragmentation And Allow Canoe/Kayak Passage Downstream	16
Maintain, Expand and Distribute Watershed Database	18
Secure Permanent Protection and Restoration of Land, Meeting Target Species Habitat Requirements	20
Target Species List	22
Forest Species	23
Grassland Species	24
Wetland Species	25
Promote Stewardship of Natural Resources on Private Lands by Increasing the Level and Consistency of Technical Assistance	26
Work with Educational Agencies to Increase the Understanding and Awareness of Wetland, Groundwater and Surface Water Resources	27
Support Improvement of Recreational Opportunities and Increase Access Along Rivers and Streams	28
Promote the Creation and Restoration of In-stream Habitat for Aquatic Species	29
Map—Channelized Streams	30

ABOUT THIS PROJECT

In September 2001, the Kishwaukee River Ecosystem Partnership set out to create a Strategic Plan for Habitat Conservation and Restoration in the Kishwaukee River Watershed. This multi-year watershed protection project had several phases. The first phase, completed in 2001-2002, included identification and compilation of available natural resource information and Geographic Information Systems (GIS) layers. The KREP project team collected more than 100 GIS layers for 42 sub-watersheds identified in the Kishwaukee River watershed. A stakeholder meeting was held December 5, 2002 to solicit additional input on resource concerns from citizens and agency staff throughout the watershed.

Phase Two, completed in 2003, included the watershed wide analysis of the natural resource information using GIS layers and the beginning of the strategic planning process to identify natural resource concerns. The data derived from this GIS analysis were organized to develop resource "indicators", such as percentage of remaining wetlands compared to the percentage of hydric (wetland) soils historically present; the presence of threatened and endangered species; etc. These indicators were used to evaluate, examine, and compare each of the 42 sub-watersheds. Please refer to the Report on Habitat and Natural Resources in the Kishwaukee River Watershed for more information about the natural resource concerns identified in the Kishwaukee watershed. The sub-watersheds were then examined individually to determine the specific concerns for each and propose recommendations to preserve and/or restore the habitat and natural resources of the area.

Finally, the input from watershed stakeholders KREP Planning Committee, GIS analysis and supporting reports were used as the basis for the Partnership's strategic plan. KREP hopes this is a useable document with practical, realistic recommendations coming from a large toolbox of potential solutions. A key component to the final plan is the identification of missing natural resource data that, once collected, will help stakeholders make better decisions to enhance and update its existing GIS analysis. This will help monitor and analyze changes to the watershed over time rather than just a snapshot report on historic data.



This project made possible using grants from McHenry County Conservation District, Grand Victoria Foundation and the IDNR C 2000 Program. Printing and distribution of this publication was paid for by a grant from the office of Pat Quinn, The Lieutenant Governor of Illinois.

Kishwaukee River Watershed

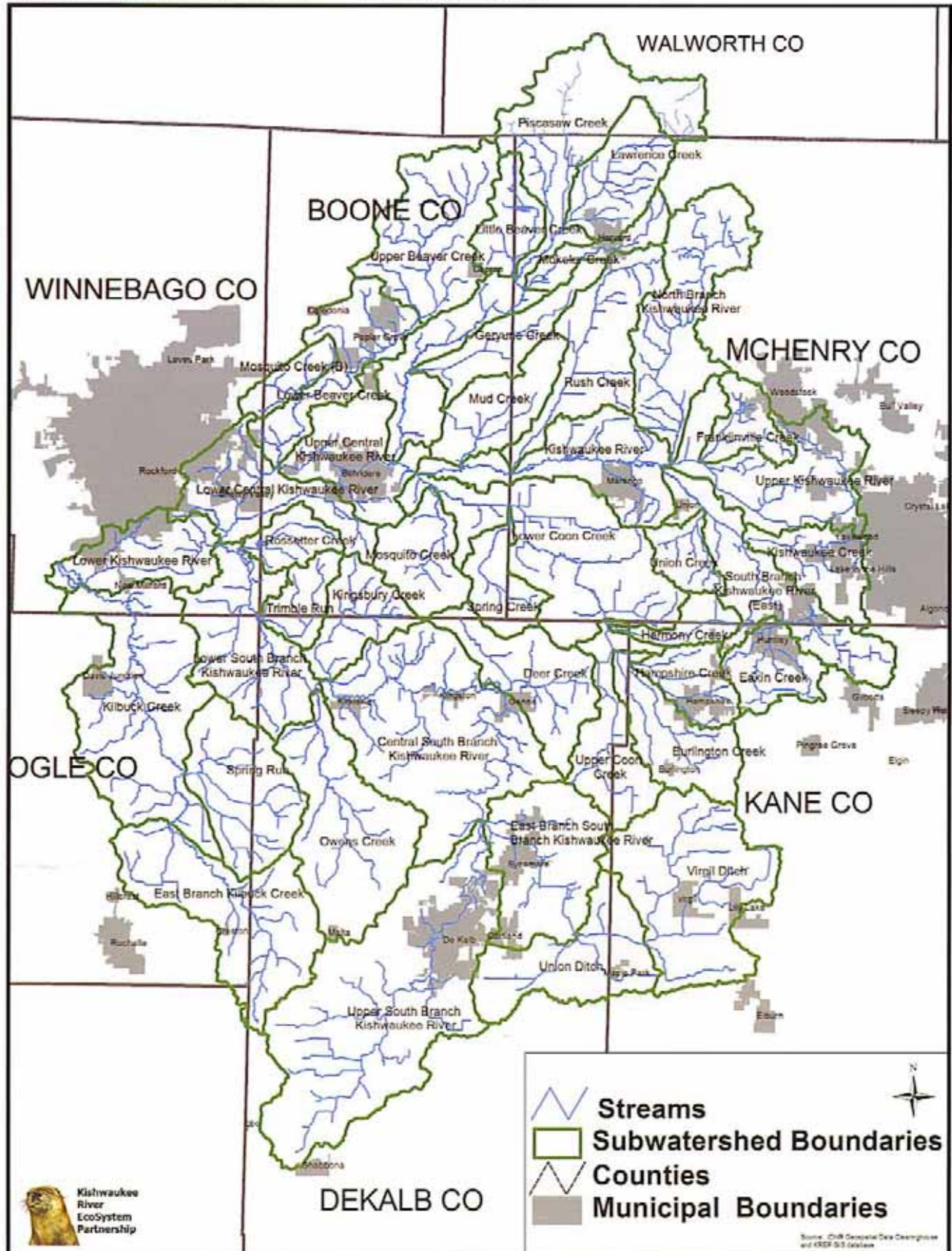


Figure 1

Strategic Plan Goal

Increase the quality and quantity of habitat available for all native species in the Kishwaukee watershed to enhance biological diversity and establish a more sustainable human environment characterized by high water quality, reduced flood damages, and increased opportunities for outdoor recreation.

This goal can be achieved by working toward the following objectives:

1. **Increase habitat for target wildlife species**
2. **Improve aquatic resources for fish and other species**
3. **Reduce nutrient & sediment loads flowing into rivers and streams**
4. **Reduce the volume and velocity of surface water runoff**
5. **Improve public access to streams and remove navigation hazards**
6. **Increase amount of biological information available to decision-makers**

Recommended Actions

Based upon the natural resources data analysis, sub-watershed investigations, identification of natural resource concerns, and KREP's goals and objectives, KREP has assembled this list of goals, objectives and actions which, if successfully implemented, should:

- Preserve existing natural habitats for the watershed's unique flora and fauna
- Instill an awareness with landowners to work together to restore the degraded portions of the watershed
- Maintain a balance between economic/cultural needs of the stakeholders and the environmental priorities required to maintain watershed integrity and biodiversity
- Expand the natural resource information database for the watershed

These activities should be focused in the **priority sub-watersheds** (Fig. 4) and **target species habitat protection areas** (Fig. 3), in order to efficiently use limited resources and protect high quality habitat. A quick reference table of general recommendations for each sub-watershed can be found at the end of this document. In most cases, the individual sub-watershed plans will also contain recommendations for specific sites/regions that are unique to that sub-watershed.

The Kishwaukee River Watershed Report, individual sub-watershed reports and supporting GIS information can be downloaded from our website <http://krep.bios.niu.edu>.

