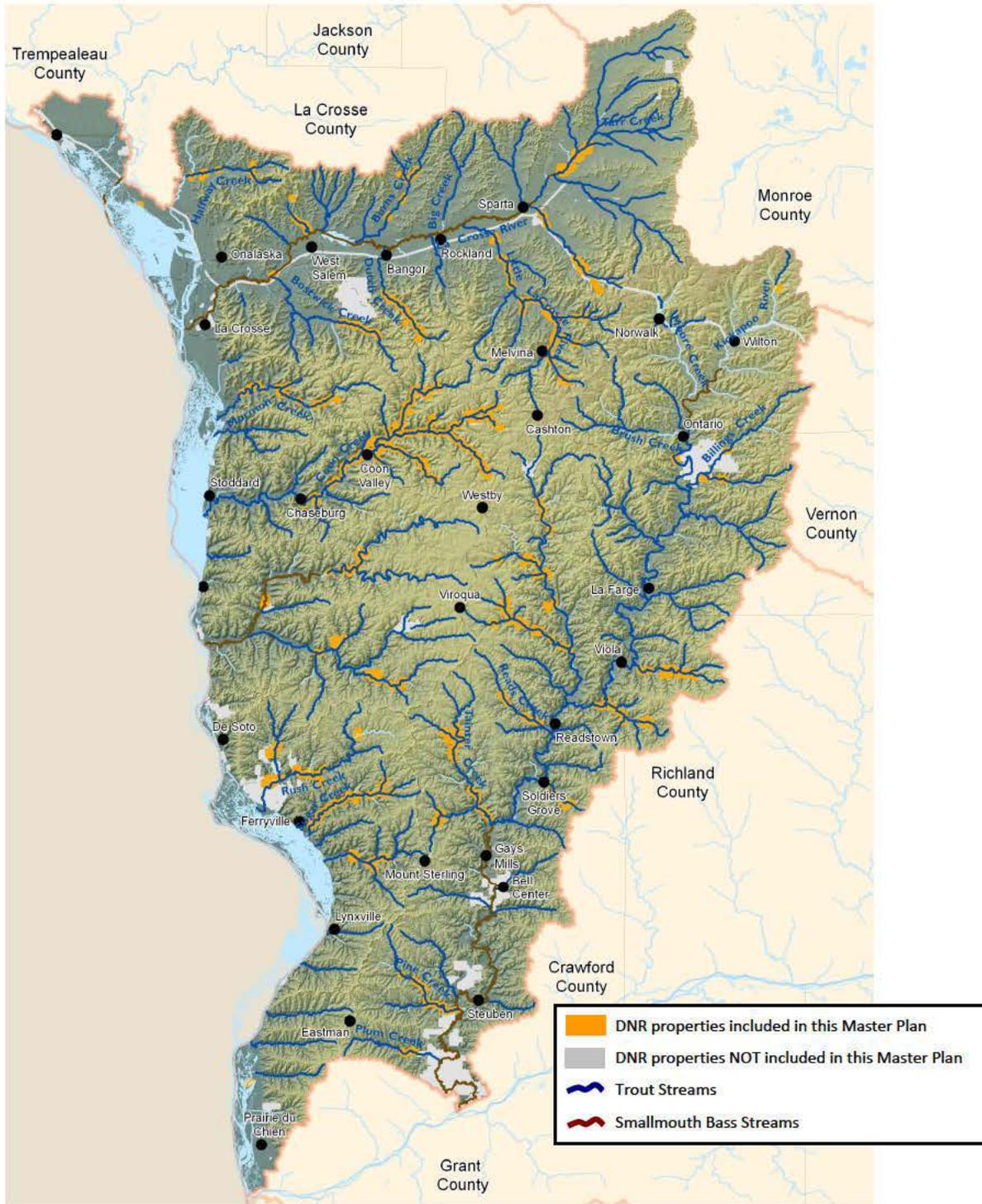


CHAPTER 6: KICKAPOO RIVER REGION

Figure 6.1: Map of the DNR lands included in the master plan for the Kickapoo River Region.



Note: Most of the properties included in this master planning process are narrow strips along trout and smallmouth bass waters and cannot be seen at the scale of this map. To enable readers to see the properties, their boundaries have been significantly exaggerated.

1. OVERVIEW

a) Physical Environment

This region encompasses both the Kickapoo and La Crosse rivers with a long, large upland ridge running from Norwalk in La Crosse County, south-southwest to Eastman in Crawford County. On either side of this ridge are numerous narrow hills and valleys that are home to countless headwater creeks. Fed by springs and seeps, these cold waters form some of the most popular trout angling streams in the Driftless Area. Much of the region is covered with deep loess deposits over bedrock (primarily dolostone, sandstone or shale). Soils are primarily silt loams. The region is home to many dry and wet cliffs. The valleys contain stream terraces and floodplains. Streams are high gradient with fast water flow in the headwaters transitioning to meandering low gradient segments as they move toward the Kickapoo and Mississippi Rivers. Groundwater is recharged directly through precipitation. This area has no natural lakes.

b) Land Cover and Use

The region's most common land cover is upland forest which blankets most of the hillsides. Crop land is restricted to the uplands and valley floors. The broad, high ridge around Westby and Viroqua is the largest block of upland farmland in the region. The La Crosse River valley floor is also heavily farmed. Very little of the region is prime farmland.

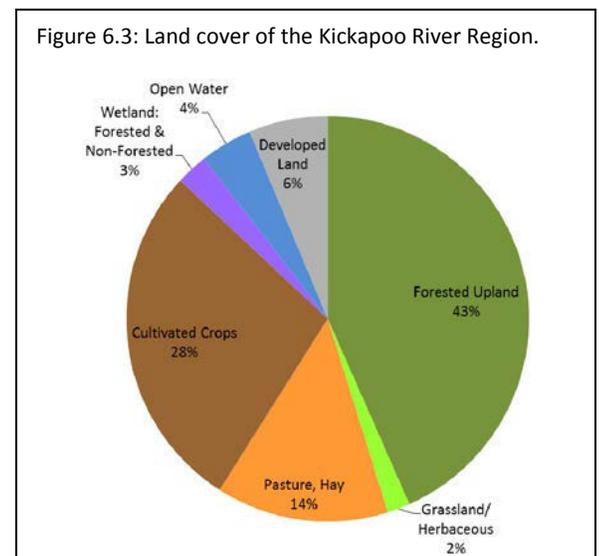
c) Terrestrial Habitats

This region is especially noteworthy for its current opportunities for the management of big block forests and dry prairie/oak openings near the Mississippi and Kickapoo rivers as well as oak barrens and southern mesic forest in portions of Monroe County. Common natural community types found in this region include southern dry, dry-mesic, and mesic forests, floodplain forest, emergent marsh, and dry cliff. Less common to rare natural communities are moist cliff, algific talus slope, shrub-car, southern sedge meadow, dry prairie, oak opening, and oak barrens. High quality natural communities of Driftless Area study stream properties can be found in Appendix C of the "Rapid Ecological Assessment for Driftless Area Streams" (Appendix 2).

d) Aquatic habitats

Streams in this region are dominated by gravel, rubble, and bedrock substrate which proliferates in the headwaters and middle stream reaches. A sand/clay transition occurs as they progress toward the Kickapoo and Mississippi Rivers. Most of the streams have limited natural fish habitat such as deep pools or woody debris, however, diligent efforts by conservation groups have increased fish habitat dramatically. Department of Natural Resources crews enhance over 1 mile of stream annually. These enhancements include installation of rock vortex weirs, LUNKER structures, in-stream boulders, cross channel logs, bank stabilization, and root wads. These streams are well-suited for trout due to the large communities of aquatic insects and excellent spawning habitat available.

Note: Detailed descriptions of the sport fishery can be found in the next section. A more complete discussion of the aquatic features and water management goals can be found in the watershed basin reports developed by the DNR.¹



¹ Watershed Basin Reports are posted on the DNR's web (dnr.wi.gov); search for "basins."

e) Threatened, Endangered, and Special Concern Species

To date, there are 60 known rare species that occur within the study stream properties of this region. Included within this list are one amphibian, eight birds, 12 fish, one mammal, five reptiles, 13 invertebrates, and 20 plants. Of these, five are state Endangered, 21 are State Threatened (includes one Federally Threatened plant), and 34 are special concern. For a complete list of these species by property see Appendix 2.

f) Invasive Species and Other Species of Management Concern

Due to connectivity to the Mississippi River, there is significant risk regarding aquatic invasive species, especially those that thrive in the cold water systems. Because there are few natural barriers to fish migration, invasive fish species could potentially inhabit all streams in the driftless area. Currently, we have not documented any invasive fish species in inland waters of the Kickapoo River Region.

g) Social and Recreation Issues

The Kickapoo River has been a favorite among canoeists for many years, supporting numerous canoe and kayak rental businesses. The river is a textbook example of an entrenched dendritic river system. It is the longest river completely within the Driftless portion of the upper Midwest.

Located in mostly within the Kickapoo River Planning Region, Fort McCoy is the only U.S. Army installation in Wisconsin. The installation has provided support and facilities for the field and classroom training of more than 100,000 military personnel from all services each year since 1984. The Fort McCoy Military complex is situated on 60,000 acres, 46,000 of which are available for maneuver and training. Fort McCoy offers hunting, fishing, and trapping opportunities to military (active and retired) and their dependents, government employees, and the general public. All participants must have the appropriate Fort McCoy permit and State of Wisconsin licenses before they are allowed to hunt, fish, or trap on Fort McCoy. Fort McCoy has 10 installation lakes and impoundments and approximately 71.2 miles of coldwater streams and tributaries. The majority of the streams are Class I trout water maintaining naturally reproducing brook and brown trout. The following trout streams are within Fort McCoy lands; La Crosse River, Squaw Creek, Sparta Creek, Tarr Creek, Swamp Creek, and Silver Creek. The impoundments on Fort McCoy also provide for recreation, military training, and habitat for fish and wildlife.

There are other recreational uses compatible with angling that occur on some of the properties included in this master plan (such as dog walking, bird watching, and geocaching); however the size, shape, and soils of most properties restrict their recreational potential. Further, lands on which the Department has acquired a fishing access easement often do not allow other recreational uses. On some of the parcels that the Department owns, the agency has entered into land use agreements with local clubs that allow snowmobiling on designated trails.

h) Cultural Resources

Archaeological sites representing all of the recognized prehistoric culture periods are found throughout the region, from Paleo-Indian (10,000-8,000 BC), through Archaic (8,000-500 BC), Woodland (500 BC-1000 AD), and Oneota (1000-1650 AD). Associated sites include Native American camps, villages, burial mounds, rock art, and more. In addition to numerous conical (round) burial mounds, there are many animal-shaped *effigy* mounds. Historic period sites (ca. 1650-present) include farmsteads, dams, sawmills, cemeteries, military sites (e.g., Bad Axe Battle Ground site), and others. The area's river towns, villages, and rural roads are dotted with historic residences, businesses, bridges, and other early structures, many of which continue to be used today.

Whether populated by ancient Indian peoples or more recent arrivals, the area's numerous archaeological sites and historic structures reflect a lengthy record of settlement, as well as intensive utilization of the diverse water, mineral, plant, animal, and other resources characteristic of the region.

2. PUBLICLY ACCESSIBLE LANDS in the KICKAPOO RIVER REGION

a) DNR and other public and private conservation lands²

i) By Watershed and sub-watershed (acres):

	Properties included in this Master Plan												TOTAL for properties included in this Master Plan	Other DNR Lands	Other Public & Private Conservation Lands**	TOTAL	
	Fisheries Management Program										Wildlife Program	End. Resources Program					
	State Fishery Areas		Remnant Program		Streambank Protection		Scattered Habitat		Other*								
Fee	Ease	Fee	Ease	Fee	Ease	Fee	Ease	Fee	Ease	Fee	Ease						
Bad Ax River	222	16	5	0	0	113	0	0	0	0	0	104	0	461	565	962	1,988
Hornby Creek	222	16															238
Side Hollow Lake - SF Bad Axe River															487		487
Bad Axe River																50	50
Springville Branch of the Bad Axe R.																821	821
South Fork Bad Axe River			5		5							104					114
Pumpkin Ridge -NF Bad Axe River					64											90	154
North Fork Bad Axe River					45										78		122
Bear Creek-Kickapoo River	78	29	478	78	0	0	0	0	0	0	0	0	0	663	3,667	8,636	12,966
Billings Creek	39	29													1,956	314	2,337
Plum Run-Kickapoo River	39														1,711	5,919	7,669
Warner Creek																2,404	2,404
Camp Creek			375	29													404
Elk Creek			102	39													141
Goose Creek-Kickapoo River			1	11													11
Bloody Run - Mississippi River	0	0	0	0	0	0	0	0	19	0	0	0	0	19	250	6,002	6,271
City of Prairie du Chein - Miss. R.									19						221	5,392	5,632
Picatee Creek - Mississippi River															29	610	639
Coon Creek	736	488	0	0	0	0	0	0	0	0	0	99	99	1,324	0	59	1,382
Middle Coon Creek	294	144															438
Lower Coon Creek	14	19														59	92
Timber Coulee Creek	411	217											99				727
Upper Coon Creek	17	109															126
Halfway Creek - Mississippi River	0	44	0	0	0	0	0	0	0	0	0	0	0	44	837	16,503	17,384
Halfway Creek		44													5	11	61
Shingle Creek - Mississippi River															758	4,005	4,763
Lake Onalaska - Mississippi River															73	12,487	12,560
Headwaters Kickapoo River	28	0	0	0	0	0	0	0	0	0	0	0	0	28	123	0	151
Sleighton Creek-Kickapoo River	28														78		106
Poe Creek-Kickapoo River															36		36
Moore Creek															9		9

² Watersheds and sub-watersheds without any DNR lands are not listed.

Table Continued

Properties included in this Master Plan																
Fisheries Management Program											Wildlife Program	End. Resources Program	TOTAL for properties included in this Master Plan	Other DNR Lands	Other Public & Private Conservation Lands**	TOTAL
State Fishery Areas		Remnant Program		Streambank Protection		Scattered Habitat		Other*								
Fee	Ease	Fee	Ease	Fee	Ease	Fee	Ease	Fee	Ease							
Kickapoo River		0	106	0	0	0	0	0	0	0	0	0	106	8,839	0	8,945
	Plum Creek		20											551		571
	Pine Creek		86													
	Halls Branch													394		394
	Crow Hollow - Kickapoo River													1,271		1,271
	Kickapoo River													5,552		5,552
	Citron Creek													30		30
	Shaw Hollow - Kickapoo River													1,041		1,041
Lower La Crosse River		16	88	0	0	0	0	0	0	0	8	0	112	2,431	0	2,543
	Bostwick Creek	16	51											2,028		2,095
	Smith Valley Creek - La Crosse River													356		356
	Neshonoc Creek		37								8			47		92
Middle La Crosse River		346	318	0	22	0	0	0	0	55	0	0	741	1,323	1,655	3,719
	Burns Creek		31													31
	Headwaters Little La Crosse River	178	97		22					55						352
	Fish Creek													8		8
	Beaver Creek														136	136
	Town of Sparta - La Crosse River													68		68
	Neshonoc Lake - La Crosse River													83		83
	Little La Crosse River	25	31											27		83
	Farmer's Valley Creek	143	35											209	1,519	1,907
	Dutch Creek		123											928		1,051
Mormon Cereek-Mississippi River		0	82	0	0	0	0	0	0	0	0	0	82	123	16,094	16,298
	Mormon Creek		82											72	4	159
	Chipmunk Creek														10	10
	Town of New Albin-Mississippi River													1	897	898
	Lock & Dam #8-Mississippi River													49	15,182	15,231
Pine Creek-Mississippi River		0	0	0	0	0	0	0	0	0	0	0	0	6	2,723	2,729
	City of La Crosse-Mississippi River													6	2,723	2,729
Rush Creek - Mississippi River		80	181	0	7	345	34	0	0	0	0	2,667	3,314	487	15,075	18,876
	Buck Creek - Mississippi River											156			6,778	6,934
	Sugar River		133												27	160
	Rush Creek		2		7	345	34					2,314		1	197	2,900
	Leitner Creek - Mississippi River														3,836	3,836
	Copper Creek	80	46												27	153
	Clear Creek - Mississippi River											197		486	4,209	4,893

Table Continued

Properties included in this Master Plan																
Fisheries Management Program																
	State Fishery Areas		Remnant Program		Streambank Protection		Scattered Habitat		Other*		Wildlife Program	End. Resources Program	TOTAL for properties included in this Master Plan	Other DNR Lands	Other Public & Private Conservation Lands**	TOTAL
	Fee	Ease	Fee	Ease	Fee	Ease	Fee	Ease	Fee	Ease						
Tainter Creek - Kickapoo River	356	143	0	0	0	0	0	0	0	149	0	0	648	1	0	649
Reads Creek		37														37
Caswell Hollow - Kickapoo River														1		1
Trout Creek - Kickapoo River	1	31														32
Tainter Creek	355	75								149						579
Upper La Crosse River	463	0	0	0	0	0	0	0	0	0	0	0	463	211	45,871	46,545
Bailey Creek-La Crosse River	463														5,814	6,277
Tarr Creek														4	8,372	8,376
Silver Creek														6	11,402	11,408
Headwaters La Crosse River														202	20,283	20,485
West Fork Kickapoo River	212	32	185	75	0	0	0	0	0	0	0	0	504	364	0	868
Bishop Branch	212	27	140													379
West Fork Kickapoo River		2	45	14												61
Seas Branch		3		28												31
Knapp Creek - WF Kickapoo				33										364		398
TOTAL	2,538	1,527	667	182	345	148	0	0	74	149	112	2,766	8,508	19,228	113,580	141,315

* Includes nonpoint easements, wetland mitigation sites, watershed management projects, public access sites, gift lands, and rearing stations.

