

## LOWER KICKAPOO RIVER WATERSHED (LW02)

The Lower Kickapoo River Watershed is located in south central Crawford County and includes all streams that flow to the Kickapoo River between Gays Mills and Wauzeka. The entire length of the Kickapoo River in this watershed is flanked by floodplain wetlands. No named lakes exist in this watershed, however several shallow oxbow lakes can be found adjacent to the Kickapoo River. Due to the steep topography in the area, much of the acreage in the watershed is woodland. The remainder is either in agriculture or private property that is not farmed. Population of the Lower Kickapoo River Watershed for the year 2000 was estimated at approximately 2,800. The fastest growing community in this watershed is the Village of Wauzeka (29%).

**Table 1: Growth in Municipalities in the Watershed**

<i>Municipality</i>	<i>1990</i>	<i>2000</i>	<i>% Change</i>
Bell Center	127	116	-8.7%
Gays Mills (part)	578	625	8.1%
Steuben	161	177	5.9%
Wauzeka (part)	595	768	29.1%

**Table 2: Land Cover in the Watershed**

<i>Land Cover</i>	<i>Percent of Watershed</i>
Forest (Total)	47.7%
<i>Broad-Leaf Deciduous</i>	47.2%
<i>Coniferous</i>	0.58%
Agriculture	39.8%
Grassland	7.34%
Wetland (Total)	3.81%
<i>Emergent/Wet Meadow</i>	2.18%
<i>Forested</i>	1.47%
<i>Lowland Shrub</i>	6.25%
Other	1.2%
Development	0.14%

Only two communities in the watershed, Gays Mills and Wauzeka, have Wisconsin Pollutant Discharge Elimination System (WPDES) permits, both of which discharge to the Kickapoo River. The Village of Wauzeka operates a 28-year old treatment plant.

Overall, nonpoint source pollution is considered the primary cause of water quality problems in streams in the watershed and consequently the stream ranking of high has been assigned for

### Watershed At A Glance

**Drainage Area (m<sup>2</sup>):** 150

**Total Stream Miles:** 96.5

**Trout Stream Miles:** 25.5

**Sport Fishery Miles:** 40

**Lakes:** None

**Exceptional/Outstanding Resource Waters:** Plum Creek

**Municipalities:** Bell Center, Gays Mills, Steuben, Wauzeka

**Major Public Lands:**

- ◆ Kickapoo River State Wildlife Area - Wauzeka Unit
- ◆ Kickapoo River State Wildlife Area - Bell Center Unit
- ◆ Lower Wisconsin State Riverway

**Concerns and Issues:**

- ◆ Nonpoint source pollution
- ◆ Atrazine

**Initiatives and Projects:**

- ◆ Wild trout reintroduction
- ◆ In-stream habitat restoration
- ◆ Continuous water temperature monitoring
- ◆ USGS Gauging Station at Steuben

nonpoint source pollution abatement. A portion of the watershed on the Lower Wisconsin River Valley is in an atrazine prohibition area. These areas indicate that elevated levels of atrazine, an herbicide used on corn, has been found in some tested private water wells. Soils are permeable which has allowed atrazine to reach groundwater in some locations. See Appendix B.

The Lower Kickapoo River Watershed has a variety of good quality habitats and rare plant communities that are listed on the state's Natural Heritage Inventory (NHI) kept by the Bureau of Endangered Resources. These communities include:

- ◆ Dry prairie
- ◆ Southern dry forest
- ◆ Southern dry-mesic forest
- ◆ Southern mesic forest
- ◆ Emergent aquatic
- ◆ Floodplain forest
- ◆ Southern sedge meadow
- ◆ Wet-mesic prairie

In addition to these special communities, the watershed is also home for a variety of rare plant and animal species including; 5 bird species, 1 species of butterfly, 7 species of dragonflies, 14 species of fish, 1 species of frog, 1 species of leafhopper, 1 species of mammal, 13 species of mussels, 18 plant species, 3 species of snake and 1 species of turtle. These plants and animals are listed on the state's Natural Heritage Inventory (NHI).

