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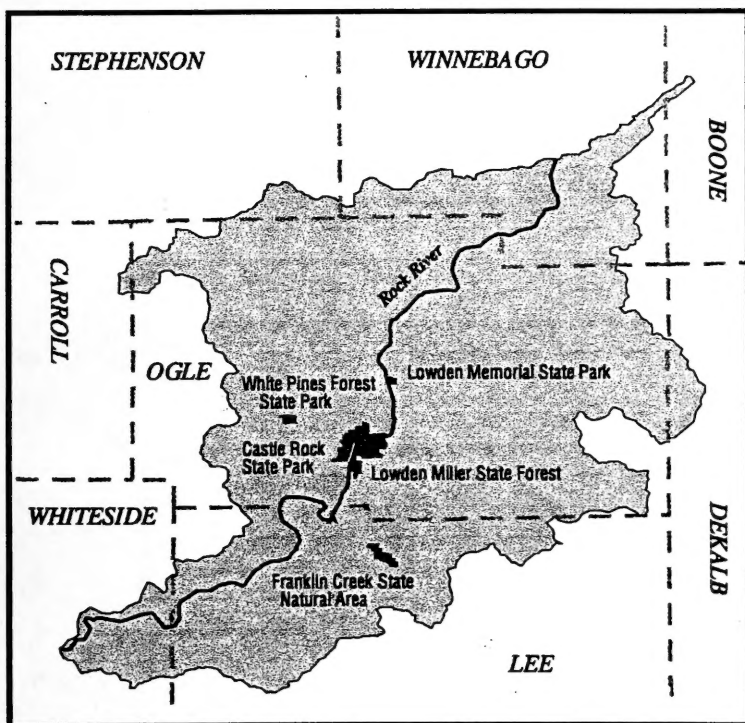
# ROCK RIVER AREA ASSESSMENT



## VOLUME 2

PART I: SOCIO-ECONOMIC PROFILE

PART II: EARLY ACCOUNTS OF THE ECOLOGY  
OF THE ROCK RIVER HILL COUNTRY



Jim Edgar, Governor  
Brent Manning, Director  
November 1996



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# **ROCK RIVER AREA ASSESSMENT**

## **VOLUME 2**

### **PART I: SOCIO-ECONOMIC PROFILE**

Illinois Department of Natural Resources  
Office of Realty and Environmental Planning  
Division of Energy and Environmental Assessment  
524 South Second  
Springfield, Illinois 62701

### **PART II: EARLY ACCOUNTS OF THE ECOLOGY OF THE ROCK RIVER HILL COUNTRY**

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November 1996

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## Other CTAP Publications

### *The Changing Illinois Environment: Critical Trends*

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- *Volume 1: Air Resources*
- *Volume 2: Water Resources*
- *Volume 3: Ecological Resources*
- *Volume 4: Earth Resources*
- *Volume 5: Waste Generation and Management*
- *Volume 6: Sources of Environmental Stress*
- *Volume 7: Bibliography*

### *Annual Report 1995, Illinois RiverWatch Network*

### *Stream Monitoring Manual, Illinois RiverWatch Network*

### *PLAN-IT EARTH, Flowing Waters Module*

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For more information about CTAP, call (217) 524-0500 or e-mail at [ctap2@dnrmail.state.il.us](mailto:ctap2@dnrmail.state.il.us); for information on the Ecosystems Program call (217) 782-7940 or e-mail at [ecoprogram@dnrmail.state.il.us](mailto:ecoprogram@dnrmail.state.il.us).

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## ***About This Report***

The Rock River Area Assessment examines an area situated along the Rock River in the northern part of Illinois. Because significant natural community and species diversity is found in the area, it has been designated a state Resource Rich Area.

This is the first in a series of reports on Illinois Resource Rich Areas in which a public-private partnership has been formed. The Rock River and subsequent assessments will provide information on the natural and human resources of the areas as a basis for managing and improving their ecosystems. The determination of resource rich areas and development of ecosystem-based information and management programs in Illinois are the result of three processes -- the Critical Trends Assessment Program, the Conservation Congress, and the Water Resources and Land Use Priorities Task Force.

### **Background**

The Critical Trends Assessment Program (CTAP) documents changes in ecological conditions. In 1994, using existing information, the program provided a baseline of ecological conditions.<sup>1</sup> Three conclusions were drawn from the baseline investigation:

1. the emission and discharge of regulated pollutants over the past 20 years has declined, in some cases dramatically,
2. existing data suggest that the condition of natural ecosystems in Illinois is rapidly declining as a result of fragmentation and continued stress, and
3. data designed to monitor compliance with environmental regulations or the status of individual species are not sufficient to assess ecosystem health statewide.

Based on these findings, CTAP has begun to develop methods to systematically monitor ecological conditions and provide information for ecosystem-based management. Five components make up this effort:

1. identify resource rich areas,
2. conduct regional assessments,
3. publish an atlas and inventory of Illinois landcover,
4. train volunteers to collect ecological indicator data, and
5. develop an educational science curriculum which incorporates data collection

---

<sup>1</sup> See *The Changing Illinois Environment: Critical Trends*, summary report and volumes 1-7.

At the same time that CTAP was publishing its baseline findings, the Illinois Conservation Congress and the Water Resources and Land Use Priorities Task Force were presenting their respective findings. These groups agreed with the CTAP conclusion that the state's ecosystems were declining. Better stewardship was needed, and they determined that a voluntary, incentive-based, grassroots approach would be the most appropriate, one that recognized the inter-relatedness of economic development and natural resource protection and enhancement.

From the three initiatives was born Conservation 2000, a six-year program to begin reversing ecosystem degradation, primarily through the Ecosystems Program, a cooperative process of public-private partnerships that are intended to merge natural resource stewardship with economic and recreational development. To achieve this goal, the program will provide financial incentives and technical assistance to private landowners. The Rock River and Cache River were designated as the first Ecosystem Partnership areas.

At the same time, CTAP identified 30 resource rich areas (including the Rock and Cache River areas) throughout the state. The Rock River Area Assessment draws, as will subsequent area assessments, from ecological and socio-economic databases, providing an overview of the region's resources -- geologic, edaphic, hydrologic, biotic, and socio-economic. Although several of the analyses are somewhat restricted by spatial and/or temporal limitations of the data, they help to identify information gaps and additional opportunities and constraints to establishing long-term monitoring programs in the partnership areas.

### **The Rock River Assessment**

The Rock River enters Illinois at Beloit, Wisconsin and South Beloit, Illinois, and runs southwest to meet the Mississippi River at Rock Island, Illinois. The assessment area is situated within the Illinois portion of the Rock River Basin along a roughly 70-mile section of the river (Figure 1) south of Rockford. It encompasses 18 of the 89 watersheds that IEPA has identified in the basin (Figure 2). The Rock River area was designated a Resource Rich Area because it contains significant natural community and species diversity. The region contains a core of high-quality natural resources as well as nearby ecologically tied natural and human resources.

The 18 watersheds cover approximately 999 mi<sup>2</sup> (639,479 acres). There are several hundred landowners within the area, with the majority of land (over 98%) being held in private ownership. Public land in the area totals 9,162 acres.

The assessment is comprised of four major parts in two volumes. Volume 1 contains *Earth Resources*, which summarizes the physical setting of the area including its geology, soils, minerals, and surface and ground water, and *Living Resources*, which describes the terrestrial and aquatic flora and fauna of the area.



