

## **Resource Assessment**

### **County Snapshot**

Crawford County is located in the southwestern portion of Wisconsin, bordered by the Mississippi River to the west and the Wisconsin River to the south with the Kickapoo River bisecting the county from north to south. The county covers approximately 586 square miles. The 2003 population estimate for the county is 16,940 with Prairie du Chien as the major population center of 6,018.

In a five-year period from 1997 to 2002 according to the National Ag Statistics Service, farms *increased* from 1,140 to 1,278. Farm average size is *up* from 199 to 224 acres. Cropland has *increased* in number from 120,160 to 129,775 due to use value assessment shifting taxes from farmland to recreational land, and the resulting land use shifting to farmland. Corn and other field crops have increased from 25,200 to 27,794. The period also shows a *decrease* in cattle from 42,075 to 38,152 head and government payments *increase* by an average of \$1,500 per farm. Rural Crawford County continues to see *increases* in farm size and an *increase* in operator age resulting in fewer farms with more concentrated livestock. Rural non-farm residents are also *increasing*.

### **Geography and Geology**

Crawford County lies entirely within the non-glaciated or driftless area of Wisconsin. Deeply dissected valleys characterize the driftless area with elevation changes from valley floor to ridge top averaging 300-400 feet. The steep forested hillsides give way to narrow agricultural lands on the valley floor and ridge tops. Two main north-south ridges in the county define the Kickapoo River Valley. State Highway 27 is located on the westernmost ridge. Many rock outcroppings can be seen throughout the county on steep hillsides. Fractured bedrock of dolomitic limestone and porous sandstone are allowing rapid water movement to aquifers once water reaches those layers.

### **Cropland and Gully Erosion**

Crawford County has had several inventories and surveys that have determined cropland soil loss rates. Midwest Reclamation Planners completed a Soil Erosion Control Plan in 1987 and calculated an average erosion rate of 8.5-tons/acre/year-soil loss, this figure is above the T-value or allowable soil loss limit of 5.0 tons/acre/year on average. With the advent of the USDA 1985 Farm Bill and the Farmland Preservation Program conservation compliance implementation as major conservation practice generators in Crawford County, soil loss rates have been *reduced* to an average of 5.1-tons/acre/year-soil loss as figured in the 2005 Crawford County transect survey.

Gully erosions continues to be an elusive measurement to gather. Sheet and rill erosion from cropland continues to have the majority of attention from such measurement tools as the Revised Universal Soil Loss Equation (RUSLE II). Administrative rule (ATCP 50.04) and NRCS policy

both require the use of RUSLE II. Gully erosion methods have not undergone change for two decades. Because of the deeply carved hills and valleys in Crawford County measurements are a guess at best. It should also be noted that any measure of erosion does not necessarily mean the soil is being delivered to surface waters.

**Hydrology and Fish Habitat**

The streams of Crawford County are defined and greatly influenced by the steep topography of the area. Five drainage areas, defined by the Wisconsin DNR, lie within the county: Rush Creek, Reads and Tainter Creeks, Lower Kickapoo River, Millville Creek and Knapp Creek. The Rush Creek Watershed is located within the Bad Axe – LaCrosse River Basin and flows into the Mississippi River. The remaining four watersheds drain into the Lower Wisconsin River.

Crawford County contains approximately 415 miles of streams (recent source – DNR personnel). (excluding the Mississippi River), with at least 150 miles (or 36%) classified as trout water. A total of 29.6 miles of streams (or 7%) is classified as exceptional resource water and streams classified as impaired total 3 miles. There are no natural lakes in the county.

Trout streams in Crawford County are:

Baker Creek	Knapp Creek
Bear Creek	Nederlo (Johnstown) Creek
Boydton Creek	Pine Creek
Citron Creek	Plum Creek
Clear Creek	Richland Creek
Cooley Creek	Rush Creek
Copper Creek	Sugar Creek
Du Charme Creek	Mill Coulee Creek
English Run Creek	Tainter Creek
Gran Grae Creek	Trout Creek
Halls Branch	Several unnamed creeks
Leitner Creek	

Because of the topography of Crawford County, sediment from eroding streambanks is a major contributor to the degradation of the counties surface waters. Streambank erosion occurs naturally at many sites. It is caused by steep stream gradients, which result in high stream velocities. Sites not pastured for extended periods typically grow trees and other woody vegetation that replace dense grass cover. This results in more bare ground that erodes easier. Trees fall into streams and further accelerate the process.

