

# Land



*We abuse the land because we regard it as a commodity belonging to us.  
When we see land as a community to which we belong,  
we may begin to use it with love and respect.*

~ Aldo Leopold

## Why Care?

-  Habitats lost now are likely gone forever. The decline of natural habitats and wild species signal changes with potentially serious long-term impacts.
-  Only 0.5% of Wisconsin's original grassland remains and much of this is degraded.
-  Grassland-dependent birds, like meadowlarks and bobolinks, have experienced the greatest population decline of all bird groups in the Midwest due to loss of grassland habitat.
-  Wetlands play an important role in the life cycle of many species. Wetlands are critical spawning areas for fish.
-  Rare micro-habitats are important to protect during times of climate stress because they shelter unique biological communities that are not fully understood.

## The Base of Life

The health of the land and our ability to reap a living from it are inextricably linked. The health of native terrestrial and aquatic organisms are also directly related to the health of the land. Changes in the way we use the land have caused significant changes to the original forest, wetland, and grassland ecosystems in the Basin. Changes in land use continue today. Some land uses, such as residential and industrial development, are even accelerating the challenges to maintain the health and ecological integrity of our native ecosystems. Today, in our Basin, approximately 73% of the land is in agriculture, 12% in residential, 7% in wetlands, 5.5% in commercial/industrial use, and 1.6% in woodlands.

Many people know of the serious loss of wetlands in Wisconsin and the U.S. (over 50% have been destroyed in our Basin) and the effect this has on rivers, flooding, groundwater, and wildlife. However, few people realize that other equally valuable wildlife habitats have also been lost, impacted, or altered in the Basin. For example, the loss of original prairie and oak openings or savannahs far exceeds the amount of lost wetlands.

## **Map 10: Rock River Basin Public Lands**

Please refer to the State of the Rock River Basin Report web page to view this map

# **Map 11: Existing and Drained Wetlands Dane County, Rock River Basin**

Please refer to the State of the Rock River  
Basin Report web page to view this map

Habitat loss and habitat fragmentation is accompanied by a serious loss of bird and animal diversity and numbers. In the Basin 134 species of animals, invertebrates and plants are listed as endangered, threatened or special concern species. Figure 10 shows the location of publicly owned state natural and recreation land in the Basin. Many of these sites protect some of the most environmentally sensitive areas. Other sensitive habitats still need protection and connection to each other to protect and preserve viable wildlife populations. The genetic isolation of species increases their vulnerability to biological and environmental threats.

However, purchasing a few more acres and placing them under public ownership will not by itself protect or restore sustainable ecosystems. Most land in the Basin is privately owned and will remain so. The more important goal is to encourage private landowners to use land management practices that will protect and restore the diverse habitats and species.

There is also growing awareness that protecting biodiversity of terrestrial and aquatic resources must include a large area or landscape scale ecosystem protection. As will be discussed throughout this report, residential or commercial land development, incompatible agricultural practices, and exotic species are major threats impacting individual critical ecologically significant tracts of land. Through the lack of a landscape scale vision and planning, many types of development continue to erase the connections between habitats. Protection is not being given at a scale of habitat that is vital to support large-ranging mammals, migratory birds and aquatic organisms.

A good example of the need for a landscape scale approach to resource management is the valuable and sensitive Niagara Escarpment habitat. The Niagra Escarpment, which is not just one ledge but a series of rather short limestone ledges, lies in several of the Basin's northern counties, including Dodge, Fond du Lac and Washington counties. The ledges also occur in several other basins in a number of counties. The ledges have only been partially studied, but the research shows that many species previously unknown live in this part of the state. These sensitive areas face serious pressure from housing development and rock quarrying. Increased development on or near the escarpments changes the habitat and environmental corridors needed to sustain the fragile life on this unique, irreplaceable limestone ledge.

## Wetlands

There are many types of wetlands. Generally when the public thinks about wetlands, they think of cattail marshes. But wetland habitats range from sedge meadows to deep-water marshes to floodplain forests. The DNR has detailed information available at its regional offices showing the different types of wetlands in Basin watersheds.

Wetland acreage in the Basin has greatly decreased since Euro-American settlement. Until recently, wetlands were viewed as wastelands with little economic value until drained or filled. A good example of Basin wetland losses is shown in Map 11. This map displays a portion of Dane County's wetland areas. The map shows 22,810 acres of existing wetlands and 29,450 acres of drained wetlands (greater than 50% loss). Drained wetland areas have good ecological potential for wetland restorations. Other counties also have numerous drained wetland areas. Most Basin wetlands were lost due to opening land for agriculture. However, urban development contributes to significant wetland loss.

☆ For more information on wetlands see:  
[www.wiscwetlands.org](http://www.wiscwetlands.org)

Some state programs assist agricultural landowners in draining water from their land. County Drainage Districts are regulated by the Department of Agriculture, Trade and Consumer Protection (DATCP). Districts help landowners, mostly farmers, manage area-wide drainage ditch systems. While moving water off the land improves farming potential, associated wetlands lose their water inputs and the wetland vegetation declines or disappears, and the rapid drainage increases flood potential.

In 1999, the Basin had approximately 120 Drainage Districts on record. Eighty-nine of the Drainage Districts covered approximately 111,459 acres. The acreage of the other 31 Drainage Districts was not reported. However, it's believed that some of the unreported Drainage Districts are defunct. Jefferson County has the both the largest (8,600 ac) and the smallest (40 ac) Drainage District.

Overall, due to the state and federal wetland protection rules and programs, it appears that the state may be holding its own with loss of wetlands. Careful assessment and protection must be available to all existing wetlands because each contributes to the health of the whole.

## Oak Savannas and Forests

After European settlement, the forest in the Basin began to rapidly change. Most of the oak savannas were cleared or plowed. Overgrazing and invasion by dense shrub and trees, due to lack of fire or animal grazing, also contributed to the loss of this ecosystem. Today only about 550 (0.01%) of the original 5.5 million acres remain in the state.

There are many private land opportunities for small-scale oak savanna restorations in the Basin. A wide variety of birds, reptiles, amphibians, insects and mammals have been identified that would benefit from oak savanna restorations. Several of these species are listed as State Endangered, Threatened or are of Special Concern.

