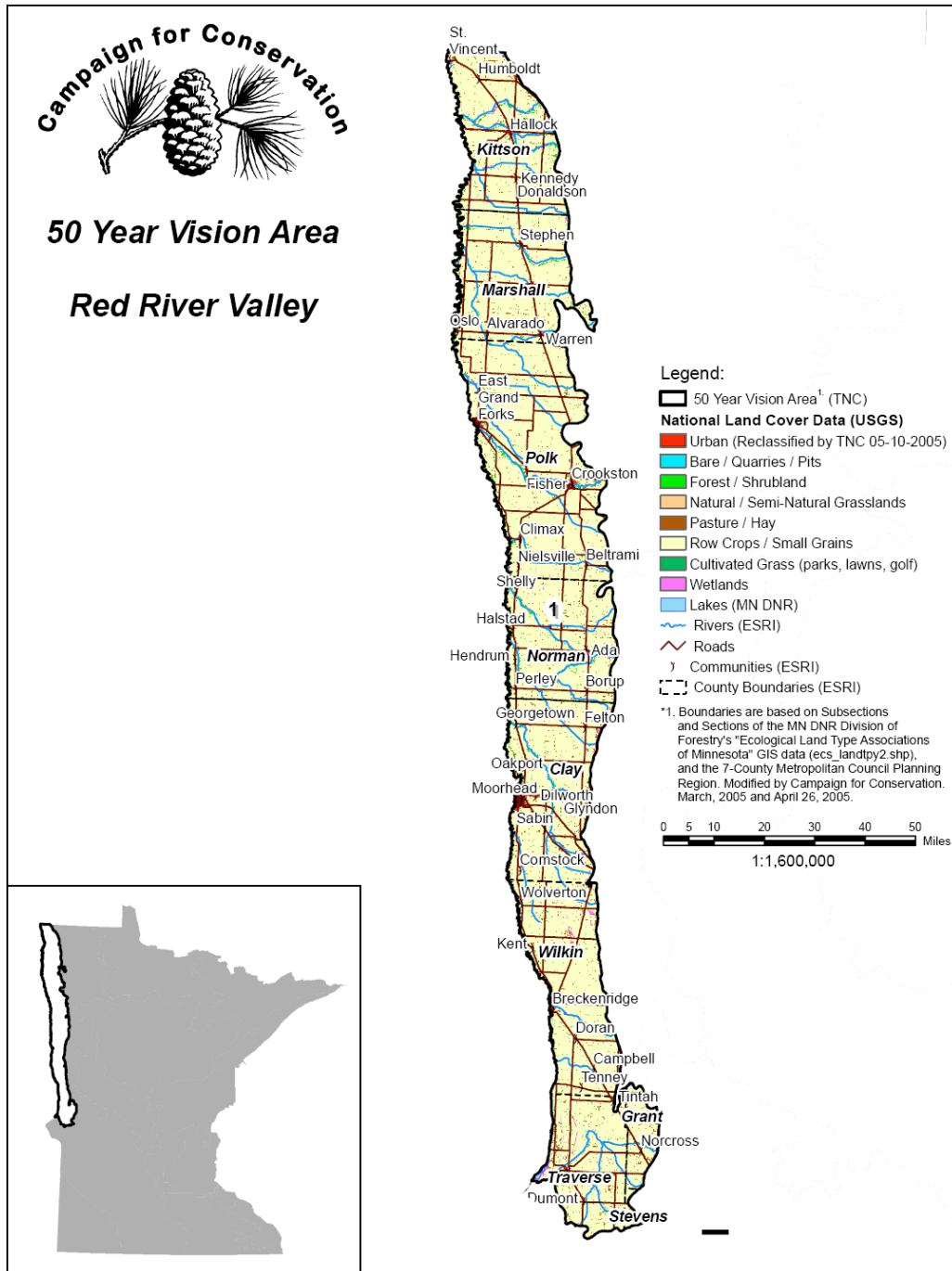


Red River Valley Conservation Region



Final Conservation Template
September 2007

particularly in wetter habitats. These wetlands and riparian areas are home to waterfowl and shorebirds that make their presence felt especially during the spring and fall when they are most visible. The breeding birds are joined by large numbers of migrants that breed in Canada and use the Valley as a natural migratory corridor. Besides the wetland habitats, there are also examples of the Valley's prairie heritage close by on the Valley's eastern margin in the Agassiz beach ridges area. These reminders of what used-to-be are also a guide to what the future can hold for the Red River Valley as today's residents look to integrate sustainable use of the land with the increased protection of natural resources.