Priority Subwatersheds

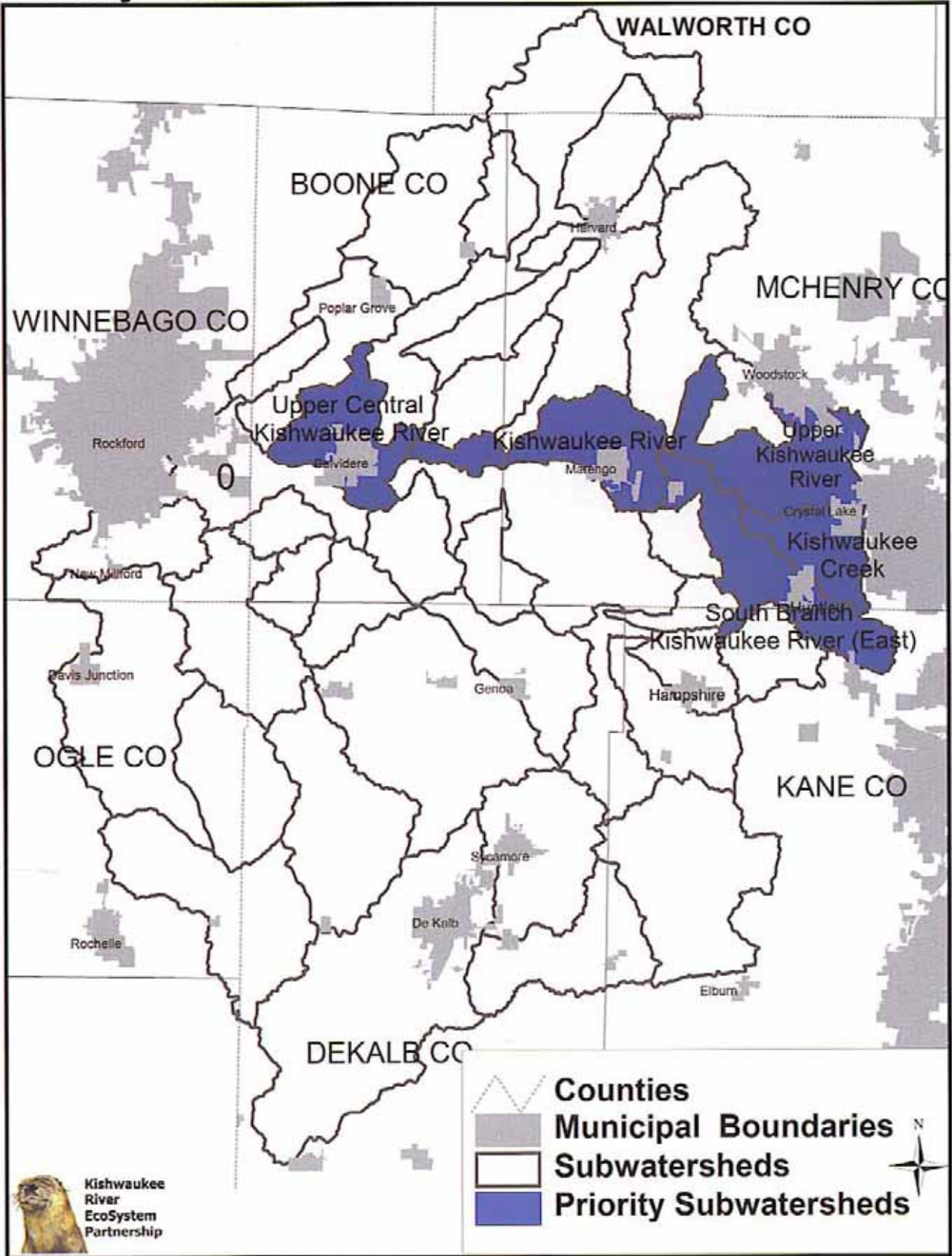


Figure 4

Habitat Restoration Areas

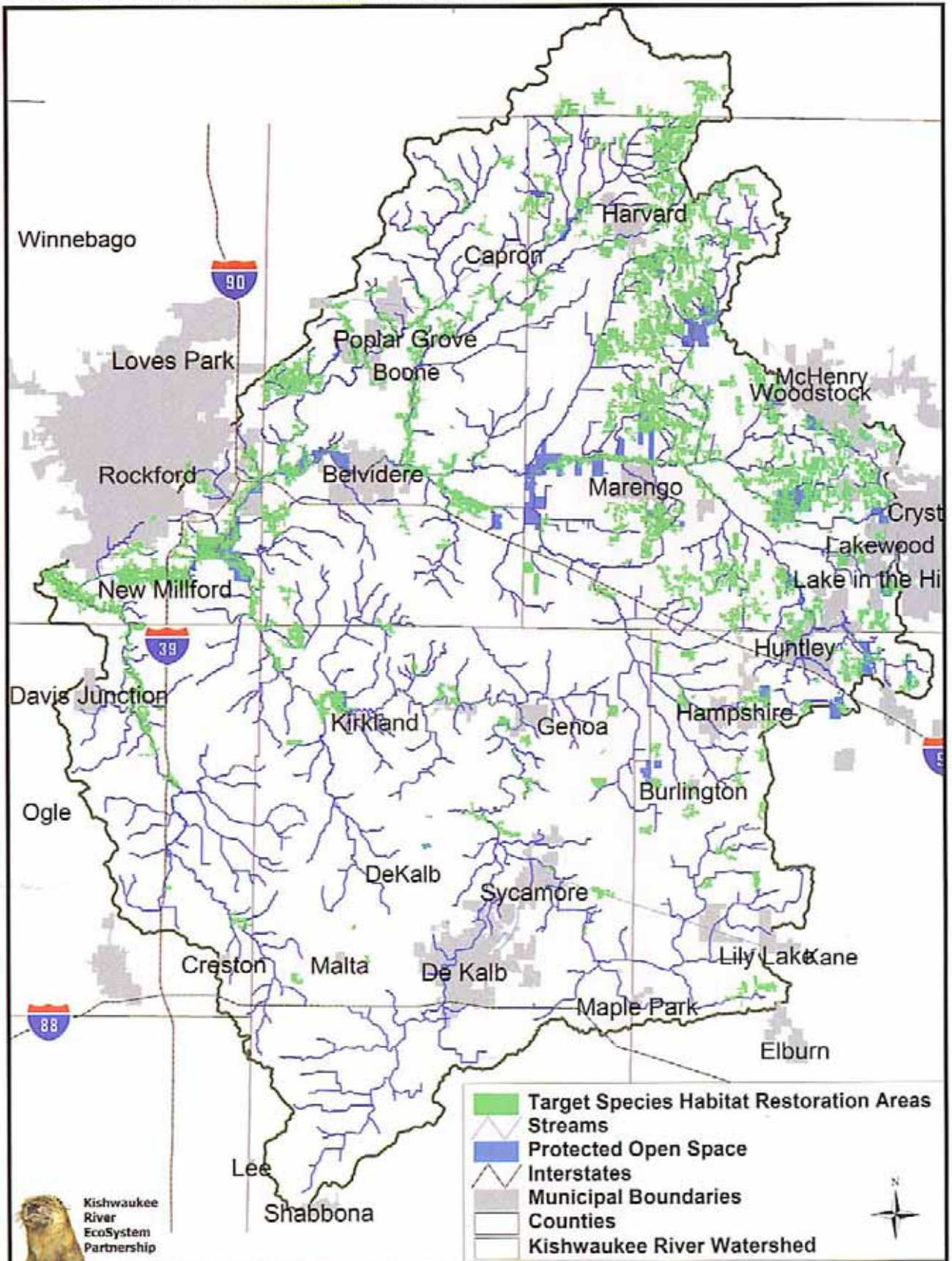


Figure 3

Promote Restoration, Management and Long-Term Protection for Stream Corridors (Objectives 1, 3 and 4)

ACTIONS

- Restore native grasses and trees along the stream channels
- Establish a min. 100 foot wide buffer along streams in agricultural areas
- Protect and restore areas within the 100 year flood plain and protect it from development
- Encourage and assist landowners with active management of vegetation
- Control invasive species by use of appropriate management techniques like prescribed burning, herbicide application, tree thinning and mowing

The stream corridor is one of the three fundamental landscape features that must be preserved in order to maintain the natural ecological integrity of the watershed (the other two being the stream channel and wetlands). Due to the extensive alterations made to Kishwaukee streams, much of the natural stream corridor has been eliminated, particularly along the headwater streams.