Over the years, much of the Basin's original deciduous forests were cut down to support communities. Cur-

rently, forests cover only 440,000 (8%) acres of the Basin. These forests are generally small and in isolated parcels. Many wildlife species associated with forests require larger areas or connected forests to exist. The largest contiguous forest remaining in the Basin is the Kettle Moraine State Forest.

After the 1950s the DNR developed programs to help landowners protect and manage woodlands. Woodland owners in the Basin are encouraged by DNR and consulting foresters to manage their forests for timber products, wildlife habitat, recreation and soil and water conservation. Every year many acres of cropland and grassland are planted with tree seedlings to grow new forests. Since the 1950s, rural forests have increased slightly in the Basin.



For more information on forestry see:  
[www.dnr.state.wi.us/org/land/forestry/uf/](http://www.dnr.state.wi.us/org/land/forestry/uf/)

**Wetland** ~ an area where water is at, near, or above the surface long enough to be capable of supporting aquatic or hydrophytic (water-loving) vegetation; and which has soils indicative of wet conditions. Areas such as: swamps, marshes, bogs, and fens.

## Why Protect Wetlands ?

- Wetlands store runoff from heavy rains and snow melts and reduce flood damage.
- Wetlands filter pollutants, nutrients, and sediments from incoming waters and protect water quality in our lakes, rivers, streams, and wells.
- Wetlands act as buffers between land and water. Shoreland wetlands protect against erosion by absorbing wave and current energy.
- Wetlands are essential habitat for fish, waterfowl, and a variety of other animals.
- Wetlands provide beautiful open spaces that enhance the quality of life, property values, recreation, and tourism.

The DNR also is working with municipalities to increase participation in the Urban Forestry Program. Besides their aesthetic value to homeowners, trees provide significant shade cover and typically increase property values. Properly located trees near houses provide considerable energy savings by providing summertime cooling or shelter from winter winds. Trees also tie up carbon in the atmosphere, while providing oxygen via photosynthesis.

Wisconsin's Urban Forestry Program ranks third in the nation. As of 2002, one hundred and thirty two municipalities in Wisconsin were recognized nationally as 2000 Tree City USA. The 21 municipalities in our Basin are: Beaver Dam, Beloit, Delafield, Delavan, Fitchburg, Fort Atkinson, Horicon, Jefferson, Lake Mills, Madison, Mayvilles, Middleton, Monona, Oconomowoc, Theresa, Stoughton, Sun Prairie, Waterloo, Watertown, and Whitewater.

## Prairies and Grasslands

Originally true prairies and grasslands (tall and short grasses) comprised about 480,000 (20%) of the Basin acres. Generally, the prairies and grasslands contained some of the most productive and relatively easily worked soils in the Basin. So it's no surprise that they were quickly and almost completely put under the plow or developed for community life. However, fire control also played an important role in the decline of the prairies. Without periodic burning, woody shrubs and trees can quickly invade and eliminate prairie ecosystems.

The current estimate is that only about 2,400 (0.5%) of original grassland vegetation acres remains in the state. Most of this is severely fragmented and degraded. Some prairie remnants or restorations are maintained by prescribed burning.

☆ For information on prairies see: [www.prairies.org/](http://www.prairies.org/)

## The Good News!

In 1996, The Nature Conservancy (TNC) shifted its focus from state boundaries to ecoregions to help develop priorities for conserving biodiversity. TNC helped coordinate ecoregion planning efforts in the U.S. Their study of the Prairie-Forest Border Ecoregion (including our entire Basin) is near completion. The project developed a database report and mapped the Ecologically Significant Areas in the ecoregion and the Basin. The database shows the conservation targets

that are regionally significant and are needed to meet the minimum goals of the ecoregion plan.

☆ For information about The Nature Conservancy: [www.tnc.org](http://www.tnc.org)

The Natural Resources Board (NRB) directed the DNR to conduct a Wisconsin "Land Legacy" study. This study is assessing the need for public land ownership over the next 50 years to meet outdoor recreation needs and to protect critical natural resources such as fish and wildlife populations, water quality, endangered/threatened species and the biological diversity of Wisconsin's ecosystems. DNR regional staff have begun identifying the critical, sensitive natural places in our area. The goal is to identify the sites to set the stage for working in partnership with interested citizens, private organizations and other agencies to protect these lands for current and future generations. The study is expected to be finalized in 2002. Read the sidebar "Important Conservation and Recreation Areas" at the end of Land section to learn more about the important sites in the Basin.

Several counties in the Basin, including Dane and Waukesha counties, have detailed information on a smaller scale showing sensitive, ecologically important land needing protection. These analyses help display the land areas needed to maintain connections between important habitats.

In early 2001, a major threat to protection of over one million acres of Wisconsin wetland habitat loomed because the U.S. Supreme Court ruling removed federal protection from small, isolated wetlands across the county. Five months later, Wisconsin became the first state to pass a law giving the state authority to protect such wetlands from filling and dredging. The wetlands now firmly under Wisconsin protection authority includes wetlands of all types, sedge meadows, shallow marshes and seasonal wetlands. The bill was passed unanimously by both the Wisconsin Senate and Assembly and signed into law by Governor McCallum.






Over the last several years many acres of state and private land has been converted to permanent grasslands using funding generated by waterfowl and pheasant stamp sales, and various state and federal grant programs. Many public and private partners are involved in these efforts notably Ducks Unlimited, Wisconsin Wetlands Association, and Pheasants Forever.

## Prairie Partnerships

### Schools and Conservation Organizations Working together!

The Concord School District and Parent Teacher Organization (PTO) teamed up with the Oconomowoc Sportsman's Club, Jefferson County Pheasants Forever, WI Environmental Education Board and the DNR to turn 10 acres of Wildlife Management land into a beautiful prairie community.

The partnership accomplishments include:

-  Re-established a prairie community including 37 species of forbs and 5 species of grasses
-  Turned 10 acres of DNR Wildlife Management land into an outdoor classroom
-  Improved habitat for wildlife and hunting.
-  Parking lot improved to accommodate school bus parking and new sign installed, courtesy of the DNR and Concord School District.
-  Students actively involved in: fund raising and buying seed, preparing the land for seeding, seeding itself and now maintenance - affording many educational opportunities and developing ownership protection outlook.