II. Current Conditions and Trends

A. Demographics and Economy

The 2000 population for the Red River Valley Conservation Region is estimated at 86,757, although that number is misleading because it only includes the Minnesota portion of the Valley. The largest population and regional service centers, Fargo, Grand Forks, and Wahpeton, are just across the Red River in North Dakota. Most people view the Red River Valley as a whole, culturally, economically, and ecologically. Except for laws, government, and taxes, the state boundary matters little.

Within the Minnesota portion of the Valley, population centers include East Grand Forks, Moorhead, and Breckenridge. Like many counties in the Great Plains, growth has been slow or declining over the past 50 years. The trend is expected to continue into the future. From 2000-2030 the region's population is only expected to grow 0.6%. During this time period, the population is also expected to age. The percentage of the population greater than 65 years of age will increase 49%. The general pattern has been for younger people to leave rural areas and settle in expanding regional centers. The populations of the Fargo/Moorhead and Grand Forks/East Grand Forks areas will grow. For example, Clay County, which includes the Moorhead area, and Polk County, which includes the East Grand Forks areas, are the only two counties in the region that are expected to grow by 2030(4.6 and 0.9% respectively).

The ethnic makeup of the regions population is also changing. The recent influx of immigrants to agriculture-related and service industries as well as refugee settlement is adding to the region's diversity. These newcomers may not yet view natural resources in the same ways as the Valley's long-time residents.

The Red River Valley is the most intensively cultivated conservation region in Minnesota. Nearly every acre that could be converted to agriculture has been. Some of the earliest large-scale agricultural operations in the world, the "Bonanza" farms, took place in the Red River Valley in the 1870s. Large-scale farming continues to this day.

According to the 2002 Census of Agriculture there were 5,989 farms in the seven core counties covering a total of 4,498,082 acres. Total harvested cropland consisted of 4,017,687 acres. The total gross market value of agricultural products sold was \$786,728,000. Crops comprised 89.1% of this value while livestock and poultry made up only 10.9%. The crops planted to the most acres were wheat, soybeans, oats, and sugarbeets.

The comparative rank of agricultural in this region illustrates its predominance. The seven core counties make up only 5.0% of the area of the state, yet 7.4% of Minnesota's farms are found here with 17.7% of the cropland. These farms produce 15.4% of the state's gross market value of crops.

Federal farm policy and its subsidy programs greatly influence the use of farmland. Upcoming changes in the 2007 Farm Bill could either drive more land into row crop systems or into conservation activities. Of particular importance is the fate of the land currently enrolled in the Conservation Reserve Program. Within the seven core counties in 2004, 590,455 cumulative acres have been enrolled in CRP contracts. A large proportion of these contracts will expire between 2007 and 2010. Although, most of these acres are not located in the Red River Valley itself, the impact on natural resources in the area could be huge if all the CRP acres were returned to row cropping.

Another major change currently underway in the region is the growth of the biofuels industry. In 2006, there were 16 ethanol plants in Minnesota. Although none of the 16 Minnesota plants are in the Red River Valley, there are two plants on the North Dakota side of the Valley in Grafton and Walhalla and proposed plants in Fergus Falls and Erskine, Minnesota and Hankinson, North Dakota. To give an indication of the impact that ethanol production is having on Midwest agriculture, the 16 Minnesota plants produced 550 million gallons of ethanol from 196 million bushels of corn (15% of the state's corn crop). By 2008, the number of plants will grow to 21 and they will use 25% of the state's corn crop to produce 1 billion gallons. This huge demand for corn is already having ripple effects, even in regions where corn is not the principal crop. Increasing corn prices and higher farm land values have put pressure to replace the corn that was once being used to feed livestock with other crops. In addition, ethanol production uses large quantities of water. In many places, including parts of the Red River Valley, there might not be enough useable year-round water to support all of the planned expansion in ethanol production.

In addition to the agricultural economy, the Red River Valley is a regional education and health center. The University of North Dakota, University of Minnesota at Crookston, North Dakota State University, Moorhead State University, Concordia College, and the North Dakota State College of Science are all located in the Valley. The universities are home to a medical school, nursing school, and are affiliated with a number of regional hospitals. Other large employers of professionals include several banks, 3M, and Microsoft (formerly Great Plains Software).

B. Land and Habitat

This region includes the Minnesota portion of the Red River Valley. The Red River of the North forms the western boundary of the region, which includes all of the Red River Prairie ECS subsection except the eastern-most portion of the subsection (which comprises the Agassiz Beach Ridges Region). The region includes the entire border between North Dakota and Minnesota and extends from Traverse Lake, on the border between Minnesota and South Dakota, to the Canadian border where the Red River leaves Minnesota to flow through Manitoba on its way to Lake Winnipeg.