Figure 1. Location of the Rock River Assessment Watersheds

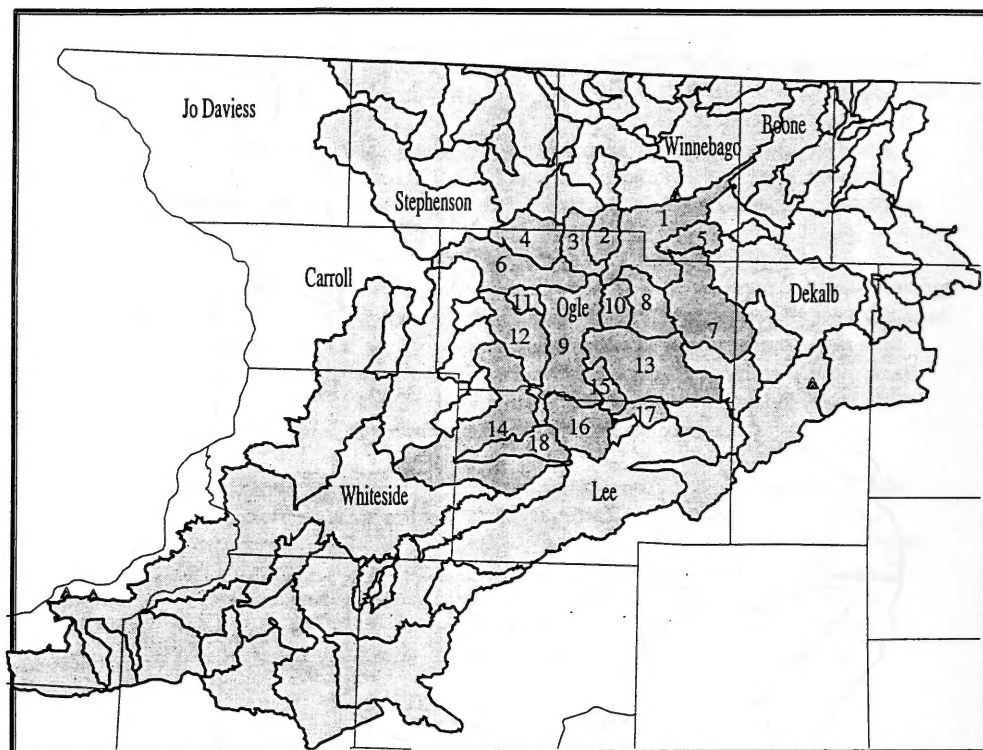
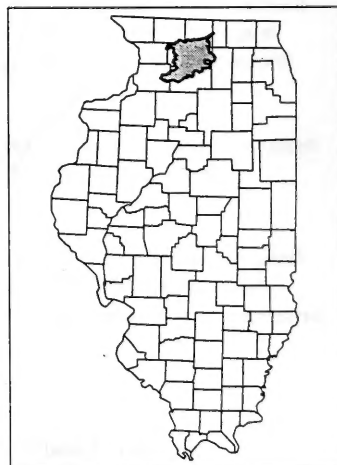


Figure 2. Rock River Basin and Assessment Watersheds



- |                           |                        |
|---------------------------|------------------------|
| 1. Rock River North       | 10. Black Walnut Creek |
| 2. Middle Creek           | 11. Coon Creek         |
| 3. Mill Creek             | 12. Pine Creek         |
| 4. Mud Creek              | 13. Kyte River         |
| 5. Kishwaukee River South | 14. Rock River South   |
| 6. Leaf River             | 15. Prairie Creek      |
| 7. Kilbuck Creek          | 16. Franklin Creek     |
| 8. Stillman Creek         | 17. Beach Creek        |
| 9. Rock River Middle      | 18. Three Mile Creek   |





In Volume 2, the *Socio-Economic Profile* discusses the demographics, infrastructure, and economy of the area, focusing on the three counties with the greatest amount of land in the watershed area -- Lee, Ogle, and Winnebago counties. Also in this volume, *Early Accounts of the Ecology of the Rock River Hill Country* describes the ecology of the area as recorded by historical writings of explorers, pioneers, early visitors and early historians.



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**PART I**

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**SOCIO-ECONOMIC PROFILE**



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## Summary

This part of the Rock River Area Assessment describes the demographic characteristics of the people and the economic structure of the area. It provides a historical perspective as well as a current picture of the human-related resources of the region.

The three main counties in the Rock River watershed -- Ogle, Lee, and Winnebago counties -- are home to 3% of the Illinois population.<sup>1</sup> Over the past several decades the area has grown in population, urbanization, income and education.<sup>2</sup> Seventy-five percent of the populace lives in urban areas, with six percent of the land used for urban purposes. The region supports more than 190,000 jobs and contributes nearly \$7 billion to the Illinois economy. Winnebago County has employment and income levels almost seven times larger than the other two counties -- 155,000 workers and sector earnings at \$5.2 billion.

While agriculture is not the most important economic sector, it dominates the region's land use due to the highly productive soils. The area is a large producer of corn and soybeans and is one of the state's top regions for producing oats, hay and livestock.

The region has considerable recreational resources in its several state parks and forests and in the Rock River itself. While it fluctuates from year to year, attendance at these sites has hovered around the one million mark over the past decade. White Pines and Lowden Memorial are the area's busiest parks, and Castle Rock is emerging as a significant attraction. Based on an economic analysis, the outdoor sites add \$12.4 million in economic output, \$7 million in personal income, and 280 jobs to the area.

Roads are being expanded faster in the Rock River region than in the state as a whole, and vehicle-miles of travel are growing at an even faster rate, especially in Lee and Ogle counties.

---

<sup>1</sup> While the natural resources assessment emphasizes the watershed as its unit of analysis, socio-economic data are displayed geographically using the 326 census tracts defined by the U.S. Census Bureau to encompass the three counties. Census tracts are small, sub-county level areas delineated by the U.S. Census Bureau for purposes of the decennial census. They are designed to be relatively homogeneous with respect to population characteristics, economic status, and living conditions. In practice they vary considerably in population and size. In the three-county area, the census districts range from 13 to 4,436 in population and from 24 to 43,879 acres in land area. The largest covers one-tenth of the county, the smallest only a couple of city blocks.

<sup>2</sup> While Ogle and Lee counties are predominantly rural in character, Winnebago County contains a significant metropolitan area, Rockford. As a result, when demographic or economic data for the three counties are aggregated, that information is weighted toward Winnebago County. Therefore, when aggregate data are used the reader should be aware that the data may be biased toward the Rockford area.

Air quality in the area is generally good; none of the five criteria air pollutants measured in the Rockford area has exceeded the standard since 1985.

Three companies provide electric service and two supply natural gas to the area. Commonwealth Edison is the largest electric supplier, serving 95% of the local population. Northern Illinois Gas is the primary natural gas supplier, with a large underground storage facility in Winnebago County.



# Demographic Trends

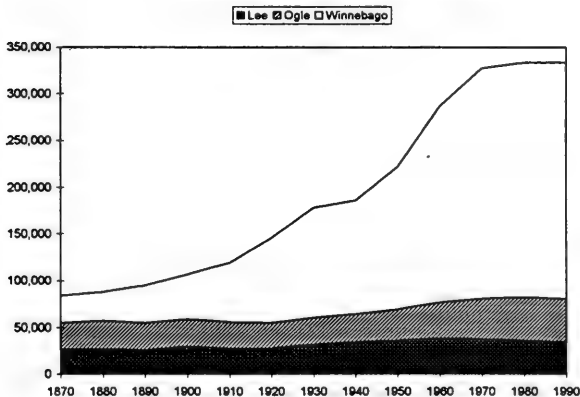
The character of an area is determined not only by its natural environment, but also by its human environment -- the size, growth, density, distribution and characteristics of the population living there. The following section describes population growth and distribution, and characteristics such as age, income, education and households and housing.

## Population

In the 120 years since 1870 the combined population in Lee, Ogle and Winnebago counties has quadrupled. The population grew 297%, compared to 350% growth statewide. Most of the growth occurred in Winnebago County, where the city of Rockford is located. Winnebago grew 763%, while Lee and Ogle counties grew at a much lower rate, 27% and 67% respectively (Figure 1).<sup>1</sup>

<b>1990</b>
<b>Three-county Rock River area</b>
Square miles: 1976.5
Population: 333,262
Density: 168.61 persons per sq. mi.
Urban population: 76.3%
9 cities
26 villages