#### **The result: A win for everyone!**

the school, wildlife, hunters, the neighbors and everyone who takes a walk in the prairie.









For Information:

Concord Elementary School  
Phone: (262) 593-2450

PTO President: Stacey Wolter  
Phone: (262) 593-2015  
Email: [wolters@watertown.k12.wi.us](mailto:wolters@watertown.k12.wi.us)

## Land Trusts

Land Trusts are springing up around Wisconsin. These privately funded organizations seek to preserve lands that are closely identified with their community's natural heritage. Land trusts work with landowners, other conservation organizations and government agencies to protect:

-  Natural Areas - prairies and oak savannas, forests and other ecologically sensitive areas.
-  Wetlands, Streams, Rivers and Lakes – water quality, waterfowl nesting habitat and shoreline areas, and habitats that support fish and other aquatic species.
-  Working Forests – by developing sustainable forest plans.
-  Recreational Land – trail systems for hikers, bikers and cross-country skiing, as well as hunting and fishing areas.
-  Open Spaces – open areas important to many cities and towns because of their natural, historic and agricultural values.
-  Park Lands – initially given protection by a land trust, may be transferred to local governments as new parks or additions to existing parks.
-  Scenic or Unique Areas – scenic views from highways or unique natural features that are part of our priceless heritage, preserved for all to enjoy.
-  Agricultural Lands – land and water areas with significant agricultural value.

The Rock River Basin has seven locally led land trusts operating in our Basin: The Dane County Natural Heritage, Friends of Pheasant Branch – Middleton, Waukesha Land Conservancy, Ice Age Park & Trail Foundation, Inc., Jefferson County Land Trust, Grassland Conservancy (Green and Rock counties Audubon Society's land trust), and the Walworth County Land Conservancy. Many more land trusts are needed to preserve our natural heritage across the Rock River Basin.

To learn more about land trusts and forming a land trust, contact:

**Urban Open Space**  
200 N. Blount St.  
Madison, WI 53703

[www.uosf.org](http://www.uosf.org)

(608) 255-6793

**Gathering Waters Conservancy**  
211 S. Paterson St., Ste.180  
Madison, WI 53703

[www.gatheringwaters.org](http://www.gatheringwaters.org)  
\* Link to other WI land trusts

(608) 251-9131

**American Farmland Trust**  
135 Enterprise Dr., Ste. AFT  
Verona, WI 53593

[www.farmland.org/regions/upperMW](http://www.farmland.org/regions/upperMW)

(608) 848-7000



In the upper part of the Basin, the DNR's Glacial Habitat Restoration Area (GHRA) project has been very successful at protecting important natural habitats. The GHRA is a major, landscape-scale habitat restoration program covering approximately 530,000 acres, many of which are in the Basin. This program focuses on enlisting landowner participation in prairie and wetland restorations. Through this program and many others, the percentage of land in the Basin in permanent grassland is increasing.

Other successful upland and wetland habitat restoration programs include the the US Fish and Wildlife Service's Partners for Fish and Wildlife (PFW) and the Natural Resources Conservation Service's (NRCS) Wetlands Reserve Program (WRP) and Conservation Reserve Program (CRP and CREP).






To date, more than 105,000 acres of wetlands and prairies have been restored in the Basin through the WRP, CRP, GHRA and PFW programs and local conservation partnerships.

The DNR has many programs that help rural landowners maintain or protect their woodlands, such as the Managed Forest Law and the Wisconsin Forest Landowner Grant Program. In addition, private organizations, such as the Ruffed Grouse Society and the WI Wild Turkey Federation, also support forest protection and oak savanna restoration.

Overall, the outlook is mixed for the Basin's natural land communities and their associated wildlife. Wetlands may be holding their own. However, continued watch must be kept on existing wetlands to ensure their protection, though restoration of degraded or developed wetlands remain a priority. Many acres of forest and woodlands along upland and river corridors continue to be lost, and individual woodlots developed. Interest is increasing in prairie and oak savanna protection and restoration, but the size of a meaningful effort is challenging. Collective energy is needed to protect all these important ecological land communities, especially on a landscape scale.






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## WHAT YOU CAN DO . . .

-  Join the Basin's Wetland-Shoreland Issue Team. Call UWEX Rock River Basin Educator at (920) 674-7295
-  Restore a prairie - in your backyard, on your farm, school or other public land.
-  Share a special nature place with a child and teach them to love and appreciate it.
-  Participate in - or start! - local partnerships that protect habitat and natural resources.
-  Work to protect and connect sensitive habitats in your county or township.

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## TO LEARN MORE ...

-  Wetlands information:  
WI DNR  
[www.dnr.state.wi.us/org/gmu/uprock/surfacewaterfiles/watersheds/wetlands.html](http://www.dnr.state.wi.us/org/gmu/uprock/surfacewaterfiles/watersheds/wetlands.html)
-  Shoreland information:  
University of Wisconsin Extension  
[www.uwex.edu/ces/shoreland](http://www.uwex.edu/ces/shoreland)  
  
DNR Water Regulation and Zoning  
[www.dnr.state.wi.us/org/water/fhp/waterway](http://www.dnr.state.wi.us/org/water/fhp/waterway)
-  Forest information:  
Wisconsin Woodland Owners Association  
PO Box 285  
Stevens Point, WI 54481  
[www.wisconsinwoodlands.org](http://www.wisconsinwoodlands.org)
-  Public Land Protection information:  
The Trust for Public Lands  
[www.tpl.org](http://www.tpl.org)
-  Forestry information:  
DNR Bureau of Forestry  
(608) 267-7494

## Important Conservation and Recreation Areas in the Rock River Basin

The DNR has been directed to identify the most important sensitive natural resource lands for protection over the next twenty years in Wisconsin. The Land Legacy Study, which is still being completed, identified the following places as having potentially important significance in the Rock River Basin.

**Patrick Marsh-Deansville Connection, Dane County:** The 160 acre restored Patrick Marsh wetland is located near the 1,690 acre Deansville Wildlife Area adjacent to Sun Prairie. The conservation and recreation goals for the area would benefit by maintaining the open space between these properties and restoring critical parcels.