** Includes conservation lands owned and eased by federal agencies, counties, private conservation groups and other similar organizations, as described in the Protected Areas Database housed in the Conservation Biology Institute (<http://databasin.org/protected-center/features/PAD-US-CBI>).

ii) By DNR Property (acres):

Kickapoo River Region		Fee	Easement	Total
Fish Management Program			5567	
State Fishery Areas				
COON CREEK FISHERY AREA	673	480	1,153	
KICKAPOO RIVER FISHERY AREA	28	-	28	
LA CROSSE AREA COMPREHENSIVE FISHERY AREA	1,271	1,047	2,318	
LA CROSSE RIVER FISHERY AREA	463	-	463	
Remnant Habitat Projects				
REM-BISHOP BRANCH CREEK	121	-	121	
REM-CAMP CREEK	375	29	405	
REM-COON CREEK	-	0	0	
REM-ELK CREEK	103	49	152	
REM-LITTLE LACROSSE RIVER	-	22	22	
REM-MAPLE DALE CREEK	20	-	20	
REM-RAINBOW SPRINGS	5	-	5	
REM-RUSH CREEK	-	7	7	
REM-SEAS BRANCH CREEK	-	28	28	
REM-WEST FORK KICKAPOO RIVER	45	48	92	
Stream Bank Protection	345	148	493	
Other*	113	149	262	
Natural Areas Program			2,830	
RUSH CREEK NATURAL AREA	2,655	11	2,667	
STATEWIDE NATURAL AREA	164	-	164	
Wildlife Management Program			112	
Scattered Habitat, Statewide Habitat, Scattered Forest, and Extensive Habitat lands	112	-	112	
Total	6,491	2,018	8,509	

* Includes nonpoint easements, scattered habitat lands, wetland mitigation, watershed management projects, public access sites, and rearing stations.

b) Habitat management of DNR lands.

i) In-stream management

A discussion of the goals and management strategies for in-stream habitat and the riparian corridor management can be found in Chapter 2.

ii) Backland habitat management

Given the scale limitations of available geospatial land cover data, it is not feasible to accurately describe the land cover in most of the Department’s land holdings that are small and narrow. As such, the following section simply lists the habitat types that are present on the properties in the Kickapoo River Region that are covered in this master plan and their approximate coverage, based on property managers’ estimates.

Habitats Present	Approx. Coverage
Prairies, grasslands, and oak opening (savanna) habitats	15%
Wetlands (inc. lowland forests)	22%
Forests (upland)	25%
Agricultural lands (includes managed grazing)	38%
	100%

These habitats are managed following the strategies described in Chapter 2.4, unless noted below.

iii) Description of any unique management strategies/techniques/goals used in this region.

In many of the trout waters here, the Department has shifted in-stream techniques to the use of root wads, backwaters, and vortex weirs in lieu of riprap and LUNKER structures. In addition, management focuses more on removal of floodplain sediment rather than thin spreading of deposits. The formerly accepted practice of grading and sloping of deposited sediments is now often replaced with the removal and sale of these high quality soils.

iv) Description of areas of special management interest in this region.

Primary Sites (See Appendix 2) - Six ecologically important sites, or ‘Primary Sites,’ were identified on Driftless Area Study Stream properties within this region. Primary Sites are delineated because they generally encompass the best examples of 1) rare and representative natural communities, 2) documented occurrences of rare species populations, and/or 3) opportunities for ecological restoration or connections. These sites warrant high protection and/or restoration consideration during the development of the property master plan. See Appendix G of the “Rapid Ecological Assessment for Driftless Area Streams” (PUB-ER-836 2012) for management considerations of the rare species and high-quality natural communities by Primary Site.

The following are Primary Sites:

Copper Creek

(La Crosse Area Comprehensive Fishery Area – 50 acres)

This site lies on Copper Creek, and hosts an oak woodland on a steep north-facing slope and a moderate-quality but small (five-acre) southern sedge meadow, notable for its lack of the virtually ubiquitous non-native invasive reed canary grass. The oak woodland was logged approximately 20 years ago and contains stumps 24-30 inches diameter at breast height (dbh). The overstory is dominated by 14- to 18-inch dbh white and red oak that together create 80% canopy cover. The subcanopy is comprised of American elm, hop-hornbeam, shagbark hickory, and black cherry. This site contains a significant opportunity for Oak Woodland conservation, a rare community type

Eureka Maple Woods & Portland Maples Woods State Natural Areas

(Coon Creek Fishery Area – 214 acres)

Eureka Maple Woods State Natural Area (SNA) lies above Timber Coulee Creek, a tributary of Coon Creek. High-quality Southern Mesic Forest occurs here on steep north-facing slopes and deep ravines. The forest is dominated by 18- to 24-inch dbh sugar maple, with lesser amounts of basswood. The ridgetop forest is second growth, slightly drier, and dominated by maples, white ash, red oak, and yellowbud hickory. The understory includes maple, American elm, and hop-hornbeam. The ground layer is exceptionally diverse, especially on pristine north-facing slopes, where lush carpets of spring flora and ephemerals abound. A ten-acre tract that was previously logged is recovering, with most trees still sapling-sized. Eureka Maple Woods was designated a SNA in 1989.

Portland Maples SNA harbors high-quality Southern Mesic Forest on steep north-facing slopes above Rullands Coulee Creek. Thirty-inch dbh sugar maple and basswood are typical here, along with scattered red maple. Large eastern leatherwood occupies the understory. The ground layer is diverse with species such as bulblet fern, maidenhair fern, false rue anemone, and white bear sedge. A small Algific Talus Slope also occurs along one north-facing slope with a half-dozen moderate sized vents with cool air flow (recorded recently at <50 degrees on an 80-degree day) and dozens of smaller, weaker vents. The ground layer in this microhabitat is dominated by bulblet fern, bladder fern, mosses, and liverworts. Portland Maples was designated a SNA in 2002.

Coon Creek Cliffs State Natural Area

(Coon Creek Fishery Area – 27 acres)

Coon Creek Cliffs State Natural Area (SNA) features moist, dripping, mossy, sandstone cliffs that range in height from 5-20 feet. Seeps emanating from the cliffs form several small ravines. The cliff habitats support a diverse variety of mosses, liverworts, swamp saxifrage, slender cliff brake, and several rare plants. The forest at the base of the cliffs has been grazed. Coon Creek Cliffs was designated a State Natural Area in 1986. Coon Creek Cliffs SNA represents one of the best terrestrial snail sites in the state. Ten snail species were identified during 2011 surveys, including four rare species. These animals rely on the moist cliff habitat and adjoining forest. Coon Creek Cliffs was designated a State Natural Area in 1986.

La Crosse River Rine-Oak Barrens

(La Crosse River Fishery Area – 113 acres)

This primary site harbors a degraded barrens community and riparian wetland along the La Crosse River. The barrens lie on mostly flat terrain on a sandy terrace above the river. There is evidence of a major disturbance in the past 10-15 years: vegetative cover values in the barrens are extremely variable, ranging from open to brushy (with many downed trees) to 70-80% mature tree canopy. There are elements of both Pine Barrens and Oak Barrens here: Dominant trees are black oak, jack pine, red pine, and red maple, most of which are 6-12 inches dbh, though some black oaks approach 24 inches dbh. The shrub layer is relatively dense, and is dominated by American hazelnut, common blackberry, chokecherry, and tree saplings. Moving down to the river, one may encounter 10- to 20-foot tall sandy banks, mostly vegetated. The wetland corridor along the river lies 10-20 feet lower in elevation than the adjacent sand terrace, and is bounded by a steep, mostly vegetated sandy bank.

Pinnacle Rock Rearing Station

(Pinnacle Rock Fishery Area – 48 acres)

Pinnacle Rock and Pond are found on this site along an unnamed Class I trout stream. Very steep north-, northeast- and west-facing forested slopes, along with a rock outcrop, are clad with dry-mesic and mesic forest. The forest east of the pond is dry-mesic, with 80% canopy cover from red/white oak (25-30 inches dbh), aspen (18-20 inches dbh), and a fair number of Norway spruce (20 inches dbh). The subcanopy creates 50% cover here, created by paper birch, hickory and basswood saplings/poles. Dominant shrubs are brambles, currants, prickly-ash

and dogwood. The forest west of the pond is mesic, with 80-90% canopy cover from red maple (14-24 inches dbh) and red oak (24 inches dbh), along with 10-15% subcanopy cover from basswood, maple and hickory. A moderate draw, rock outcrops & boulders are interesting features here. The dominant shrub is hazelnut.

Tainter Creek

(LaCrosse River Comprehensive Fishery Area – 121 acres)

This site features high-quality southern mesic forest on north- and northeast-facing slopes, a series of moist northeast-facing sandstone cliffs, and moderate-quality southern dry-mesic forest/oak woodland on the ridgetops and southwest-facing slopes. Two stands of high-quality mesic forest are dominated by 18- to 30-inch dbh basswood, sugar maple and red oak, with subdominant trees of yellow birch, American elm, yellowbud hickory, and white ash. The subcanopy is occupied by hop-hornbeam, nannyberry and alternate-leaved dogwood, along with numerous maple saplings. The mesic ground layer is extremely diverse, with species such as showy orchid, blue cohosh, large-flowered bellwort, and Dutchman's breeches.

State Natural Areas –

In addition to the SNAs mentioned above, the master plan includes Rush Creek State Natural Area. Unlike the other natural areas, Rush Creek is a large property and although trout streams flow through part of the property, a substantial amount of the natural area is upland. In fact, Rush Creek SNA is best known for its the prairies that sit high above the Mississippi River. The property is described here.

Rush Creek State Natural Area

The outstanding feature of Rush Creek is a two-mile long series of dry lime prairies situated on the steep southwest facing limestone-capped bluffs of the Mississippi River. These “goat prairies,” named for their steep, rocky terrain, are part of the most extensive dry prairie remnants left in the state. While most Wisconsin prairies were lost to the plow or development, Rush Creek’s steepness and dry southwestern exposure are largely responsible for its preservation. Characteristic plants include lead-plant, little blue-stem, side-oats grama, silky aster, blazing-star, wood betony, compass plant, and bird’s-foot violet. The narrow north and east-facing slopes bluff tops are forested with red and white oak and a significant amount of black walnut, hickory, basswood, sugar maple, and aspen. Common shrubs and mid-canopy species include gray and round-leaved dogwood, American hazelnut, sumac, and ironwood with a good diversity of woodland herbs and forbs. Rush Creek SNA supports a large contiguous block of southern oak forest that provides critical habitat for forest interior species as well as common species. The spring-fed Rush Creek is cool and clear and supports a floodplain forest of silver and red maples, elm, cottonwood, river birch, and willow. The extensive nature and diversity of vegetation make Rush Creek important habitat for numerous rare plants and animals. Rare plants include purple milkweed, hairy meadow-parsnip, broad beech fern, and Kentucky coffee tree. Rare animals include wing snaggletooth, Kentucky and cerulean warblers, Acadian flycatcher, red-shouldered hawk, and the gorgonne checkerspot butterfly. Rush Creek is owned by the DNR and was designated a State Natural Area in 1981.

Current and past management

The property is managed as: a reserve for oak woodland, dry prairie reserve, floodplain forest and southern dry-mesic forest; as a significant archaeological site; as an oak savanna and prairie restoration site; as a wetland protection site; and as an ecological reference area. Natural processes determine the structure of the forests, along with prescribed understory manipulation in the oak woodland and prairie. Over the course of time, the oak component will decrease in the dry-mesic forest under a passive management regime. Another objective of the property is to provide opportunities for research and education on the highest quality native oak woodlands and dry prairies.

The ecological characteristics of the prairie and oak woodland areas are primarily shaped by an intensive fire management program. The native prairie species are managed actively through tree/shrub control using tree harvest, brushing, prescribed browsing/grazing, and especially fire to mimic natural disturbance patterns. Occasional fire-tolerant woody species are retained at low densities (oaks, hickories, and native shrubs such as hazelnut). The native dominant savanna tree species (primarily oaks) are managed passively. However, some thinning of the canopy, understory manipulation and shrub control via harvest, brushing, prescribed browsing/grazing or fire is needed to mimic natural disturbance patterns. Conversion of agriculture fields to native tree plantings to fill gaps in large contiguous blocks of southern oak forest is planned.

Future management opportunities

- Conduct prescribed burns to enhance the prairie and savanna.
- Remove brush from the prairie, savanna and especially the edge.
- Control invasive species, especially garlic mustard, crown vetch, and teasel.
- Convert the sharecrop fields to forest land.
- Provide and maintain access points, informational and boundary signs.
- Continue to acquire land within the project boundary.

c) Recreation facilities and their use and management in this region.

See Appendix 3.

3. REPORT CARD on Trout and Smallmouth bass Streams in the Kickapoo River Region.

Report Card Summary (See Figure 6.4)

The Kickapoo Region overall has good to excellent fisheries for brown trout and limited brook trout. Most watersheds hold a mix of brook and brown trout, although median watershed densities of brook trout dominate in only three of the 15 watersheds. Brook trout fisheries are better represented at the sub-watershed scale (Figure 6.7) because they are patchy on the landscape. Brook trout do well in the absence of brown trout and where natural habitat quality is high and anthropogenic stress is low. In terms of resilience to the effects of climate warming, the most resilient brook trout watersheds can be found in the northern and northeastern portions of the region; Lower La Crosse, Middle La Crosse, Upper La Crosse, Bear Creek, and West Fork of the Kickapoo River.

Inland waters of the region have limited smallmouth bass habitat and therefore has few smallmouth bass fisheries. These limited opportunities occur in the extreme lower reaches of the larger waters including the La Crosse, Coon, Kickapoo and Bad Axe Rivers. The Lower Kickapoo River has excellent potential and low land use stress for smallmouth bass, however electrofishing surveys have not been conducted.

Trout stream thermal habitat in the Kickapoo region is on the whole very resilient to warming from climate change. Only two watersheds are less than a "C" the Bad Axe and West fork Kickapoo. Trout stream restoration grades correspond to the watersheds that have good to excellent brown trout performance except for the Headwaters of the Kickapoo which has poor sport fish performance and the Upper LaCrosse which has moderate brown trout and good brook trout performance.

Angling opportunities in the Kickapoo Region are very good which is why this area of the state is a destination for trout anglers. There is good access in most of the watersheds and when compared to the demand, as defined by distance to population the relative supply is very good as well.

Report Card on Trout and Smallmouth bass Streams in the Kickapoo River Region.

Figure 6.4: Overview report card of the Kickapoo River Region.

Grade methods are detailed in Chapter 2. Grades show each watershed's place in the distribution of all Driftless watersheds. An **A** means the value is in the upper quartile (75%-100%) or upper quintile (80%-100%) of the distribution, whereas an **F** means the value is zero or is in the lowest quintile (0-20%) of the distribution. Blank cells indicate "not applicable."