*Population Trends, Rock River Area*

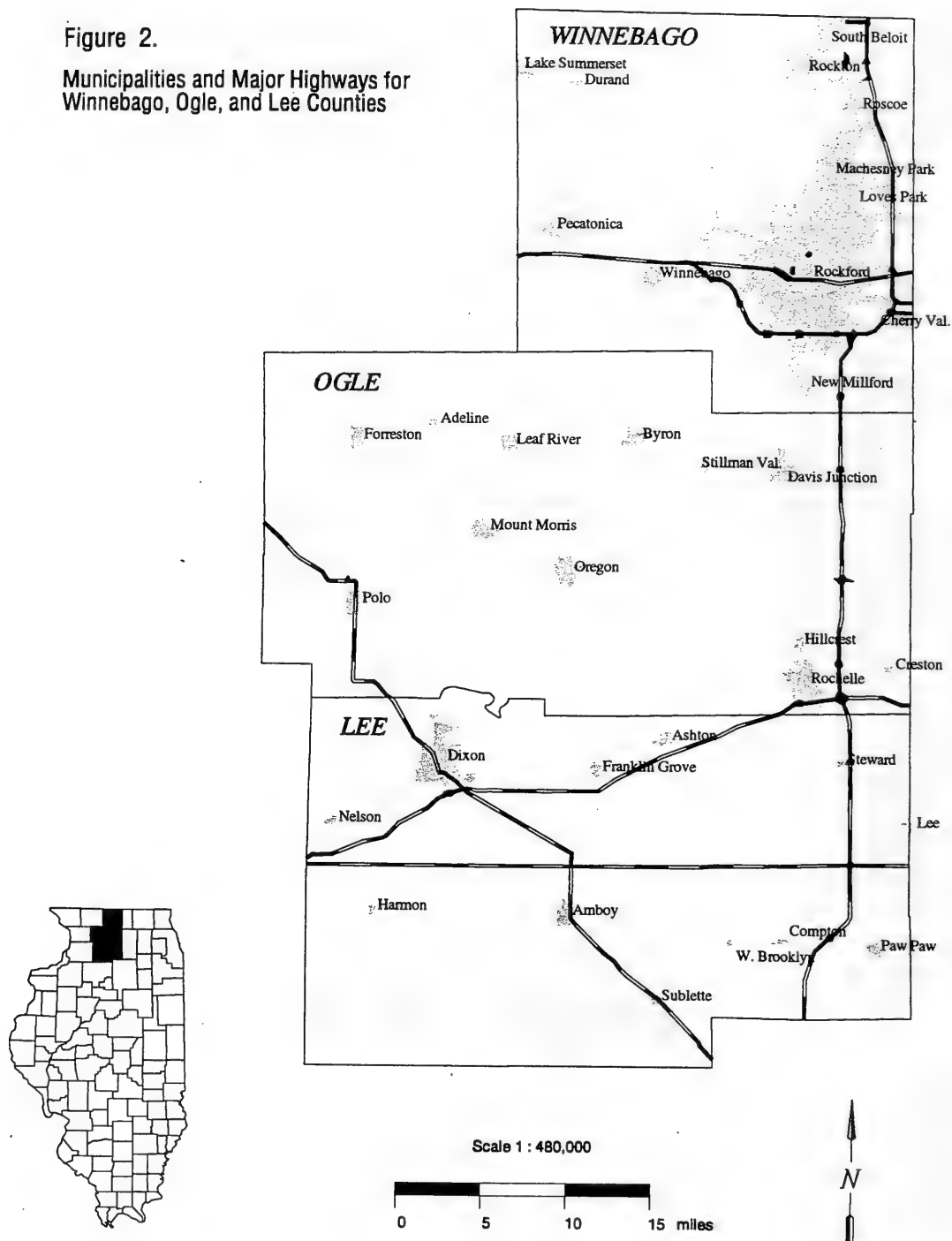


*Figure 1*

<sup>1</sup> Population data was taken from the 1990, 1993 and 1994 Illinois Statistical Abstract.

Figure 2.

Municipalities and Major Highways for  
Winnebago, Ogle, and Lee Counties



As of 1990, the Rock River area was home to approximately 3% of the state's population (Table 1). The area is projected to grow slightly (less than one percent for each county) over the next 25 years: from 1992-2020, Winnebago County is projected to grow at an average annual rate of .40% for a population increase of 30,340; Lee County is projected to grow at an annual rate of .07%, for an additional 730 persons; and Ogle County growth is projected at .23% annually for a 3,120 person increase<sup>2</sup>.

**Table 1. Population**

	1990 Population	% of State Population	County Rank	% change, 1970-1992
Lee	34,392	.3%	41	-8.6%
Ogle	45,957	.4%	30	10.8%
Winnebago	252,913	2.21%	7	5.2%
Rock River Area	333,262	2.92%	--	4.3%
Statewide	11,430,602	100%	--	4.5%

### Urban population

In 1990, urban population (communities greater than 2,500 population) for the 3-county area was 76.3%, compared to 84.6% for the state. In Winnebago County, 87.4% of the population lives in urban areas, compared to 44% in Lee (down from 47.8% in 1970) and 39.4% in Ogle (down from 41.6% in 1970). Trends in population density are listed in Table 2. Overall, the population density of the Rock River area is 18% less than statewide.

**Table 2. Population density**  
(persons per square mile)

	1870	1910	1950	1990
Lee	37.46	38.25	50.25	47.41
Ogle	36.23	36.72	44.05	60.56
Winnebago	59.53	128.31	309.60	513.84
Rock River Area	42.48	60.09	112.45	168.61
Statewide	45.69	101.43	156.71	205.61

<sup>2</sup> Projections were taken from the *1994 State Profile*, Woods & Poole Economics, Inc. Other projections published in *Illinois Population Trends 1980-2025* (Illinois Bureau of the Budget) show a declining population in the area. However, those projections were prepared before the release of the 1990 Census of Population.

**Table 3. Incorporated Municipalities, Rock River Area**

	City, town or village	1990 Population
<b>Lee County</b>		
Amboy	C	2,377
Ashton	V	1,042
Compton	V	343
Dixon -- County Seat	C	15,134
Franklin Grove	V	968
Harmon	V	186
Lee (also in DeKalb Co.)	V	319
Nelson	V	200
Paw Paw	V	791
Steward	V	282
Sublette	V	394
West Brooklyn	V	164
<b>Ogle County</b>		
Adeline	V	141
Byron	C	2,284
Creston	V	535
Davis Junction	V	246
Forreston	V	1,361
Hillcrest	V	828
Leaf River	V	546
Mt. Morris	V	2,919
Oregon -- County Seat	C	3,891
Polo	C	2,514
Rochelle	C	8,769
Stillman Valley	V	848
<b>Winnebago County</b>		
Cherry Valley	V	1,615
Durand	V	1,100
Loves Park	C	15,457
Machesney Park	V	19,033
New Millford	V	463
Pecatonica	V	1,760
Rockford -- County Seat	C	140,003
Rockton	V	2,928
Roscoe	V	2,079
South Beloit	C	4,072
Winnebago	V	1,840

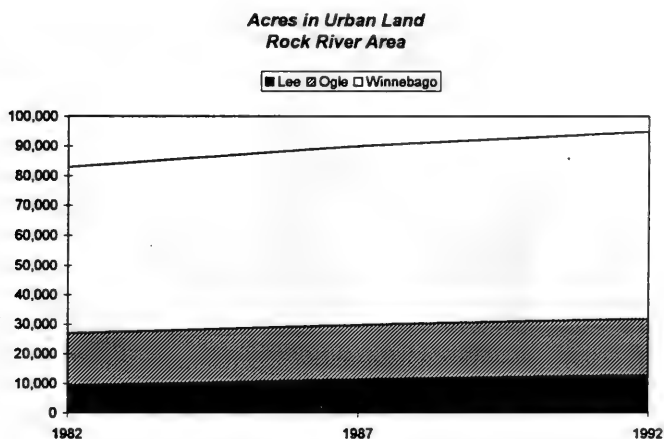
Source: Illinois Counties & Incorporated Municipalities,  
December 1, 1993, Illinois Secretary of State.

## Urban Land Use

Although the majority of the population lives in urban areas, only a small percentage of land area is urban. Lee, Ogle and Winnebago counties have 35 incorporated municipalities which, according to satellite imagery<sup>3</sup> taken between 1992 and 1994, cover 5.75% (74,049 acres) of the counties' combined land area. By county their urban land use is:

- Winnebago -- 17.4%, 57,813 acres (three cities and eight villages),
- Lee -- 1.6%, 7,575 acres (two cities and 10 villages), and
- Ogle -- 1.7%, 8,662 acres (four cities and eight villages)

Recent trends in land use are available from the U.S. Department of Agriculture Soil Conservation Service's *National Resources Inventory* for 1982, 1987 and 1992 (Figure 3).<sup>4</sup> Between 1982 and 1992 urban land use grew 14.5% in the 3-county area (making the area 7.37% urban), compared to a 13.6% increase statewide (for a total 6.26% urban land use). Lee County had the largest increase at 38%, while Winnebago County urbanization grew at 12.5% and Ogle County at 8%.



*Figure 3*

<sup>3</sup> *Landcover in Illinois Counties*, IL Department of Natural Resources, draft report, January 1996.

<sup>4</sup> Because different methodologies are used and the data are collected from representative sample points in each state, the NRI data vary slightly from the satellite data.

## Population Characteristics<sup>5</sup>

### Age

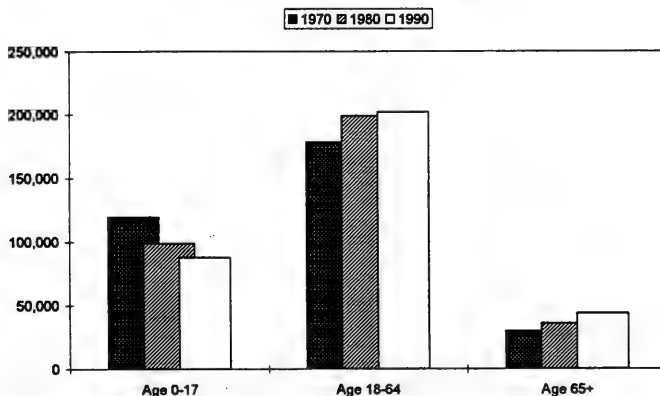
From 1970 to 1990, the percentage of persons aged 0-17 dropped 26.6% in the three-county area, down from 36.5% of the population to 26.3%. The number of persons aged 65 and over, however, rose 46%, from 9% to 13% of the population.