**Upper Rock River Corridor, Dodge/Jefferson Counties:** The corridor includes about 40 miles of the Rock River, 35 miles of the Crawfish River and adjacent areas such as Waterloo Wildlife Area and the Faville Prairie. Considerable variety of wildlife habitats and sensitive lands are in the corridor. The Rock and Crawfish rivers offer many recreation opportunities, notably fishing and boating, within an hour's drive of Milwaukee and Madison metropolitan areas.

**Jefferson Wildlife Area & Tamarack Fen, Jefferson County:** The Jefferson Wildlife Area consists of approximately 1,050 acres. The surrounding area has a large drumlin and the largest remaining tamarack wetland in the state.

**Glacial Habitat Restoration Area (GHRA), Fond du Lac/Dodge Counties:** The GHRA project is a regional approach to wildlife habitat management that focuses on establishing a patchwork of restored wetlands and grasslands to maintain waterfowl, wild pheasants and non-game grassland songbirds within an agricultural landscape. Residential development is increasing in the project area. Expansion of the GHRA goals include maintaining farmland in the landscape and restoring additional wetlands/grasslands that would provide significant recreation and conservation benefits.

**Horicon Marsh Area, Dodge County:** Horicon Marsh is one of the state's most valuable waterfowl resources. Land uses are changing rapidly in the area, particularly along the east side of the marsh, and along the Niagara Escarpment. Many of the area's scenic and biological values are dependent upon maintaining agricultural and open space landscape.

**Niagara Escarpment, Dodge/Fond du Lac Counties:** The Niagara Escarpment is a long dolomite ridge that in Wisconsin runs from Door County south along the east side of Lake Winnebago and then finally recedes underground in Dodge County. Many of the state's most spectacular views are from this ridge. The Escarpment also harbors very unusual habitats that have many rare species. The long, linear feature can link many existing protected escarpments or near escarpment areas, such as High Cliff State Park and Horicon Ledge County Park. Its length and proximity to the Fox River Valley cities, makes it a very frequently visited feature in the state and there is strong interest in protecting additional areas to meet conservation and recreation needs.

**Lima Marsh - Storrs Lake - Clover Valley Wildlife Area Connection, Rock/Walworth Counties:** All three of these wildlife areas are located near Janesville & Whitewater. They receive heavy use for hunting, fishing, hiking and wildlife observation. Linking these areas through a network of open spaces would support important recreation and conservation values. This area would link the Southern Unit of the Kettle Moraine State Forest with the Rock River corridor and the wetlands along the east shore of Lake Koshkonong.

**Former Rockdale Mill Pond Area, Dane County:** The Rockdale Dam, located just south of Cambridge was recently breached allowing the Koshkonong Creek to run free. The Dam site area and 70-acre impoundment are being reclaimed and incorporated into Dane County's adjacent CamRock Park. Expansion of the protected area along the stream corridor would provide a range of recreational trail uses.

**Lower Rock River Corridor, Rock County:** This place includes 40 miles of the Lower Rock River and tributary corridors including the lower Yahara River, Bass Marsh and Turtle Creek. The riverine shorelines remain relatively undeveloped and the waters support an excellent smallmouth bass fishery. In several places rich and diverse mussel populations occur. The Rock River passes through Beloit and Janesville where there is considerable interest in restoring riverbanks and protecting adjacent land. The corridor offers excellent short and long distance canoeing potential and opportunities for wetland protection.

**Prince's Point, Scuppernong and Bark Rivers lowlands, Jefferson County:** The Prince's Point Wildlife Area, located at the junction of the Bark and Scuppernong rivers, lies north of the city of Whitewater. It is a heavily used public hunting area. This area, given its proximity to Milwaukee, Janesville and other cities, offers the opportunity to connect the Southern Unit of the Kettle Moraine with the Rock River corridor. The wet nature of the land best suits hunting, fishing and low intensity recreation activities.

**Lake Koshkonong shoreline - wetlands, Jefferson County:** Lake Koshkonong, one of Wisconsin's largest shallow lakes, was originally described by settlers as a large meadow because wild rice covered the lake. The lake is almost surrounded by large backwater marshes which are separated from the lake by a shallow bank that keeps the carp from invading the marshes. The high quality backwater marshes still exist and attract large numbers of waterfowl and other wildlife. Much of the shoreline adjoins large wetlands and remains undeveloped, thus offering the opportunity to protect this important lake-wetland complex.

**Lake Mills Wildlife Area, Jefferson County:** The Lake Mills Wildlife Area, located at the southern end of Rock Lake, consists of diverse habitats of upland oak woods, oak savanna, deep-water marsh, and lakes. The site is near several urban areas; Madison, Lake Mills and Watertown. The Glacial Drumlin State Trail also runs through the area. The quickly growing spread of rural housing is affecting the recreation and conservation values of the area. The conservation and recreation goals for the area would greatly benefit by maintaining the open space in the area and restoring suitable wetlands.


**Harvey's Marsh, Badfish - Anthony - Hook - Harveys - Island lakes, Dane County:** This area consists of a number of prairie pothole lakes that provide important habitat for waterfowl nesting and grassland birds. The area offers the opportunity to restore wetlands, grasslands, and oak savannas. It is near the Madison metropolitan urbanizing area. Common recreation uses that could benefit are hunting, motorized trails, bird watching, and scenic driving.

# Agriculture

*The crux of the land problem is to show that ...a harmonious balanced system of landuse...is possible on private farms...and is advantageous to both the owner and the public.*

~Aldo Leopold

## Why Care?

-  High levels of bacteria, from animal and human sources, are a significant concern in some streams because of potential health impacts.
-  Excess nitrogen applied to fields can contribute to nitrate contamination in water supply wells and streams.
-  Phosphorus from farm fields contributes to the excess growth of algae and other plants in lakes and streams.
-  Sediment is choking the life out of many Basin rivers, lakes, and wetlands. It also can contain nutrients like phosphorus and sometimes contaminants.
-  The health of the Gulf of Mexico fishery is related to the land management practices in the Upper Mississippi River Basins, including the Rock River Basin.

