

Northern Tallgrass and Prairie Potholes: The Stevens County Ecosystem

Morris lies within the Northern Tallgrass Prairie region, one of the broad categories of grassland that comprise the Great Plains. While it once covered millions of acres, tallgrass prairie is now one of North America's rarest habitats.

Prior to widespread settlement by Europeans (which occurred in the 1860s in Stevens County), the prairie was populated by a variety of grasses, some of which grew 8'-10' tall. Low annual rainfall, periodic droughts and fires, grazing by bison and other large animals, insect pollination, ant activity, and other forces influenced the type of plants that grew there. Because of herbivore grazing, prairie fires, and other factors, wooded areas were usually found only along streams, wetlands, and spring-laden bluffs.

The prairies in this region were dotted with glacially-formed depressions called "prairie potholes," most of which held water for at least part of the year. The largest depressions formed lakes, while smaller depressions became various types of wetlands whose ecosystems were shaped by repeated cycles of inundation and drought.

Less than one percent of Minnesota's native tallgrass prairie has survived. Early European settlers increased the spread of woody plants in the prairie by suppressing fires and by planting trees and shrubs in farm windbreaks and shelterbelts. Most of the prairie, however, was lost to fields, pastures, and other development.

Smaller wetlands have similarly changed through time. Widespread drainage to increase tillable farmland eliminated many small wetlands. Specific farming practices also caused soil to accumulate within wetlands, introduced residues from agricultural chemicals, and altered hydrology through irrigation.

Despite the loss of prairie and wetland habitat described above, a range of plants and animals still flourishes in the region. Prairie areas support large numbers of grasses, wildflowers, insects, and grassland-dependent songbirds and mammals. Wetlands are home to aquatic invertebrates, shellfish, forage and predatory fish, a variety of birds, and mammals such as muskrat, otters, and beavers. The wetlands are especially important to migrating waterfowl and constitute a large portion of North America's waterfowl breeding grounds.

Close to the UMM campus, there is a small parcel of remnant native prairie on City of Morris park land. It is located on the west side of the Pomme de Terre River, between UMM and the West Central Research and Outreach Center (the current experiment station). UMM students under the direction of their professor, Dr. Margaret Kuchenreuter, have begun a several-year effort to help strengthen native plant diversity in this parcel through controlled burns, removal of non-native woody

plants, and targeted removal of exotic species such as leafy spurge.

Plants

Plants native to this region's northern tallgrass prairie include grasses and wildflowers such as:

aster	needle and thread
big bluestem	prairie clover
blazing star	prairie dropseed
coreopsis	prairie phlox
goldenrods	prairie turnip
Indian grass	purple coneflower
lead plant	side oats grama
little bluestem	switch grass

Native trees include cottonwood, willow species, American elm, ash, box elder, and silver maple. Scattered native oak trees and some oak groves are found several miles northeast of Morris.

This region's rare plants include:

ball cactus	red threeawn
cutleaf iron plant	sedges
false asphodel	slender milk vetch
ginseng	small white lady's slipper
hair-like beak-rush	snow trillium
marsh arrow-grass	soft goldenrod
Missouri milk vetch	spike rush
mousetail	tooth cup
mudwort	water hyssop
northern gentian	western prairie fringed orchid
plains prickly pear	whorled nut-rush
prairie mimosa	wolf's spike rush
prairie moonwort	

These species live in grasslands, near wetlands, and along streams.

Birds

Bird species common to this area include:

Waterfowl	mallard
blue-winged teal	mergansers
Canada goose	northern shoveler
canvasback	redhead
gadwall	ruddy duck
greater scaup	wood duck
lesser scaup	
Grassland Birds	horned lark
bobolink	lark bunting
clay-colored sparrow	red-winged blackbird
common yellowthroat	savannah sparrow
grasshopper sparrow	sedge wren

western meadowlark

yellow-headed blackbird

Raptors

bald eagle
great horned owl
northern harrier

red-tailed hawk
rough-legged hawk
Swainson's hawk

Other Birds

American crow
common egret
cormorant
gulls
herons

lesser yellowlegs
ring-necked pheasant
sandpipers
terns
turkey

Today rare birds in this region include:

American bittern
American wild pelican
burrowing owl
chestnut-collared longspur
common moor hen
Forster's tern
greater prairie chicken
king rail
loggerhead shrike

marbled godwit
piping plover
sandhill crane
short-eared owl
Sprague's pipit
upland sandpiper
whooping crane
Wilson's phalarope
yellow rail

Animals

The northern tallgrass prairie was once home to large grazing animals such as bison and elk, predator species like the gray wolf and the swift fox, and many small mammals.