Projections to the year 2020 has the 65+ population at 21.6% in Ogle, 18.6% in Winnebago, and 20.8% in Lee County.

Projections for the younger population, aged 0-19 years, is 25.5% of the population in Ogle County, 25.8% in Winnebago County, and 24.2% in Lee County. (1994 State Profile)

1990	
<b>Three-county Rock River area</b>	
Age 0-17:	26.3%
Age 65+:	13%
Median Age:	33.6
Per Capita Income: \$19,726	
Persons in poverty (1989):	9.5%
Minorities:	10%
Females/males:	51%/49%
4 years high school or more:	76%
4 years college or more:	15%

**Age Distribution, Rock River Area**



*Figure 4*

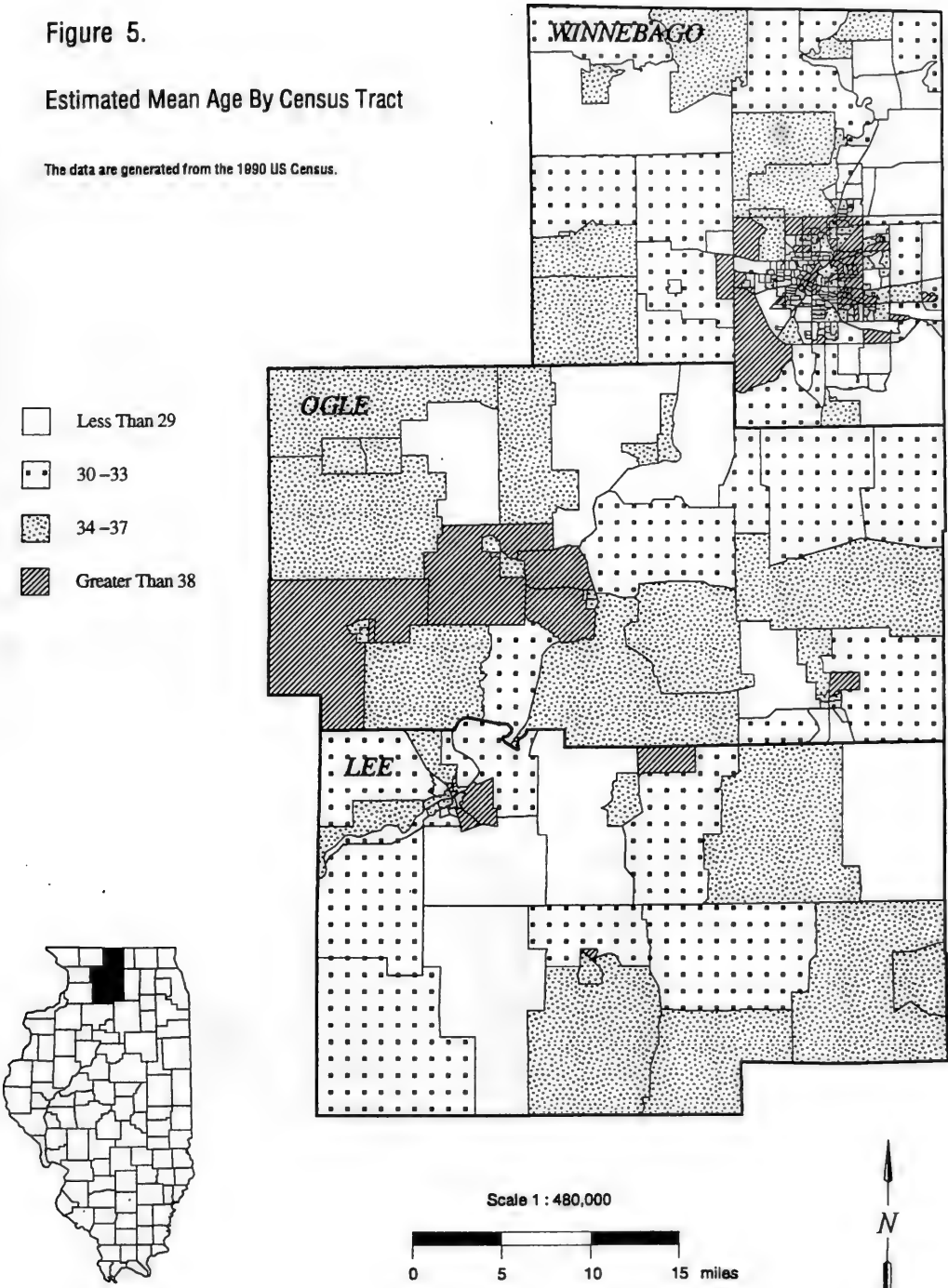
Over the 20-year period, median age has risen in the three counties and statewide. Since 1970, the median age rose 5.3 years in Lee County, 5.7 years in Ogle County, and 6.7 years in Winnebago County. This compares to a statewide increase of 4.2 years (Table 4).

<sup>5</sup> Data on population characteristics were taken from the 1987, 1990 and 1993 Illinois Statistical Abstract, and the 1970, 1980 and 1990 Census.

Figure 5.

Estimated Mean Age By Census Tract

The data are generated from the 1990 US Census.



**Table 4. Median age**

	1970	1980	1990
Lee	28.9	30.7	34.2
Ogle	28.3	30.5	34.0
Winnebago	26.7	29.6	33.4
Statewide	28.6	29.9	32.8

### **Race and Gender**

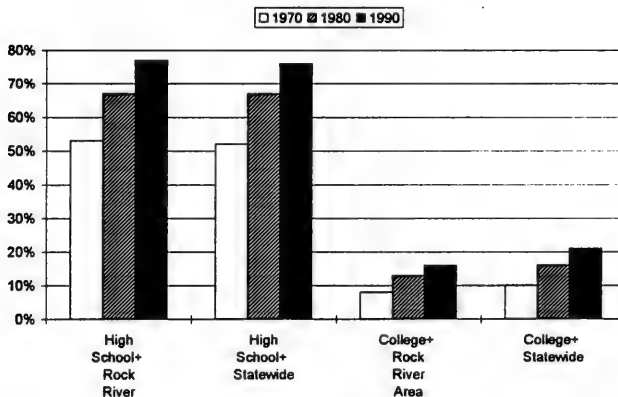
The area is 10% minority, with that portion of the population increasing 87% since 1970 (from 5.4%). This compares with a 21.7% minority population statewide. Lee and Ogle counties have small minority populations, 5.4% and 2.3% respectively, with Winnebago having the largest percentage, 12%. The greatest 20-year increase occurred in Ogle County, where the minority population grew from .3% (115 persons) to 2.3% (1,062) of the total population.

The percentage of males to females averaged 49% to 51% for the area in 1970; in 1980 it shifted to 51% males and swung back to 51% female in 1990, similar to statewide trends.

### **Education**

The 3-county population mirrors the statewide population in education trends, with the percentage of high school graduates growing from roughly 52% in 1970, to 68% in 1980, and 76% by 1990 (Figure 6).