Because agricultural land use dominates the Basin, its impact on the land, streams, lakes and groundwater is significant and quite visible. What is not so visible to some is the farming community's commitment to the stewardship of the land. Two important challenges face farmers in protecting their land. Economic market forces continually make farming a very difficult way to support a family - as some say 'farmers spend \$1,000s to make pennies'. Many Conservation Practices require a significant financial investment. The other factor is the unpredictability of nature. Any farm management practice can be overwhelmed by a two-inch storm falling fast over farm fields. The farming community needs the commitment of all Basin residents to support their stewardship of the land.

The Rock River Basin is an agricultural powerhouse in Wisconsin. Farming is a very important economic asset to the Basin. Several Basin counties are among the top agricultural producing counties in Wisconsin. Dane, Dodge and Fond du Lac counties in 1999 each produced agricultural products with a market value of \$150 million/year or more - the highest Wisconsin valuation category. Rock, Jefferson and Columbia counties produced agricultural products with a value greater than \$100 million.

- ☆ For more information on WI Agriculture Statistics:  
[www.nass.usda.gov/wi/](http://www.nass.usda.gov/wi/)  
(select WI Agri. Stats.Pub., select County Estimates)

Besides the tremendous economic value of farming to local communities and the Basin, to the surprise of many, another very important value of agriculture is the role farms play in supporting habitat for wildlife. Because farms are the number one land use in the Basin, they are especially critical to preserving ecosystems on a landscape scale. One of the best ways to protect the watershed's water quality is to keep the land in agriculture and employ on-farm conservation practices, such as conservation tillage and streambank buffers. Besides the benefits to water quality, imagine the benefits to wildlife if every stream and river had an adequate riparian buffer along it. From many perspectives, a critical need in the Basin and state is finding ways to support conservation-minded sustainable farming.

- ☆ For more information on sustainable farming see:  
<http://1000ways.baka.com>

The success of agriculture in the Basin is a reflection of our productive and irreplaceable soil legacy and the hard working farm families that work the land. With this farming success however, also comes the potential for water quality impacts. Runoff from agriculture significantly impacts water quality in rivers and lakes in our Basin - and beyond. Runoff can impact waterbodies by creating conditions where there is little or no oxygen available. These areas are called hypoxic zones. Research on the Gulf of Mexico hypoxic zone shows the size of the zone is related to how much stormwater and with all its pollutants runs off the land in the Upper Midwestern river basins, including the Rock River Basin. The major contributing source is agricultural runoff from upstream river basins.

- ☆ For more information on agrichemicals in waterways:  
<http://toxics.usgs.gov/topics/agchemicals.html>

However, even as we discuss agriculture's significant role in stormwater runoff pollution, keep in mind that in some watersheds and in many streams and lakes, other sources are the largest contributors of sediment and nutrients. Wastewater treatment plants and erosion from the thousands of residential and industrial con-

struction sites across the Basin also deliver large quantities of nutrients and sediment. Basin residents going about their normal living activities, caring for their lawns and driving cars, also contribute significantly to runoff pollution.

## Crops

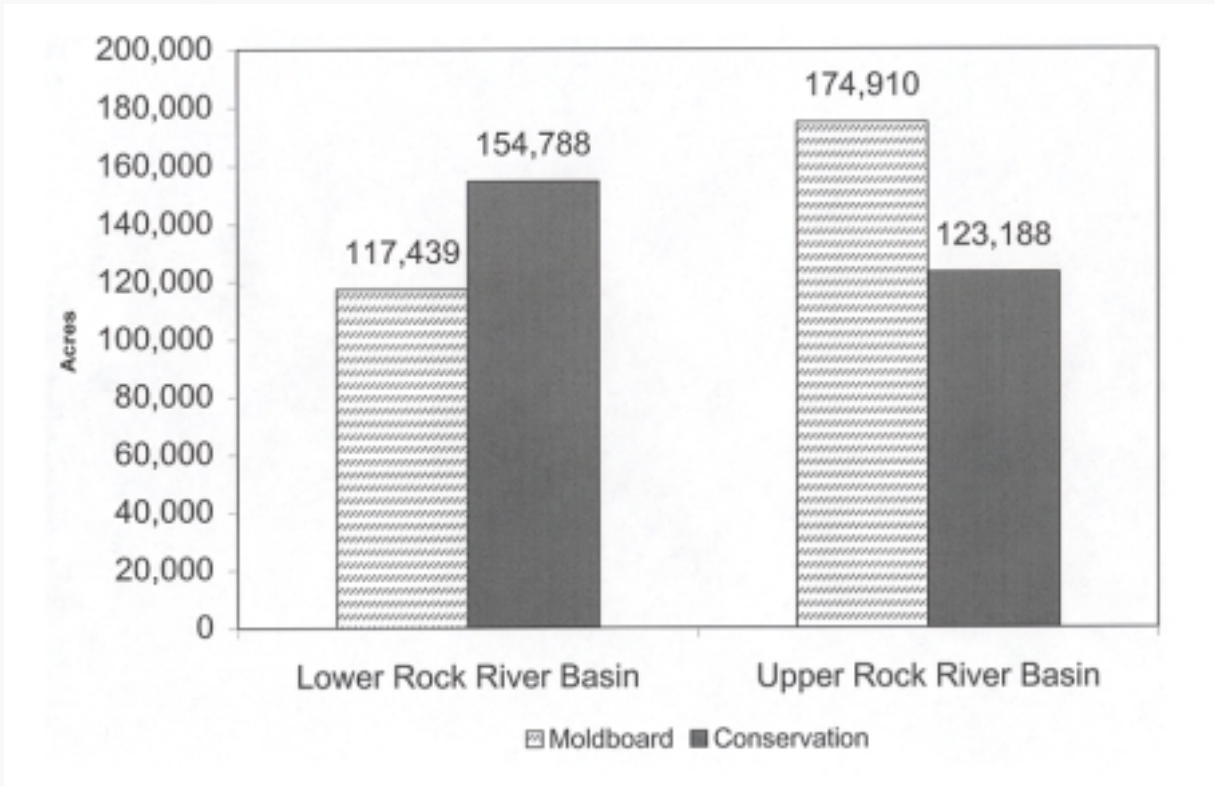
Most crop-growing disturbs the soil and can set the stage for potential runoff of soil to rivers and lakes. Crop type and associated cropping practices affect the amount of soil and pollutants coming off farm fields. Row crops like corn and soybeans typically expose more soil between each row and each individual plants, than other crops, especially before these plants reach maturity or after harvesting. The bare soil is vulnerable to the impact of rain causing the washing of soil down the fields and into our waterways. However, corn and soybeans can often be grown using no-till or other conservation tillage practices that better hold soil on the land. Small grain crops like wheat and alfalfa better reduce that amount of runoff because of their denser planting.