The Red River Valley was once the bottom of a large glacial lake. This lake has been named Lake Agassiz and at its peak was larger than all of the modern Great Lakes combined. Lake Agassiz varied in size depending on the location and extent of the continental ice sheets that covered most of Canada. The lake finally disappeared about 8,500 years ago when the ice sheets retreated far enough that an outlet to Hudson's Bay was created. The lake sediments and the following 8,000-year history of prairie vegetation resulted in deep organic soils with very little topographic relief. Once the wetter areas were tilled and drained, the Valley became one of the richest agricultural areas in the state

The Red River flows north through this zone and rivers and streams meander extensively through the largely level landscape. Flooding is common in early spring and can cause major problems due to the flat topography. Frozen conditions to the north and the grade of the river can cause water to back up and flood large areas. Heavy clay soils with very low infiltration rates add to the flooding potential. In spite of frequent flooding, there are few permanent lakes in the region.

In pre European settlement times, the Valley was “a vast sea of natural grassland” which constituted the eastern reaches of the original North American Tallgrass prairie. In the Valley, wide expanses of big bluestem and Indian grasses were dotted by wet prairies. The grasslands were broken by narrow forested floodplains of streams and rivers that crossed the Valley floor from the east. Within the “fire shadows” of the streams, rivers, and shallow lakes, woodlands and brushlands could develop. Bison, elk, wolves, prairie chickens and other prairie wildlife were abundant.

Less than 1% of the original native prairie remains in the Red River Valley. A somewhat higher level of native prairies still exist in the Lake Agassiz beach ridges and sand dunes that were formed on the eastern margins of the lake. The high sand and gravel content in these habitats created conditions too dry for sustained row crop agriculture and more of it survived as part of livestock operations. What little native prairie is left in both the beach ridges and valley floor proper is under threat by tree encroachment due to fire suppression and limited use of prescribed fire.

With the rich soils deposited by Glacial Lake Agassiz, the Red River Valley is now a prime agricultural region. The land use is primarily intensive cultivation of sugar beets, potato, wheat, sunflower, and other specialty crops. Land cover composition is:

Row crops/Small grain	92.7%
Pasture/ hay	02.9
Wetlands	00.9
Forest/shrubland	02.4
Urban	00.9
Cultivated Grass	<u>00.2</u>
	100%

Most the area has been extensively ditched and the wetlands drained for crop production. Less than 20% of the presettlement wetlands remain, and in some counties, 95% of the wetlands have been lost.

Although small and widely separated, a few high quality examples of the regions natural heritage still exist. Among the most notable are Scientific and Natural Areas such as Malmberg Prairie, Felton Prairie, Bluestem Prairie, Sandpiper Prairie, and Western Prairie SNAs. Together these five sites contain 2,871 acres within the Red River Valley Conservation Region. All of these areas contain important prairie communities of high biodiversity significance. Buffalo River State Park also preserves important biodiversity features. Many Wildlife Management Areas contain areas of native vegetation as well, and can add to the habitat base of both game and nongame native species.

Although most of the area has not been completely analyzed, the Minnesota County Biological Survey has identified 53 important natural community locations totaling 6,495 acres. Using another type of biodiversity planning analysis, The Nature Conservancy identified 3 areas of 6,933 acres within this conservation region that are part of the Northern Tallgrass Prairie

ecoregional portfolio. Not all land within these areas need to be protected but important conservation targets are present that do merit preservation.

There has been some protection of prairie remnants and other natural habitats on private lands. Several large prairies are owned by The Nature Conservancy, including Bluestem Prairie and Felton Prairie, and the Audubon Society has a sanctuary at Warren. Only one Native Prairie Bank easement of 81 acres has been purchased by the State of Minnesota in the Red River Valley Region. The Prairie Bank program could be a very useful tool to protect some of the prairie remnants that still remain. Another program, RIM Reserve easements, offers permanent protection to wetlands and other habitats. The state of Minnesota holds rights on 2,530 acres in 77 RIM Reserve easements.

Nearly all of the land in the Red River Valley is privately owned. This region has the lowest level of public ownership of any in Minnesota. Only 0.3% of the total land area is in federal, state, or local conservation ownership. This low level of public land ownership puts high demands on the lands that are open to the public.

C. Lakes, Rivers, Wetlands, and Groundwater

There are nearly 6,822 miles of streams and rivers that flow through the Red River Valley Conservation Region. About 48.2% of them have been ditched. This level of stream ditching, channelization, and straightening is higher than any other conservation region in the state, with the exception of the neighboring Aspen Parklands conservation region.