Restoration of native grasses and trees along the stream channel is needed to:

- Provide wildlife habitat
- Filter debris and pollutants and slowing surface runoff
- Help maintain temperature and chemical characteristics to tolerable levels
- Provide nutrients and food to the stream for maintaining a balanced, healthy ecosystem
- Attenuate flood flows by slowing velocities and promoting infiltration and retention of surface water

The recommended width of the naturally-vegetated stream corridor is the 100 year floodplain. **For streams along agricultural landscapes we recommend, a minimum buffer width of 100 feet.** The current buffers are usually degraded and dominated by weedy and invasive species such as reed canary grass, buckthorn and garlic mustard. In these degraded reaches, **landowners should be encouraged and assisted with active management of the vegetation to promote a healthier, more diverse habitat for native flora and fauna.** Counties in the watershed should **implement county-wide stream corridor protection programs to preserve the natural integrity of the stream corridor especially in urbanizing areas.**

Many of the counties have floodplain protection regulations which regulate development for the purpose of flood control/flood damage reduction. However, these regulations do not protect the natural features of the floodplain, which provide many benefits to the stream other than conveyance of flood waters. When a parcel is slated for development, the stream corridor is typically converted to provide for storm water management. While these drainage systems are marketed to the community as an attractive, functional amenity and open space, they cannot provide all the functions of a naturally-vegetated stream corridor and still meet the requirements for an effective storm water management system.

Another stream corridor protection strategy recommended for individual landowners is placing the stream corridor portion of a parcel into a conservation protection agreement. The final protection strategy recommended is acquisition of stream corridor parcels from willing landowners by local forest preserve and park districts or conservation organizations. Analysis of the 1999 land cover within a 100 foot buffer on both sides of the streams and existing Conservation Reserve Program areas has shown that of the 30,300 total buffer acres, approximately 45% of those or 13,600 acres (14,100ac minus 500ac currently in CRP) are used for row crop production and eligible for the Conservation Reserve Program if enrolled as a grass filter strip. KREP also found the remaining open space and developed land accounted for 42% and 3% respectively. These maps show an example where KREP has identified 39,800 acres of FEMA flood zone area that are currently in row crops and are also eligible for CRP if planted to a forest buffer.



Top left (Fig. 5) is a common condition of streams in the Kishwaukee River watershed as they flow through agricultural landscapes with little or no buffers. Top right (Fig. 6) highlights the recommended 100 ft. stream buffer.



Above left (Fig. 7) is an aerial photo of the South Branch Kishwaukee River. Note the lack of buffer and encroachment of row crops up to the rivers edge. Above right (Fig. 8) is the same area with the 100 year flood zone overlaid in light blue. All of the cropland within this area is automatically eligible for CRP and should be restored to native vegetation.

Encourage Communities to Require Conservation Development Practices that Protect the Ecological Integrity of the Watershed

(Objectives 1, 2, 3 and 4)

ACTIONS

- Encourage the protection of stream corridors with a conservation easement
- Acquire stream corridor parcels from willing sellers
- Manage run-off on-site through use of non-traditional storm water system
- Implement recommendations in TCSP Route 47/Kishwaukee Corridor Study
- Encourage the adoption of county-wide watershed development ordinances for Boone, Winnebago, DeKalb and Ogle counties to protect wetlands, stream corridors and improve storm water quality

Future development in the watershed must be compatible with existing natural resources such as stream corridors, wetlands, floodplains, and forests in order to minimize runoff and pollutants to the river system, preserve vital wildlife habitat and provide a sustainable living environment.

Development on a parcel should take place outside of the natural drainage system and existing habitats, including wetlands (existing or drained), stream corridors, floodplains, and existing stands of forest. Furthermore, these areas should be interconnected with adjacent habitats to facilitate movement of species and reduce habitat fragmentation.

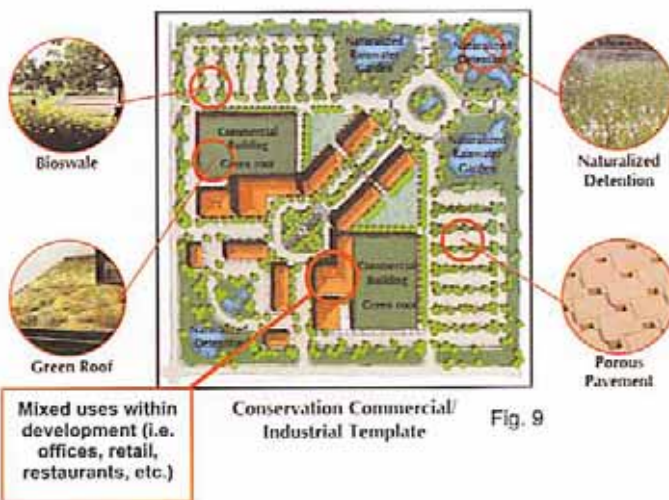
Hydric soils should be protected from development and replanted to slow overland drainage and provide wildlife habitat. Developments should manage all runoff on-site through use of a “distributed non traditional storm water system” that emphasizes infiltration and filtering rather than conveyance and temporary storage. This requires a fundamental shift in the design and long term management of storm water infrastructure. An excellent guide for the future development already exists: the **TCSP Route 47 Kishwaukee River Corridor Project** provides a comprehensive transportation and land use plan that balances development while preserving the ecological integrity of the Kishwaukee River. *The Partnership recommends that communities within the study area implement the recommendations and that other communities use the report to guide their pursuit of achieving sustainable development.*

Another study for the Blackberry Creek Watershed in Kane County provides a detailed analysis of the impacts of conventional development on the natural systems, as well as how conservation development practices could be used to reduce the negative impacts associated with growth. The study included design of development “templates” for various land uses, including commercial, moderate density residential, rural residential, and estate residential. The project included a watershed-wide analysis of the hydrologic response to future urbanization and concluded that the current practices and trends would cause the continued degradation of that watershed’s resources and habitat. As part of the study, an economic analysis of future development was also performed and found that the current development pattern is not economically sustainable and undermines the budgets of local municipalities by hundreds of thousands of dollars after build-out has occurred. To view the report, contact Kane County Department of Environmental Management or download it at: www.co.kane.il.us/kcstorm/index.htm .

Development templates illustrating the differences between conservation development and conventional development for parcels zoned for commercial development and moderate-density residential.

Conservation Design Features

- Distributed storm water system with naturalized detention, infiltration systems in the parking lot islands, and green roofs on some buildings
- Pedestrian-orientated layout to minimize automobile use
- Same square footage of development as in conventional scenario



Conventional Design Features

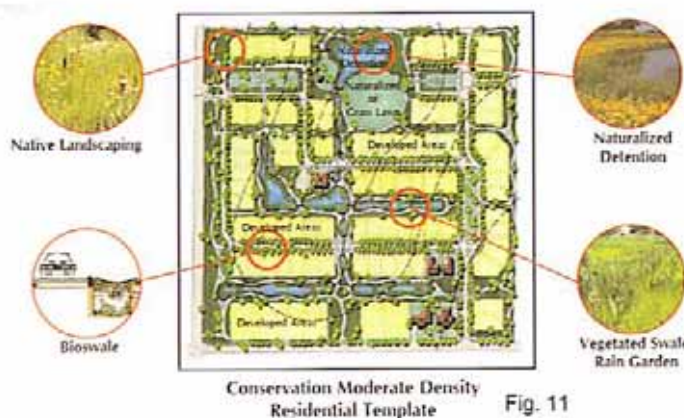
- Centralized detention (turf or rip rap shoreline)
- Curb & gutter and extensive storm sewer network
- No provisions for infiltration of runoff
- Single use development (retail) with isolated restaurant out lots accessible only by automobile.



Fig. 10—Conventional Commercial/Industrial Template

Conservation Design Features

- Distributed storm water system with naturalized detention, rear yard infiltration systems, overland swales for storm water conveyance. Extensive system of functional vegetation from development's inception
- Minimal use of curb & gutter storm sewer
- Variation in lot sizes
- Narrower roads & no cul de sacs
- Natural area corridors created between rear lot boundaries
- Same number of units as conventional scenario



Conventional Design Features

- Centralized detention (turf or rip rap shoreline)
- Curb & gutter on all streets
- Extensive storm sewer system
- No provisions for infiltration of runoff
- Little, if any preserved natural areas (floodplain, wetlands, woodlands, or prairie)



Fig. 12—Conventional Moderate Density Residential Template

Source: Blackberry Creek Alternative Futures Project; Kane County, 2003. Exhibits created by Conservation Design Forum. For more info, visit: www.co.kane.il.us/kcstorm/index.htm.