Traditionally, farmers overturned soil during spring or fall plowing using moldboard plows, which leaves bare soil fully exposed to storm runoff. This tradition is changing! Farmers increasingly are using conservation tillage, which leaves corn stubble or other plant residue on the fields. The stubble breaks the impact of rain, slows runoff and more water soaks into the ground. As a result, less soil and nutrients leave the field and more rainfall or runoff recharges the groundwater.

It takes special seed planting and farm equipment to do conservation tillage. The new planting and tillage implements can be expensive and require large investments by the farmer. Consequently, farmers must be confident that the equipment will get the job done and be profitable besides protecting water quality.

Annually, the Basin's County Land and Water Conservation Departments (LCD) conduct agricultural transect surveys. The surveys are conducted by driving a proscribed route around a county and using statistical sampling methodology; assessing agricultural land use at the field stops. Information is gathered on crop rotations, crop types, tillage practices, fertilizer application and manure management, irrigation, and the location, size, and number of animals for large dairy, hog, beef, and poultry operations.

# Conservation Tillage vs. Moldboard Plowing in the Rock River Basin



The surveys show that more farmers are using conservation tillage in the Basin and helping control runoff of soil and fertilizers. However, the environmental and economic advantages of conservation tillage aren't fully recognized. More education and increased program support is needed. The accompanying graphic shows the acres of conservation tillage compared to traditional moldboard plowing employed by farmers in the Upper Rock and the Lower Rock River Basin. Additional information is also available for other crops in the 28 watersheds in the Basin from the DNR, DATCP, and County LCDs.

In order to participate in Federal Programs and Wisconsin Farmland Preservation Program, farmers are required to have a farm Conservation Plan. These plans, which contain detailed information on farming practices and cropping history, significantly assist the landowner in managing their land not only for crop production but also to protect the Basin's natural resources.

☆ For more information on farm conservation plans:  
<http://datcp.state.wi.us>  
(search the site by typing in 'conservation plan')

Most crops require added fertilizers like phosphorus and nitrogen, and sometimes pesticides or herbicides, to help plants achieve their maximum production. However, over-fertilization of farm fields is a significant problem in our Basin. Statewide soil testing by the University of Wisconsin Department of Soil Science shows that the average phosphorous level in cropland soils has increased since 1974 (from 37ppm to 52 ppm today). This is a result of over-application of commercial fertilizers, animal manure or wastewater treatment plant sludge. Phosphorus overloading significantly increases the potential for large quantities of phosphorus moving with soil into waterways. The result is increased rooted plant and algae growth in rivers and lakes. Phosphorus also creates increased biological oxygen demand in the rivers and lakes stressing or even killing water-living animal species.

It's very important that the appropriate amount of phosphorous be added to a field since phosphorus is usually tightly bound to soil particles. Farming practices that hold soil on the field help keep excess phosphorus out of the rivers and lakes. Although even here, new information is showing that we've perhaps been too complacent about high phosphorus levels in soil. Some studies are showing that very high levels of phosphorus in some soil may result in phosphorus dissolving and

leaving the field in solution - not just moving off the fields with soil. Most nutrient application regulations do not regulate phosphorus application rates, but instead only regulate nitrogen rates. This regulatory approach may be changing.

Excess nitrogen applied to crop fields generally does not leave the field with soil movement off the field. Nitrogen usually moves downward through the soil into the groundwater. In the Basin, increasingly high levels of nitrates are showing up in water wells and in many streams, as discussed in the groundwater section. While other sources also contribute to the nitrogen found in rivers and lakes, agriculture, especially though drain tiled fields, contributes large quantities of nitrogen to waterbodies.

Increasingly farmers are using Integrated Nutrient Pesticide Management planning on their farms. These plans help the farmer calculate and apply the needed amounts of fertilizers and pesticides to crops during planting and through the growing season. More farmers are also using crop consultants to check crops weekly so that insecticides, pesticides and fertilizers are used only when they're needed. This approach helps farmers save money on fertilizers and pesticides while preventing excess nutrients and pesticides from entering our rivers and lakes.

## Animal Husbandry

Livestock or poultry farming can potentially be a significant source of nutrients and bacteria to the environment. These operations result in a large volume of manure that must be handled in an environmentally safe manner while taking advantage of its nutrient value.

Over the last five years in the Basin and Wisconsin, the total number of dairy farms has decreased while the number of large size dairy or livestock farms has increased. As dairy farms get larger, typically farmers purchase more animal feed and grow less on-farm alfalfa, a crop that better reduces surface water runoff due to its denser planting.

Frequently, as animal operations increase in size, suitable nearby land for spreading manure often isn't available. This potentially means more manure in concentrated areas and increased potential for water quality impacts from excessive nutrients, bacteria and biological oxygen demand. Air quality is also an increasing concern. Odor is a big issue when large factory type animal farms are proposed in an area.





Manure from large, permitted livestock farms and hundreds of smaller dairy farms is routinely spread on Basin farm fields. Spread correctly, at the rate of plant need and uptake, manure provides essential nutrients to agricultural crops. However, soil testing on fields spread with manure often shows that when soil receives nitrogen levels equal to plant needs, the phosphorus load exceeds crop needs.

Studies raise concern over not only the large quantity of manure to be land spread, but also that the amount of phosphorus in manure is rising. Dairy cows need more phosphorus in their diet for good milk production. As a result, often additional phosphorus is added to the animals diet; but today many feed stocks contain more phosphorus than in the past. For example, one common animal feed is cottonseed, which is nutritious and generally less expensive than other animal feed. However, its high phosphorus content is more than can be utilized by some animals. As a result, manure from animals fed cottonseed can contain higher levels of phosphorus. The overall result is that more phosphorus is added to soils, which may already have more phosphorus than the plants can consume.