Although streambank erosion occurs naturally, the problems are accelerated by erosive land use activities. Referring upstream to Monroe County’s Middle Kickapoo River Watershed Inventory, 66% of the degraded streambanks had agricultural erosive impacts. This is a reasonable figure to apply to Crawford County. The Land Conservation Department staff

believes this finding shows that cattle exclusion does not necessarily solve stream bank erosion problems.

### **Animal Waste**

Barnyard runoff and land spreading of manure (especially on frozen ground) are the two principal sources of animal waste pollution in Crawford County streams and wells. Bacteria, sediment, ammonia, and nutrients are the major culprits that foul county water.

Crawford County farmers have followed a statewide trend and expanded their operations, resulting in fewer barnyards and more confined herds. The result is fewer barnyard issues, but more land spreading problems, especially in late winter and early spring. Only two dairies in the county approach 400 cows milked daily with only three that completely confine their herds. The rotational grazing community is now up to 30% of the dairies milking 15% of the cows (source – UW Extension) in the county. They contribute little to no overland flow to waters of the state.

### **Nutrient Management**

When farming started in Crawford County animal manure was a valuable commodity. It was stacked, saved, and spread to increase crop yields. As commercial fertilizer became available, manure became a waste product, not fit to haul to the back forty. The pendulum has swung back to the valuable side for manure. As soil health is better understood, and environmental regulatory pressures are brought to bear, animal waste is again being managed more carefully.

Poorly managed nutrients wash into county wells. The Crawford County Land Conservation Department offers ongoing private well screening for nitrates and coliform bacteria. The last five years of private well volunteer testing shows 10% of Crawford County wells screen above the 10 mg/l standard for nitrates and 30% screen positive for coliform bacteria. Most well positive detects have agricultural impacts (source – Land Conservation Department).

Southwest Technical College has trained 20 + Crawford County farmers to prepare their own nutrient management plans. In addition, cost sharing has been available through the EQIP program administered by USDA to hire consultants to write plans. This program has had marginal interest by farmers.

### **Watersheds**

There are five major Watersheds in Crawford County, Rush Creek, Reads & Tainter Creek, Lower Kickapoo River, Knapp Creek, and Millville Creek.

***The Rush Creek Watershed*** extends west from Highway 27 toward the Mississippi. It has steeply wooded hillsides with narrow ridgetops and valleys. Rock outcrops along the bluffs facing the Mississippi are common. The scenic beauty found in the watershed has attracted many new landowners that have built seasonal and permanent homes. Most streams in this watershed are trout streams with eroding stream banks and lack of adequate trout habitat. Purple loosestrife is a widespread exotic invader (source - Wisconsin Wetlands Assn.). There are many small steep

prairies on the bluffs that create a unique climate for rare flora and fauna. USDA – NRCS are moving to protect these areas. The Mississippi Valley Conservancy is also active here purchasing conservation easements.

***The Reads and Tainter Creeks*** watershed is the northeast corner of Crawford County. All waters flow to the Kickapoo. Much of the acreage is wooded. The remainder is either agriculture or private property not farmed. A multi-million dollar apple industry is located on the ridge east and west of Gays Mills. Agriculture strongly persists here with recreational ownership not as advanced as in other areas of the county. An eclectic population is very active in land use policy. Eroding stream banks are common. Many of the riparian areas hold DNR fishing easements.

***The Lower Kickapoo River Watershed***, in south central Crawford County, and includes all streams that flow to the Kickapoo between Gays Mills and Wauzeka. Several shallow oxbow lakes can be found adjacent to the Kickapoo. Almost half of the acreage is woodland.

***The Knapp Creek Watershed***, on the eastern border of the county, overlaps into Richland County and drains to the Wisconsin above Boscobel. There are no major municipalities in this watershed. The Crawford portion of the watershed is mostly wooded.

***The Millville Creek Watershed*** extends from the mouth of the Wisconsin River upstream to Wauzeka on both sides of the river and includes a portion of Grant County. Much of the acreage is forested. The remainder is either in agriculture or private property not farmed. There are significant wetlands in the floodplain near the mouth of the Wisconsin River.

**Outstanding and Exceptional Resource Waters of Crawford County**

The creation of Chapter NR 207 “Water Quality Standards for Wisconsin Surface Water,” allows the Department of Natural Resources to classify high quality streams as outstanding resource waters (ORW) or exceptional resource waters (ERW). An exceptional resource water is surface water, which provides valuable fisheries, hydrological, or geologically unique features, outstanding recreational opportunities, unique environmental setting and which is not significantly impacted by human activities.