Work With Local Communities, State and Federal Agencies to Prevent or Correct Impairments of Water Quality in Streams and Rivers

(Addresses Objectives 2, 3, & 4)

ACTIONS

- **Support construction of expanded wastewater treatment capacity to remove nutrients and harmful constituents**
- **Support land treatment systems as an alternative to conventional wastewater treatment**
- **Install water quality devices on new storm water systems and outfalls to increase oxygenation of the water**
- **Expand landowner education about stream buffers and augment existing stream corridor protection programs**
- **Encourage local agencies to investigate the presence of illegal septic discharges to streams and provide funding assistance to landowners to install on-site treatment systems that meet State water quality standards**
- **Work with agricultural landowners to install water table management structures**
- **Implement effective conservation tillage/nutrient management plans on agricultural lands**
- **Identify erosion sites and determine treatment method using bioengineering methods**
- **Retrofit storm water management systems in urbanized areas to improve water quality and provide habitat for fish and wildlife**
- **Promote the use of native plantings around storm water detention basins**
- **Implement construction site erosion and sediment control ordinances**

Wastewater treatment plants contribute to the impairment of many streams in the Kishwaukee watershed. Segments of the Upper Kishwaukee River, South Branch Kishwaukee River, Mokeler Creek, South Branch Kishwaukee River East, Huntley Ditch and Hampshire Creek are all listed in the 2004 303d list as being impaired due to municipal point source discharges from municipal waste.

A major concern is the increased discharge into the watersheds streams. Also, many of the homeowners in Illinois do not have access to municipal sewage treatment and therefore need septic field to dispose of effluent. However, many regions in the state have surface discharging systems which put the effluent directly into a nearby stream posing a serious health threat to people. Some common diseases are Salmonella, Hepatitis A, and Leptospirosis. The Illinois Department of Public Health estimates that there are 8,370 surface discharging systems in the west Chicago Region and 1,395 in the Rockford region.

The EPA and IDPH are currently working with landowners to ensure these systems are safe and operating effectively. Urban non-point sources of pollution exist in the watershed as well. Runoff from parking lots and unprotected construction sites are major pollution sources in urban areas. Chemicals, nutrients and sediments are efficiently transported into storm drains and then to local creeks streams.

In agricultural areas, excess nutrients from manure, fertilizers, previous crops, and irrigation water are all potential sources of pollution. Specific management practices to reduce nitrogen loss include soil testing, split applications, side dressing, using nitrogen stabilizers, manure testing, application calibration, variable rate technologies and livestock/poultry feed rations.

Water table management structures can also be a way to regulate the discharge of nutrients into a drainage system. Normally drainage tile outlets into a ditch with no method of control or management—the tile is always open. A structure, with its adjustable riser boards, is placed in the tile, normally near the outlet, providing a means to manage the height of the water table and allow water to percolate into the soil and not flow directly into the ditch. In an agricultural setting and over winter when fields are fallow, the risers can be installed to help recharge groundwater supplies and provide the benefits including reduction in nitrification and wildlife habitat creation. In the spring, the risers are removed and the field can drain before planting. Still, most important is the continued use and adoption of no till and conservation tillage systems that leave the ground untilled until planting or leave at least 30% residue cover after planting respectively. Conservation tillage has been shown to reduce erosion by around 70%, reducing the amount of chemical pollutants that are transported to streams by bonding to soil particles.

Construction Site Erosion and Sediment Control



Fig. 13—No storm drain inlet protection



Fig. 14—Storm drain inlet protection

2000 Bureau of Census List of Urbanized Areas in the Kishwaukee River Watershed that are now required to comply with NPDES Phase 2 regulations:

Belvidere	DeKalb Township	McHenry County
Belvidere Township	Dorr Township	New Milford
Bonus Township	Elburn	Poplar Grove Township
Boone County	Flora Township	Rockford Township
Caledonia Township	Gilberts	Rutland Township
Cherry Valley	Huntley	Scott Township
Cherry Valley Township	Kane County	Spring Township
Cortland Township	Lake in the Hills	Sycamore
DeKalb	Lakewood	Sycamore Township
DeKalb County	Lily Lake	Timberlane

Encourage Resource Agencies to Remove Man-Made Obstructions on Perennial Streams to Restore Movement of Aquatic Species, Reduce Habitat Fragmentation and Allow Canoe/Kayak Passage Downstream (Objectives 2 & 5)

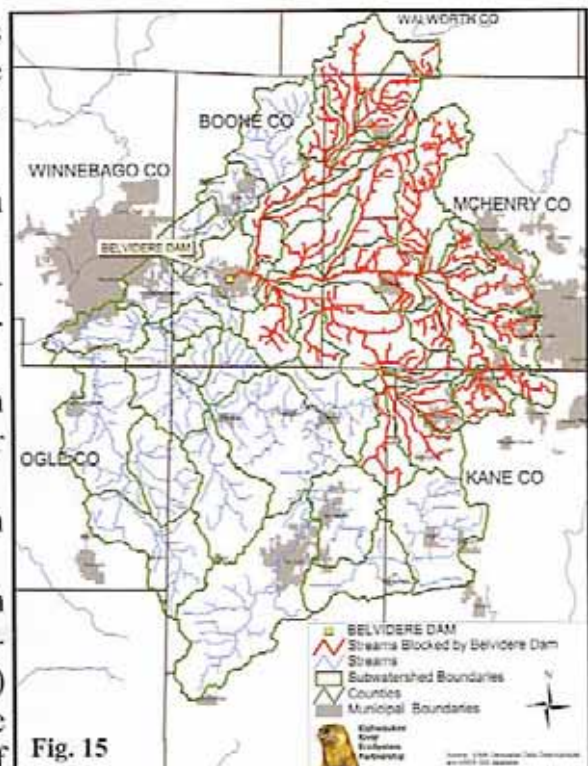
ACTIONS

- Complete study of Belvidere Dam modification or removal
- Secure funds to remove dam on Kilbuck Creek
- Remove dam on North Branch Kishwaukee River
- Modify detention basin dam on Eakin Creek at Huntley Outlet Mall
- Identify in-stream structures and culverts that create a barrier to fish migration

Many species of fish use the smaller headwater streams for spawning in the early spring. If a dam or other obstruction prevents their movement they will not be able to reach spawning areas thus reducing the populations of those fish. Studies have shown that bass, and other game species require free flowing rivers. The Fox River Fish Passage Feasibility Study has observed that sport fish were found in the free flowing reaches of the river rather than the dam impoundment and IBI scores were higher in the free flowing sections.

In order to achieve the Partnership's goals, the following dams should be studied for removal or modification:

- Belvidere Dam on the main stem Kishwaukee River
- Abandoned Mill Dam on Kilbuck Creek, 1/4 mile downstream of IL Route 251
- Recreational Dams on North Branch Kishwaukee River near IL Route 14
- Detention Basin Dam on Eakin Creek at Huntley Outlet Mall
- Other on-line structures which create a barrier to species movement (including some culverts) where there is more than 1 mile of perennial stream upstream of the barrier

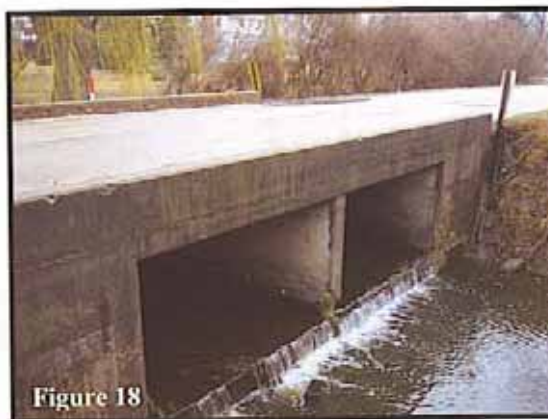
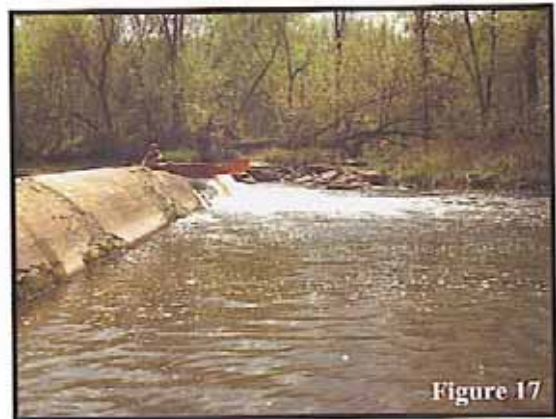


The Belvidere Dam blocks 570 miles of streams



The dam in Belvidere is the only major obstruction to fish passage and boating in the Kishwaukee River Watershed.

The dam on Kilbuck Creek was not listed in the current GIS dam layer. It is a barrier to fish passage and can be a navigation hazard.



Often box culverts and other stream crossing structures can create an obstruction when the elevation of the bottom is higher than the stream bottom.