This watershed contains public land that can be used for a variety of recreational purposes from fishing and boating to hiking and birdwatching. The Kickapoo River Wildlife Area - Wauzeka Unit and the Kickapoo River Wildlife Area - Bell Center Unit includes over 7,000 acres of WDNR owned land and WDNR easements which offers fishing, hunting, and birdwatching opportunities.

### **STREAMS AND RIVERS IN THE WATERSHED**

#### **Citron Creek**

Citron Creek, located in central Crawford County, flows in a southeasterly direction for 4.6 miles before reaching the Kickapoo River near Steuben. This stream has a gradient of 42 feet per mile and drains wooded hillsides and agricultural valleys. Many large springs enter Citron Creek at several places. Citron Creek is a Class III trout stream for its entire length.

The most recent biological survey, conducted in 1982, documented few brown trout and numerous forage fish species. In-stream cover for fish was limited to few undercut banks, rocks and woody debris. A fish and habitat survey should be conducted on Citron Creek to document existing conditions. Citron Creek would benefit from the purchase of streambank easements from willing sellers and the restoration of in-stream habitat. Citron Creek was stocked with brown trout between 1960 to 1996 and exclusively brook trout since 1998. Access to Citron Creek is from two road crossings.

#### **Crow Hollow Creek**

Crow Hollow Creek, also known as Creek 10-11, is located in west central Crawford County. This stream flows in a westerly direction for 4.2 miles before reaching the Kickapoo River near Bell Center. Crow Hollow Creek has a gradient of 42 feet per mile and drains wooded

hillsides with agricultural activities found in the valleys. Crow Hollow Creek is a Class I trout stream for its entire length.

The most recent survey, conducted in 1998, documented a naturally reproducing brown trout population and numerous forage fish species. Beaver dams were present and causing some siltation problems. In-stream cover for fish was not abundant but consisted of undercut banks, boulders and woody debris. Given the favorable water temperatures, food supply and cover, Crow Hollow Creek is a good candidate for stocking of wild brook trout. This stream would also benefit from in-stream habitat restoration and the purchase of streambank easements from willing sellers. Wild brook trout were stocked in 1998. Access to Crow Hollow Creek is from three road crossings.

### **Duffy Creek**

Duffy Creek, located in central Crawford County, flows in a southeasterly direction for approximately 2.0 miles before reaching Citron Creek. Duffy Creek is not a classified trout stream. A fish and habitat survey of Duffy Creek should be conducted to determine existing conditions.

### **Halls Branch**

Halls Branch, located in central Crawford County, flows in an easterly direction for five miles before reaching the Kickapoo River near Bell Center. This stream has a gradient of 43 feet per mile and drains wooded hillsides and agricultural valleys. Halls Creek is a Class III trout stream for two miles from its mouth up to Zintz Road and Class II upstream of Zintz Road for three miles.

The most recent survey, conducted in 1998, documented a cool, clear stream with a bottom comprised mainly of sand with a balance of silt, gravel, cobble, and boulders. Adequate in-stream cover was available for the brook and brown trout found in the stream. Numerous forage fish species were also documented. Unrestricted cattle access to the steep banks of Halls Branch was also documented as a pervasive source of sediment. Halls Branch would benefit from the purchase of streambank easements from willing sellers and the restoration of in-stream habitat. WDNR records indicate Halls Branch has been stocked with brown trout since 1961, while brook trout have only been stocked intermittently since 1996. Access to Halls Branch is from four road crossings and WDNR owned land. A state threatened species has been found in this creek.

### **Kickapoo River**

The downstream 40 miles of the Kickapoo River flow through the Lower Kickapoo River Watershed. This reach contains a USGS Gauging Station at Steuben. For more information on the Kickapoo River see page 98.