A common perception is that the largest farms with large herds of animals automatically have the greatest impact on the environment, especially from the great quantities of manure they produce. For example, a 1,000 animal unit farm produces an amount of sewage equal to a 5,000-person city. Generally, for the most part the large permitted farms are more aware of the environmental impacts of their operations and control their pollutants. However, the individual large-scale animal farms hold probably the greatest potential for a locally environmentally disastrous incident. As the numbers of large-scale animal farms increase, the potential grows for associated larger-scale environmental problems.

Large sized animal farms, those with greater than 1,000 animal units, (1,000 animal units equals 700 dairy cows or 2,500 pigs over 55 pounds or 100,000 egg-laying chickens or 55,000 turkeys) are regulated by the DNR under its Animal Waste program. A Wisconsin Pollution Discharge Elimination System (WPDES) permit must be obtained and standards followed for managing waste from these facilities. The Basin has 16 permitted animal production facilities as of 2001. Five are for dairy operations, three are beef or bull producing farms, three are swine facilities, one is a combined beef/swine facility, and four are poultry operations.

Smaller animal operations can cause more environmental impacts to land and water resources because of their large numbers and that they generally operate under fewer environmental regulations. In 1999, through state legislation, smaller animal farms unregulated through a WPDES permit were brought under increased regulations. Small animal farms must meet the following animal waste prohibitions, when state funding is provided for cost sharing:

-  No overflowing manure pits.
-  No unconfined stacking of manure near waterways.
-  No direct runoff of waste into waterways.
-  No grazing or pasturing of animals close to waterways such that sod cover is lost.

Other state legislation requires DNR and DATCP to develop additional rural and urban nonpoint source pollution runoff control standards and criteria for the farming community and urban areas. The NPS Program revision is still underway and expected to be completed in 2002.

While there are still farmers who have barnyards draining right into streams, and some who allow their cows to wander in the stream - causing stream banks to erode, the numbers continue to decline. There are also still some farmers who plow up-and-down hillsides - instead of crossways to reduce runoff. However, most farmers have made important strides in reducing run-off pollution. While there's still a lot to be done on farms, collectively, farmers continue to step up to good resource protection. In fact, it's certainly true that most farmers want to farm so as to protect the soil, streams and groundwater and many know how to do so. The largest obstacle is having an adequate farm income to finance conservation protection practices.

## The Good News!

Increasingly, there are more efforts directed to helping farmers stay in farming. A number of agencies and organizations have programs helping to preserve agriculture in the state and our Basin. One organization in particular, the American Farmland Trust, is dedicated to preserving farms and farmland through a number of avenues, including the purchase of development rights on a farm, through easements.



In our Basin, the Town of Dunn in Dane County was the first community in the state to develop a program to Purchase Development Rights (PDR) on farmland. By Spring 2001, the township purchased development easements rights to over 1,000 acres on 8 farms. In 2001, another 644 acres on 3 farms is under negotiations and 21 additional farms have submitted applications.

The funding is provided by the township citizens via a tax levy of \$0.50 cents/\$1,000 equalized value and by over \$600,000 in grants from the Farmland Protection Program of the U.S. Department of Agriculture. This federal program has considerable funding available for matching grants to eligible land trusts as well as to state and local governments to purchase permanent conservation easements on working agricultural lands.

The town's tax levy and general funding are also used to support staff to make sure the program works. Through this program, Dunn Township and its residents are protecting their agricultural and environmental resources and the rural way of life in their community.

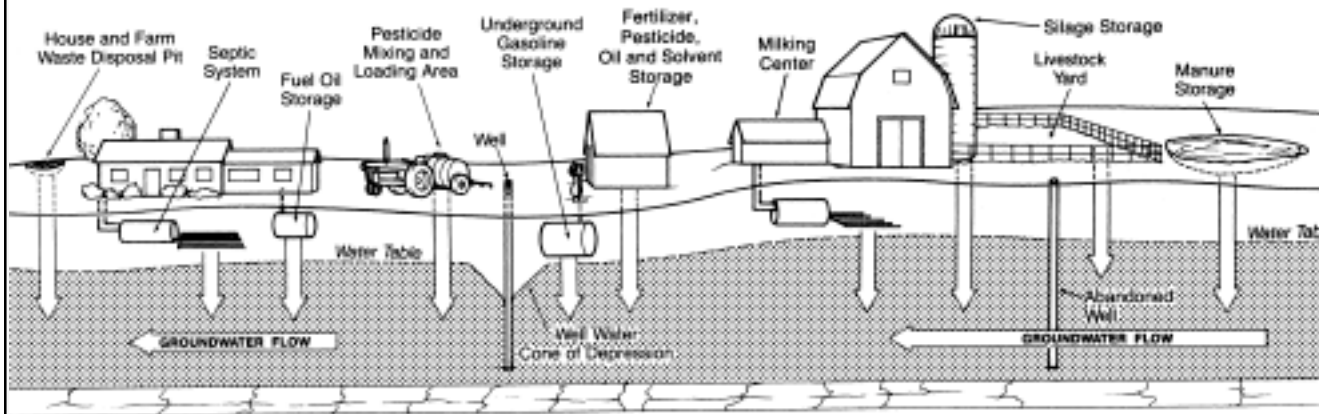
☆ For more information on development rights see: <http://town.dunn.wi.us> (Under Land Use select: planning, history, documents...)

Funding is also available via many federal and state programs to help farmers install and use farm conservation practices. Practices installed through the Conservation Reserve Program (CRP), the Wetland Reserve Program (WRP) and other federal programs not only help protect water quality but also often provide significant wildlife habitat benefits. CRP alone has been a major factor in both controlling runoff pollution and providing important habitat for songbirds, waterfowl and other wildlife.

In 2001, a very important supplement to the CRP program began in Wisconsin. This program is called the Conservation Reserve Enhancement Program (CREP). Through CREP, over 200 million dollars of federal funding is matched by 40 million dollars of State Stewardship Program funding and made available to 40 basins in Wisconsin, including the Rock River Basin. Under CREP, significant funding is available to eligible, interested farmers for shoreland buffers and associated wetland restorations.