Maintain, Expand and Distribute Watershed Database

(Objective 6)

ACTIONS

- Identify data gaps in the GIS database
- Conduct natural area inventories where lacking
- Conduct site surveys to fill data gaps in cooperation with local groups
- Gather mussel data in all reaches of the river
- Collect fish data from above and below obstructions
- Distribute database to local decision-making bodies
- Facilitate increased research efforts by state and federal agencies
- Add digital soils maps for Boone and Ogle counties to database
- Update GIS database with any new information as it becomes available

Collecting and analyzing water quality and species information is one of the best ways available to determine the current and historic health of a stream system and the surrounding landscape, however many of the Kishwaukee's sub-watersheds do not have sufficient information to even guess as to the condition of the streams. For example, no known fish collection data are available for 9 sub-watersheds, and no mussel data are available for 24 sub-watersheds, mostly in the south branch watershed. In addition, the data are sometimes greater than 20 years old.

Also lacking is macro-invertebrate and water quality sampling. Many of the inventories that have been conducted are on a small site by site basis and no extensive natural area inventory has been conducted since the Illinois Natural Areas Inventory in the late 1970's. Until now, the watershed's Geographic Information Systems data has been in many different formats in many different locations.

The Partnership is committed to continuing to update and maintain the GIS layers and information in a unified system, and distributing that information free of charge to those who need it in order to protect preserve and enhance our natural resources.

The Partnership has created a website so the layers and reports can be downloaded, and members can find links to helpful resources and stay up on current events.

Visit KREP online at <http://krep.bios.niu.edu>

Data Gaps

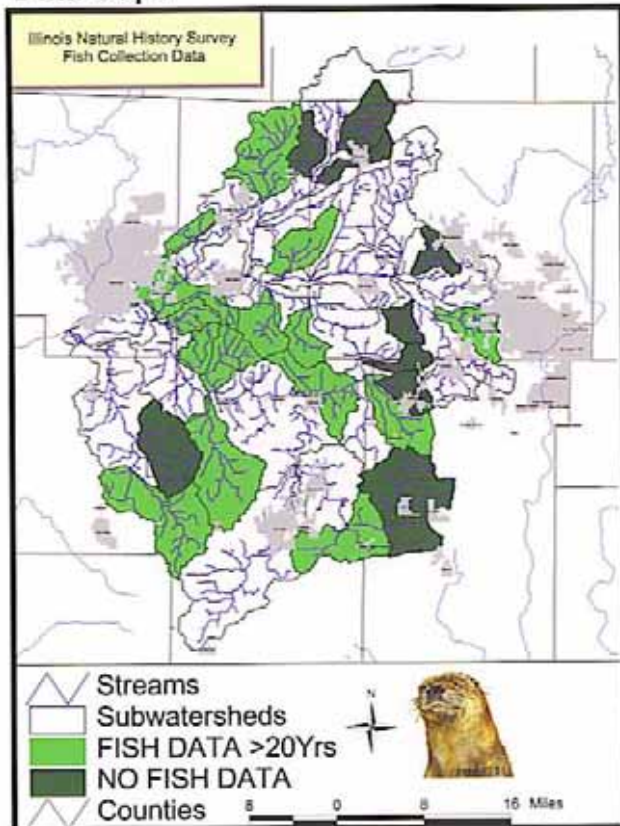


Figure 19—Fish Data

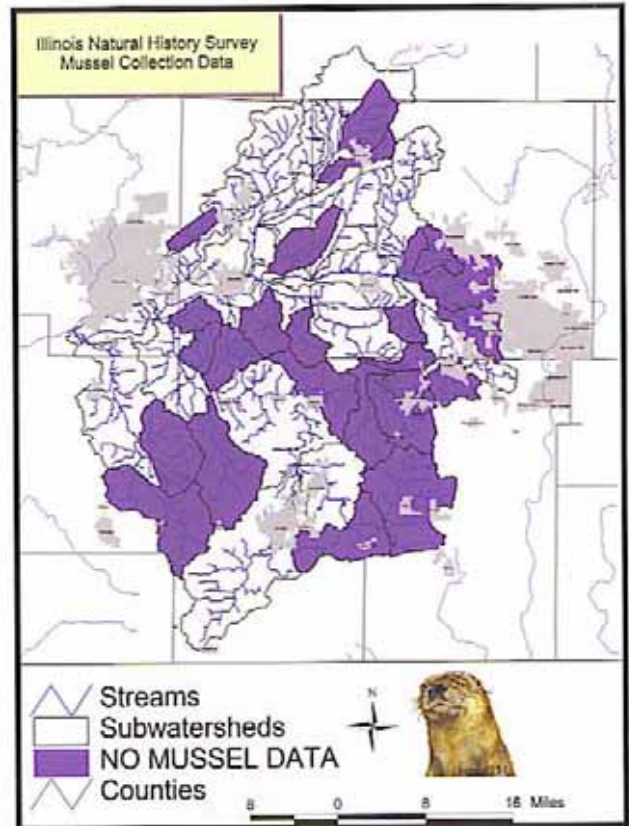


Figure 20—Mussel Data

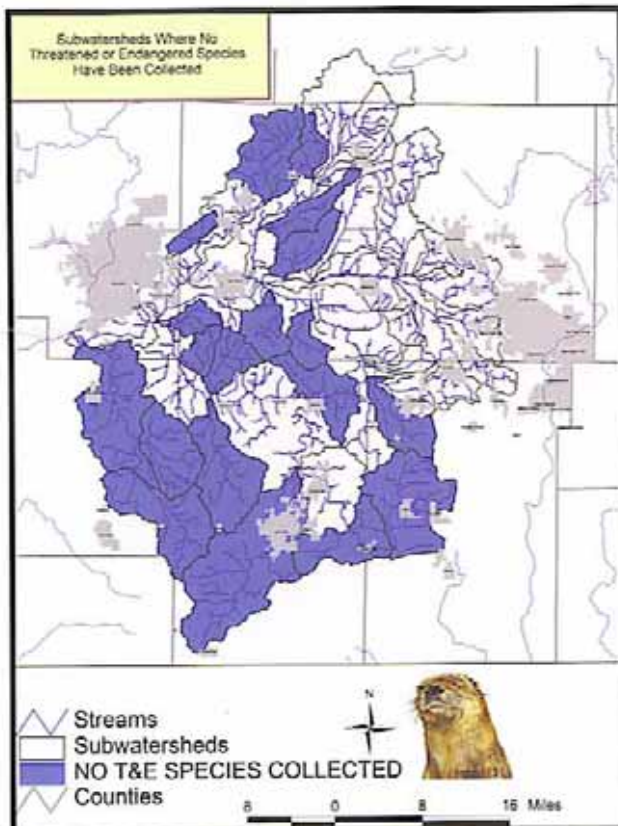


Figure 21—Threatened & Endangered Species Data

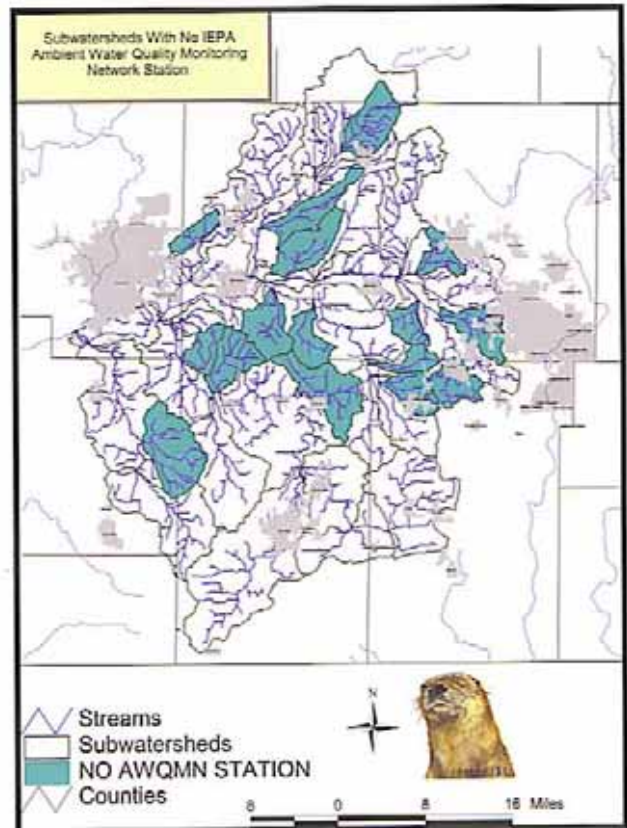


Figure 22—Water Quality Monitoring Data

Secure Permanent Protection and Restoration of Land, Meeting Target Species Habitat Requirements

(Objectives 1, 2 & 3)

ACTIONS

- Assist natural resource agencies to protect existing natural areas through acquisition from willing sellers, purchase of development rights, conservation easements, etc.
- Encourage IDOT and the Illinois Toll Highway Authority to reduce mowing and use native vegetation in their right-of-ways
- Secure funding to purchase land and conservation easements on land that provides critical habitat for target species

Target Species Habitat Protection Areas: Analysis of the 1999 IDNR GIS land cover file was performed to identify habitat restoration areas suitable for those species in the watershed at greatest risk of extirpation (becoming extinct in the watershed). A Target Species List and following set of maps was derived from existing analyses and reports detailing spatial habitat requirements for unique native species inhabiting the watershed. These are intended to serve as tools for the partnership, resource agencies and public to identify areas that could provide habitat for these species. Watershed protection and preservation requires a commitment from all stakeholders in the watershed, from the agency/organization level all the way down to the individual landowners.