			Watersheds														
			Bad Axe River	Bear Creek - Kickapoo River	Bloody Run - Mississippi River	Coon Creek	Halfway Creek - Mississippi River	Headwaters Kickapoo River	Kickapoo River	Lower La Crosse River	Middle La Crosse River	Mormon Creek - Mississippi River	Pine Creek - Mississippi River	Rush Creek - Mississippi River	Tainter Creek - Kickapoo River	Upper La Crosse River	West Fork Kickapoo River
Brook Trout	Stream Health and Habitat Quality	Natural Habitat Potential	B	C	D	C	C	C	D	C	C	D	C	D	C	B	B
		Land Use Stress	D	B	A	B	A	C	A	A	A	B	C	A	B	A	C
	Sport Fishery Performance	Stock (5" up to 8")	D	F	B	F	D	F	D	C	F	C	A	F	F	D	C
		Quality (8" up to 12")	D	F	A	D	D	F	D	D	F	C	A	C	B	B	B
		Memorable (12" +)	F	F	A	F	F	F	F	F	F	F	F	F	F	F	F
Projected resilience to climate change		C	A	C	C	B	C	B	A	A	C		C	C	A	B	
Brown Trout	Stream Health and Habitat Quality	Natural Habitat Potential	A	A	D	A	B	B	B	A	B	A	A	D	A	F	A
		Land Use Stress	D	B	B	C	C	C	B	B	A	C	A	C	B	A	D
	Sport Fishery Performance	Stock (6" up to 10")	B	B	F	A	D	F	B	F	B	C	F	B	A	C	B
		Quality (10" up to 15")	A	B	F	A	C	F	B	F	C	C	F	B	B	C	A
		Memorable (15" +)	C	F	F	C	F	F	F	F	F	B	F	F	F	F	A
Projected resilience to climate change		A	A	D	A	C	A	C	B	A	C		B	B	B	B	
Smallmouth Bass	Stream Health and Habitat Quality	Natural Habitat Potential	C	D		D	D	F	A	B	D	B			B	D	F
		Land Use Stress	A	B		B	A	C	A	F	F	A			C	F	B
	Sport Fishery Performance	Stock (8" up to 14")	C	F		F	F			C	F				F	F	F
		Memorable (14" +)	F	F		C	F			D	F				F	F	F
Projected gain from climate change		A	B	D	A	D	B	D	D	B	C	D	C	B	D	A	
Trout Stream Habitat	Thermal resilience of trout streams		D	B	A	C	B	C	B	A	A	A	A	B	C	B	D
	Total miles of stream restoration		A	A	D	A	D	B	D	D	A	C	F	C	C	A	A
Recreation	Angling opportunities	Percent of trout stream miles with public access	C	C	C	A	B	D	B	C	B	B	F	B	B	A	B
		Percent of smallmouth bass stream miles with public access	D	C		B	A	F	A	B	C	A			F	B	C
	Supply relative to demand		Miles of publicly-accessible trout and SMB streams per 100K people within a 1-hour drive	B	B	B	A	C	D	A	B	B	B	F	A	A	A

a) Brook Trout

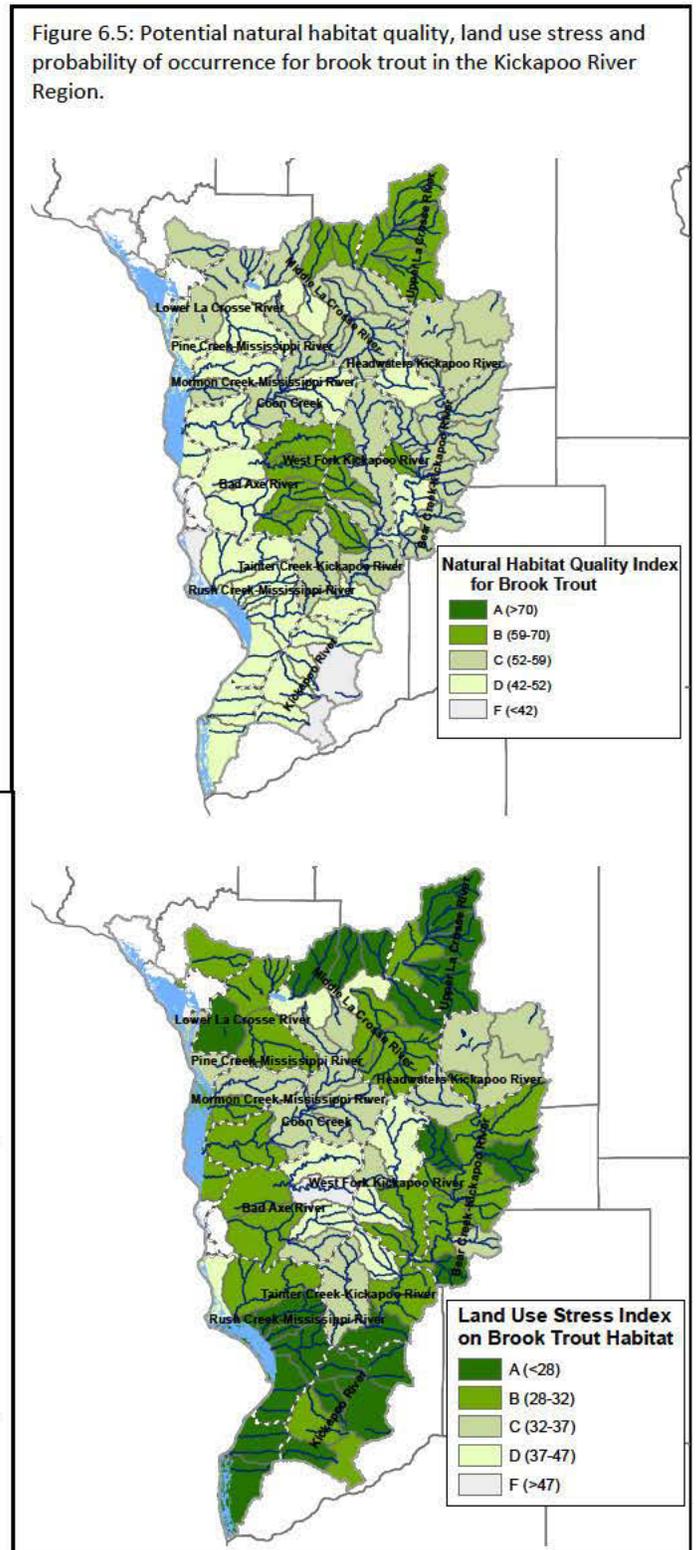
i) Stream Health and Habitat Quality

Figure 6.5 shows the levels of natural habitat potential, land use stress and probability of occurrence for brook trout in the Kickapoo River Region.

Natural Habitat Potential (Top Panel Fig. 6.5)

Limited portions of the Kickapoo River Region offer good potential brook trout habitat. In general, the northern planning regions of the Driftless Area contain higher habitat potential for brook trout, due to the high relative influence of air temperature and precipitation in the model. As can be seen in Figure 6.5, the habitat potential for brook trout is generally mediocre, except for headwater sub-watersheds in the following watersheds: Bad Axe (Springville Branch, North and South Forks of the Bad Axe, and Hornby Creek); West Fork of the Kickapoo River (Seas Branch and Bishops Branch); Bear Creek (Otter Creek); Middle LaCrosse River (Big Creek and Beaver Creek) and the Upper LaCrosse River (LaCrosse, Tarr, Silver, and Coles Valley Creeks). In general, significant brook trout populations are relegated to the headwaters of these creeks where competition with brown trout is not as intense.

Figure 6.5: Potential natural habitat quality, land use stress and probability of occurrence for brook trout in the Kickapoo River Region.



Land Use Stress

Figure 6.5 (lower right panel) also shows the level of stress from land use and other human activities in the region for brook trout. The Land-use Stress Index ranges from 0 – 100, where lower values indicate **less** land-use impacts and but a better grade (A or B). Higher values indicate greater negative land-use impacts with poor grades (D or F). As can be seen, there is a high level of anthropogenic stress throughout the central portion of the Kickapoo region (Hwy 27 on the “ridge”). Here, high levels of land-use stress are the result of less forested land cover in local catchments and at the sub-watershed scale and increased agricultural land-use. The headwaters of many streams in this region are the most stressed, particularly in Mormon Coulee, Bad Axe, Kickapoo, Tainter, West Fork Kickapoo, and Coon Creek watersheds. Lower levels of land-use stress are noteworthy among the following watersheds: Bloody Run; Halfway Creek; all three Watersheds of the La Crosse River system; and Rush Creek (Figure 6.4).

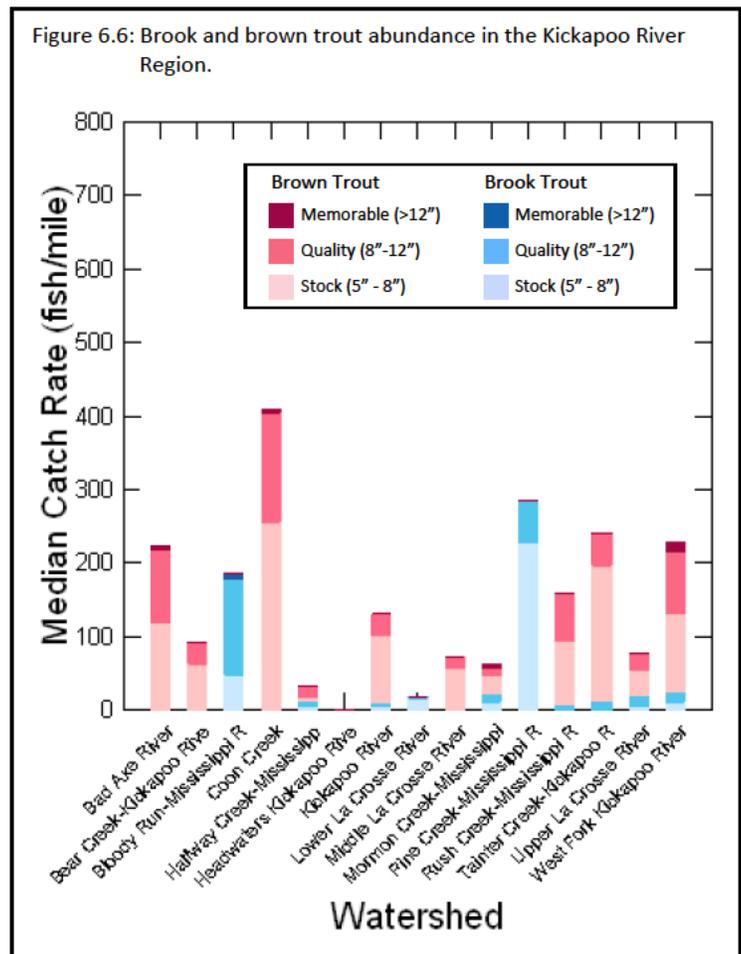
Probability of Occurrence (Lower Left Panel Fig. 6.5)

The places where brook trout are most likely to be found are in the headwater sub-watersheds. However, these sub-watersheds are experiencing the highest levels of land-use impacts, primarily from agriculture. This finding underscores the importance of mitigating negative impacts using conservation practices such as: taking land out of production with the Conservation Reserve Program; managed intensive grazing operations; nutrient management plans used by many farmers; contour farming techniques; and other efforts by the DNR, County Land Conservation Departments, Nature Conservancy and other conservation organizations like Trout Unlimited. Reduction in overland flow of water, trout habitat restoration, riparian management and erosion control are a main focus.

ii) Sport Fishery Performance

As can be seen in Figure 6.6 most watersheds hold a mix of brook and brown trout, although median watershed densities of brook trout dominate in only three of the 15 watersheds: Bloody Run, Pine Creek, and Lower La Crosse. Pine Creek watershed has the highest density of brook trout, however Pammel Creek is the only trout stream in the entire watershed. In watersheds that have both brook and brown trout; brown trout tend to dominate which is not uncommon in Wisconsin. These differences in abundance occur primarily because of competition for food and space. Brown trout get larger and are more aggressive than brook trout; therefore the brook trout get pushed into the less desirable habitat making them work harder to feed and avoid predators. A complete discussion regarding competition between brook trout and brown trout can be found at in Chapter 2.

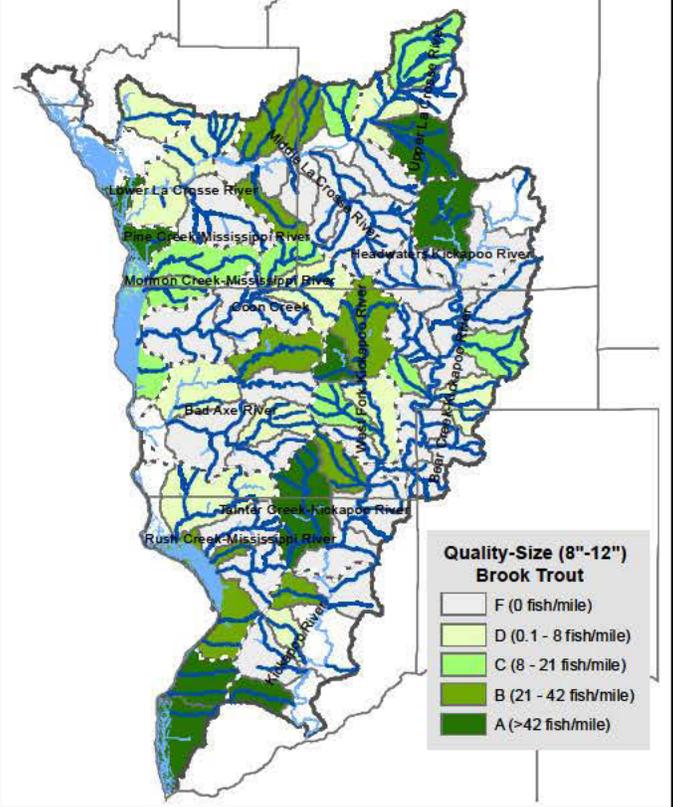
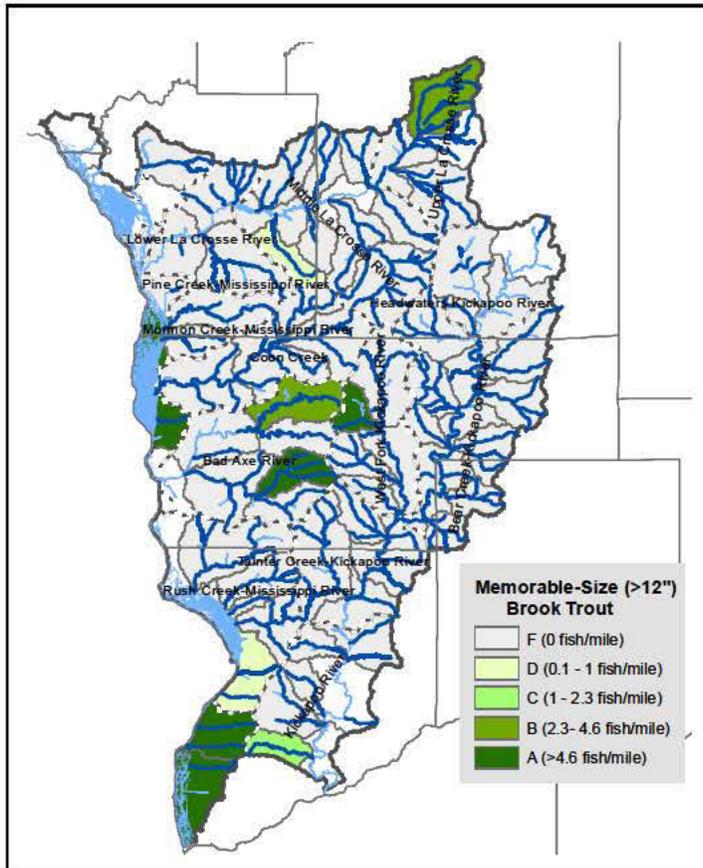
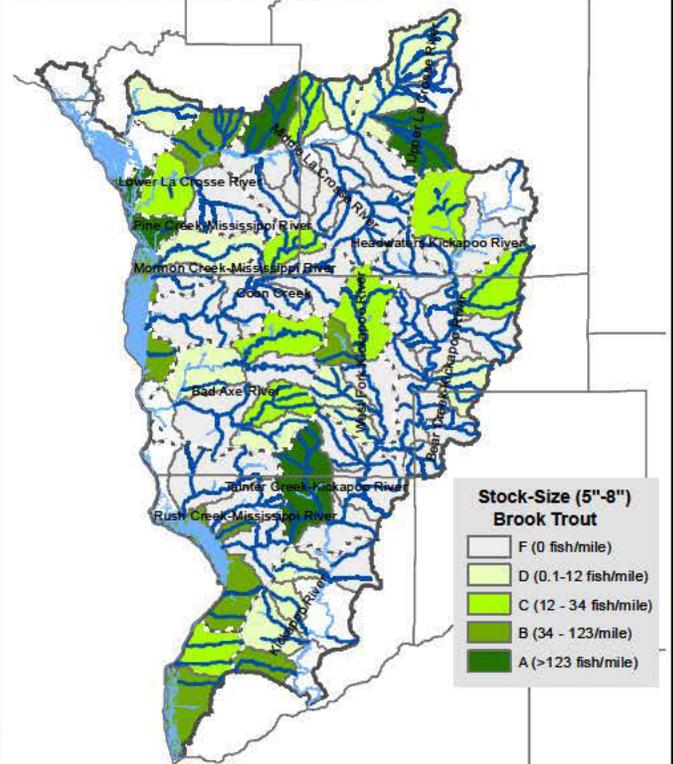
Figure 6.6: Brook and brown trout abundance in the Kickapoo River Region.



The best brook trout streams tend to occur where competition with brown trout does not occur. These streams (eg. Bloody Run and Pine Creek Watersheds) tend to flow into large warm water systems like the Mississippi, Wisconsin, and Kickapoo Rivers. These large warm water systems likely buffer brook trout populations from emigration effects by brown trout.