Exceptional Resource Waters of Crawford County

Stream Name	Watershed	Miles	ORW/ERW
Boydton Creek	Knapp Creek	.7	ERW
Cooley Creek	Rush Creek	All	ERW
Copper Creek	Rush Creek	All	ERW
Plum Creek	Lower Kickapoo River	All	ERW
South Branch Copper Creek (Class I portion)	Rush Creek	2.7	ERW
Tainter Creek (Cnty B to County Line)	Reads / Tainter Creek	4.8	ERW
Wisconsin River	Several	3.1	ERW
Sugar Creek (S10) upstream	Rush Creek	7	ERW

Crawford County currently has no water body designated Outstanding Resource Water.

**Watershed Rankings and DNR Basin Plan Recommendations**

Crawford County contains all or part of five watersheds as delineated by DNR. These watersheds are part of two different river basins, managed as Geographic Management Units (GMUs) by DNR.

These watersheds are designated Low, Medium, High, or Not Ranked in the Basin plans as a priority for projects to curb Non-Point Source (NPS) pollution.

Under the Clean Water Act, states must submit 303 (d) lists of impaired waters to the Environmental Protection Agency (EPA) for the purpose of developing Total Maximum Daily Loads (TMDLs)

The following table summarizes Crawford County watershed rankings and 303(d) list status.

<i>Watershed Name</i>	<i>River Basin</i>	NPS Ranking	NPS 303(d) list	Comments
Knapp Creek LW08	Lower Wisconsin	Medium		
Reads and Tainter Creek LW03	Lower Wisconsin	High		
Lower Kickapoo LW02	Lower Wisconsin	High	Kickapoo River near Steuben Halls Branch (lower 3 miles)	Impaired by mercury Impaired by sediment
Millville Creek LW01	Lower Wisconsin	Not Ranked		
Rush Creek BL01	Bad Axe - LaCrosse	High		

Crawford County has used these plans and consulted with DNR staff on resource priorities in the county. DNR staff and Crawford County LCD staff agree on the resource priorities in the basins and watersheds. These plans make the following recommendations and observations:

**Lower Wisconsin River Basin:** (July 2002 plan date)

***Millville Creek Watershed*** (LW01)

- Gran Grae should be surveyed for fish, habitat, and rare aquatic elements. The stream uplands should have a non-point source pollution reduction project.

***Lower Kickapoo River Watershed*** (LW02)

- DNR should perform fish and habitat surveys on Sand, Plum, Halls Branch, and the Kickapoo rivers to update existing data
- DNR should summarize the long term (since 1977) water quality data at Steuben

***Reads and Tainter Creeks Watershed*** (LW03)

- DNR should update fish & habitat survey on Baker, Bear, and Tainter Creeks

- In-stream habitat improvement is needed in Nederlo, Tainter, and Trout Creek
- Do an experimental wild brook trout stocking above the county dam (BK#6) on Nederlo Creek

***Knapp Creek Watershed*** (LW08)

- Collect fish, habitat, and water quality data for Richland Creek
- Consider West Fork of Knapp Creek & Boydtown Creek for non-point source pollution reduction project and experimental wild strain brook trout introduction

**Bad Axe – La Crosse Basin:** (July, 2002 plan date)

***Rush Creek Watershed*** (BL01)

- Conduct fish and habitat surveys on Buck, Copper, Sugar, Kettle Hollow,
- Consider riparian buffers and in-stream habitat for Cooley,

**The Blackhawk/Kickapoo Dam #6**

The Crawford County actively operates and maintains one large, earthen embankment flood control dam built under the federal program PL566 in partnership with USDA/NRCS. Reduction of serious flash flooding in Johnstown valley in the north central part of the county is the primary purpose of the dam. The dam does not impound water. Nederlo Creek flows through the structure.

**Forest Land**

Most of Crawford County's forests grow on productive, silt loam soils. Hardwoods dominate the landscape. 50% of Crawford County's 184,400 acres are forested. That is an increase from the 1980 inventory, of 47%. This increase can be attributed to field abandonment, conversion to pasture, tree plantation and changes in inventory criteria.

93.5% of the forest lands in Crawford county are privately owned. Smaller parcels of land and a growing percentage of non-resident owners are increasing in the county.