The maps presented in this section are not to be interpreted as parcels targeted for acquisition or condemnation, rather they are intended to help both public and private stakeholders identify which sections of the watershed are in the ideal locations to provide the habitat features essential to re-establishing or maintaining the critical wildlife species of the watershed. These areas should receive some degree of special consideration for grant funding of private and public habitat restoration projects due to the likelihood they will provide the greatest benefit to these target species. KREP hopes these maps can help raise awareness of the habitat areas so that private land stewardship and existing land protection organizations can work in cooperation to increase the amount, quality and connectedness of habitat in the Kishwaukee River Watershed. Doing so will only help to preserve the richness and appealing features that have brought us to this unique part of the state.

Target Species List Development: The KREP Target Species list (Table 1) is a compilation of existing lists from many sources and databases. Care was taken to exclude non-endemic (non-native to the watershed) or rare migrant species (like some bird species). The KREP Target Species list includes species from the U.S. Fish and Wildlife Species of Concern list for Region 3, U.S. Fish and Wildlife Birds of Conservation Concern list, and Partners in Flight Priority Bird Species for the Dissected Till Plain, Prairie Peninsula, and Upper Great Lakes Regions. The list also includes collection databases information from the Illinois Natural Heritage Database, McHenry County Conservation District, Illinois Natural History Survey and the Illinois Threatened and Endangered species list for the Kishwaukee Watershed. The species are on these lists because their populations are in decline or unstable, and without protection they will continue to disappear. It was not feasible in the scope of this analysis to cover each species individually; therefore we have tailored the general habitat recommendations for species guilds listed below.

HABITAT RESTORATION AREAS

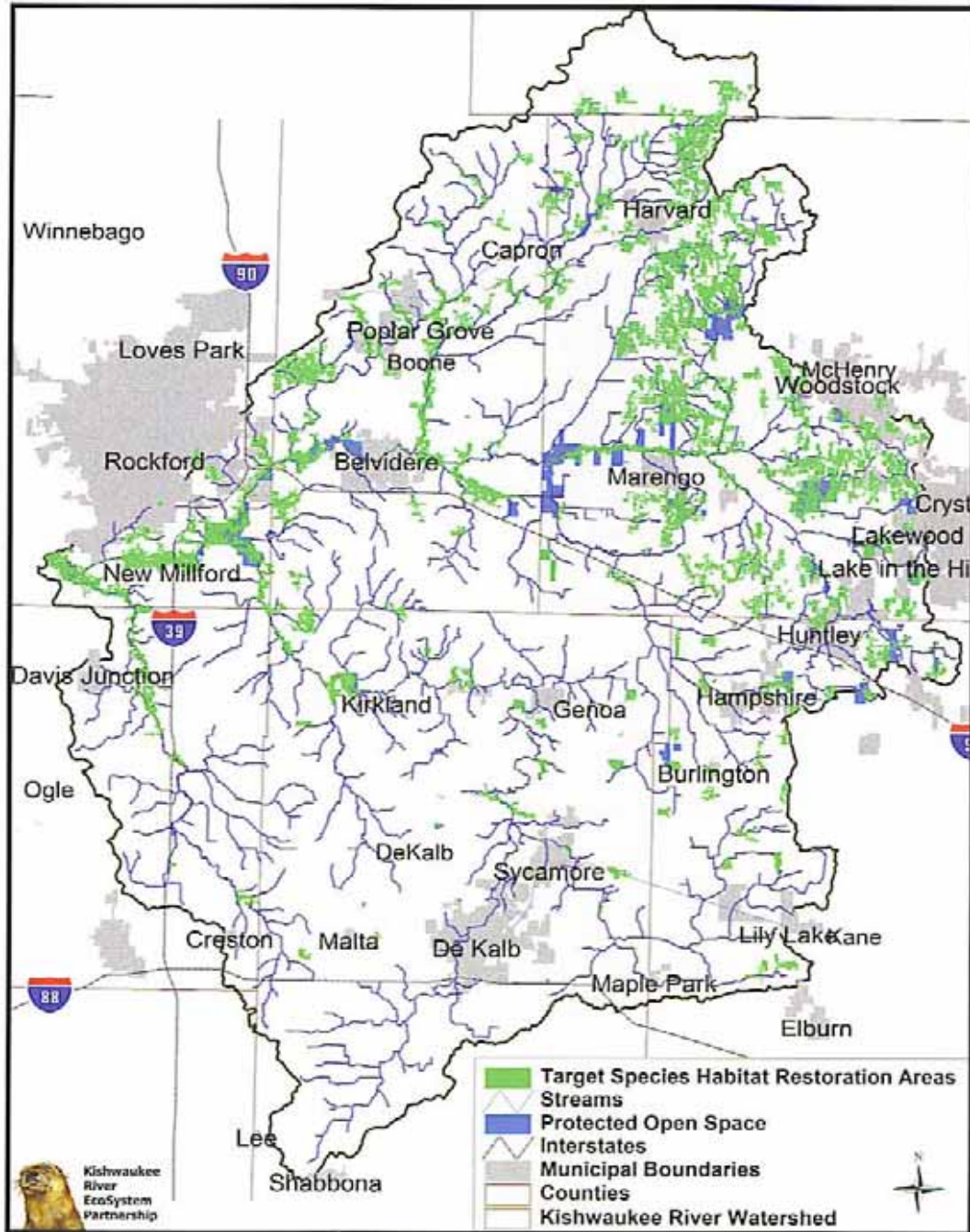


Figure 23—General Habitat Requirements: Each species on KREP's Target Species List was grouped into several general habitat types: Forest (Riparian, Upland and, Savanna), Grassland (Open and With Shrubs), Wetland and Aquatic. Since bird habitat can serve as an umbrella for other terrestrial species data, they were the primary focus of these recommendations. For more information on the Target Species Habitat Requirements and the Habitat Restoration Areas map development, refer to the report on the Natural Resources and Habitat in the Kishwaukee River Watershed.

Table 1: Target Species List for Habitat Conservation Plan

BIRDS

Acadian Flycatcher
American Bittern (SE)
Bald Eagle (SE,FT)
Baltimore Oriole
Barn Owl (SE)
Bell's Vireo
Bewick's Wren (SE)
Black Crowned Nigh Heron (SE)
Black Rail
Black-billed Cuckoo
Black Tern (SE)
Blue-winged Warbler
Bobolink
Brown Creeper (ST)
Brown Thrasher
Cerulean Warbler
Chimney Swift
Common Moorhen (ST)
Common Tern (SE)
Dickcissel
Double Crested Cormorant (ST)
Eastern Kingbird
Eastern Phoebe
Eastern Wood Pewee
Field Sparrow
Foster's Tern (SE)
Golden Winged Warbler
Great Egret (ST)
Greater Prairie Chicken
Grasshopper Sparrow
Great Crested Flycatcher
Henslow's Sparrow (SE)
Kentucky Warbler
King Rail (ST)
Least Bittern (SE)
Least Tern
Le Conte's Sparrow
Little Blue Heron (SE)
Long Eared Owl (SE)
Loggerhead Shrike (ST)
Louisiana Waterthrush

Northern Bobwhite
Northern Harrier (SE)
Northern goshawk
Orchard Oriole
Osprey (SE)
Peregrine Falcon (SE,FE)
Piping Plover
Pied-billed Grebe (ST)
Prothonotary Warbler
Red-headed Woodpecker
Red-shouldered Hawk (SE)
Sandhill Crane (SE)
Sedge Wren
Sharp-shinned Hawk (SE)
Short-billed Dowitcher
Short-eared Owl (SE)
Snowy Egret (SE)
Stilt Sandpiper
Swainson's Hawk (SE)
Upland Sandpiper (SE)
Veery (ST)
Whip-poor-will
Wilson's Phalarope (SE)
Wood Thrush
Worm-eating Warbler
Yellow Billed Cuckoo
Yellow Crowned Night Heron (ST)
Yellow Headed Blackbird (SE)
Yellow Rail (SE)