Median catch rates that exceed 21 fish per mile for quality-sized brook trout are common among the sub-watersheds of the Tainter Creek, Upper La Crosse River and the West Fork of the Kickapoo River Watersheds (Figure 6.7). Memorable-sized (>12") brook trout are limited in occurrence, but can be found in the following systems: South and North Forks of the Bad Axe, headwaters of the La Crosse River Watershed and the Bloody Run Watershed (Picatee Creek, Du Charme Creek, and Mill Coulee Creek). These streams that occur in the Bloody Run and southern Rush Creek watershed are all managed with Catch and release regulations likely benefiting the size structure of their populations.

Figure 6.7: Brook trout density – stock, quality, and memorable size fish in the Kickapoo River Region.



iii) Project Resilience of Brook Trout to Climate Warming

This RPA utilizes these newest USGS Stream model outputs to evaluate impacts of global warming on future distributions of brook and brown trout and smallmouth bass. A more complete discussion of the methods and analysis can be found in Chapter 2. For each trout species, the RPA examines future distributions by classifying each stream reach into three categories: stable, at risk, and lost. Figure 6.8 shows projected effects of climate warming on future brook trout distribution. Models project that a majority of stream miles currently inhabited by brook trout in the Kickapoo River Region will be either lost or almost lost by the mid-century. Brook trout are projected to persist in some watersheds more than in others (Figure 6.8 and 6.9). In several watersheds, the models project near extirpations by the mid-century: Coon Creek, Headwaters of the Kickapoo, Mormon Creek, Rush Creek, Pine Creek and Tainter Creek. The most resilient brook trout watersheds are in the northern and northeastern portions of the region; Lower La Crosse, Middle La Crosse, Upper La Crosse, Bear Creek, and West Fork of the Kickapoo River. None of the models project a gain in the distribution of brook trout.

To various degrees, all of watersheds in the Kickapoo Region will be affected by increased air and water temperatures. However, if land use changes cause more water to percolate into the aquifer rather than flow across the surface of the land, this trend can be somewhat mitigated. Brook trout need cold water to survive. Currently, significant groundwater flow ensures adequate thermal refuge for brook trout during warm summer months. If the overland flow of warmer water increases, the brook trout distribution may be nearly extirpated from many of the sub-watersheds in the region.

Figure 6.8: Projected climate effects on future brook trout in the Kickapoo River Region (2046 to 2065).

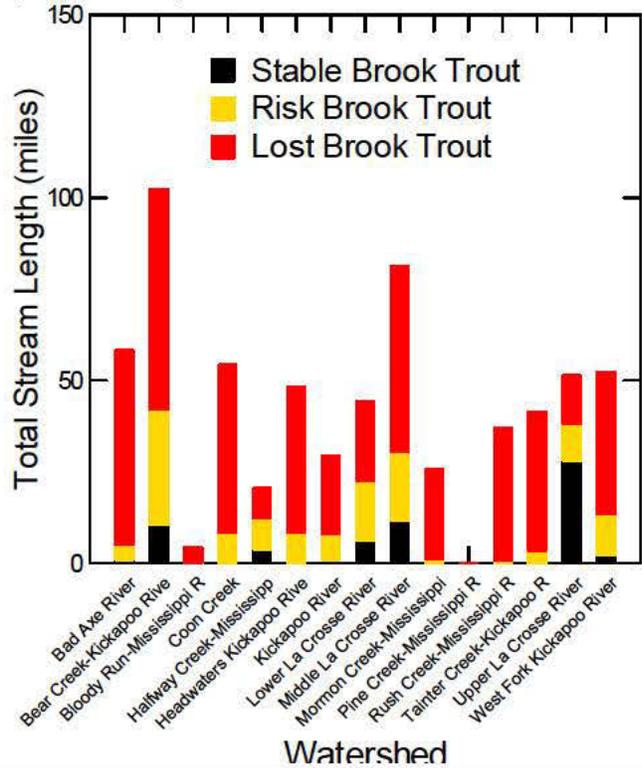
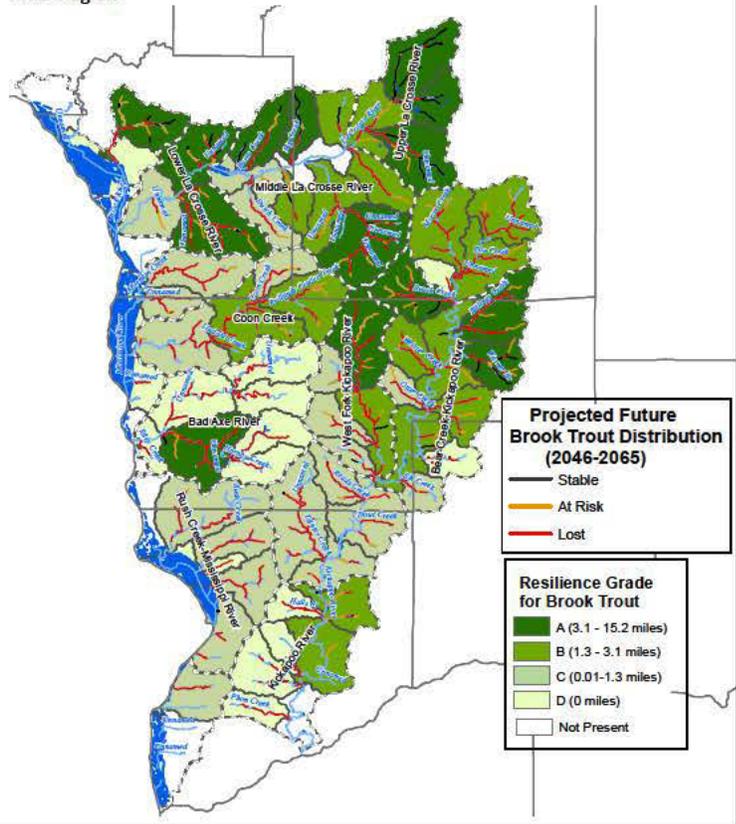


Figure 6.9: Projected resilience of brook trout to climate warming in the Kickapoo River Region



b) Brown Trout

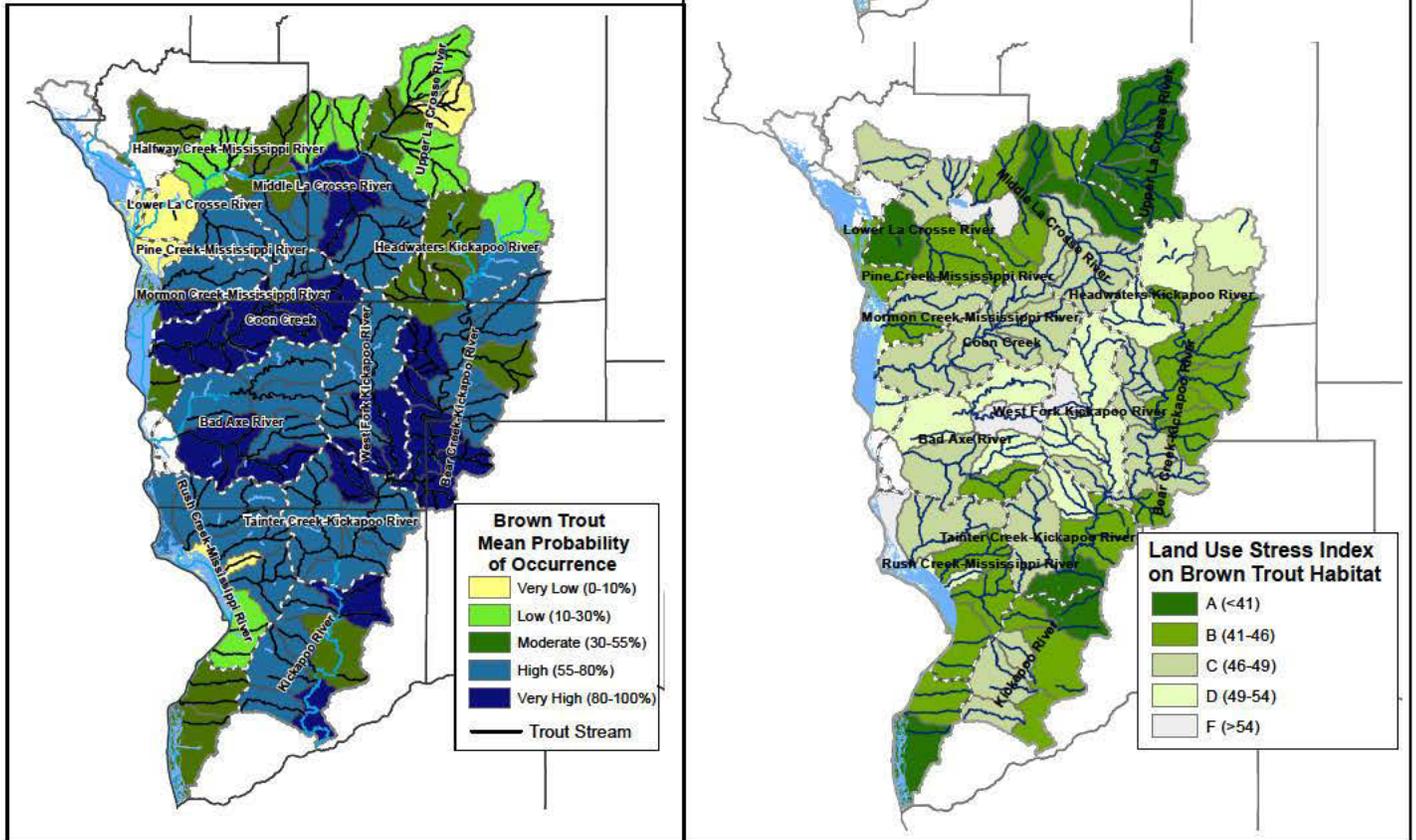
i) Stream Health and Habitat Quality

Figure 6.10 shows the levels of natural habitat potential, land use stress and probability of occurrence for brown trout in the Kickapoo River Region.

Natural Habitat Potential (Top Panel Fig. 6.10)

The Kickapoo River Region is located at the heart of tension zone between brook trout and brown trout distributions. In the northern portion of the region (La Crosse River watersheds) natural habitat for brook trout is noticeably better than brown trout. Except for Bloody Run watershed, all of the southern watersheds hold better natural habitat potential for brown trout than brook trout (See the report card Figure 6.4 and Figure 6.5 and 6.10). South of the La Crosse River, high quality brown trout fisheries occur in almost all watersheds in the region with the best waters in Vernon and northern Crawford counties.

Figure 6.10: Potential natural habitat quality, land use stress and probability of occurrence for brown trout in the Kickapoo River Region.



Land Use Stress (Lower Right Panel Fig. 6.10)

Land use stress on brown trout habitat is highest in the central portion of the planning region, due to the greater amounts of row crop land in the catchments and the cumulative network of row crop upstream of each catchment. The conversion of grassland and forested land cover to agricultural row crops and the resulting soil erosion has negative impacts on brown trout habitat. Stressors on brown trout are not limited to the headwater areas on the regions streams but instead encompass entire sub-watersheds. Although land-use practices, erosion control, and stream health have improved tremendously since the 1930s, the legacy of the past continues to haunt the Driftless Area. Many of the streams today still have steep eroding banks, incised channels, and poor in-stream habitat.

Probability of Occurrence (Lower Left Panel Fig. 6.10)

The Kickapoo River region, along with the Lower Wisconsin River and the Kinnickinnic River Regions is one of three strongholds for brown trout country in the Driftless Area. In comparison to brook trout, brown trout has higher probabilities of occurrence throughout much of the planning region. Because of their more ubiquitous distribution, brown trout appear more tolerant to anthropogenic stressors. Exceptions to this general pattern are: the three La Crosse River watersheds, Pine Creek watershed and the Bloody Run watershed.

ii) Sport Fishery Performance

As can be seen in Figures 6.6 brown trout dominate most watersheds in the planning region. The Kickapoo River Region has the 2nd highest median catch rate for brown trout among the 8 planning regions (Figure 2.26). The top 4 of the Kickapoo Region's 15 watersheds holding the highest densities of brown trout are the Bad Axe River, Coon Creek, Tainter Creek and the West Fork of the Kickapoo River (Figure 6.11).

Higher densities of memorable-size brown trout (>15") are a rarer feature across the landscape. The Kickapoo River Region is well-known for excellent size structure among its brown trout fishery. This region is one among four areas in the Driftless Area which hold memorable-size brown trout (see Figure 2.24 in Chapter 2) Noteworthy Kickapoo River Region streams that contain memorable-size brown trout above 9.5 fish per mile include Rush Creek, South Fork of the Bad Axe, Harrison Creek, Camp Creek, and the West Fork of the Kickapoo River.

Figure 6.11: Median Catch Rates of Brown Trout in the watersheds of the Kickapoo Planning Region.