CREP funding is only available for the eligible conservation practices, not for agency staff. Recognizing that county and state staff could use help in getting the word out about CREP, a number of Lake Districts and

## Farmstead Contamination Sources



This illustration identifies possible farmstead sources of contaminants to groundwater. Common to most farms are large quantities of nitrogen-containing materials. If not managed properly, these materials can become sources of nitrate contamination of drinking water. The farm well is often vulnerable because of its close proximity to nitrate sources. (UWEX-Water Resources Clip Art, Collection II)

## **Map 12: Nonpoint Priority Projects in the Rock River Basin**

Please refer to the State of the Rock River  
Basin Report web page to view this map

environmental organizations, working with the conservation organization Pheasants Forever and the Rock River Coalition, are helping fund college scholarships for interns. The interns will help NRCS and County LCDs administer this new program.

Shoreland buffers will help farmers control soil and nutrient runoff from their fields into nearby streams and lakes. This new funding could help install streambank buffers on a landscape scale in our Basin. This would be a tremendous step forward in helping improve river and lake water quality.

Since 1978, Wisconsin has made significant progress in addressing agricultural nonpoint source water quality problems through the DNR Nonpoint Source (NPS) Pollution Program. The NPS Program works with rural and urban landowners to reduce stormwater runoff pollution in a variety of ways.

Traditionally, the program provided funding to eligible rural landowners and cities to reduce storm water runoff in entire watersheds. A number of these watershed scale projects are still active in the Basin: Lake Mendota, Beaver Dam River, Rock Lake, Lake Ripley and Spring Creek. These projects will be ending within three to five years. Map 12 shows the location of active Priority Watershed Projects still receiving rural and urban runoff control funding as well as completed watershed projects in the Rock River Basin.

The watershed approach was recently found to achieve significant results out in the field. In 2001, the Spring Creek Priority Watershed Project, which is a small watershed, showed a positive stream response to watershed-wide control of stormwater runoff pollutants. As a result of conservation-minded land management, for the first time in 20 years native trout have reproduced in this small stream. Recently, the DNR requested that the stream be removed from the EPA's 303d listing of impaired streams in Wisconsin - one of the first removed in the state!

☆ For more information on the watershed approach:  
[www.epa.gov/OWOW/watershed/](http://www.epa.gov/OWOW/watershed/)

Today, NPS program funding is now available for eligible rural or urban nonpoint pollution control projects in every Basin watershed. The Targeted Runoff Management Program (TRM) and the Urban Nonpoint Source and Stormwater Grants programs help install critical rural or urban stormwater control projects. Through these grants, a number of stormwater control projects are proposed or underway in the Basin.

However, a more far-reaching change is underway in the Nonpoint Source Program Redesign. In 1997, the legislative changes required the state to develop both agricultural and non-agricultural performance standards and agricultural prohibitions. Implementation of the new nonpoint runoff control standards will be related to availability of funding. The counties will be developing strategies to implement the statewide performance standards. In addition, because urban nonpoint runoff pollution is equally a water quality problem, the rules will include new, more stringent, urban performance standards.

The NPS Program changes are under intensive review because the new requirements will affect land management at private farms and cities, villages and townships. The standards are being developed through a joint effort of the DNR, DATCP, and a Citizen Advisory Committee and involve extensive public input. Adherence to uniform statewide performance standards is expected to resolve many nonpoint source impacts and move us a long way towards improving the water quality in our streams and lakes.

Another important change across the state is increased involvement of counties in protecting the land and water resources in their own counties. Since 1998, each county in the Basin has written a county Land & Water Resource Management Plan. The plans detail the major natural resource issues and priorities in each county. Annually, DATCP provides funding to implement practices and actions needed to address critical issues. The county's Land and Water Resource Management Plan, and associated funding are expected to provide important local leadership and promote landowner participation in controlling many sources of runoff pollution. These plans are an excellent informational resource for county residents to help them understand their land and water problems. See [page 61-64](#) for a summary of the land and water resource plans' goals and actions for the Rock River Basin counties.






The Farmland Preservation Program (FPP) is a DATCP program that helps farmers maintain valuable farmland in agriculture. In 1999, in the Basin, approximately 980,000 acres of cropland, woods, and pastures were enrolled in the program. About 5,500 farmers received an average tax credit of \$815 to help them preserve their farms. As mentioned, an important requirement in FFP is developing and following a farm Conservation Plan. The FPP program is currently being redesigned to increase its effectiveness at keeping farmland in farming.

Together the local, state and federal programs are helping support good agricultural land use in the Basin and help maintain the important economic and environmental role of agriculture in the Basin.

The importance of agriculture to the Rock River Basin cannot be overemphasized. The Basin is a major producer of animal and human food. Farming is also a major part of the economy in many communities. However, agriculture is an equally vital component in providing habitat for wildlife and protecting important ecological communities. It is in the interests of many stakeholders to protect the vitality of agriculture in the Rock River Basin.


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## WHAT YOU CAN DO . . .

-  Support local and state funded best management practices for farms.
-  Support studies and funding for conservation farm practices and alternative manure storage.
-  Purchase products from farmers who practice conservation and nutrient management.
-  Urge farmers to use conservation tillage and buffers near all waterways.
-  Support legislation that funds programs aimed at reducing runoff pollution.

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## TO LEARN MORE ...

 **Animal Waste:**  
 Nat. Council for Science and the Environment  
[www.cnie.org/nle/crsreports/agriculture](http://www.cnie.org/nle/crsreports/agriculture)

 **Sustainable Agriculture:**  
 Leopold Center for Sustainable Agriculture  
[www.ag.iastate.edu/centers/leopold](http://www.ag.iastate.edu/centers/leopold)  
 Michael Fields Agriculture Institute  
[www.mfai.org](http://www.mfai.org)



**Soil Transect Survey:**  
 County Land Conservation Departments

Columbia Co. (608) 742-9670

Dane Co. (608) 224-3730

Dodge Co. (920) 386-3660

Fond du Lac Co. (920) 923-3033

Green Lake Co. (920) 294-4051

Jefferson Co. (920) 674-7110

Rock Co. (608) 754-6617

Washington Co. (262) 335-4800

Walworth Co. (262) 741-3450



**Agriculture and Conservation Practices:**  
 DATCP Land and Water Resources  
 (608)224-4620



**Agriculture and Nonpoint pollution Impacts:**  
 DNR Runoff Management  
 (608) 267-7694

# **County Land and Water Resource Plans Summary**

Please refer to the State of the Rock River Basin Report web page to view this Table