There are only 6 lakes greater than 150 acres in size in the region although many smaller wetlands and shallow lakes still exist. Nearly the entire lake habitat in this region was formed when oxbows of the Red River and other large streams were cut off by meandering or are reservoirs.

The Red River and its tributaries have been altered by dams and channelization. Despite construction of various flood structures, high levels of precipitation can cause severe flooding in the basin, as evidenced by the nearly annual flooding and record flood of 1997. Communities suffering severe damage from that flood are removing residents and structures from the floodplain to give the rivers space to expand into during floods. Smaller summer floods due to intense heavy rainfall also continue to cause severe damage to agricultural crops as fields are flooded for two or three days during the height of the growing season. Surface runoff and wind erosion contribute to sedimentation and nutrient loading in surface waters.

Dams are also responsible for blocking the movement of fish from the mainstem of the Red River to its tributaries. Fish passage between different habitats is essential for maintaining healthy populations. Many species utilize the deep slow water of the main channel of the Red River as refuge habitat during dry seasons, but move into tributaries for spawning and rearing habitat. There are currently three dams remaining on the Red River main channel, all of which are planned for removal or modification to allow movement of fish.

Water quality and availability are major concerns. The Minnesota Pollution Control Agency has surveyed only a portion of Minnesota's waters yet has labeled 58 streams and rivers in the Red River Valley Region as impaired. Nearly every major river is included on the list including the Red River, Two, Tamarac, Snake, Red Lake, Poplar, Wild Rice, Buffalo, Otter Tail, Rabbit, and Mustinka Rivers. Most of the identified rivers and streams have been impaired by either high

turbidity as a result of soil erosion and eutrophication from high nutrient loads (phosphorous and nitrogen) or by low levels of dissolved oxygen. A few rivers have been impacted by fecal colliform bacteria including segments of the Red River, Lost River, and Clearwater River.

Dealing with impaired waters is an inter-state and international issue for the Red River Valley. Turbidity is a major problem for the Red River, but the state of North Dakota does not recognize it as an impairment. No matter what activities Minnesota takes to reduce turbidity, there will also need to be progress in North Dakota if the problems of the Red River are to be resolved. The impairment due to turbidity and excessive phosphorus are impacting the waters that reach Canada. Since the US is a major contributor to the problem of poor water quality in Lake Winnipeg, solutions will need to be addressed in the Red River Valley.

Water quality has also been implicated in the rates of cancer, birth defects, and stillbirth in the Red River Valley. Although definitive results are still lacking, the perceived high rates of these health problems among rural populations as compared with urban and suburban residents is a cause of concern.

Most of the wetlands that existed in this region in European presettlement times have been lost to agricultural activities. The National Wetland Inventory identified only about 38,000 acres of wetlands remaining in the region, and that total represents less than 10% of the wetlands originally found in the area. Anderson and Craig estimated in 1984 that Polk, Norman, and Clay Counties had all lost at least 95% of their presettlement wetlands and Wilkin and Traverse at least 99%.

The large cities on the Red River draw their water from the river, and other cities rely on ground water for their supply. Runoff causes sedimentation and nutrient loading of the river. Excessive runoff also contributes to flooding.

Groundwater contamination by agricultural pollutants, including hog manure management is a growing concern. Shallow aquifers that supply the rural population with water are becoming polluted in places with nitrates, phosphates and pesticides. The biggest problem is inappropriate practices in recharge areas located in the beach ridges to the east of the Valley. Natural groundwater in deeper aquifers is often poor due to high-dissolved solids and naturally occurring arsenic. Heavy pumping of overlying drift aquifers may cause the upward flow of lesser quality groundwater from the deeper poorer-quality sources.

There is generally a shortage of water for industrial uses, which may limit industrial expansion and could be a limiting factor in the placement of ethanol plants. This shortage may create a potential interstate conflict due to high levels of pumping in certain areas of North Dakota. A partial solution to the problem of declining aquifers would be to hold more water in Valley wetlands to allow more recharge (the Manston Slough project is a good example) and to reduce flood damage.

D. Fish and Wildlife

Waterfowl, Canada goose, pheasant, sharptail grouse, prairie chicken, turkey, and deer are the targets of most hunting activity in the area. White-tailed deer densities are very high in riparian areas and other wooded habitats because they tend to be concentrated in what native habitat is available. In the past, this region supported exceptional numbers of waterfowl including mallard, pintail, canvasback, redhead and several species of teal, as well as Canada and snow geese.

Fishing in this region focuses on trophy channel catfish in the large rivers as well as northern pike, walleye, and small mouth bass.