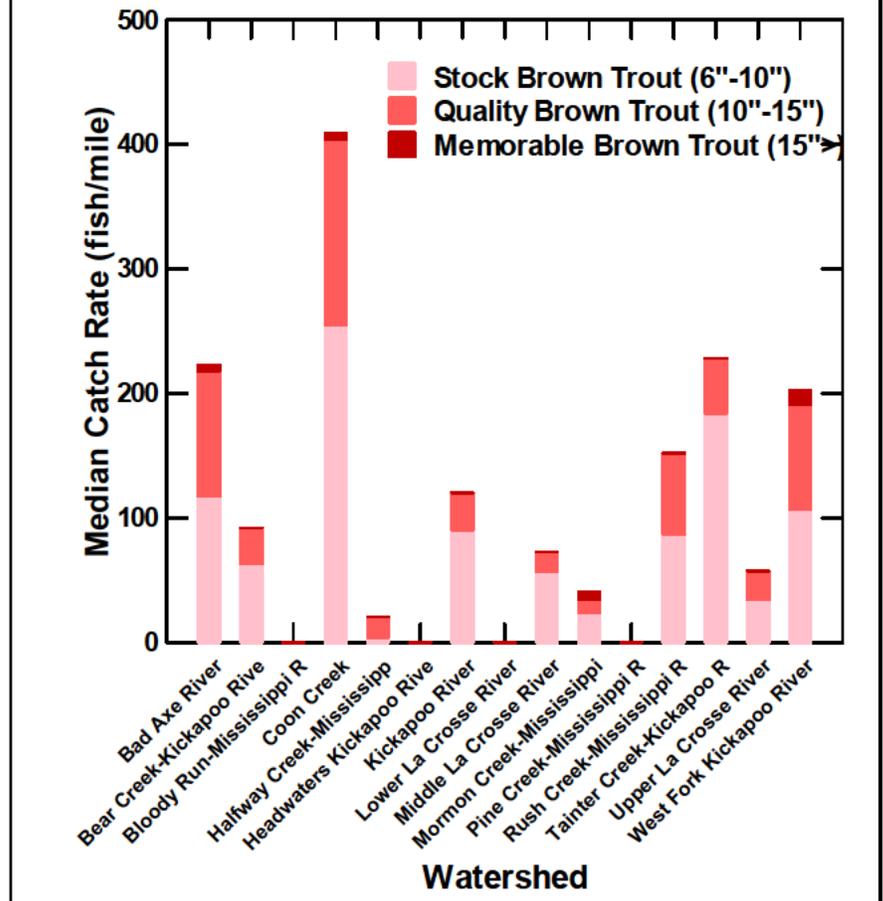
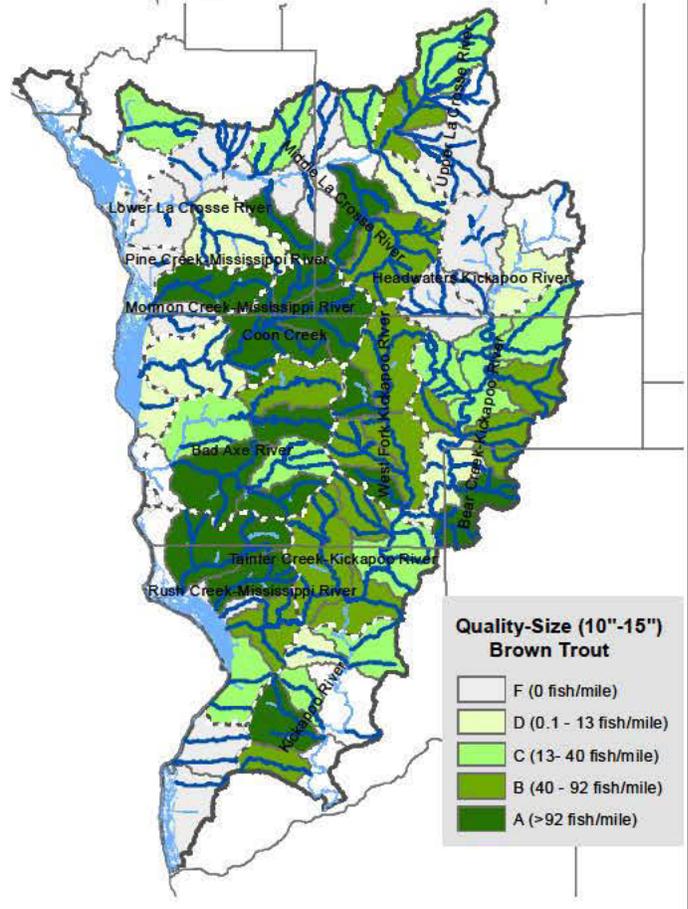
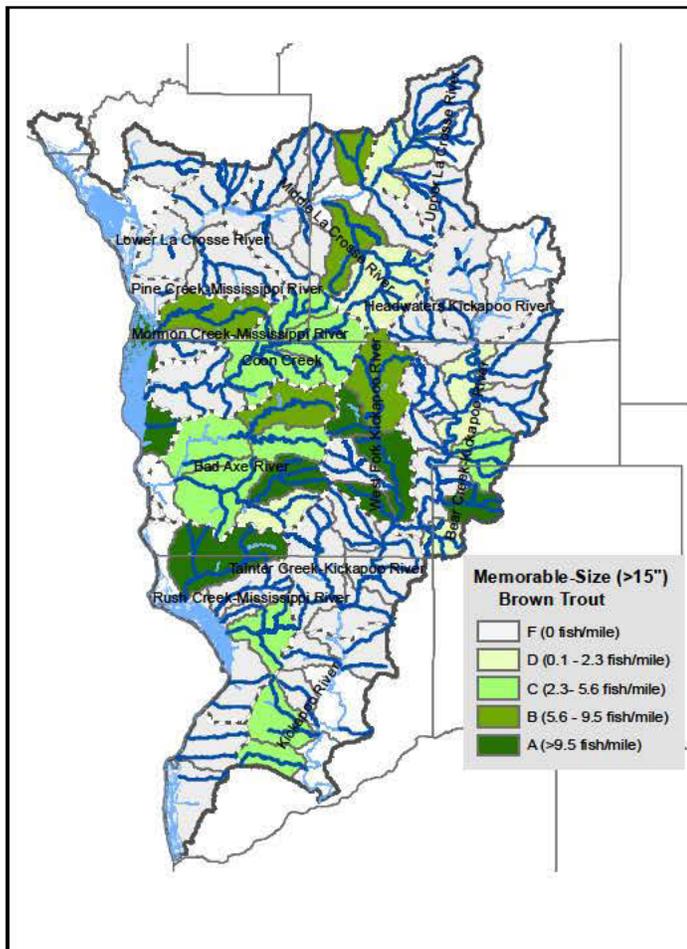
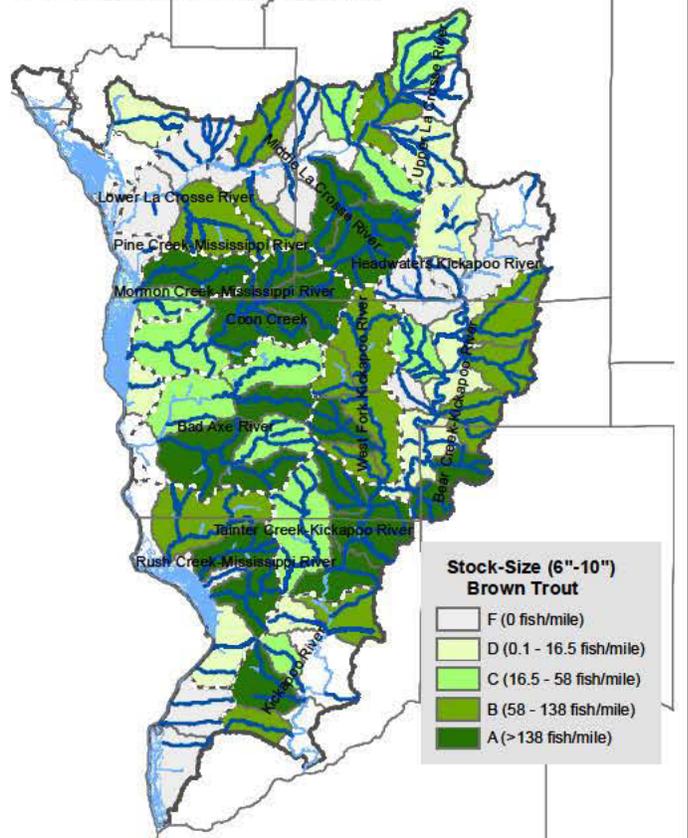


Figure 6.12 maps median catch rates for stock-size, quality-size, and memorable-size brown trout among the sub-watersheds in the Kickapoo River Region. Patterns in abundance of stock-size brown trout mirror the patterns observed in habitat quality modeling. There are lower catch rates in the La Crosse River watersheds and the Bloody Run watershed.

Figure 6.12: Brown trout density – stock, quality, and memorable size fish in the Kickapoo River Region.



iii) Projected Resilience of Brown Trout to Climate Warming

Brown trout show a significantly different trend than brook trout in their response to projected increase in air and water temperatures. Brown trout distribution is much less affected by climate warming at the mid-century (Figures 6.8 and 6.13). Because brown trout can tolerate warmer water temperatures, the modeling results (Figure 6.13) project a much different picture than those for brook trout (Figure 6.8). Proportionally, the Lower La Crosse River watershed is expected to have the greatest loss of brown trout distribution. The Bear Creek watershed is also projected to see 20 miles of at risk or lost distribution, relatively small loss relative to the large size of this watershed. The agricultural “highlands,” namely the headwater sub-watersheds of the Bad Axe watershed show low resilience of brown trout to climate warming; (Figure 6.14). Otherwise, impacts of climate warming on brown trout distribution by the mid-century in the Kickapoo River Region is projected to be minimal, as most sub-watersheds hold high resilience values (>12.8 stream miles/sub-watershed) for brown trout.

Figure 6.13: Projected climate effects on future brown trout in the Kickapoo River Region (2046 to 2065).

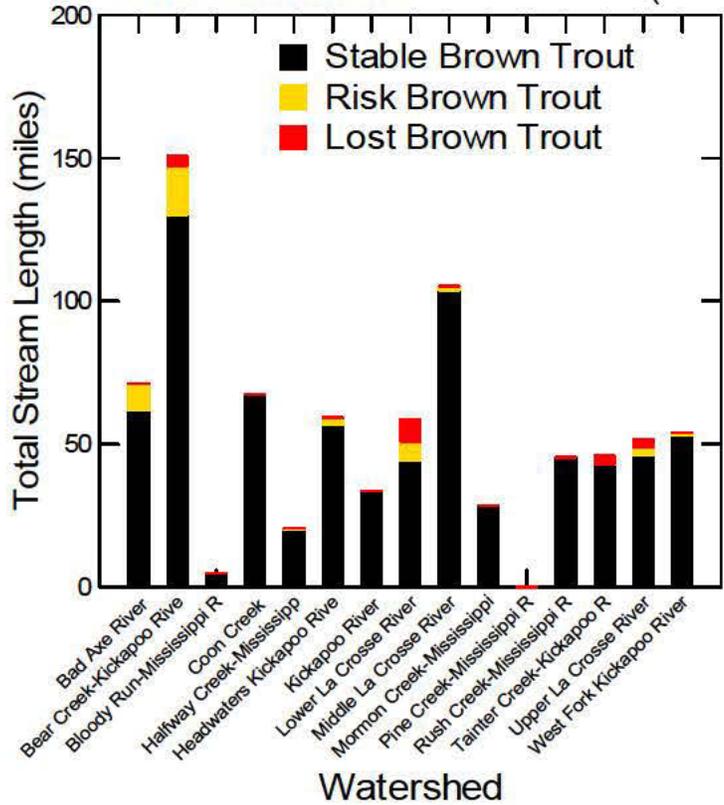
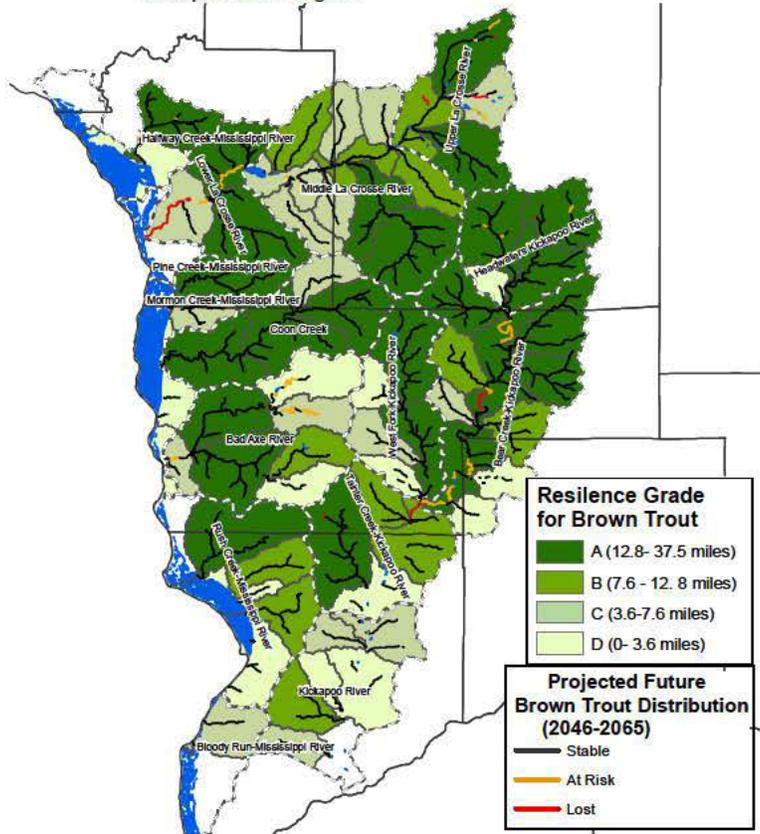


Figure 6.14: Projected resilience of brown trout to climate warming in the Kickapoo River Region.



c) Smallmouth Bass

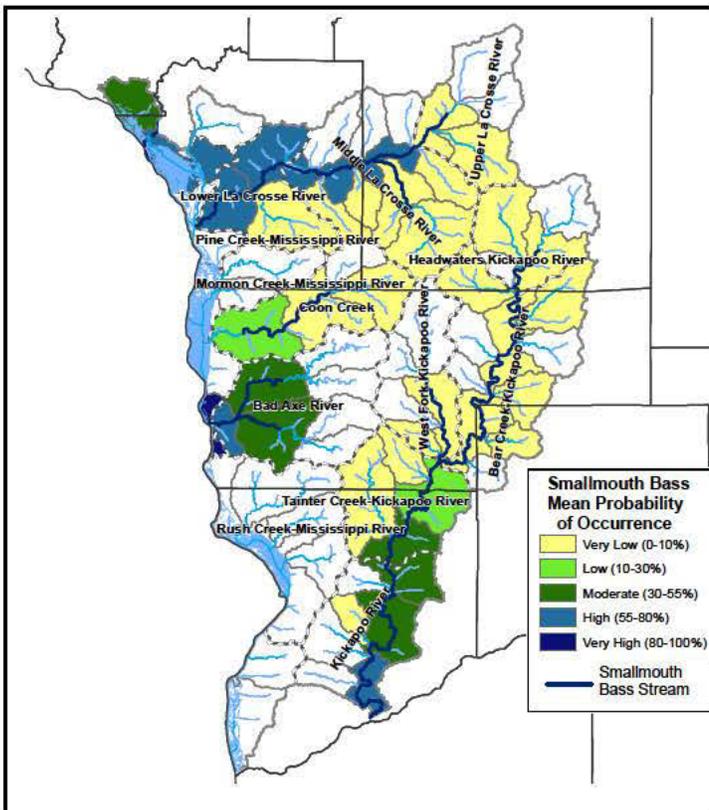
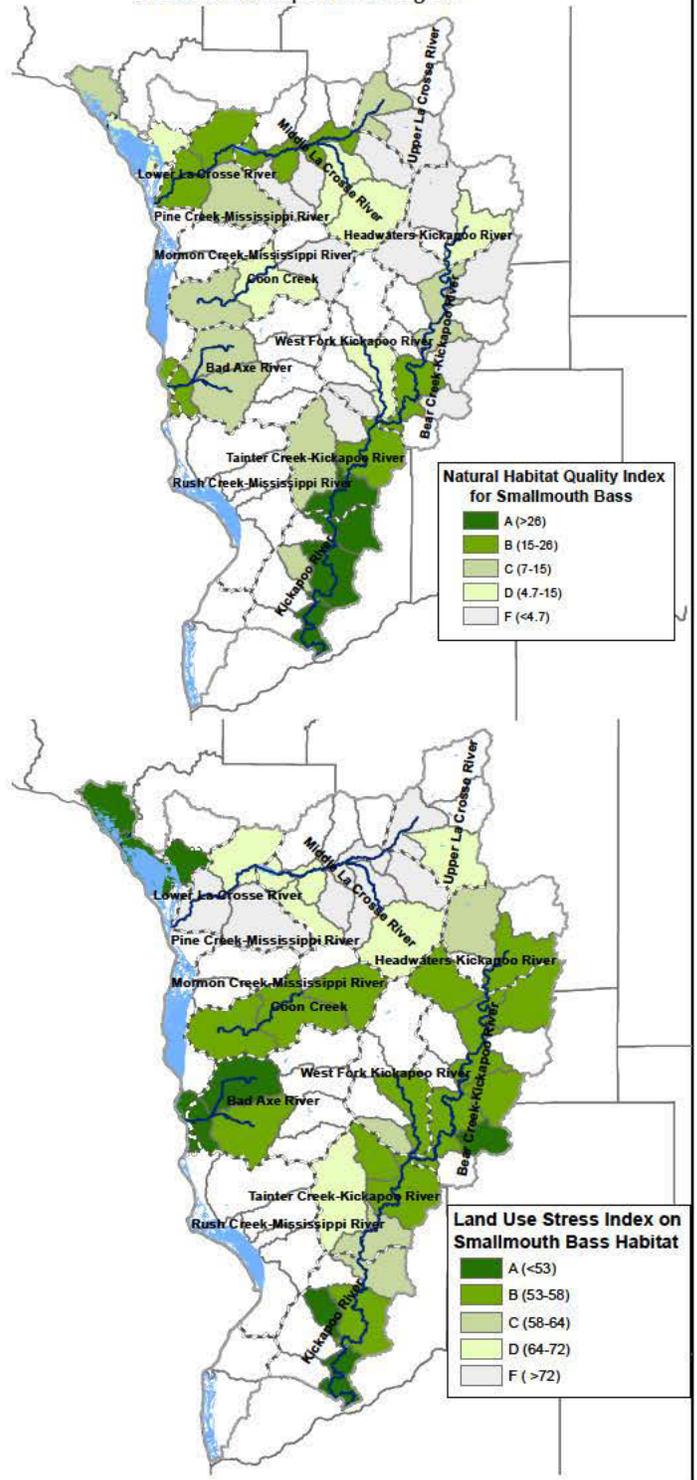
i) Stream Health and Habitat Quality

Figure 6.15 shows the levels of natural habitat potential, land use stress and probability of occurrence for smallmouth bass in the Kickapoo River Region.

Natural Habitat Potential, Land Use Stress, and Probability of Occurrence

This region has very limited smallmouth bass habitat and therefore has few smallmouth bass fisheries. Smallmouth bass can be found in the extreme lower reaches of the larger waters including the La Crosse, Kickapoo and Bad Axe Rivers (Figure 6.15). Model results indicate that anthropogenic stress levels on smallmouth bass in these lower reaches is low.

Figure 6.15: Potential natural habitat quality index, land use stress index and probability of occurrence for smallmouth bass in the Kickapoo River Region.



ii) *Sport Fishery Performance*

Smallmouth bass do not occur in fishable numbers in many Kickapoo Region streams or rivers. As shown in figures 6.16 and 6.17, only three watersheds show the presence of smallmouth bass in DNR surveys. These surveys show fewer than 4 smallmouth bass per mile, which is considered to be mediocre or poorer densities for smallmouth angling. The lower portion of the Kickapoo River throughout Crawford County is not represented, as no surveys were conducted in the lower reaches of the Kickapoo River.

Figure 6.16: Smallmouth bass density – stock and memorable fish.