REPTILES

Blanding's Turtle
Massasauga snake

MUSSELS

Slippershell Mussel
Spike
Butterfly
Rainbow

FISH

Blacknose Shiner
Weed Shiner
Iowa Darter

MAMMALS

River Otter

INSECTS

Melissa Blue
Ottoe Skipper
Cobweb Skipper
Dakota Skipper

PLANTS

American Dog Violet
Balsam poplar
Beaked sedge
Black-sided rice grass
Bog bedstraw
Common bog arrow grass
Crawe's sedge
Dragon wormwood
Few-seeded sedge
Forked aster
Ground juniper
Hairy marsh yellow cress
Hills thistle
Narrow-leaved sundew
Northern gooseberry
Pale vetchling
Plains buttercup
Prairie bush clover
Queen of the prairie
Red-berried elder
Richardson's Rush
Slender bog arrow grass
Small yellow lady's slipper
Speckled alder
White lady's slipper
Woolly milkweed

Forest Species

Riparian Forest Species Habitat Requirements

Need: Large tracts, >500 acres in size, of connected and un-fragmented native riparian forest and large tracts of native buffers on smaller streams. Ideally a >4,000 ac tract would be best for cerulean warbler habitat. (floodplain buffers primarily are mature closed canopy forests, while smaller streams are more open like savanna and swamps)

Recommend: Increase management of existing private and protected forest lands >100 ac by restoring native plants, reducing non natives and manage with prescribed fire. Continue to connect existing forest tracts and expand existing riparian buffers. Reduce forest fragmentation and edge effect by filling interior with trees and creating gradual transition areas at the forest edge with native shrubs, grasses and forbs. Manage riparian forests with landscape scale fire in order to naturalize the habitat and create multiple types to attract different species, specifically savanna species.

Upland Forest Species Habitat Requirements

Need: Large tracts >100 ac(250 - 4,000 acres), un-fragmented native mature forest.

Recommend: Increase management of existing private and protected upland forest lands >100 ac by restoring native plants, reducing non natives and manage with prescribed fire. Reduce fragmentation by reducing edges by filling interior with native trees and creating transition areas with native shrubs and grass on the outside edge of forest interior cover. Connect upland forest areas to other nearby forests and existing open space. For Birds: Reduce cowbird foraging habitat within at least a 1.5 km buffer around forest reserves. Allowing edges of forest tracts to grow up in shrubs or other natural vegetation so that edges are less abrupt may also help to reduce predation and parasitism in forest patches (S. Robinson, pers. Comm.). (PIF Birds of Conservation Concern, Prairie Peninsula).

Savanna Species Habitat Requirements

Need: Diverse forest/savannah habitat types with a variation in native tree canopy cover in large complexes.

Recommend: Manage existing large forest tracts >250ac with fire to create "landscape burns" (Partners in Flight, p30 Prairie Peninsula) and create a diverse matrix of habitats.

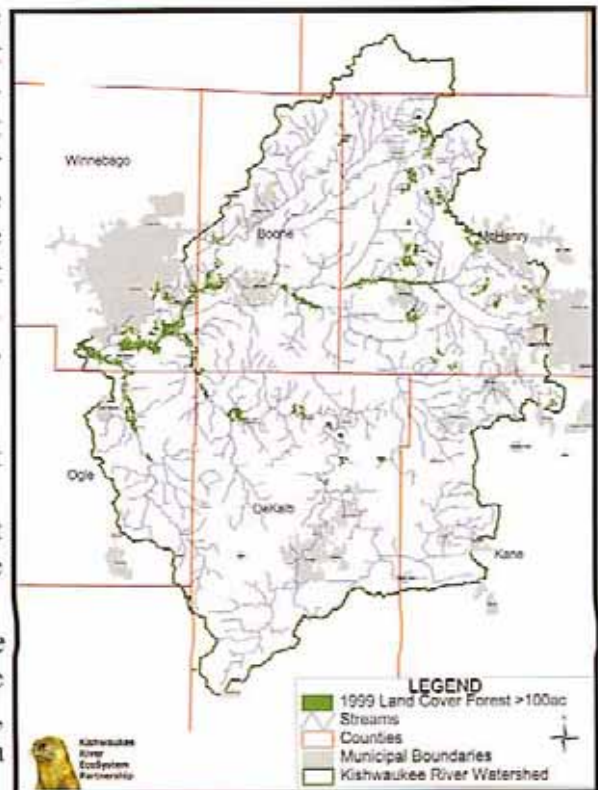


Fig. 24—Potential Forest Habitat Restoration Areas

Grassland Species

Open Grasslands Species Habitat Requirements:

Need: Large tracts with a variety of native grassland habitats (from short grass to tall grass with forbs).

- **Tall grass** - 85 acres needed for grasshopper sparrow and 140 acres for Henslow's Sparrow habitat – Best case scenario 2500 acres of contiguous native grassland.
- **Short grass** - 125 acres to support most short grassland bird species. Best case scenario 2500 acres of contiguous native grassland.

Recommend: Create or restore large tracts of >100 ac of native grassland on existing cool season grasslands and manage with prescribed fire.

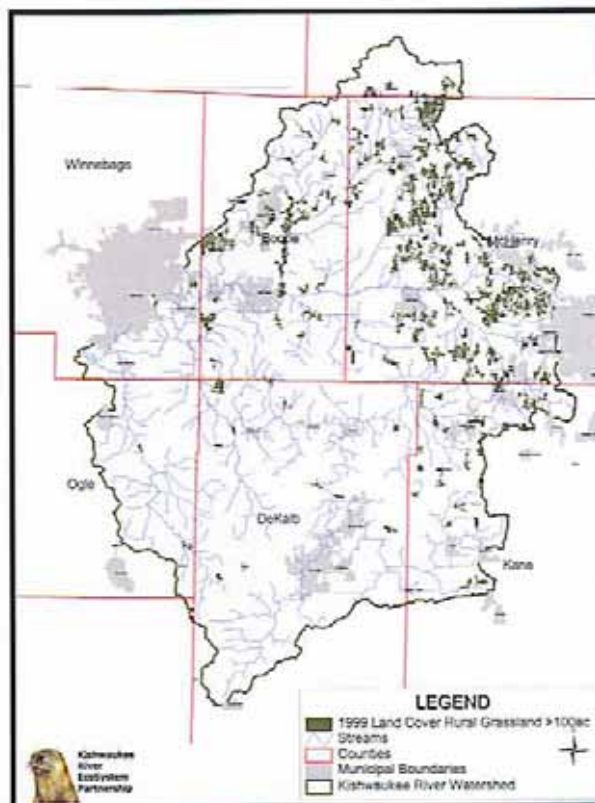


Fig. 25—Potential Grassland Restoration Areas

Grasslands With Shrubs—Species Requirements

Need: Large tracts with a variety of native grassland habitats (from short grass to tall grass with shrubs).

- **Tall grass w/shrubs** – 40 acres for bobwhite quail -75 acres for verios

Recommend: Create or restore large tracts >100 ac of native grassland on existing cool season grasslands and manage with prescribed fire

Wetland Species

Wetland Species Habitat Requirement

Need: 25 acres is adequate to support most wetland species. However, large complexes of wetlands >25acres with a variety of habitats like open water, mud flats, sedge meadow and swamp provide the most benefit.

Recommend: restore and enhance wetland complexes greater than 10 acres in size to support more species than isolated wetlands. (Fairbairn and Dinsmore 2001, Naugle et al. 2001). **Water level management can be used to accommodate the needs of species requiring different types of wetlands.** Wetland restorations have been successful in providing more breeding and migration habitat for wetland species (Partners in Flight).



Fig. 26—Potential Wetland Habitat Restoration Areas

Promote Stewardship of Natural Resources on Private Lands by Increasing the Level and Consistency of Technical Assistance

(Objectives 1, 2, 3 and 4)

ACTIONS

- **Maintain current list of resource agencies and organizations that have programs that assist private landowners to manage natural resources**
- **Establish a cooperative relationship with groups and organizations that would be willing to actively assist and promote private stewardship efforts**
- **Sponsor workshops about how to establish backyard prairies, stream buffers, and enhance native habitats**
- **Distribute information on control and management of invasive species**
- **Create website links to groups and programs for private landowners**
- **Identify several model restoration projects as examples of ecologically sensitive resource management to highlight and promote**

With a large portion of the watershed in private ownership and the fact that the Conservation and Forest Preserve Districts cannot own and protect all of the open space, KREP has to work with and assist these owners if it is to make a considerable contribution to conserving and protecting habitat in the watershed. Often landowners do not know what resources are available to them to solve the various problems they may face. Several helpful documents already exist and KREP should work to distribute these resources to private landowners who have significant open space. KREP does not have the resources to solve the watershed's problems alone. We should partner with existing groups and programs to cooperatively address conservation on private land. One of the main problems on private land is the lack of management. Prescribed fire and removal of invasive species are the key recommendations to improving habitat.