Over 300 species of birds have been recorded from the Red River Valley, but loss of habitat has resulted in fewer species and smaller populations. There are a total of 82 wildlife species of greatest conservation need in this region.

Despite their presettlement abundance, upland birds such as the prairie chicken suffered great declines when the early mix of diversified agriculture was replaced by intensive industrial scale row cropping. Prairie chickens have recovered in the prairies to the east of the area however, and there is now a limited hunt. Raptor and songbird populations also declined in this period.

Many of the rarest species are either wetland adapted or prairie adapted. The wetland species are more frequently found on the Valley floor while the prairie species are more common in the prairies found along the Lake Agassiz beach ridges. The wetland species of greatest conservation need include: northern pintail, lesser scaup, dunlin, white-rumped sandpiper, marsh wren, sedge wren, yellow rail, trumpeter swan, marbled godwit, whimbrel, red-necked grebe, black tern, and common snapping turtle. The prairie species include: prairie vole, northern grasshopper mouse, plains pocket gopher, badger, Baird's sparrow, Henslow's sparrow, Sprague's pipit, Swainson's hawk, chestnut-collared longspur, upland sandpiper, loggerhead shrike, burrowing owl, western hognose snake, Dakota skipper, and regal fritillary.

E. Recreation

Buffalo River State Park near Glyndon is the only state park located in this region, but there is also a State Recreation Area along the Red River in East Grand Forks. Together the State of Minnesota owns 546 acres, but about 8 acres of inholdings within the legislatively approved boundaries are still held privately. The State Park Land study also identified the need for an additional state park in the Red River Ecological Subsection with a cultural theme representation.

There are relatively few county or regional parks, including Marshall County Park, Pine Ridge Park in Grant County, and M.B. Johnson Park in Moorhead.

There are no state trails in the Red River Valley, although the Agassiz County Trail has been considered to have regional potential. Trails can play an important role in connecting natural resource areas with corridors of natural vegetation. Such connections can allow movement of animal and plant species to maintain gene flow and the colonization of better habitat as environmental conditions change due to global warming.

The Red River Valley is usually not thought of as a part of the state with a strong boating tradition, but 468 miles of the Red River and Red Lake River have been designated as state canoe routes. There are opportunities to designate many more canoe trails on the major tributaries to the Red River.

When both the Minnesota and North Dakota sides of the Red River Valley are considered, a number of interesting destinations for viewing nature are available. Wildflower walks and bird watching are the principal attractions. Among the possible sites to visit are Kelly's Slough National Wildlife Refuge (ND), Buffalo River (MN) and Turtle River (ND) State Parks, Prairie Chicken (ND) and Rothsay (MN) Wildlife Management Areas, Bluestem, Kettle Drummer, Foxhomme, and Felton Prairie Preserves (MN), and the prairies located in Oakville Township near Grand Forks (ND). One program to highlight prairie history and environments is the Prairie

Passage highway route extending north to south along Highways 75, 59, 32, and 9. This route extends from Canada to Mexico, visiting many native prairies along its way. An important feature of the route is prairie restoration along its right-of-way. Although most of the Prairie Passage is mostly located to the east of the Red River Valley, it does cross into the Valley in a few places.

The Pine to Prairie Birding Trail is the first birding trail in Minnesota. Several of the hotspots near the trail fall in the Red River Valley. Besides the Buffalo State Park and the preserves listed above, the Anna Gronseth and Town Hall Prairie Preserves and Breckenridge Water Treatment Ponds are included as possible sites to visit.

For serious birders, the Red River Valley can be a national destination in certain winters. When there is a population decline of voles and other rodents in Canada during hard winters, there can be a southerly dispersal of great gray owls and snowy owls searching for food. During exceptional years, bird watchers will travel from all over the US to see these eruptions of boreal and arctic owls.

The spring warbler migration can also be impressive in the Red River Valley. One reason for the high-quality birding opportunities is the scarcity of available habitat. When migrating birds reach the Valley, they tend to concentrate in the patches of riparian woods. Places such as Johnson Park, in Moorhead can host high densities of birds as they move through the area. Many birders feel that if more oxbows and floodwater storage areas could be protected and managed for native vegetation, the birding opportunities in the Red River Valley would be greatly expanded.

Outdoor recreation including hunting and fishing are important activities in this region and are increasingly helping to diversify local economies. For example, anglers from all over the Midwest are drawn to the Red River for the large catfish it produces. Fish in the five-pound range are frequently caught and larger individuals reaching 15-20 pounds are not uncommon. However, for many Valley residents the best hunting and fishing opportunities are outside the Valley itself. There is far more natural habitat to both the west in North Dakota for waterfowl, pheasant, and big game and to the east in the Lake Country of Minnesota for fishing, deer. Substantial hunting and fishing revenues are being lost outside the region as residents travel to better habitat and areas open to public hunting.