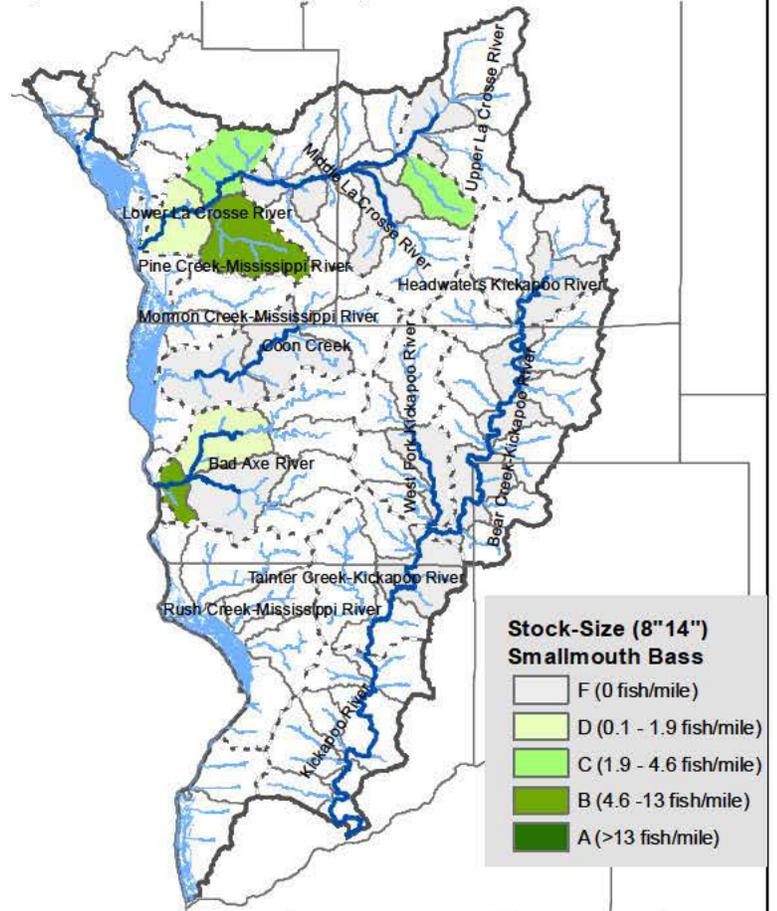
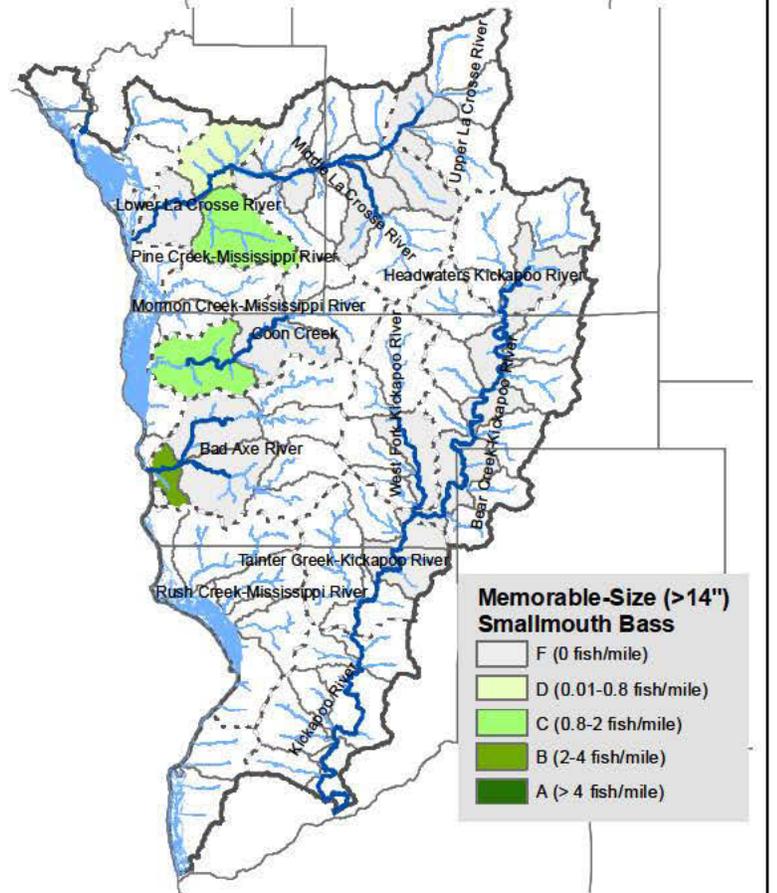
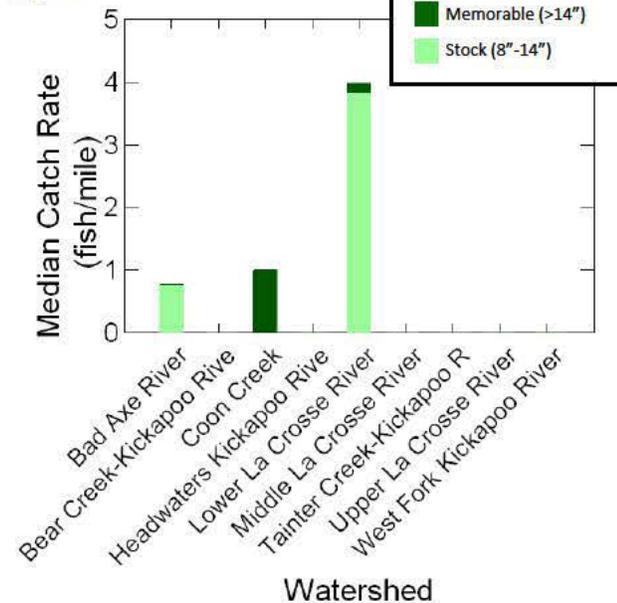


Figure 6.17: Smallmouth bass abundance in the Kickapoo River Region.



iii) Projected Gains of Smallmouth Bass to Climate Warming

This RPA utilizes these newest USGS Stream model outputs to evaluate impacts of global warming on future distributions of smallmouth bass. A more complete discussion of the methods and analysis can be found in Chapter 2. For smallmouth bass the RPA examines future distributions by classifying each stream reach into three categories: gain and possible gain. Unlike the projected declines in trout, the effects of climate warming will expand the future distribution of smallmouth bass by the mid-century.

Figure 6.19 represents an estimate of the total stream miles in each sub-watershed that smallmouth bass are projected to expand into by the mid-century. Currently smallmouth bass distribution is limited in the Kickapoo region; however distribution of this warm water fish is projected to increase by the mid-century. The model projects modest gains in smallmouth bass distribution mainly in the larger watersheds like Coon Creek, Bad Axe and La Crosse Rivers (Figure 6.19). None of the models projected that smallmouth bass would be lost from waters where they currently exist.

Because bass require larger water, they are projected to expand into only a subset of the waters where trout will be lost. Moreover, the waters they expand into may likely be nursery-habitat streams, too small to support significant adult fishable populations. In addition, since they occupy a higher trophic level, the number of smallmouth bass in these streams and rivers will be considerably fewer than the number of trout that had existed.

Figure 6.18: Projected climate effects on future smallmouth bass distribution in the Kickapoo River Region (2046 to 2065).

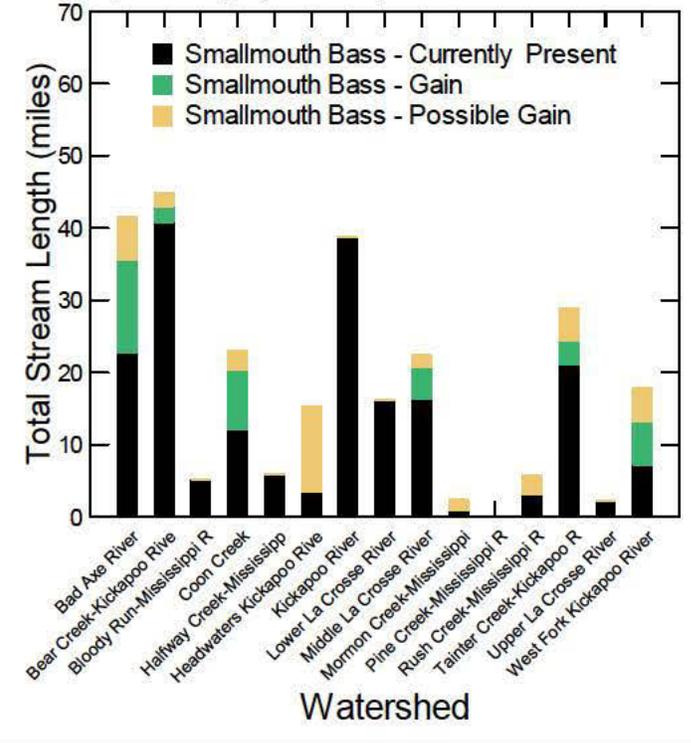
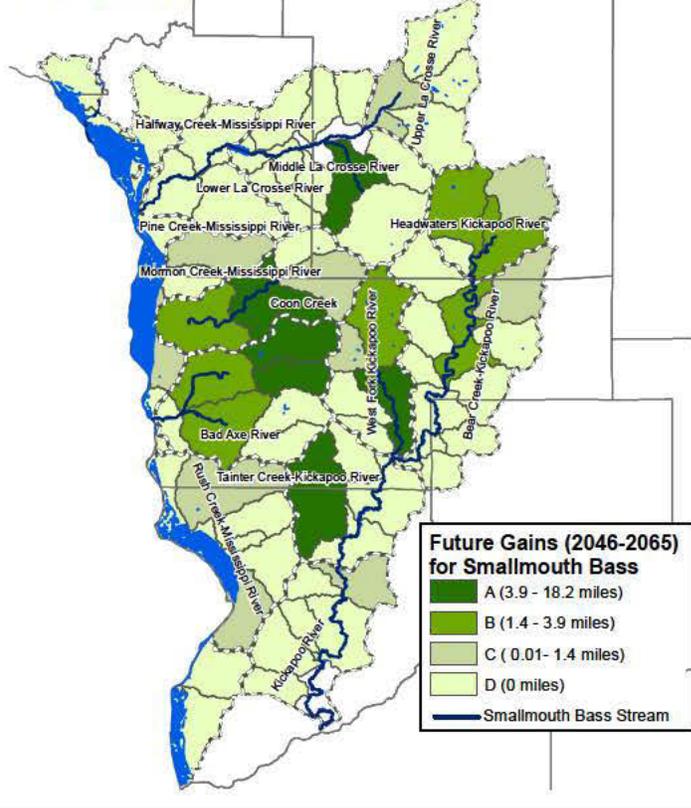


Figure 6.19: Projected Smallmouth Bass Gains from Climate Warming in the Kickapoo River Region



d) Trout Stream Thermal Habitat

The bar chart on the right shows stream miles, by thermal class, of the trout streams in each watershed (Figure 6.20). As shown, some watersheds have many more miles of trout water than others. In addition the chart shows that nearly all the water is cold or cold transition.

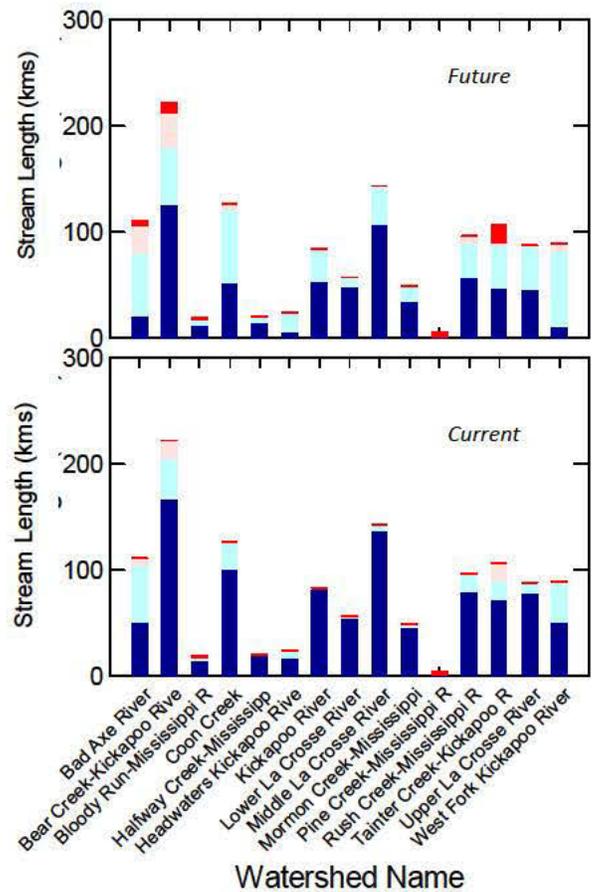
The coldest water in each watershed tends to be in the headwaters and where spring seeps occur.

In the future, all of the watersheds will still have significant portions in the cold and cold transition thermal classes. However, the model projects that portions of the Bad Axe, Bear, Pine, and Tainter Creeks will have parts in the “warm” thermal class. This change will cause the distribution of trout to decrease as fewer miles of water will be in the preferred thermal range.

A stream reach was defined to be **thermally resilient** when the Stream Climate Model projected that the thermal class (see Table 2.2 in Chapter 2) would remain unchanged (current time period to the mid-century time period). When a projected stream temperature increases for a stream reach was “pushed” into a warmer class, the change was invariably only one class level upward (i.e stream reach thermal class shifted warmer from cold to cold transition, or from cold transition to warm transition, never from cold to warm transition). Thermally-resilient stream reach segments were summed at the subwatershed (HUC-12), and then expressed as the percent of the total trout stream miles. These thermal resilience grades for each sub-watershed are mapped in Figure 6.21).

The central “highland” portion of the Kickapoo River region exhibits much less thermal resilience. Thermal stress in all streams tends to occur in this central ridge and far northeast portion of the region. To the detriment of trout, nearly all of the less thermally-resilient areas overlap with areas containing greater anthropogenic land use stress.

Figure 6.20: Projected future* and current thermal classes of trout streams in the Kickapoo River Region.



* Time period of 2046 to 2065.

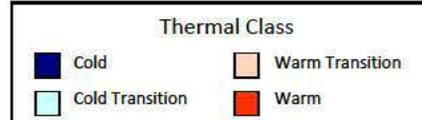
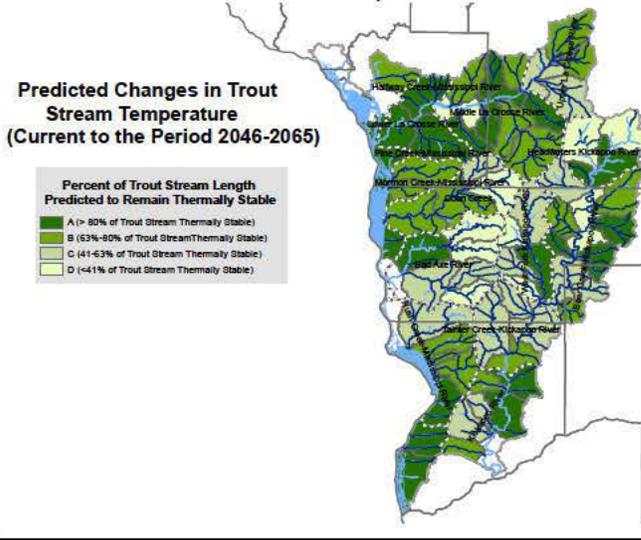


Figure 6.21: Projected changes in trout stream temperatures from current to the time period 2046-2065.



e) Trout Stream restoration

A significant amount of habitat restoration and enhancement work has been performed in the Kickapoo River Region. Among the eight planning regions, the most habitat work has taken place in the Kickapoo River Region, totaling over 121 miles of stream habitat (Figure 6.22).

The Department and partner groups restrict most stream restoration efforts to stretches along which there is public access. Figure 6.23 shows the same data mapped at the sub-watershed scale rather than the watershed scale shown in Figure 6.22. As shown in Figure 6.23 the Department and its numerous conservation partners has focused on several watersheds: Bear Creek, Coon Creek, Bad Axe and Upper La Crosse River. DNR crews enhance approximately 1 mile of trout water each field season.

A more complete discussion of the goals and activities of the trout habitat program can be found in Chapter 2.

Figure 6.22: Miles of trout habitat work completed from 1970 to 2006 in the Kickapoo River Region.