**Education Trends, 1970-1990**



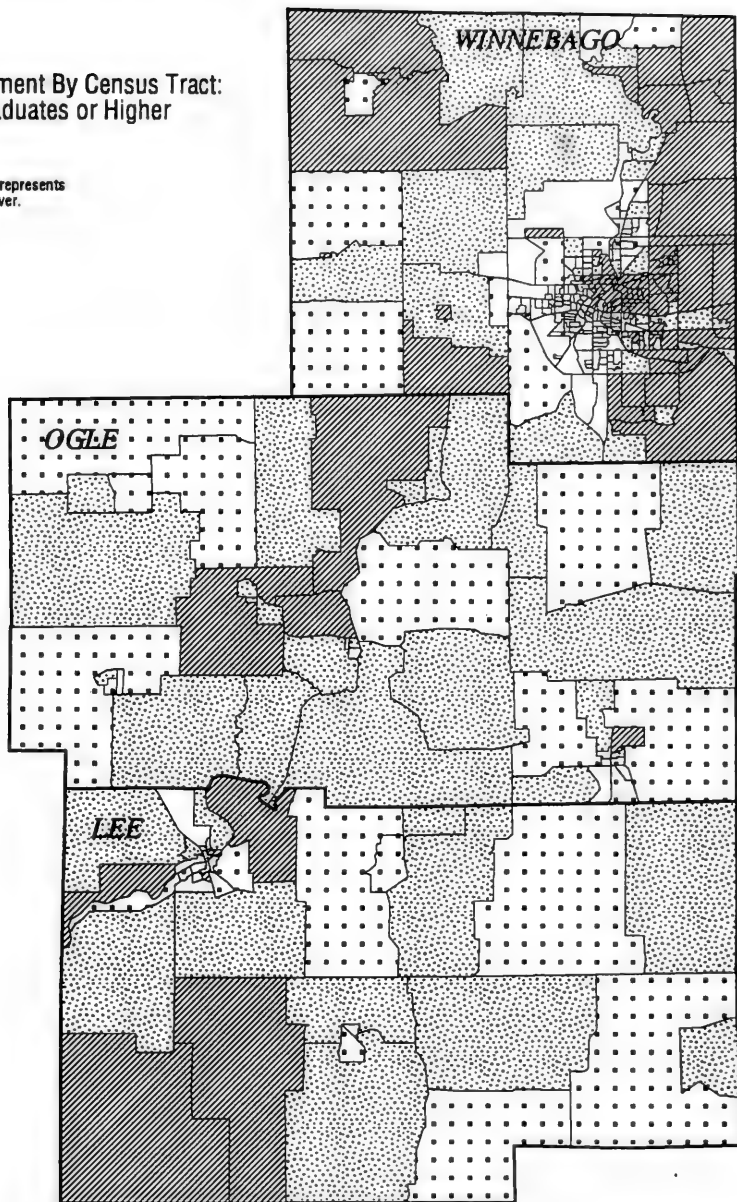
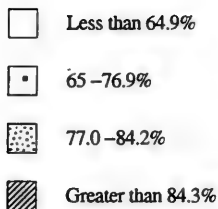
*Figure 6*



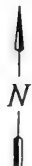
Figure 7.

1990 Educational Attainment By Census Tract:  
Percent High School Graduates or Higher

Data are from the 1990 US Census and represents  
the percentage of persons age 25 and over.



Scale 1 : 480,000



The number of people age 25 and over with four or more years of college has continued to increase also, although the Rock River area has a smaller percentage of college graduates than the state as a whole. In 1990 about 15% were college graduates compared to a statewide percentage of 21%.

**Table 5. 1990 Educational Attainment**  
(persons age 25 and over)

	Percent High School Graduates or Higher	Percent with Four Years of College or Higher
Lee	76%	12%
Ogle	78%	12%
Winnebago	76%	17%
Rock River Area	77%	16%
Statewide	76%	21%

### **Per Capita Income**

Per capita income is somewhat lower in the Rock River area than it is statewide. The disparity has grown and then lessened again over the past few decades: in 1970 per capita income was 6% lower than statewide, in 1980 it was 20% lower, and in 1990, 13% lower. From 1970-1990, per capita income rose 72% in the three-county area, compared to an 85% increase statewide. By county it rose 99% in Lee, 70% in Ogle, and 69% in Winnebago County. In 1990, out of 102 counties, Winnebago County was ranked 12 in per capita income, Ogle County was ranked 34, and Lee County, 48.

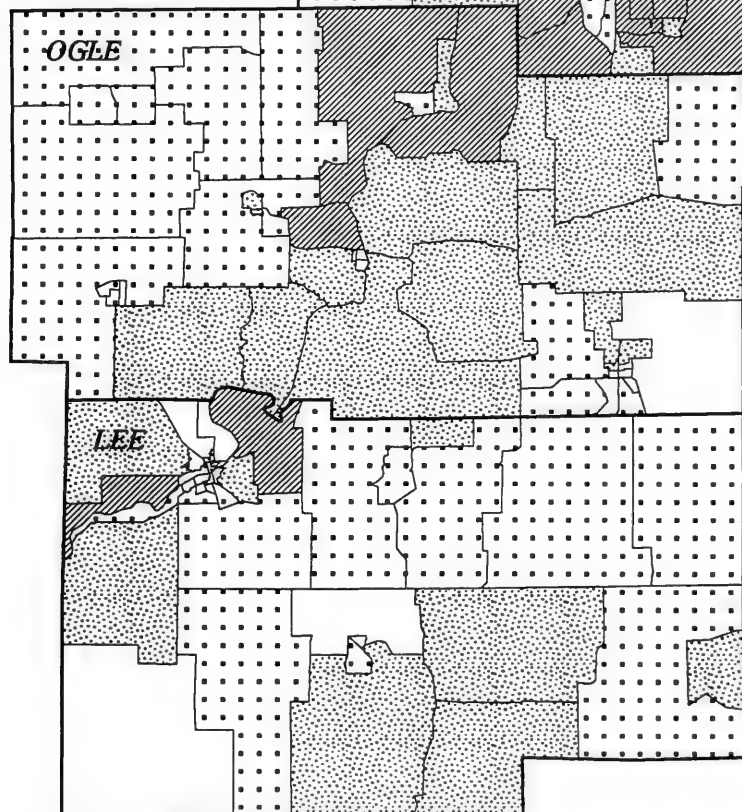
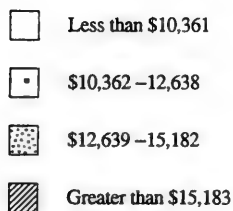
The number of persons living in poverty increased over the ten year period from 1979-1989:

- Lee County -- 7% to 8.8%
- Ogle County -- 6.9% to 7.2%
- Winnebago County -- 8.3% to 10.1%
- Statewide -- 11% to 11.9%

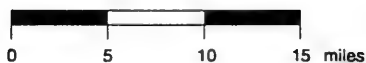
Figure 8.

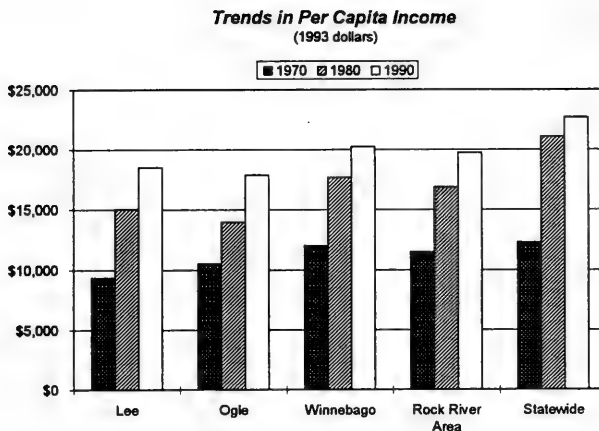
# 1990 Per Capita Income By Census Tract For Winnebago, Ogle, and Lee Counties

Data are from the 1990 US Census and are calculated for each census tract.



Scale 1 : 480,000





*Figure 9*

## Households and Housing

### Households<sup>6</sup>

From 1970 to 1990, the number of households in the three-county area increased 25% while the number of persons per household dropped from 3.16 persons to 2.58 persons. At the state level, the number of households increased 20% while the number of people living in them dropped from 3.09 to 2.65.

1990	
<b>Three-county Rock River area</b>	
Households:	126,334
Persons Per Household:	2.58
Median Household Income (1989):	\$36,069
Housing Units:	133,032
Vacancy Rate:	5%
Median Value, Owner-occupied:	\$58,686

In Ogle and Winnebago counties, households grew 27% and 26% respectively during the twenty year period. The trend was slightly different in Lee County, where households grew 16% from 1970 to 1980, but dropped 1% from 1980 - 1990.

<sup>6</sup> Data on households and housing were taken from the 1970, 1980 and 1990 Census, and the 1987 and 1993 Illinois Statistical Abstract.

**Table 6. Number of Households**

	1970	1980	1990
Lee	10,949	12,649	12,475
Ogle	13,437	16,311	17,132
Winnebago	76,799	89,408	96,727
Rock River Area	101,185	118,368	126,334
Statewide	3,502,138	4,045,374	4,202,240

Unlike rising per capita income, household income is declining in the area (Table 7), down 5.2% compared to a statewide increase of 1.6%.