Mammals currently found in the region include:

badger
beaver
cottontail rabbit
coyote
fox squirrel
Franklin's ground squirrel
gray squirrel
jack rabbit
mice
mink

moles
muskrat
otter
raccoon
red fox
shrews
striped skunk
voles
weasel
white-tailed deer

Fish include walleye, northern pike, panfish, bullhead, and roughfish species.

Rare animals in this region include insects such as various skippers; arthropods like jumping spiders; amphibians and reptiles such as the snapping turtle and western hognose snake; and mammals such as prairie vole, mule deer, and eastern spotted skunk.

Pomme de Terre River

The campus lies on the bank of the Pomme de Terre River, which travels 125 miles through Otter Tail, Grant, Stevens, and Swift counties. The Pomme de Terre is a tributary of the Minnesota River, one of the state's eight major river basins. Approximately 40 percent of the Pomme de Terre's watershed lies in Stevens County, and the Pomme de Terre drains about 75 percent of the county. Soils adjacent to the river contain outwash sands and gravel with high permeability rates, with shifting clay subsoils.

The river itself is home to interdependent plant and animal life that includes aquatic plants and algae, invertebrate organisms that feed on them and on organic detritus, and fish and other vertebrate predators. The riverbanks support an equally complex community of plants and animals.

In recent years, sedimentation has caused the Pomme de Terre to lose storage capacity which increases its flood potential. The river's shorelines are also eroding in some locations. Runoff from agricultural land, shoreland, and city streets can carry unwanted chemicals, nutrients, and sediment into the river, affecting both it and groundwater recharge areas. The health of the Pomme de Terre River is important in part because the Minnesota River has been identified by the MPCA as one of the most polluted rivers in the state.

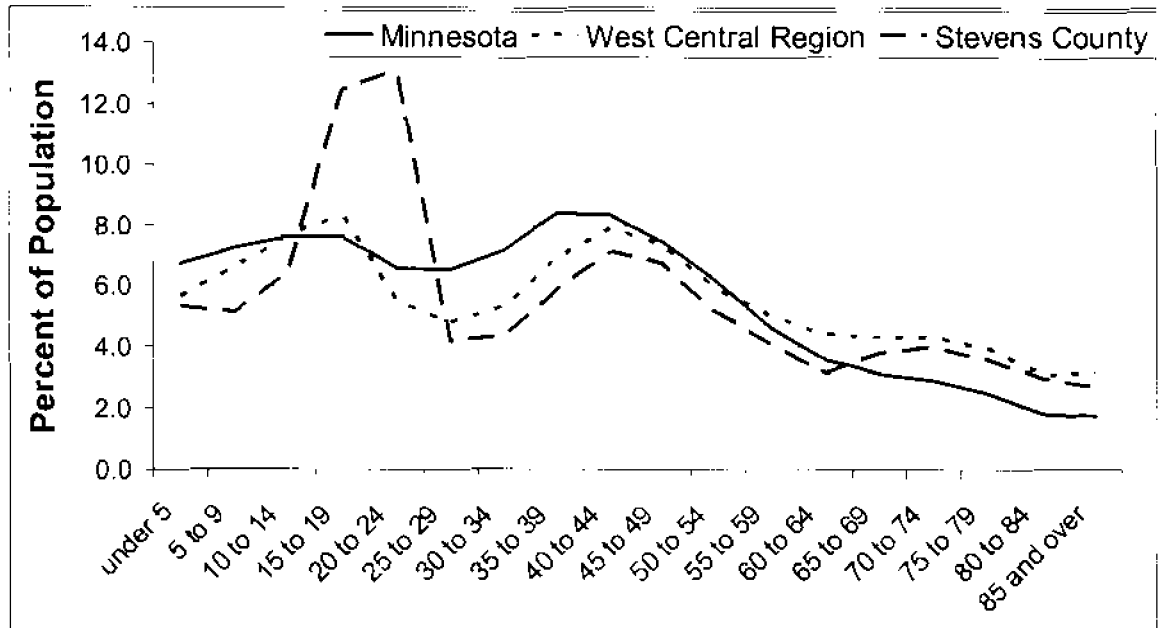
Groundwater

Along the Pomme de Terre River beneath the UMM campus, buried sand and gravel deposits (located in meltwater drainage channels formed by glaciers) create the primary aquifer from which the City of Morris draws its water. The aquifer is recharged through snow melt and rainfall.