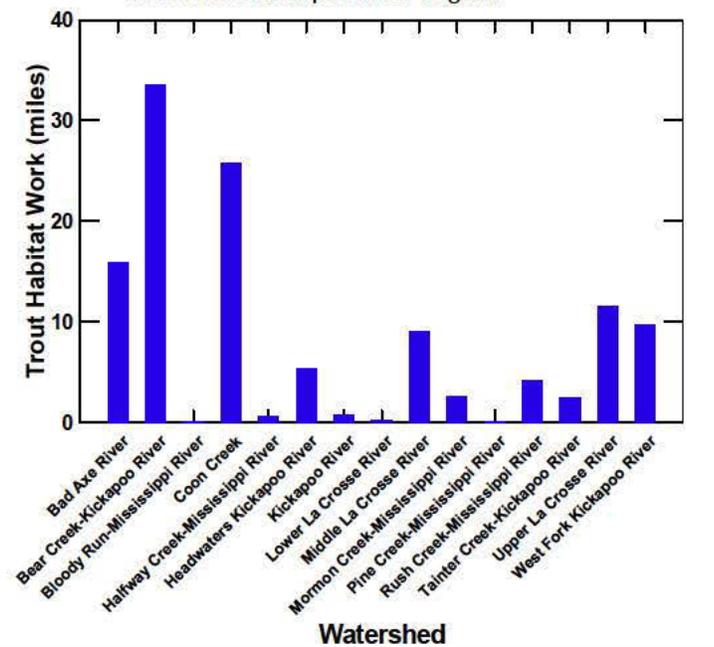
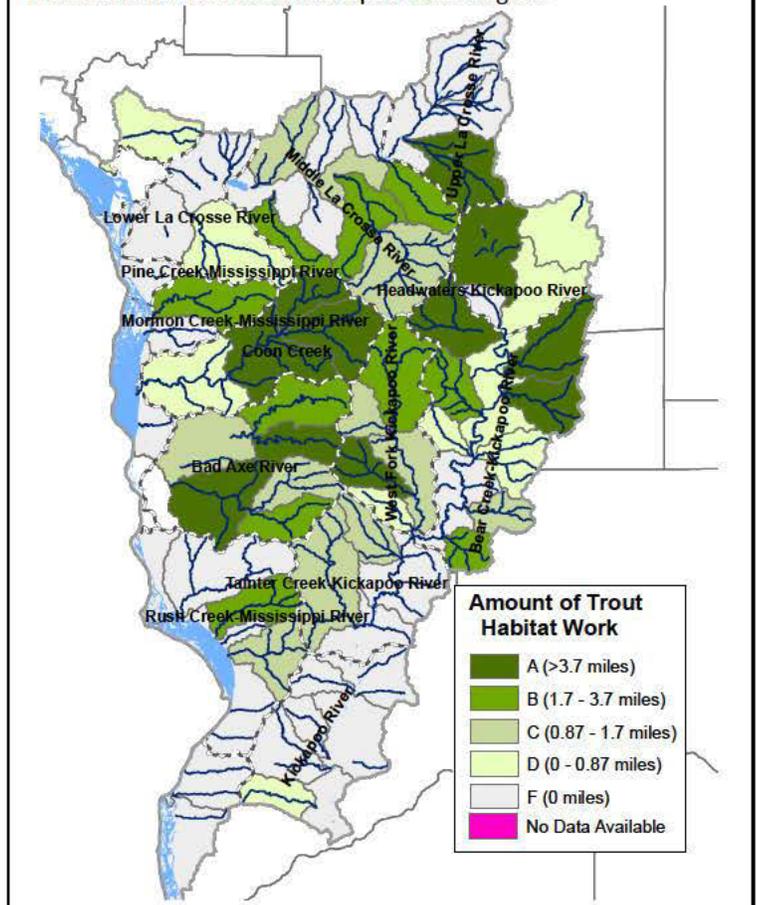


Figure 6.23 Relative amount of trout habitat work completed from 1970 to 2006 in the Kickapoo River Region.



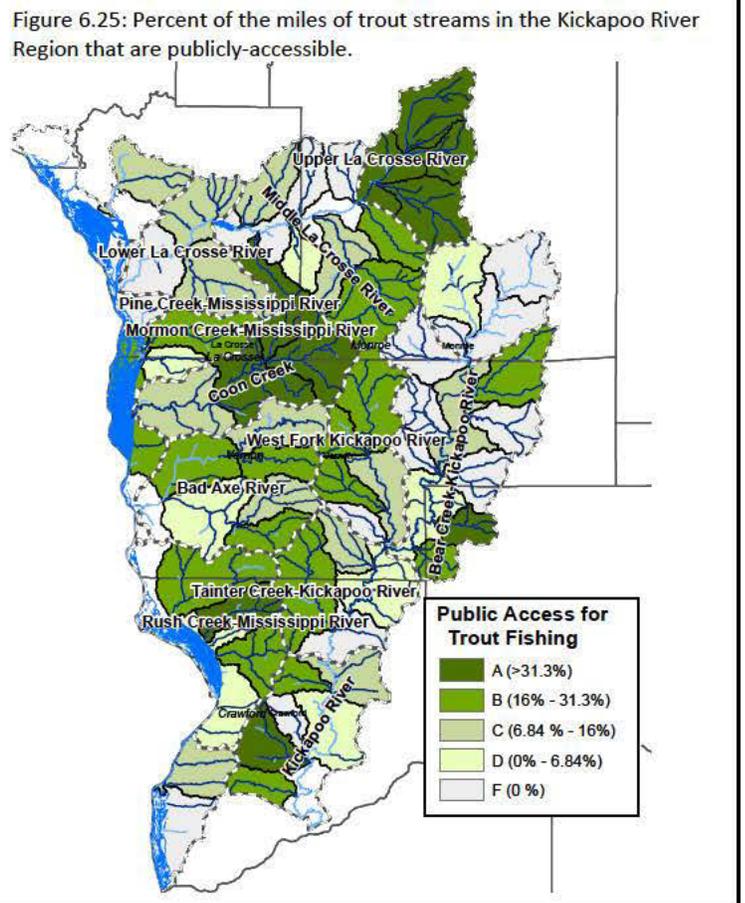
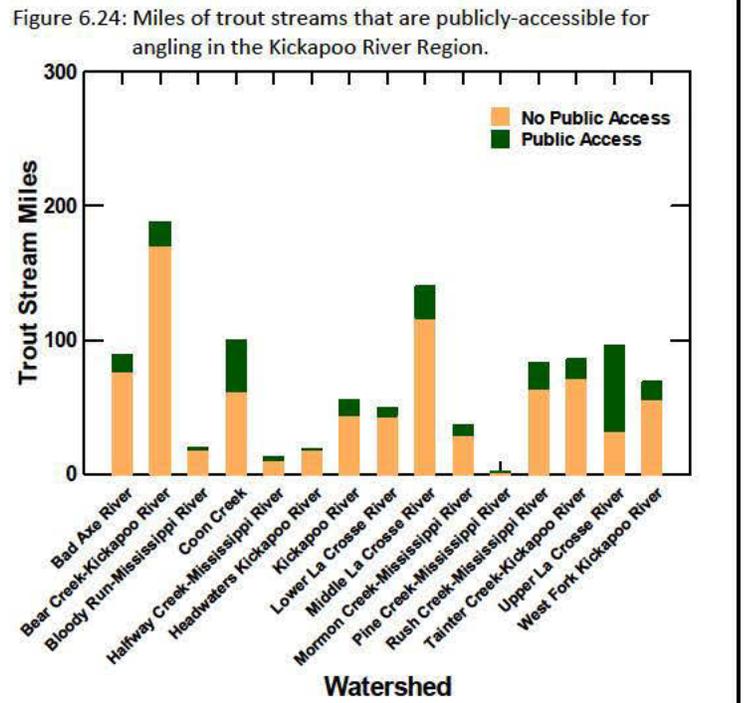
f) Recreation Opportunities

i) Trout angling opportunities

Anglers seeking good trout angling experiences can find them in the Kickapoo River Region. Fisheries survey crews say it is difficult to “not find trout.” This means that trout exist in most flowing water in the region. Typically, anglers find the easiest fishing early in the year when vegetation along the stream bank is shortest. As summer progresses many streams become choked with vegetation and are difficult to fish. Anglers who fish this region should expect excellent fishing for wild brook and brown trout.

Although the public has access to all of these streams if they enter at road crossings or other public access sites and “keep one foot wet” while moving up or downstream, most anglers prefer fishing along streams where they have access to the adjacent shoreline. The Kickapoo River Region holds the most miles and the highest percentage of public access for trout angling among the eight planning regions (See Figure 2.38 in Chapter 2), arguably the best in the entire Driftless Area.. Region-wide 21.6% of the trout stream miles have public access adjacent to their banks. As seen in Figure 6.29, the distribution of public access for trout angling is patchy. Among the 67 trout stream sub-watersheds in the planning region five sub-watersheds that have over 50% of their trout stream miles in public access: Sugar Creek (50.2%), Silver Creek (52%), Tarr Creek (65.7% public), Timber Coulee Creek (73% public), and the Headwaters La Crosse River (87% public). Seventeen of the 67 sub-watersheds in the planning region which contain trout streams have no public access.

Moreover, numerous other conservation partners have also purchased fishing easements along trout streams in the region, however, the Department does not have all the data to map and quantify.



ii) Smallmouth bass angling opportunities

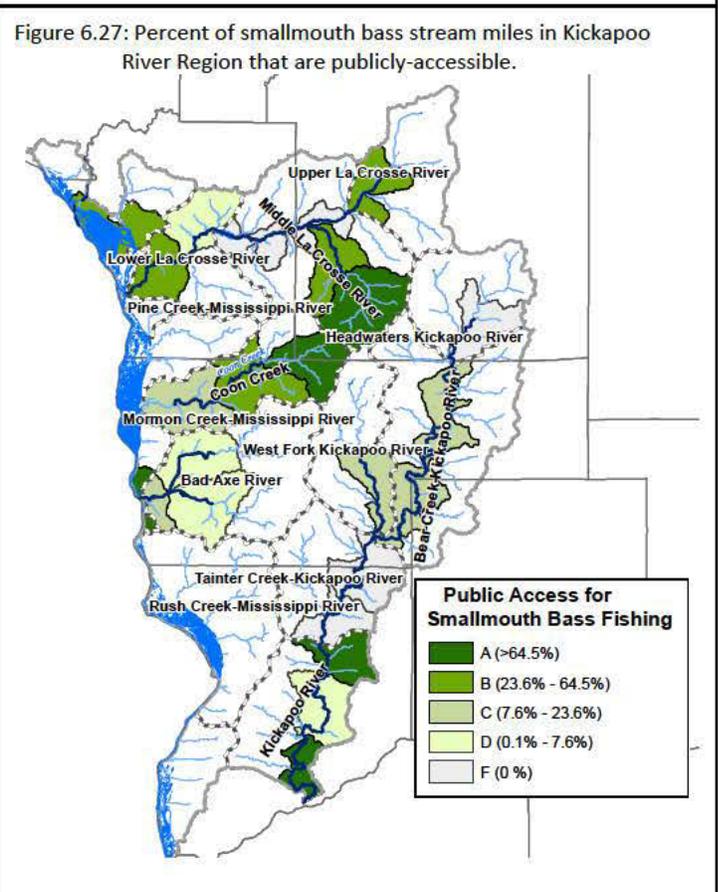
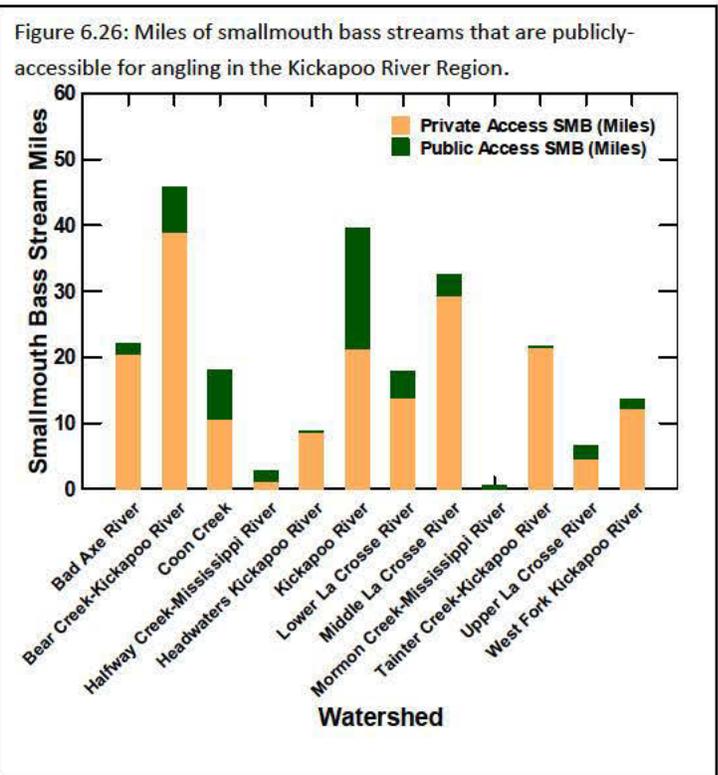
There are very few smallmouth bass angling opportunities in the Kickapoo River Region due to the cold water temperatures in much of the region. Smallmouth bass fishing is marginal at best and only in the most downstream sections for the watersheds in this region. However, the lower portion of Kickapoo River holds some of the most publicly accessible smallmouth bass water available (Figure 6.26). The lower Kickapoo River is also very accessible for small watercraft for fishing access.

Some sub-watersheds show excellent public access for smallmouth bass angling where adult-fishable populations of smallmouth bass are minimal to non-existent (Figure 6.27). Although these trout streams are jointly classified as smallmouth bass water, their smallmouth bass habitat is only for nursery habitat and may not contain fishable adult populations (eg. Coon Creek, Vernon County).

iii) Other recreation opportunities

Aside from the outstanding trout fishing in the area there are many other recreational opportunities available to the public. Boating, camping tubing, hiking, running, biking, bird watching are all exceptional. In addition, fishing for warm water species is great in the Mississippi and Wisconsin Rivers. This region has no natural lakes and only a small number of small impoundments that provide inland lake fishing. The fisheries in these impoundments are limited to panfish, and bass and fish populations vary from year-to-year based on environmental and anthropogenic effects. All watersheds within the Kickapoo Region have some publicly accessible land associated with them. These lands include significant acreage in the Big and Rush Creek Fisheries Areas and many miles of easements along the region's streams. Figure 6.29 shows that Coon Creek and The Upper La Crosse River hold most of the lands accessible to the public. Other watersheds with significant public land include: the Bad Axe, Kickapoo, Middle La Crosse, Tainter Creek, and the West Fork Kickapoo River.

Fisheries Areas allow for all State approved uses while fisheries easements only allow for fishing, bird watching, and walking (hunting or trapping are not allowed).



iv) Recreation supply and demand

The Kickapoo River Region is one of the most remote parts of the Driftless Area. Not only is it distant from Madison and the Twin Cities, it has only one sizeable city (La Crosse/Onalaska). Further, although there are many roads in the region, given the topography they tend to be winding and slow. As a consequence, only a limited number of residents can get to the region within an hour's drive (Figure 6.28).

Relative to demand, there is a considerable amount of publicly-accessible lands along trout and smallmouth bass waters in several watersheds (notably the Upper La Crosse, Coon Creek, and Kickapoo River watersheds). As a consequence, the region is well supplied with angling opportunities for the people who travel an hour or less (Figure 6.29 and Figure 6.30). In addition to the previously mentioned public parcels, public road access on most streams is excellent where tenants of the Public Trust Doctrine should be followed.

Figure 6.28: Population within a one-hour drive of sub-watersheds in the Kickapoo River Region.

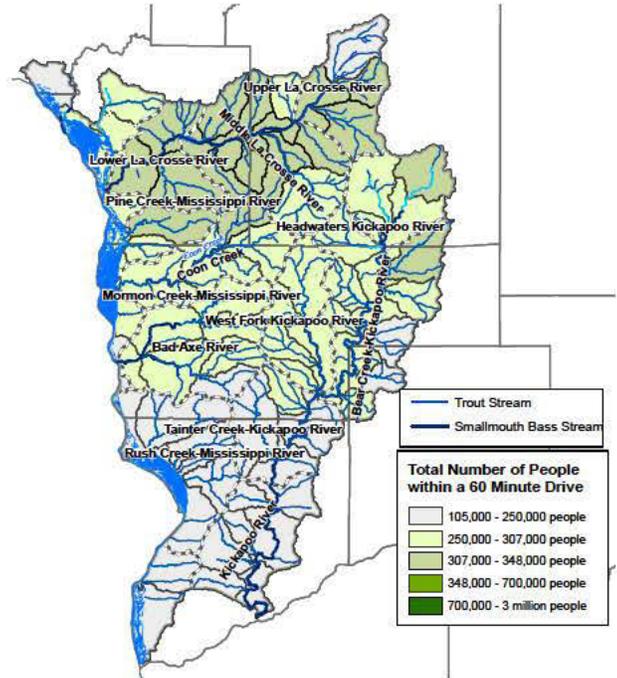


Figure 6.30: Supply of publicly-accessible trout and smallmouth bass stream miles per 100,000 people within a one-hour drive of sub-watersheds in the Kickapoo River Region.