Issues affecting forest land;

Overgrazing of livestock in woodlands remains an important issue for forest managers. Livestock in the woods compact the soil, trample and eat young trees, damage larger ones and generally reduce the productivity of most woodlands. The shift in Wisconsin's use value assessment has put pressure on landowners to pasture woods to change their highly assessed "recreational land" into cropland. This threatens to reverse some of the progress made in recent years to restrict livestock from more productive woodlands. However the change has caused an increase of enrollees in the Managed Forest Law Program that reduces their taxes while requiring a responsible woodland management plan.

Rural home construction continues to increase throughout the county and takes land out of both agricultural and forestry use. Subdividing land into smaller parcels results in results in the property having management issues for certain forestry practices. Insects and diseases continue

to be problematic and spread more rapidly by human influences. The Gypsy moth is a newer pest in the county and is likely to become more significant in its impacts.

Opportunities for forest landowner management;

A new look at use value assessment to encourage landowners to protect their woods from livestock should be discussed. Delivery of information and education to new forest landowners is important to new rural property purchasers. The Managed Forest Law, the Forestry Incentives Program, the Stewardship Incentives Program, the Conservation Reserve Program, the Wisconsin Forest Landowner Grant program, and the Tree Farm Program and others that promote good stewardship contribute to the sound management of the forest resources of the county.

### **County Soils**

In general there are five soil areas, Uplands, Sandy terraces, Silty terraces, Silty bottoms, and Alluvial.

The Uplands are made up mainly of Fayette and Dubuque soils. Where ridges predominate, the soils are on rolling ridgetops in uplands that are deeply dissected. Slopes are predominantly 5 to 15 percent. Steep, stony areas have many escarpments of bedrock. Slopes are between 30 and 60 percent.

Principal soils in the Sandy terraces are those of the Dakota and Sparta series. They are nearly level and are in two areas of the county. One is by Prairie du Chien and is a nearly level plain underlain by acid sand and gravel. The Mississippi River deposited the coarse-textured underlying materials at the time of the Wisconsin glaciation. The other is along the northern half of the Kickapoo River. They are subject to serious erosion and in places runoff has cut deep gullies far into the terraces.

Silty Terraces have silty soils on highly dissected terraces, or benches. The Bridgeport Terraces lies about 120 ft. above the Wisconsin River and occupies approximately 4,200 acres. Other terraces go up the Wisconsin and Kickapoo valleys. The Citron and Haney Valley consist of old channels formed by the meandering Kickapoo River. The Hogsback is an oxbow feature now preserved by The Nature Conservancy and the Wisconsin DNR for its unique topography, fauna, and flora.

Silty soils on bottomlands are generally Arenzville, Orion, and Chaseburg. They are in the major drainageways in the interior of the county. They are productive but their use is limited due to occasional flooding.

Alluvial land has wet sandy soils on the bottoms of the Mississippi and Wisconsin Rivers. Its texture varies but is mainly silt, coarse sand, and gravel. It has a high, fluctuating water table.

### **Wetlands**

Crawford County has experienced a decline in the number and quality of wetlands (source – NRCS). The DNR wetland inventory (1979) shows 27,331 acres or 7.5% of the total county acreage as wetlands, the majority located along major stream corridors and in the lower Kickapoo River system as it approaches the confluence with the Wisconsin River.

Substantial wetland acreage occur along the Mississippi and Wisconsin river valleys and are managed by the US Fish and Wildlife Service in the Mississippi and the DNR in the Wisconsin River Valley. The Wisconsin DNR and the US Army Corp of Engineers require mitigation (a creation) when natural wetland sites are destroyed. State and federal programs, primarily the Wetlands Reserve Program (WRP) administered by the NRCS have been available to cost-share with private landowners who wish to return their ditched, tiled, or drained fields to wetlands. Only one landowner in the last five years has participated in this program.

### **Invasive Plants**

County citizens have become more aware of invasive plant and animal species. Older invaders haven't raised much public ire. Multi-flora rose control has been a thorn in the side (pun intended) of farmers and woods walkers since it's introduction in the 1950's. NRCS and Crawford County have partnered with it's EQIP program and county rental equipment to give landowners the tools to make a start at multi-flora rose control.

More folks have been paying attention to flora and fauna invaders since the zebra-mussel have wiped out county native mussels and the industry around them that used to thrive in the Mississippi along Prairie du Chien (Courier Press – 2001). Garlic Mustard is currently the weed of choice to eradicate along with purple loosestrife.