### **Otter Creek**

Otter Creek, located in central Crawford County, flows in an easterly direction for five miles before reaching Pine Creek near Steuben. This stream has a gradient of 22 feet per mile and drains forested hillsides and agricultural valleys. Otter Creek is not a classified trout stream.

The most recent survey, conducted in 1975, documented numerous forage fish species. Siltation derived from streambank erosion and streambank pasturing of livestock were noted as reducing available habitat for trout. It was also suggested that Otter Creek's water temperatures may not support a trout fishery. A fish and habitat survey should be conducted of Otter Creek to determine existing conditions. Continuous water temperature monitoring of Otter Creek should also be conducted to determine if the stream is capable of supporting a trout population. WDNR records indicate that Otter Creek has never been stocked. Access to Otter Creek is from WDNR easements and one road crossing.

### **Pine Creek**

Pine Creek, located in central Crawford County, flows in a southeasterly direction for 6.5 miles before reaching the Kickapoo River near Steuben. This stream has a gradient of 24 feet per mile and drains forested hillsides and agricultural valleys. Pine Creek is a Class II trout stream for its entire length.

The most recent survey, completed in 1997, documented brown trout and numerous forage fish species. In-stream cover consisted of undercut banks, log tangles and aquatic vegetation. Silt was the primary bottom type, followed by rubble and sand. This stream has potential to become a quality trout stream, however flooding, streambank grazing of livestock and beaver dams are negatively affecting the habitat and consequently the fishery of Pine Creek. Stocking of wild brown trout and resurveying the stream is recommended. Pine Creek would benefit from the purchase of streambank easements from willing sellers and the restoration of in-stream habitat. WDNR records indicate Pine Creek has been stocked with brown trout consistently since 1960, but with wild brown trout only since 2001. Access to Pine Creek is from WDNR easements and five road crossings.

### **Plum Creek**

Plum Creek, located in southern Crawford County, flows in an easterly direction for 5.2 miles before reaching the Kickapoo River near Wauzeka. This stream has a gradient of 35 feet per mile and drains forested hillsides and agricultural valleys. Plum Creek is a Class I trout stream for its entire length and an Exceptional Resource Water, (ERW).

A series of fish and habitat surveys have been conducted on Plum Creek since 1997. Both brook and brown trout are naturally reproducing and a healthy and diverse forage fish community inhabits Plum Creek. With the assistance of the Prairie Rod and Gun Club, restoration of in-stream habitat began in 1999 with the addition of LUNKER structures, boulder retards, and streambank stabilization. Yearly fish and habitat surveys are tracking changes to the fish community over time in response to the restoration of in-stream habitat. Problems noted during recent surveys include beaver activity, streambank grazing of livestock, streambank erosion, and lack of permanent in-stream cover for adult trout. Additional in-stream habitat development in Plum Creek would benefit the trout fishery. This stream would also benefit from the purchase of additional streambank easements from willing sellers. Continued fish and habitat surveys should be conducted to track fishery population changes in response to additional in-stream habitat restoration. WDNR records indicate that Plum Creek was last stocked with brook trout in 1996. The naturally reproducing populations

of brown and brook trout have eliminated the need for further stocking. Access to Plum Creek is from two road crossings, WDNR owned land and WDNR easements.

### **Sand Creek**

Sand Creek, located in northern Crawford County, flows in a westerly direction for five miles before reaching the Kickapoo River in Bell Center. This stream has a gradient of 44 feet per mile and drains forested hillsides, recreational land, and some agricultural land. Sand Creek is not a classified trout stream.

The most recent survey, conducted in 1978, documented many forage fish species, one brook trout and two brown trout. Flooding and eroding streambanks were contributing to problems with in-stream habitat for trout. A fish and habitat survey should be conducted to determine the existing condition of Sand Creek. This stream would benefit from the purchase of streambank easements from willing sellers and the restoration of in-stream habitat. WDNR records indicate that Sand Creek was last stocked in 1970 with brook trout. Access to Sand Creek is from one road crossing.