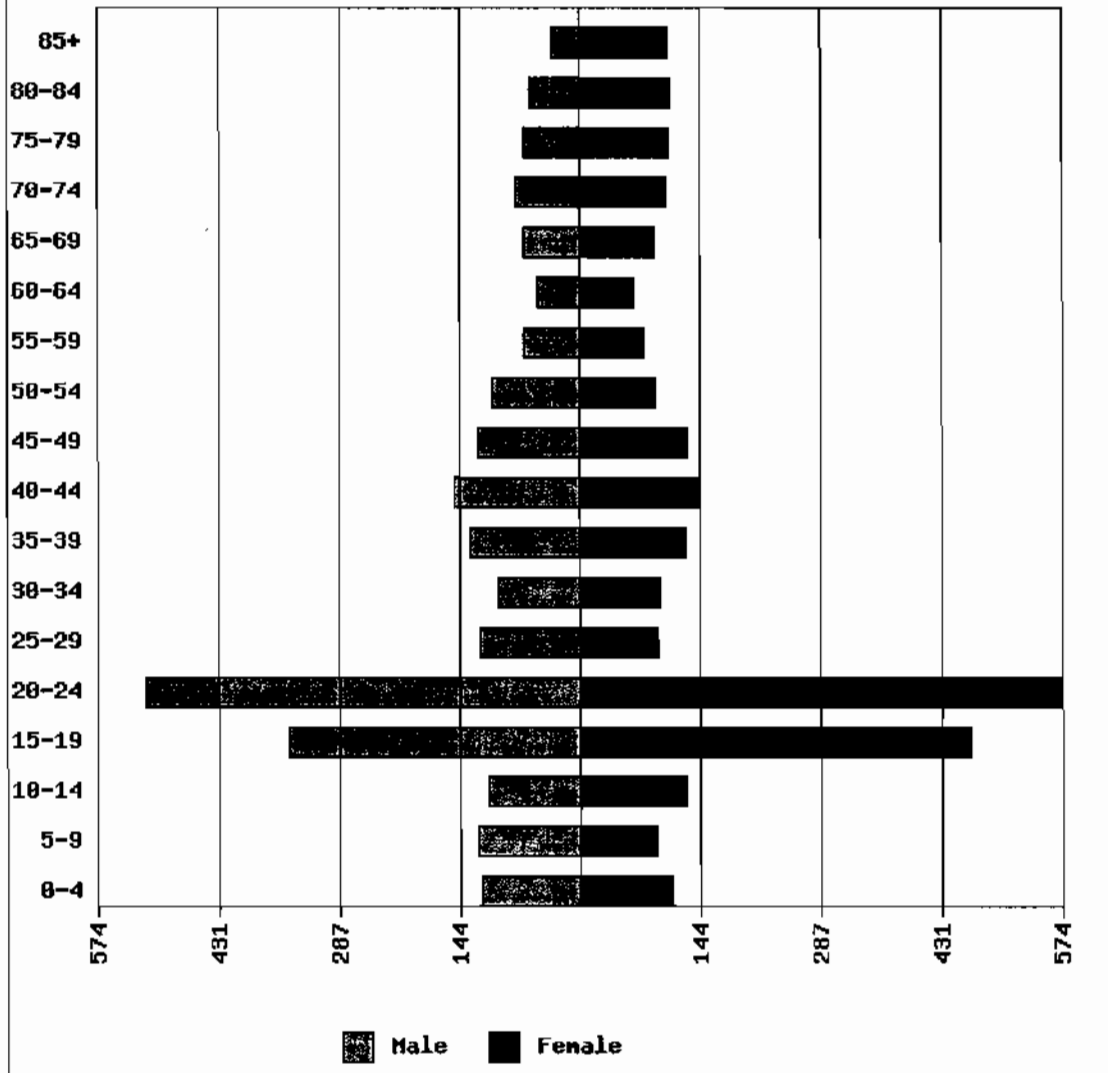
Aquifers are susceptible to contamination from pesticide use, extensive use of nitrogen-based fertilizers, feedlots, manure application, septic tanks, landfills, industrial chemicals, and other intensive land uses. Protecting the region's wetlands which store, buffer, and filter runoff and storm water discharge is one strategy to help improve both groundwater quality and river health.