Figure 28
The use of prescribed fire is one way to manage natural areas and reduce non native invasive species.



Figure 27
A forestry mower is used to remove non native buckthorn and honeysuckle and restore native prairie areas.

Work with Educational Agencies and Organizations to Increase the Understanding and Awareness of Wetland, Ground Water and Surface Water Resources

(Objectives 1, 2, 3, 4, 5 & 6)

ACTIONS

- Sponsor workshops about the interactions of ground and surface water
- Sponsor an environmental education summit to identify needs and distribute information on existing environmental education programs
- Distribute environmental education materials to teachers
- Distribute citizen pollution complaint forms to the public with information about how to recognize and report violations of storm water and erosion control permits on construction sites and other sites in the watershed
- Hold workshops for contractors to explain new storm water permit requirements
- Conduct a “bio-blitz” on the South Branch Kishwaukee River to collect biological information that is currently not available or is out of date

Examples of pollution where a complaint should be filed:



Figure 29



Figure 30

Illegal dumping of fill materials (Fig. 29) into rivers, streams and wetlands. Lack of and improperly placed and maintained silt fencing (Fig. 30). Lack of cover to prevent soil erosion (Fig. 31). If you see examples similar to these contact your local EPA office or submit a citizen pollution complaint forms. Further information is available online at <http://www.epa.state.il.us/pollution-complaint/>.



Figure 31

Support Improvement of Recreational Opportunities and Increased Access Along Rivers and Streams

(Objective 5)

ACTIONS

- Work with open space and planning agencies to update the Boone-Winnebago Greenways Plan
- Assist DeKalb County to develop a greenways plan for the South Branch
- Mark mileage along canoe routes
- Encourage landowners to provide opportunities and access for hunting and fishing
- Develop a coordinated trail system within new developments along rivers and streams throughout the watershed
- Identify access problems along the rivers
- Update the canoe and fishing guide for the Kishwaukee River
- Provide additional canoe launches along the South Branch Kishwaukee River



Figure 32

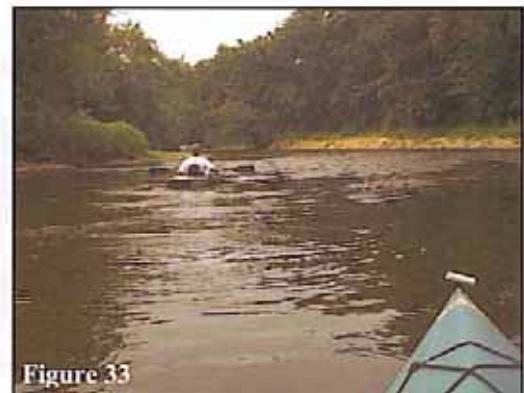


Figure 33

Canoeing and kayaking are popular along the North & South branches of the river.

Promote the Creation and Restoration of In-Stream Habitat for Aquatic Species

(Objectives 1, 2 and 3)

ACTIONS

- Discourage channelization of natural streams and maintain natural stream meanders
- Develop and distribute guidelines for how to create and/or restore ecologically sound stream channel habitat
- Distribute information about permits needed for channel maintenance
- Encourage the use of native vegetation that will not impede flood flows
- Promote the use of channel designs that improve habitat and reduce maintenance costs of drainage systems

Sixty-nine percent of the Kishwaukee's streams have been channelized (Fig. 35). Channelizing our streams has eliminated and degraded most of the in-stream habitat required for a diverse stream ecosystem and short circuited the natural geomorphic functions of the stream itself. The result is a loss of habitat for aquatic species and overall aquatic biodiversity, erosion along the stream banks and excess sedimentation in the stream channel, and ultimately an increase in the amount and frequency of flooding to areas downstream. Most of the channelization occurs along the headwater tributary streams that needed for spawning and rearing young fish. Without in-stream habitat like rocks, vegetation, some woody debris and natural functions, the young fish have little food, can get washed down stream and become vulnerable to predators.

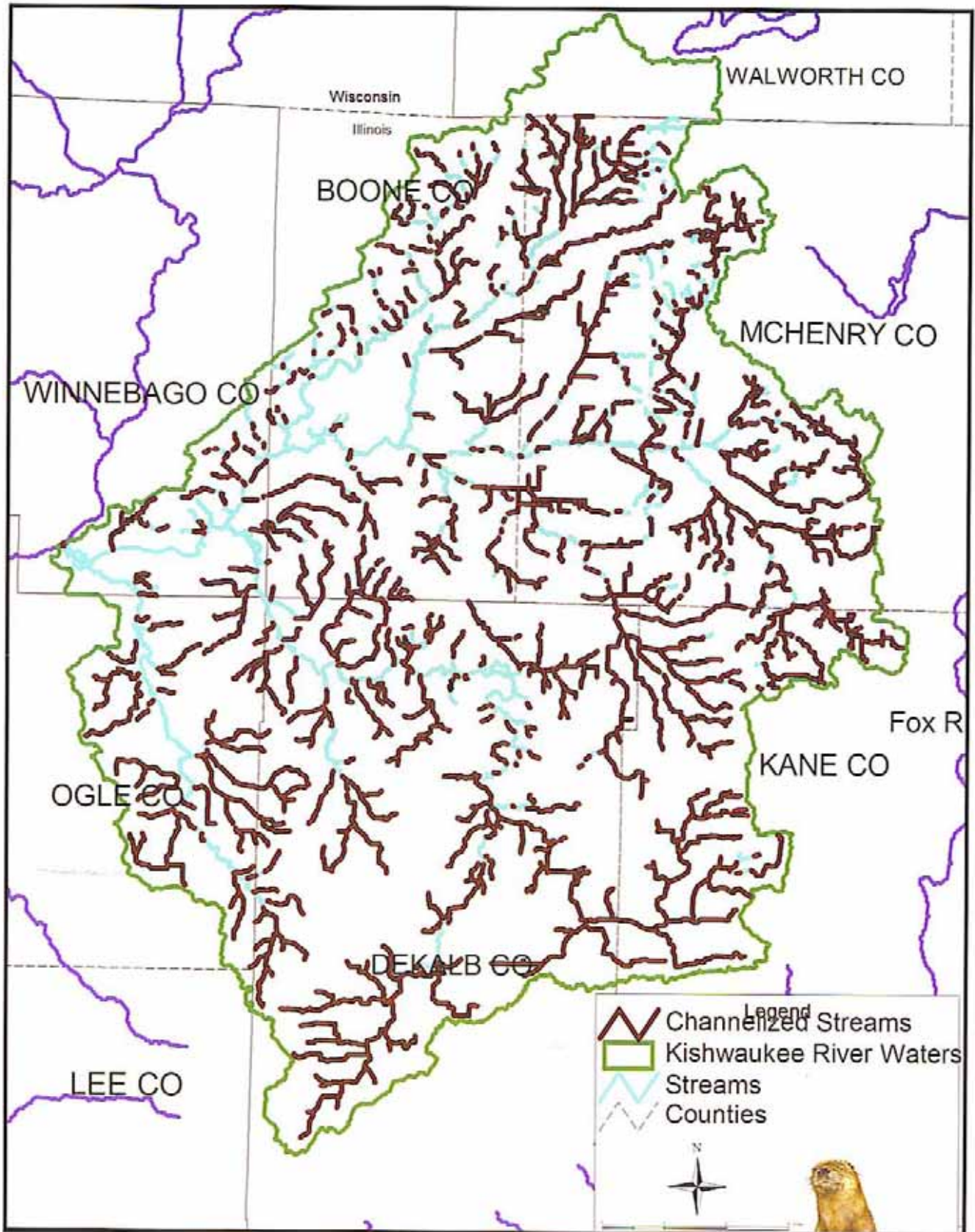


Naturally Functioning Stream Channel



Recent Channelization

Channelized Streams





This project made possible using grants from McHenry County Conservation District, Grand Victoria Foundation and the IDNR C-2000 Program



**Kishwaukee
River
EcoSystem
Partnership**

Website: <http://krep.blos.nlu.edu>
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