### **RECOMMENDATIONS (LW02)**

- ◆ A fish and habitat survey should be conducted of **Citron Creek, Duffy Creek, Otter Creek, and Sand Creek** to document existing conditions.
- ◆ Wild trout should be stocked in **Crow Hollow Creek** and **Pine Creek**.
- ◆ **Citron Creek, Crow Hollow Creek, Halls Branch, Pine Creek, Plum Creek and Sand Creek** would benefit from in-stream habitat restoration.
- ◆ Continuous water temperature monitoring of **Otter Creek** should be conducted to determine if the stream is capable of supporting a trout population.
- ◆ **Citron Creek, Crow Hollow Creek, Halls Branch, Pine Creek, Plum Creek and Sand Creek** would benefit from the purchase of additional streambank easements from willing sellers.
- ◆ Continued fish and habitat surveys of **Plum Creek** should be conducted to track fishery population changes in response to additional in-stream habitat restoration.
- ◆ **Halls Branch** and the **Kickapoo River** should be surveyed to determine if rare aquatic elements previously found in the streams are still present.
- ◆ The Village of Wauzeka should continue to pay attention to operation and maintenance of its treatment plant.
- ◆ A professional evaluation of the plant should be considered to assist the Village of Wauzeka in planning for needed preventative maintenance.

**Watershed Map**

**Streams in the Lower Kickapoo River Watershed (LW02) Crawford County Area: 150 square miles**

Stream Name	WBIC	Length (miles)	Existing Use	Potential Use	Supporting Potential Use	Codified Use and Trout Stream Classification	Proposed Codified Use	303(d) Status	Rare Aquatic Species	Use Impairment		NPS Rank	Monitored/ Evaluated/ Unassessed	Data Level	Trend	Ref*
										Source	Impact					
Citron Creek	1183200	0-4.6	COLD III	COLD I	Part	COLD III	same	N	N	SB	HAB	H	E	B3	U	2,7
Crow Hollow Creek (Creek 10-11)	1184000	0-4.2	COLD I	same	Thr	DEF	COLD I	N	N	BDAM, SB	HAB	H	M	B4,H 2	I	4,7
Duffy Creek	1183300	0-2	U	U	U	DEF	same	N	N			NR	U			7
Halls Branch	1184300	0-2	COLD III	COLD I	Part	COLD III	same	N	Y	NPS, FL, SB, PSB	HAB	H	M	B4, H2	U	2,5,7
Kickapoo River	1182400	0-40	WWSF	same	Part	WWSF	same	Y			FAD	L	E		U	7
Otter Creek	1183100	0-4	U	U	U	DEF	same	N	N	NPS	HAB	H	E		U	7,9
Pine Creek	1183000	0-6.5	COLD II	COLD I	Part	COLD III	COLD II	N	N	FL, PSB, BDAM	HAB	H	M	B4, H2	I	2,3,7
Plum Creek	1182700	0-5.2	COLD I	same	Thr	COLD III/ERW (1.5) COLD II/ERW (3.7)	COLD I	N	N	NPS, PSB, BDAM	HAB	H	M	B4, H4	S	2,6,7
Sand Creek	1184800	0-5	WWFF	COLD I	U	DEF	same	Y	N	FL,SB	HAB	NR	E		U	7,10
13 Unnamed Streams		20														

Total Stream Miles 96.5  
 COLD I 9.4  
 COLD II 9.5  
 COLD III 6.6  
 WWSF 40.0  
 WWFF 5.0  
 U 6.0

**\*The numbers in this column refer to the References found in the corresponding Watershed Narrative. See Appendix J: "How to Read the Stream Tables," in Chapter 7 of the State of the Lower Wisconsin River Basin Report.**

## REFERENCES

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