In the Red River Valley itself, only about 2% of the land is open to hunting, according to the WMA Citizen's Advisory committee. As a result, there is a high demand for public hunting opportunities. There are only 13 Wildlife Management Areas in the region consisting of 4,011 acres. The Wildlife Management Plan Acquisition Plan sets a 50-year goal of doubling public hunting opportunities for pheasant and waterfowl by acquiring an estimated 4,000 acres of new WMA lands as well as acquiring 3,986 acres of inholdings at the existing WMAs. The newly created WMAs should be focused on increasing grassland and wetland habitat for prairie chicken, pheasant and waterfowl and creating large core grassland blocks (>2000 acres) for multiple grassland species.

The federal Waterfowl Production Areas (US Fish and Wildlife Service) also provide hunting opportunities. Within the Red River Valley there are four WPAs with a total of 1,546 acres. The USFWS Detroit Lakes Wetland Management District Comprehensive Conservation Plan calls for the acquisition of 36,820 acres in fee and 64,154 acres of easements in Clay, Norman, Polk, Traverse, and Wilkin Counties, but many of these acres fall outside of the Red River Valley Conservation Region.

Prairie chickens, once the predominant grassland game species in this area, have made a comeback to levels permitting a limited hunting season nearby. With more habitat, there are strong expectations that the hunting season could expand. Habitat that is good for prairie chickens is also be used by pheasants. Partly because the northwest portion of Minnesota is near the northern edge of the pheasant range, the region ranks next to last in the state in the potential to produce pheasants among the regions within the pheasant range. The state Pheasant Plan aims to increase Minnesota's pheasant harvest to 750,000 roosters by 2025. To accomplish this, an additional 1.56 million acres of grassland habitat must be added or restored in the state. Northwest Minnesota's share of that habitat is about 4.95% or around 77,217 acres in Clay, Traverse, and Wilkin Counties. A further complication to the prairie chicken and pheasant's future in Minnesota is the fate of USDA Conservation Reserve Program lands. The rebound of the Minnesota's pheasant population in the last twenty years is largely attributable to the expansion of suitable habitat created through CRP. However, large numbers of CRP contracts are set to expire in the next few years, and there is concern regarding the availability of federal funds to renew the current acreage levels. Inadequate funding could result in the loss of many acres of marginal land to production.

The Minnesota Duck Plan is another ambitious effort to improve wildlife habitat in Minnesota. This plan calls for adding 2,000,000 new acres of habitat statewide to produce a breeding duck population averaging 1 million birds. To accomplish this goal in the Red River Valley will necessitate adding about 30,000 acres focused on wetland/grassland complexes of working lands, each 4-9 square miles in size.

III. Conservation Challenges

Unlike many other regions in Minnesota, the greatest conservation challenge in the Red River Valley is not to identify and protect the remaining examples of high quality habitat. There are few examples of presettlement natural communities left to be protected. Rather, the chief focus in the Valley will be to restore the remaining natural systems to a more natural ecological function thereby improving water quality and flood control. This will include restoring wetlands and prairies, creating buffers along watercourses, allowing streams to re-meander, removing barriers to fish passage, and creating a more sustainable and ecologically friendly agricultural system. The Valley will continue to be one of the richest agricultural areas of the state, but it can also regain more of its native ecological functions.

IV. Status of Current Planning Efforts

The following plans or studies were reviewed and incorporated into this summary:

- Experiment in Rural Cooperation, University of MN, 2006 (ongoing)
- Minnesota Comprehensive Wildlife Conservation Strategy, DNR, 2006
- Minnesota Pheasant Plan, DNR, 2006
- Minnesota Duck Plan, DNR, 2005
- Minnesota Sales Tax Statistics for Tourism, MN Dept. of Revenue, 2004
- Minnesota State Comprehensive Outdoor Recreation Plan (SCORP), DNR, 2002
- Minnesota State Park System Land Study, DNR, 2000
- Minnesota Wetlands Conservation Plan, BWSR, DNR and other MN state agencies, 1997
- Minnesota Wildlife Management Area Acquisition, DNR, 2002

- HAPET modeling conducted by USFWS for wetland/grassland protection and restoration

Further Planning should consult these additional planning efforts:

- Watershed District Natural Resource Assessments
- Red River Basin Stream Survey Reports 2002-2006
- Detroit Lakes Wetland Management District Comprehensive Conservation Plan, USFWS 2003
- Red River Basin Natural Resources Framework Plan, Red River Basin Commission 2005
- Red River Basin Mediation Agreement 1998
- Ecosystem Science and Sustainability Initiative, University of Minnesota 2004
- Northern Tallgrass Prairie Ecoregional Plan, TNC 1998
- Water Quality Plan, MPCA
- County Comprehensive Water Plans
- Working Lands Initiative
- Statewide Corridors Project

V. Goals

The primary conservation goal in the Red River Valley region is to improve water quality and flood control ecosystem services by restoring wetlands, creating streamside vegetation buffers, and re-engineering rivers and streams to a more natural geomorphology and hydrology. The vegetation restoration should use native plants and avoid the nearly ubiquitous brome and reed canary grasses. By restoring wetlands, rivers, and streams, fisheries will improve and the newly created riparian habitat will benefit terrestrial species as well.

More specifically the goals for the region should: 1). Reduce run-off and improve water quality by buffering streams. Buffering tributaries will also improve wildlife migration corridors from the Agassiz Beach Ridges Region to the main stem Red River. 2). Reduce flooding through the use of set-back levees and allow steams to re-meander, both of which also provide wildlife benefits. 3). Create new opportunities for outdoor recreation especially in the area surrounding the Moorhead metropolitan area, and 4) Restore prairie and wetlands around existing remnants. The small pieces of remnant habitat are generally not of sufficient size to support natural ecological functions. Even if restored prairies and wetlands don't have the same levels species diversity as native prairies and wetlands, they do offer additional area that might turn some native vegetation remnants into viable habitat for many animals.

A. *Demographics and Economy*

1. Promote economic activity that sustains the natural resource base.
 - Promote sustainable development that has a relatively low impact on the environment and natural resources
 - Provide assistance to local communities in developing economic strategies that promote sustainable growth.
 - Establish ordinances, incentives and guidelines at the local level that promote development consistent with conservation goals.

- Locate new wind power generation facilities away from migration corridors and away from native prairie to avoid the introduction of invasive species during the construction process and reduce the impact on declining prairie bird species.
- Increase perennial grass-based agriculture as an alternative to row crops. Specifically, increase the use of free-ranging cattle to diversity agricultural systems and increase amount of grassland. Also encourage more organic agriculture, direct food production, and the use of diverse prairie plantings for biofuel and biomass production.
- Implement best management practices in environmentally sensitive agricultural areas including the use of conservation tillage and buffer strips. One focus should be to create permanent cover and leave waste grain for prairie chickens and pheasants
- Promote sustainable agricultural activities to reduce soil loss, energy use, and pesticide and fertilizer application while increasing local foods production.
 - Meter the outflow of waters from all pattern tile fields to drain water from the fields only when high water levels negatively impact crops

B. Land and Habitat

1. Identify and protect high priority natural areas
 - Complete finely focused natural resource inventory, assess ecosystem health, and identify stressors to ecological function.
 - Use the full spectrum of protective tools to ensure critical areas are conserved.
 - Identify restoration targets for prairies and wetlands and acquire rights necessary to restore ecological functions.
 - Develop conservation plans for each county specifying the actions needed to protect natural resources and maintain a high quality natural environment. Specific goals for prairie and wetland restoration and habitat connectivity should be included in each plan.
2. Control spread and infestation of invasive species (e.g. leafy spurge, Canada thistle, purple loosestrife etc. Expand the Clay County Weed Control model to other counties in the region.
3. Monitor and prepare for impacts of climatic change on the region's native flora and fauna.

C. *Lakes, Rivers, Wetlands and Groundwater*

1. Reduce pollutant and chemical load of streams and rivers
 - Decrease sediment loads by use of best management practices on residential, agricultural and commercial lands.
 - Rigorously enforce mandated 1 rod wide buffers on either side of all watercourses (including ditches) plus encourage an additional 50-300' of native perennial grasses that can be used for multiple uses including grazing, haying, and cellulose production.
 - Complete impaired waters analysis for all lakes and streams in the region. Continue water quality monitoring and the River Watch program.
 - Develop Total Maximum Daily Load (TMDL) studies for all impaired waters in the region.
 - Enforce and enhance regulations for all private septic systems and failing municipal systems.
 - Develop coordinated strategies to reduce loadings of nutrients to Lake Winnipeg by 10% within five years to support the recommendations of the International Joint Commission's International Red River Board
 - Promote the use of storm water best management practices and develop legal standards if needed.
2. Return watercourses to semi-natural hydrology and morphology.
3. Inventory area wetlands and assess ecological function.
 - Complete the restorable wetland inventory for the region (HAPET).
4. Restore 5% of the original small wetlands (<50 acres) in the region in the next 5 years and more over time. Target long-term goals for wetland protection and restoration to subwatersheds with the highest percent of wetland loss.
5. Maintain and expand temporary easements and contracts for conservation utilizing federal farm bill programs.
6. Determine groundwater systems and identify sources of potential contamination.
 - Develop groundwater flow models.
 - Develop targets for groundwater protection.