**Table 7. Median Household Income**  
(in 1993 Dollars)

	1979	1989	Percent change
Lee County	\$35,474	\$32,943	-7.1%
Ogle County	\$36,670	\$36,057	-1.7%
Winnebago County	\$38,665	\$36,498	-5.6%
Rock River Area	\$38,033	\$36,069	-5.2%
Statewide	\$36,962	\$37,565	+1.6%

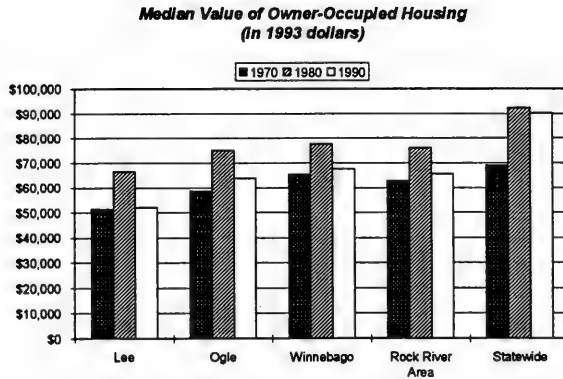
## Housing

Housing units in the area increased 24.6% between 1970 to 1990, while vacancy rates increased 18%. Statewide, the number of units rose 21.7% and vacancies jumped 51.1%. Among the three counties, Ogle experienced the greatest increase in housing, up 16.6% and Lee County had the most change in vacancies, up 26.7%.

The median value of owner-occupied housing units in the Rock River area increased 4% over the twenty-year period (Figure 10). During the first ten years of that period,

**Table 8. Housing Units**

	1970		1980		1990	
	Units	Vacancy	Units	Vacancy	Units	Vacancy
Lee	11,602	5.7%	13,358	5.3%	13,314	6.3%
Ogle	14,254	5.6%	17,288	5.6%	18,052	5.1%
Winnebago	80,931	5.2%	93,184	4.0%	101,666	4.9%
Rock River Area	106,787	5.3%	123,830	4.4%	133,032	5.0%
Statewide	3,703,367	5.4%	4,319,672	6.0%	4,506,275	6.7%



*Figure 10*

however, values jumped 21% but then dropped 16% over the last ten years. Statewide, the median value rose 30% overall, with only a 2% drop between 1980 and 1990.

## **Conclusion**

Over the past 100 years the counties in the Rock River Resource Rich Area have grown in population, urbanization, income, and education. Although more than 75% of the populace lives in urban areas, only about six percent of the land is urban. The remainder is primarily agricultural. As elsewhere in the state and the nation, the populace is aging, with the median age rising from the mid- to late-twenties to the early- to mid-thirties. It is also becoming more educated, with more than three of four persons having at least a high school diploma and close to one of six having a college degree or higher.

Income in the area is slightly lower than the statewide per capita income, but it has risen almost three-fourths over twenty years. At the same time, the number of people living in poverty has also risen a least one percent, to about 10% of the population.

Following state and national trends, the number of households have grown by one-fourth, while individual households have shrunk from 3.16 persons to 2.58 persons. The shrinking households accompany a smaller median household income, which was five percent less in 1989 than in 1979. Statewide, the median household income grew a little over one percent.

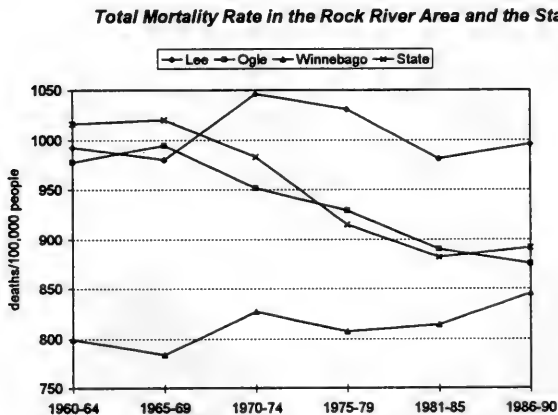
# Health Trends

The most commonly used measure of a population's health is the mortality rate -- the number of deaths per 100,000 people. Mortality rates are provided for total deaths and by cause of death. Other measures of health are infant mortality rates and premature births, the number of teenage and single mothers, and access to health care, measured by the number of hospital beds and doctors per 100,000 people.

## Mortality Rates<sup>1</sup>

The mortality rate in the 3-county Rock River area is 3% lower than the state average.<sup>2</sup> On a county basis, however, the rates vary considerably, ranging from 845 per 100,000 population in Winnebago County to 996 in Lee County. Winnebago County is well below the state average, while Lee County is considerably above it. Mortality in Ogle County is close to the state average.

Although mortality in the area is lower than it is statewide, the rate of improvement has been greater at the state level, with the mortality rate 12.3 % lower in 1990 than in 1960.



*Figure 11*

<sup>1</sup> Mortality rate data is from Illinois Department of Public Health: Division of Health Statistics, *Vital Statistics Illinois*, various years.

<sup>2</sup> In the discussion of the mortality rates, references to a mortality rate for a particular year is actually a five year average rate. For example, when citing the 1960 mortality rate it is in fact the 1960-64 average mortality rate.

**Table 9. Mortality Rates**  
(deaths per 100,000 people)

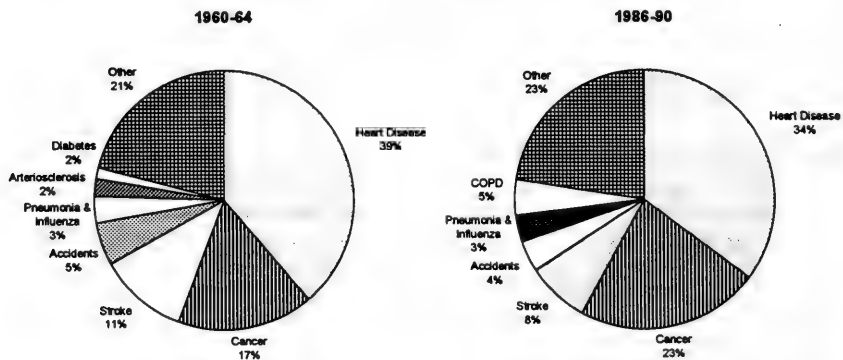
	1960-64	1965-69	1970-74	1975-79	1981-85	1986-90
Lee	992.4	980.0	1046.3	1030.7	981.1	996.0
Ogle	977.5	994.6	951.2	929.1	890.2	875.1
Winnebago	799.1	783.8	826.9	806.8	813.7	845.2
Region	849.0	834.7	868.6	847.6	842.4	865.1
State	1016.1	1019.9	982.6	915.0	882.2	891.6

Ogle County came close to the state rate -- mortality fell 11.5% since 1960. In Lee County, mortality rose in the 1970s and declined in the 1980s to just above the 1960 level. In Winnebago County the trend was opposite -- mortality increased 6% since 1960.

The difference in mortality rates within the region and compared to the state reflects in part the demographic characteristics of the Rock River Area. For example, the age of the population is highly correlated to mortality rates. Winnebago County, with mortality rates below the state average, typically has had a lower median age and fewer elderly as a percentage of the population than has the state. At the other extreme, Lee County, with mortality rates much higher than the state average, has a higher median age and a higher percentage of elderly than the state.

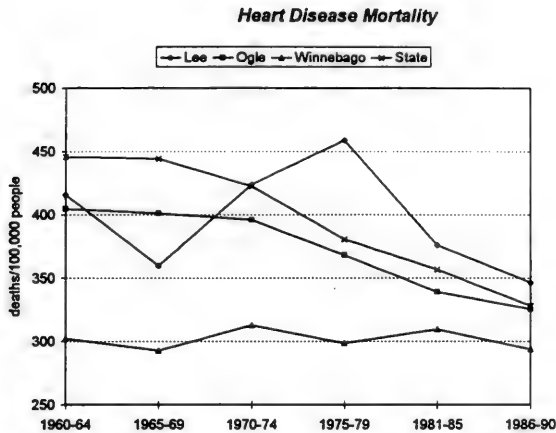
## Major Causes of Death

The three major causes of death, in descending order, are heart disease, cancer, and stroke. During the 1990 time period they accounted for approximately 65% of all deaths statewide and in the Rock River area. Deaths from both heart disease and stroke have declined in the state and in the Rock River area since 1960, while deaths from cancer have risen considerably.



*Figure 12. The major causes of death in the Rock River area, 1960-64 and 1986-90*





*Figure 13*

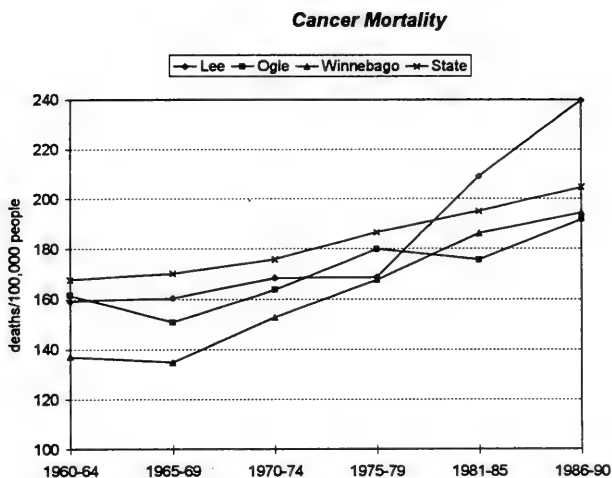
## Heart Disease

In 1980 the mortality rate from heart disease was 7.5% lower in the Rock River area than statewide, 304 per 100,000 compared to 328. Winnebago and Ogle counties have been below the state average for at least 30 years; in 1990 Winnebago was 11.5% lower and Ogle was 1% lower. Lee County, on the other hand, has been above the state average since 1970 (5.5% in 1990).