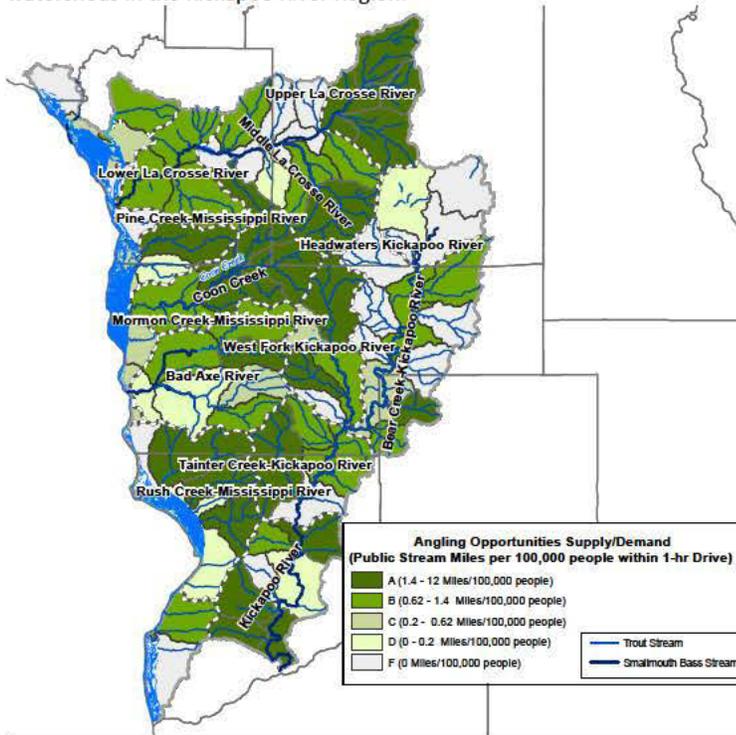
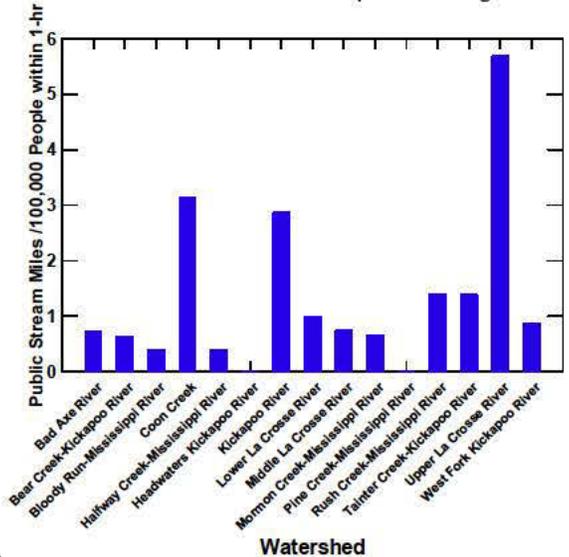


Figure 6.29: Publicly-accessible miles of trout and smallmouth bass streams per 100,000 people within a one-hour drive of watersheds in the Kickapoo River Region



4. The Watersheds

Bad Axe River

The North and South Forks of the Bad Axe River have been sampled annually in late summer since 2007. Five stations are completed on each branch. The headwaters of the each branch are spring fed and contain brook trout. These headwater areas are essential to sustain natural reproduction of brook trout in the watershed. The middle portions of the Bad Axe have excellent fish populations dominated by naturally reproducing brown trout. Brook trout are present but uncommon. Toward the lower reaches the waters warm and fish other than trout start to become more common. This includes smallmouth bass.

The most recent sample date for the main stem of the Bad Axe River was in 2007. Sample data showed a fish assemblage associated with a transition from cold to warm water as it enters the Mississippi River.

Other notable streams found in the Bad Axe River watershed are the Springville Branch Bad Axe River and Hornby Creek. Both are cold water streams with abundant naturally reproducing brown trout. Hornby Creek sampled in 2011 showed significant signs of flood damage and scour holes from heavy rainfalls in 2007 and 2008. Young of the year were extremely abundant in Hornby's headwaters.

Other excellent trout streams in watershed: Coe Hollow, Cox, Sidie Hollow, Frohawk, and Norwegian Hollow Creeks.

Bear Creek-Kickapoo River

As the name indicates this watershed is dominated by the Kickapoo River. The fishery of this river is cool to cold water resource is good. However, siltation and lack of fish cover are significant issues in the main stem of the Kick. However, opportunities at brown trout of trophy proportions are available in the Kickapoo River. Access is excellent as most bridges have adequate canoe landings. Fish survey data is limited.

Other outstanding waters in the watershed are:

Billings Creek-The most recent survey, conducted in 2012, showed that brown trout were abundant with natural reproduction and multiple year classes of fish present. Large numbers of young of year trout were collected during this survey. Relatively few brook trout were sampled and the ones captured appeared to be stocked. The stream reaches temperatures above 70 degrees during the summer. The stream bottom consists of mostly sand and rock. Some habitat work had been done on the stream in the past. Records show that both brown and brook trout have been stocked every year since 2002 by local co-op programs.

Warner Creek- The most recent survey, conducted in 2011, showed that brown trout were naturally reproducing and abundant with multiple year classes present. Brown and brook trout young of the year were found in the headwaters of the creek. Woody debris is abundant in stream due to many large blow downs deposited as a result of flooding. Water temperatures remain in the low 60's all summer. Abundant forage fish in the lower stretches of the creek provide a good food source for large brown trout. Warner Creek had been stocked with feral brown trout from 2002-2009. Since that time it has been stocked with feral brook trout from local co-ops.

Bear Creek- The most recent survey, conducted in 2010, documented mostly brown trout with a few brook trout present. A wide range of forage fish were present in the stations sampled. Young of the year brown trout were found, however no young of year brook trout were sampled. A habitat enhancement project has been completed approximately 1000' upstream of the confluence with the Kickapoo River. Rip-Rap and LUNKER structures have been installed providing an outstanding opportunity at large brown trout. Records show that since 2002 Bear Creek has been stocked yearly with brown and brook trout reared by local co-ops.

Elk Creek-The most recent survey, conducted in 2009, document an abundance of naturally reproducing self-sustaining brown trout. A limited number of stocked rainbow trout were found here as well. Sedimentation appears to be problem in some stretches of the stream, possibly due to stream bank over grazing. Elk Creek is stocked regularly with small fingerling rainbow trout. Extensive habitat work has been performed in the watershed. Most of this work is accompanied by multiple DNR easements.

Other streams of note located in this watershed are: Cheyenne Valley, Weister, Brush, Indian, Jug, South Jug, and Tenny Springs Creeks.

Bloody Run - Mississippi River

Du Charme Creek (Bloody Run Creek)- The most recent survey, conducted in 2003, documented a limited number of brook trout with few year classes present. At that time young of year were present in small numbers. Substrate is mostly silt. Most of the fish present were found in several pools. Stream temperatures are cold enough to sustain brook trout however unknown factors may limit the population. From 2003 to 2006 an effort was made to reintroduce brook trout by stocking feral brook trout. Since 2003 the stream has not been surveyed to determine stocking success. Access is difficult and the streams small size limits angling opportunity.

Other trout streams located in this watershed: Mill Coulee, and Picatee Creek

Coon Creek

Timber Coulee-The most recent biological survey, conducted in 2012, documented multiple year classes of self-sustaining brown trout. Natural reproduction is exceptional. Forage fish populations are limited by abundant trout and low water temperatures. A series of 5 trend stations are completed annually on this stream. Flow and temperature have remained consistent through time. Timber Coulee is Wisconsin's wild brood source for the state's feral brown trout program. Occasionally adult brood fish have been stocked into the stream.

Coon Creek-The most recent survey, conducted in 2012, documented that Brown trout are extremely abundant. Habitat work performed on a large track of State Land (Neprud Property) was sampled. Stream flows are fairly consistent in the stream. Coon creek is the downstream portion of Timber Coulee Creek. Trout are stocked annually by local co-ops.

Several other trout streams in the area are very similar to Coon Creek. They all have extremely high populations of self-sustaining, naturally reproducing, brown trout with limited forage. In addition this watershed holds the second largest amount of land under State ownership in the Region. Most streams have multiple easement sections. Also, these streams have undergone extensive habitat improvement over the years. Stream temperatures are cold and substrates consist of a cobble and gravel. Vegetation is also very abundant in the streams.

Other Exceptional streams in this watershed include: Bohemian Valley, Rullands Coulee, Spring Coulee, Hasley, Lindahl, Hohlfield Coulee, and Rhundahl (CR 8-8).

Halfway Creek - Mississippi River

Halfway Creek- The most recent survey, conducted in 2009, documented a limited number of brook and brown trout. Some young of the year were present, but not in sufficient numbers to sustain the population. Many of the brook trout captured had gill lice. This watershed substrate is mostly sand which along with limited fish habitat is the reason for low fish populations despite low water temperatures. A limited amount of habitat work has been

performed in this stream, which also has limited access. Halfway Creek was stocked with domestic brown trout fingerlings from 2003-2008.

Headwaters Kickapoo River

Moore Creek-The most recent survey, conducted in 2010, documented brook trout and abundant forage species. Brook trout from several age classes were recorded, but no young of the year were present. This creek is stocked with feral yearling brook trout raised by local co-ops. Multiple fish habitat projects have been completed by the county. The in stream habitat consists of rock bottom, undercut banks, woody debris and vegetation. Temperatures recorded were below 55 degrees (F).

Cook Creek-The most recent survey, conducted in 2008, indicated there were no trout present, but appeared as if it would be suitable habitat. Cobble bottom with riffle/pool structure and good sinuosity. Historically the stream contained trout, possibly stocked fish. Stocking of brown and brook trout happened from 2002-2004. Multiple forage fish were found during the surveys. Water temperatures recorded were in the low 60's.

Kickapoo River

Plum Creek-The most recent biological survey, conducted in 2012, documented an abundance of naturally reproducing, self-sustaining brown trout and limited number of naturally reproducing, self-sustaining brook trout. A few tiger trout (brook and brown trout hybrids) were also captured. Limited forage is available. 3 trend stations are completed annually on this stream. Flow levels and temperatures have maintained consistency through historic data. However, this stream has previously been brook trout dominated and appears to be switching to one dominated by brown trout. Numerous easements occur and multiple habitat projects have been completed on this stream. The last time trout were stocked was 2002.

Halls Branch-The most recent survey, conducted in 2012, indicated a healthy population of brown and brook trout. Multiple year classes along with young of the year were found for both species. There was also a wide variety of forage fish. Water temperatures were in the low 60's. The stream is relatively deep and narrow with abundant woody debris. Some of the fish sampled appeared to be stocked. Halls Branch is annually stocked with feral brook trout by Gays Mills co-op.

Other excellent trout streams located in this watershed are: Pine, Crow Hollow, and Citron Creeks.

Lower La Crosse River

La Crosse River -The lower La Crosse River flows for 18 miles from the dam on Lake Neshonoc down to the Mississippi River and is a warm water river with species similar to the Mississippi itself. Smallmouth bass are common in the upper third. Generally trout are not present except for during winter when water temperatures are suitable.

Bostwick Creek- Last surveyed in 2007, this 13.6 mile long tributary flows at approximately 18 cubic feet per second and contains naturally reproducing self-sustaining brown and brook trout. Although brook trout are present they do not occur in large number. Brown trout however, do occur in both large number and size. Substrate consists of mostly silt and sand. Woody debris and undercut bank are the most common fish holding structure. Bostwick Creek was stocked annually from 1999-2008 with brown trout.

Neshonoc and Gills Coulee Creeks- Last surveyed in 2005 and 2012 respectively, these creeks showed naturally occurring self-sustaining trout populations dominated by brook trout. Qualitative habitat analysis showed a severe

lack of fish habitat throughout. However, Gills Coulee has a limited amount of habitat work performed by the county. Access is limited.

Other creeks of note in the watershed include: Eggens Coulee, Creek 23-7 (Hoyer valley), Larson Coulee, McKinley Coulee, Pleasant Valley (Creek 18-2) and Smith Valley Creeks.

Middle La Crosse River

This portion of the La Crosse River is considered cool to cold and sustains modest populations of wild trout. Because of the abundant forage, trout here can reach large size. This 23 mile long section extends from Monroe County downstream to Lake Neshonoc

Little La Crosse River-The Little La Crosse River has been surveyed annually since 2007. It is characterized by an exceptional fishery for wild, naturally reproducing, self-sustaining brown trout. This stream has multiple easement areas as well as associated habitat improvement projects. Substrate consists of sand, gravel, and rubble.

Dutch Creek-Last surveyed in 2009 this stream will provide outstanding opportunities for anglers. Along with stocked brook trout, Dutch Creek has an abundant population of naturally reproducing self-sustaining brown trout in its 9.4 mile length. Multiple habitat and easement sections allow angler to fully utilize this resource.

Burns Creek- Burns Creek provides anglers with a unique fishing experience. Its upper portions are brook trout dominated while the lower portions hold good numbers of brown trout. The two parts are separated by a small dam located off highway E near Bangor, WI. While the upper portion is dominated by brook trout, brown trout are present. Both species are naturally reproducing and self-sustaining. The last survey (2010) showed an average size of approximately 10 and 8 inches for brown and brook trout respectively. Burns Creek has been stocked sporadically since 2002.

Other creeks in watershed include: Adams Valley, Beaver, Big, Cannon Valley, Creek 6-16, East Beaver, East Upper Big, Farmers Valley, Fish, Halls Valley, Little Burns, Lyons Valley, Pleasant Valley, Sand, Upper Big, and West Beaver Creeks.

Mormon Creek-Miss. River

Mormon Creek-This creek is approximately 15 miles long and has been monitored annually since 2007. Fish surveys have shown that both brook and brown trout are naturally reproducing and self-sustaining. In addition to adequate natural reproduction Mormon Coulee Creek has been stocked with both species from 1998 to 2008 and is occasionally stocked with large brood fish. There are many sections of this creek where habitat has been improved and are accompanied by fisheries easements which makes this creek very accessible to the public. Other streams with fisheries in this watershed include John's Coulee and Chipmunk Coulee Creeks.

Pine Creek-Mississippi River

Only one trout stream Pammel,Creek is found in this watershed.

Rush Creek - Mississippi River

Rush Creek-Surveyed annually since 2007, Rush Creek and its tributaries provide some of the best fisheries in the region. All streams in this watershed have good access, significant portions with habitat enhancement, natural reproduction and the potential for large fish. State Land and easements are common along Rush, Sugar, Copper and Coluee Creeks. Other streams worth mentioning include: Buck, Kettle Hollow, Morgan Hollow, and Leitner Creeks.

Tainter Creek - Kickapoo River

Tainter creek- The most recent biological survey, conducted in 2007, documented abundant, self-sustaining brown trout. In addition to brown trout numerous forage species were present. Temperatures recorded were in the low 60's. Excellent natural habitat exists and has been enhanced by DNR Fisheries Crews in easement areas. Deep holes and large woody debris provide habitat and potential for large brown trout. Brook trout are stocked annually by local Purdy co-op but were not found in the most recent survey. Feral brown trout strains have also been stocked a couple times.

Reads Creek- The most recent biological survey, conducted in 2012, documented both brown and brook trout. Natural reproduction and multiple year classes were present for both species. Summertime maximum stream temperatures are in the low to mid 60's. Brook trout were found mostly in the headwaters of the stream where the substrate is mostly cobble due to flood effects from years prior. Feral brook trout were stocked once in 2005.

Nederlo Creek- The most recent biological survey, conducted in 2010, documented brook trout in the headwaters of the stream, possibly due to the abundance of beaver activity on the stream. Large beaver dams could be deterring brown trout from reaching the upper stretches of the stream. The brook trout population was made up of multiple classes, and very is abundant, self-sustaining and naturally reproducing. The lower stretches of the stream have a mixture of brown and brook trout with a few hybrid tiger trout present. Summertime maximum water temperatures were in the low 60's. There has been no trout stocking the last 10 years. Other trout streams of note located in this sub watershed are: Sherry, Trout, Baker, and Bear Creeks.

Upper La Crosse River

La Crosse River-The most recent biological survey, conducted in 2010, showed a healthy population of brown trout. The stream has a very sandy bottom with low conductivity, making electrofishing difficult. Along with brown trout, many forage species were found. The size of this watershed and the stream itself has the potential to produce trophy trout. Brown trout stocking has occurred previously in the upper reaches of the Upper La Crosse River. Most of the sampling is conducted by Fort McCoy. Other trout streams located in this sub watershed are: Squaw, Tarr, Stillwell, Silver and Bailey Creeks.

West Fork Kickapoo River

West Fork of the Kickapoo River-The most recent biological survey, conducted in 2008, documented abundant, naturally reproducing, self-sustaining brown trout as well as numerous brook trout. Many forage fish are also found in the stream. Summertime maximum water temperatures were in the low to mid 60's. In addition to having an outstanding fishery, habitat has been enhanced on many fisheries easements on this stream. The stream has been stocked annually since 2002 with feral brook trout by the local co-ops.

Seas Branch-The most recent Biological survey, conducted in 2008, documented a dominant brook trout population in the upper stretches of the stream. Below an impassable fish barrier a mixture of brown and brook trout were collected. Seas Branch is a fast running stream that has been heavily impacted by floods. Water temperatures recorded were in the low 60's. Sculpin provide a good food source for the brook trout. Brook trout were stocked once in 2003 in Seas Branch Pond. This stream is very accessible and has several sections with habitat enhancement.

Bishop Branch-The most recent Biological survey, conducted in 2010, document abundant brown trout populations. This fish population is naturally occurring and self-sustaining. Several habitat projects have been performed on several state owned easements. No stocking has been recorded in the past 10 years. Other outstanding trout streams located in this watershed are: Harrison, Cook, Mapledale, and Knapp Creeks.