The Social Environment
 Source: 2000 U.S. Census

	Morris City	Stevens County
1900	1934	8721
1910	1685	8293
1920	2320	9778
1930	2474	10185
1940	3214	11039
1950	3811	11106
1960	4199	11262
1970	5366	11218
1980	5367	11322
1990	5613	10634
2000	5173	10053



2000 Population for all races:
Morris city (Stevens County)



	Males	Male Pct	Females	Female Pct	All Persons	Total Pct
Under 5 years	116	5	111	4.1	227	4.48
5 to 9 years	120	5.1	92	3.4	212	4.18
10 to 14 years	110	4.7	129	4.7	239	4.72
15 to 17 years	86	3.7	81	3	167	3.3
18 and 19 years	259	11.1	385	14.1	644	12.71
20 years	160	6.8	202	7.4	362	7.14
21 years	142	6.1	183	6.7	325	6.41
22 to 24 years	214	9.1	189	6.9	403	7.95
25 to 29 years	119	5.1	95	3.5	214	4.22
30 to 34 years	98	4.2	98	3.6	196	3.87
35 to 39 years	130	5.6	127	4.7	257	5.07

40 to 44 years	149	6.4	147	5.4	296	5.84
45 to 49 years	120	5.1	131	4.8	251	4.95
50 to 54 years	105	4.5	92	3.4	197	3.89
55 to 59 years	66	2.8	78	2.9	144	2.84
60 and 61 years	24	1	20	0.7	44	0.87
62 to 64 years	25	1.1	45	1.7	70	1.38
65 and 66 years	30	1.3	30	1.1	60	1.18
67 to 69 years	36	1.5	63	2.3	99	1.95
70 to 74 years	76	3.2	104	3.8	180	3.55
75 to 79 years	66	2.8	109	4	175	3.45
80 to 84 years	59	2.5	109	4	168	3.31
85 years and over	32	1.4	106	3.9	138	2.72
Total Population	2,342	100	2,726	100	5,068	100

HOUSING OCCUPANCY	Number	Percent
Total housing units	2,065,946	100.0%
Occupied housing units	1,895,127	91.7%
Vacant housing units	170,819	8.3%
For seasonal, recreational, or occasional use	105,609	5.1%

HOUSING TENURE	Number	Percent
Occupied housing units	1,895,127	100.0%
Owner-occupied housing units	1,412,865	74.6%
Renter-occupied housing units	482,262	25.4%
Average household size of owner-occupied unit	2.69	(X)
Average household size of renter-occupied unit	2.03	(X)

HOUSEHOLD BY TYPE	Number	Percent
Total households	1,929	100.0%
Family households (families)	985	51.1%
With own children under 18 years	451	23.4%
Married couple family	811	42.0%
With own children under 18 years	339	17.6%
Female householder, no husband present	131	6.8%
With own children under 18 years	88	4.6%
Nonfamily households	944	48.9%
Householder living alone	712	36.9%
Householder 65 years and over	341	17.7%
Households with individuals under 18 years	471	24.4%
Households with individuals 65 years and over	609	31.6%
Average household size	2.20	(X)
Average family size	2.84	(X)

RACE	Number	Percent
One race	5,007	98.8%
White	4,745	93.6%
Black or African American	89	1.8%
American Indian and Alaska Native	62	1.2%
Asian	78	1.5%
Asian Indian	17	0.3%
Chinese	13	0.3%
Filipino	2	0.0%
Japanese	5	0.1%
Korean	26	0.5%
Vietnamese	2	0.0%
Other Asian ¹	13	0.3%
Native Hawaiian and Other Pacific Islander	1	0.0%
Native Hawaiian	0	0.0%
Guamanian or Chamorro	1	0.0%
Samoan	0	0.0%
Other Pacific Islander ²	0	0.0%
Some other race	32	0.6%
Two or more races	61	1.2%

EDUCATIONAL ATTAINMENT	Number	Percent
Population 25 years and over	2,459	100.0
Less than 9th grade	246	10.0
9th to 12th grade, no diploma	183	7.4
High school graduate (includes equivalency)	680	27.7
Some college, no degree	480	19.5
Associate degree	182	7.4
Bachelor's degree	456	18.5
Graduate or professional degree	232	9.4
Percent high school graduate or higher	82.6	(X)
Percent bachelor's degree or higher	28.0	(X)

INCOME IN 1999	Number	Percent
Households	1,936	100.0
Less than \$10,000	381	19.7
\$10,000 to \$14,999	234	12.1
\$15,000 to \$24,999	230	11.9
\$25,000 to \$34,999	200	10.3
\$35,000 to \$49,999	348	18.0
\$50,000 to \$74,999	340	17.6
\$75,000 to \$99,999	108	5.6
\$100,000 to \$149,999	51	2.6
\$150,000 to \$199,999	14	0.7
\$200,000 or more	30	1.5
Median household income (dollars)	31,786	(X)

YEAR STRUCTURE BUILT	Number	Percent
1999 to March 2000	16	0.8
1995 to 1998	110	5.4
1990 to 1994	72	3.5
1980 to 1989	210	10.3
1970 to 1979	366	18.0
1960 to 1969	337	16.6
1940 to 1959	520	25.6
1939 or earlier	403	19.8