Only Ogle County matches the state's decline in heart disease mortality -- both down 26% since 1960. In Lee County, the rate increased in the late 1960s and in the 1970s, but has declined 32% since. The mortality rate in Winnebago County has remained steady over the last thirty years.

**Table 10. Heart Disease Mortality**  
(deaths per 100,000 people)

	1960-64	1965-69	1970-74	1975-79	1981-85	1986-90
Lee	415.5	359.9	424.1	458.7	376.0	346.6
Ogle	404.3	400.9	396.0	368.1	339.0	325.8
Winnebago	302.5	292.8	313.0	298.5	309.5	293.9
Region	331.3	314.7	336.7	325.3	320.8	303.8
State	445.7	444.1	422.4	380.5	356.7	328.3



*Figure 14*

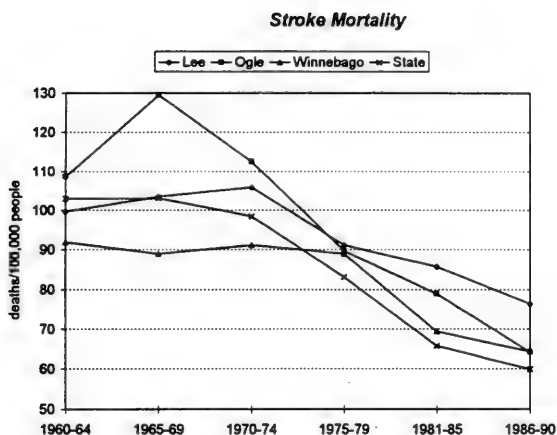
## Cancer

The mortality rate from cancer has increased since 1960 -- in the Rock River area and statewide. However, the area has been below the state average during that time; in 1990 it was 199 per 100,000 population in the region compared to 205 statewide. Ogle and Winnebago counties have the lowest cancer rates; in 1990 Ogle County was 6.4% lower and Winnebago County was 5.1% lower. Lee County has been above the state average since the early 1980s (17% higher in 1990).

Although the cancer mortality rate is lower in the Rock River Region than it is statewide, it is increasing there at a greater pace. Since 1960 cancer mortality has increased 51% in Lee County and 39% in Winnebago County, compared to 22% statewide. Ogle County more nearly matched the state rate at 19%.

**Table 11. Cancer Mortality**  
(deaths per 100,000 people)

	1960-64	1965-69	1970-74	1975-79	1981-85	1986-90
Lee	159.2	160.4	168.4	168.7	209.1	239.7
Ogle	161.6	150.8	163.7	179.8	175.6	191.7
Winnebago	136.9	134.7	152.7	167.7	186.1	194.3
Region	143.2	139.9	156.0	169.4	187.1	198.7
State	167.8	170.1	175.8	186.5	195.1	204.7



*Figure 15*

## Stroke

Stroke mortality has dropped dramatically in the Rock River area since 1960 -- 41% in Ogle County (despite a large increase in the mid- to late-1960's), 30% in Winnebago County and 23% in Lee County. Statewide, mortality from stroke dropped 42% since 1960.

In the 1960s and early 1970s, the rate of death from stroke was lower in the Rock River area than it was statewide. However, the state rate has been dropping at a faster pace and since the mid-1970s the area's stroke mortality rate has been above the state average; in 1990, it was 10% higher. All three counties have stroke mortality above the state average -- the 1990 rate in Ogle and Winnebago counties was approximately 7.5% higher than the state average, and in Lee County it was 27.5% higher.

**Table 12. Stroke Mortality**  
(deaths per 100,000 people)

	1960-64	1965-69	1970-74	1975-79	1981-85	1986-90
Lee	99.6	103.4	105.9	91.1	85.7	76.4
Ogle	108.6	129.5	112.4	89.7	78.9	64.2
Winnebago	91.8	88.9	91.1	89.0	69.4	64.4
Region	95.1	95.8	95.6	89.3	72.5	65.6
State	103.0	103.1	98.4	83.1	65.8	59.9

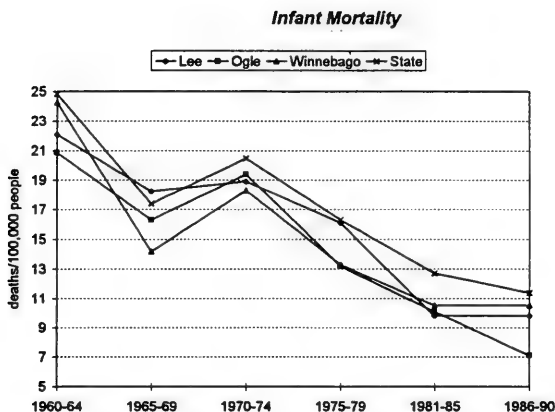


Figure 16

### **Infant Mortality and Premature Births<sup>3</sup>**

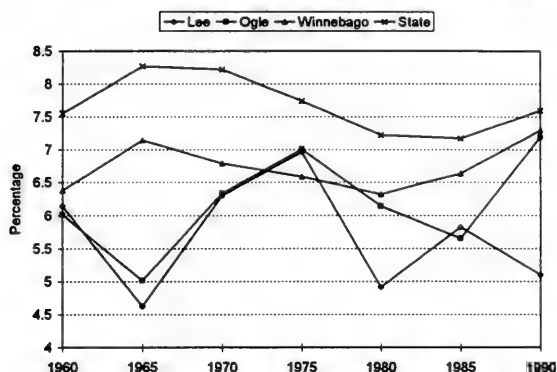
Another measure of community health is the infant mortality rate, which is lower in the Rock River area than statewide. In 1990, the Rock River area rate was 12% lower than the state rate, Lee County was 14% lower, Ogle was 38% lower and Winnebago County 8% lower. Infant mortality has been declining at a steady rate overall since 1960 (Figure 16). Statewide it is down 54% and in the Rock River area it is down 56% in Lee County, 66% in Ogle County, and 57% in Winnebago County.

**Table 13. Infant Mortality**  
(deaths per 100,000 population)

	1960-64	1965-69	1970-74	1975-79	1981-85	1986-90
Lee	22.1	18.2	18.9	16.1	9.8	9.8
Ogle	20.9	16.3	19.4	13.2	10.1	7.1
Winnebago	24.3	14.2	18.3	13.3	10.5	10.5
Region	23.5	14.9	18.5	13.6	10.4	10.0
State	24.8	17.4	20.5	16.3	12.7	11.4

<sup>3</sup> This data is from Illinois Department of Public Health: Division of Health Statistics, *Vital Statistics Illinois*, various years.

**Premature Births as a Percentage of Total Births**



*Figure 17*

The Rock River area has also consistently had a lower percentage of premature births (Figure 17). In 1990, the area was 7% below the state average<sup>4</sup>, and in Lee, Ogle, and Winnebago Counties the rates were 33%, 5%, and 4% below the state average.

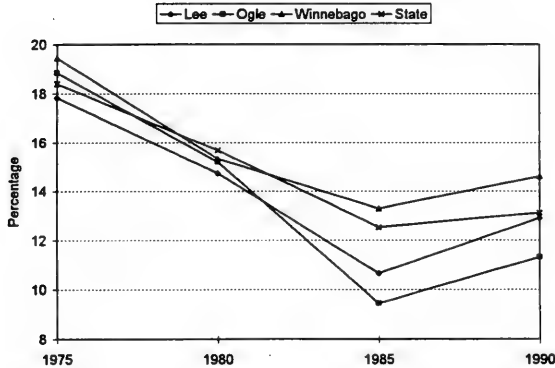
Even though the Rock River area's premature birth rate is lower than the statewide rate, it has increased while the state rate has remained fairly steady (Table 14). Since 1960, the percentage of premature births rose 20% in Ogle County (from 6 to 7.2% of births) and 14% in Winnebago County (from 6.4 to 7.3% of births). Over the same period, the rate declined 17% in the lesser populated Lee County.