- Assess capacity in light of growth demands and direct growth away from areas of fragile or limited groundwater supplies. Protect the Buffalo Aquifer by limiting development and increasing recharge.

D. Fish and Wildlife

1. Develop incentives and regulations for enhanced protection of shoreline and stream restoration in both Minnesota and North Dakota.
2. Improve shallow lake and large wetland management.
3. Enforce existing rules of roadside management to promote breeding habitat for ground nesting wildlife including Hungarian partridge and pheasant. Promote the DNR Roadside for Wildlife Program.
4. Ensure that suitable habitat for species of concern is primary focus of land and water conservation efforts.
5. Expand private landowner stewardship incentive programs. Provide ongoing funding to entice landowners to idle (plant grass or trees) acres in sensitive wetland, riparian, and prairie areas.
6. Create habitat corridor connections for prairie chickens and other grassland species across the Red River Valley from the Agassiz Beach Ridges prairies in the east to the Sheyenne National Grasslands in the west. Corridors are needed to provide dispersal routes and prevent genetic isolation. Manston Slough will be a key habitat acquisition along the way with 1320 acres of permanent wetlands and 2300 acres of temporary flood storage.

E. Recreation

1. Promote opportunities for hiking, biking, wildlife watching, photography, canoeing and other non-consumptive outdoor recreation opportunities on public and private lands in the area.
2. Create and open one new state park emphasizing native vegetation.
3. Open new regional and local parks with a focus on natural resources.
4. Develop a regional trail system including hiking, biking, and canoeing. Use city, county and state parks as nodes in the trail network. Trails may offer opportunities for linking natural communities while increasing recreational access.
5. Restore and protect 77,000 acres of grasslands as called for in the Pheasant Plan. Much of this area will be protected in easements and temporary contracts. Increased upland grassland bird populations could help draw hunters and birdwatchers to the area, which would help

diversify local economies and provide visitors in the non-summer months.

6. Restore and protect 30,000 acres of grassland/wetland complexes as called for in the Duck Plan.
7. Acquire additional 3,986 acres of WMA inholdings and 4,000 acres of new WMAs as called for in WMA plan.
8. Acquire the 36,820 acres in fee and 64,154 acres of easements in Clay, Norman, Polk, Traverse, and Wilkin Counties called for in the USFWS Detroit Lakes Wetland Management District Comprehensive Conservation Plan. Many of these acres fall outside of the Red River Valley Conservation Region.
9. Increase the size and health of the Red River's fish populations by improving water quality and reconnecting the mainstem with its tributaries.
10. Create buffer areas around natural habitats through county zoning to prevent residential development from impacting existing parks, preserves, and wildlife areas.
11. Teach children and adults about the importance of outdoor experiences to our physical and mental health.

VI. Opportunities and Strategies

Probably the most important opportunity is to work with local units of government in targeted conservation efforts to improve water quality and reduce flooding while at the same time protecting wildlife habitat and providing opportunities for outdoor recreation. A number of projects can contribute to this effort. The management of watercourses (including ditches) is critical. Buffers of perennial plants along watercourses need to be created or expanded and can be managed for biomass production. The watercourses themselves need to be returned to a more natural morphology and riparian vegetation restored. Of particular interest are the Wild Rice River, Buffalo River, Bois de Sioux River, and Lawndale Creek. CRP fields throughout the region should remain in perennial cover.

The main channel of the Red River and its main tributaries also need to be a focus of attention. Removal or modification of outdated water control structures needs to continue and the channels can be restored. The dams at Drayton, Argyle, Stephen, Christine, Hickson and the drop structures on the Sand Hill River are targets for activity. Increased recreational access on the Red River and Red Lake Rivers are needed to increase public interest and awareness. The Greenway on the Red River is one project that will open more area to public recreation as well as promote conservation and flood control. The Riverwatch Program is another way to increase public awareness of the importance of our river resources.

Further conservation of terrestrial habitats is also needed. There is so little native prairie and savannas left in the region that nearly all of it should be protected via acquisition or easement programs. The state's Native Prairie Bank easement program is one way to approach protection and should be utilized more in this region.