**Table 14. Percentage of Premature Births**

	1960	1965	1970	1975	1980	1985	1990
LE	6.1	4.6	6.3	7.0	4.9	5.8	5.1
OG	6.0	5.0	6.3	7.0	6.1	5.7	7.2
WO	6.4	7.2	6.8	6.6	6.3	6.6	7.3
Region	6.3	6.6	6.7	6.7	6.1	6.4	7.1
State	7.6	8.3	8.2	7.7	7.2	7.2	7.6

<sup>4</sup> From 1960-1985, the Illinois Department of Public Health defined premature births (in the Vital Statistics of Illinois) as babies born at a weight less than 2501 grams. In 1990, the Vital Statistics Report included number of babies at less than 2599 grams.

**Percentage of Births to Teenage Mothers**



*Figure 18*

### **Teenage and Single Mothers<sup>5</sup>**

Infant mortality and premature births are influenced by the number of teenage and single mothers who often have low income and, therefore, less access to health care.

Between 1975 and 1990 the teen birth rate declined both statewide and in the three counties -- about 28% in the state, and 28%, 40%, and 25% in Lee, Ogle, and Winnebago counties respectively. A slight increase occurred, however, during the five-years period of 1985 and 1990.

Before the early 1980s, the regional teen birth rate was equal to or below the state average. Since then it has passed the state rate and is now 7% higher than statewide, primarily because of the high rate in Winnebago County (11% higher than the state's). The teen birth rate in Lee and Ogle counties was 2% and 14% lower than statewide in 1990.

**Table 15. Percentage of Births to Teenage Mothers**

	1975	1980	1985	1990
Lee	17.8	14.7	10.6	12.9
Ogle	18.8	15.2	9.4	11.3
Winnebago	19.4	15.3	13.3	14.6
Region	19.2	15.2	12.5	14.0
State	18.4	15.7	12.5	13.1

<sup>5</sup> This data is from Illinois Department of Public Health: Division of Health Statistics, *Vital Statistics Illinois*, various years.

**Table 16. Percentage of Births to Single Mothers**

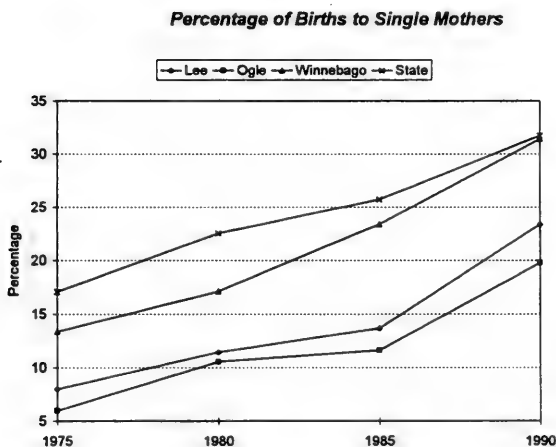
	1975	1980	1985	1990
Lee	8.0	11.4	13.7	23.4
Ogle	5.9	10.5	11.6	19.8
Winnebago	13.4	17.2	23.4	31.4
Region	11.8	15.6	20.7	29.0
State	17.1	22.5	25.7	31.7

Though the percentage of births from teenage mothers has declined since 1975, the percentage of births from single mothers increased. It jumped 85% statewide, and more than doubled in Winnebago County, almost tripled in Lee County and more than tripled in Ogle County. Even so, the rate for the 3-county area remained below the state average during this 15-year period; in 1990 it was 9% lower.

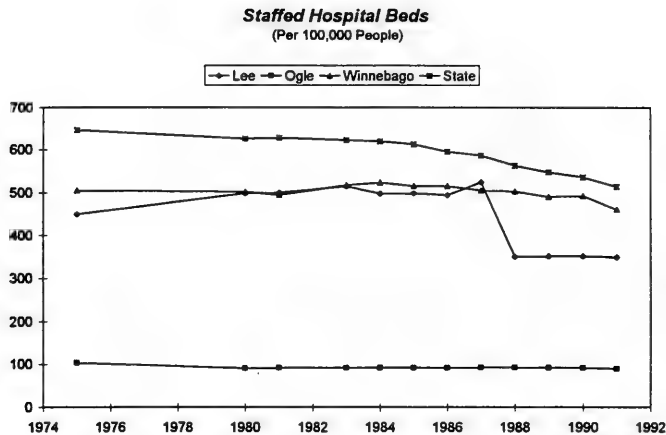
Leading the area in both teen and single mother birth rates is Winnebago County, where 14.6% of babies born in 1990 were born to teenagers and 31.4% to single mothers (Tables 15 and 16).

## **Health Care Access**

A key aspect of health is the availability of health care providers and facilities, specifically the number of doctors and staffed hospital beds. All three counties in the Rock River area have fewer hospital beds and doctors per 100,000 people than the state average. In 1991,



*Figure 19*



*Figure 20*

the number of hospital beds and doctors were 23% and 22% lower in the Rock River area than statewide. Availability in Ogle County was particularly low. However, it is likely that many Ogle County residents use health care facilities and providers located in Lee, Winnebago, or other counties in the area.

**Table 17. Number of Staffed Hospital Beds<sup>6</sup>**  
(per 100,000 population)

	1975	1980	1981	1983	1985	1987	1989	1991
Lee	449	498	500	516	499	525	352	350
Ogle	104	91	91	92	92	93	92	89
Winnebago	505	502	494	518	516	505	490	461
Region	446	444	439	458	455	451	421	398
State	647	626	628	623	613	587	548	515

**Table 18. Hospitals in the Rock River Region (1994)**

	City	Staffed Beds
Katherine Shaw Bethea Hospital	Dixon	122
Rochelle Community Hospital	Rochelle	42
H. Douglas Singer Mental Health Center	Rockford	190
Rockford Memorial Hospital	Rockford	451
Saint Anthony Medical Center	Rockford	210
Swedish American Hospital	Rockford	298

<sup>6</sup> Data on number of hospital beds is from the Illinois Hospital & Health Systems Association.



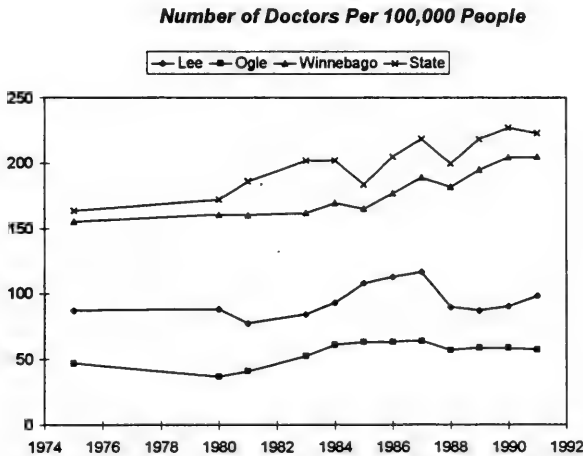
**Table 19. Number of Doctors per 100,000 Population<sup>7</sup>**

	1975	1980	1981	1983	1985	1987	1989	1991
Lee	87	88	77	84	108	117	87	98
Ogle	47	37	41	52	63	64	59	57
Winnebago	155	161	160	162	165	189	195	205
Region	133	136	135	139	145	164	165	174
State	164	172	186	202	184	219	219	223

The trends in health care availability for the Rock River area and the state are similar -- more doctors, fewer hospital beds. Figures 20 and 21 show that, since 1975, the number of staffed hospital beds has declined 9% statewide while the number of doctors has increased about 34%. In the Rock River area there are 11% fewer hospital beds and 31% more doctors.

## Conclusion

The total mortality rate has steadily declined in Illinois, but in the Rock River area only Ogle County has experienced a declining rate. Infant mortality and mortality rates for heart disease and stroke have declined in both the Rock River area and the state, while cancer mortality has increased significantly.



*Figure 21*

<sup>7</sup> Data on number of doctors is from the Illinois Department of Professional Regulation.

Total mortality, infant mortality, and mortality from heart disease and cancer in the Rock River area are consistently below the state average, except in Lee County. The Rock River area is above the state average in stroke mortality rate. Within the Rock River area, Winnebago County typically has the lowest mortality rates while Lee County has the highest (except infant mortality).

The percent of births to teenage mothers declined in both the Rock River area and the state, while the percent of births to single mothers rose significantly. With respect to health care availability, the Rock River area is significantly below the state average in doctors and staffed hospital beds per 100,000 people.

## ***The Regional Economy***

The Rock River area represents 3% of the state's employment and 2.5% of its personal income. In 1993, total personal income<sup>1</sup> in the area was approximately \$6.7 million with 193,131 persons employed. Winnebago County accounted for 80% of the area's employment and 77.8% of the personal income.

During the period 1969-1993, the area experienced slightly higher employment growth than did the state as a whole -- 1.1% average annual growth, compared to .9% statewide. In fact, both Ogle and Winnebago counties fared well over the 24-year period (Figure 22). In Lee County, however, employment fell about 3%, from 16,172 to 15,720 workers. During the same time period, the county's population declined almost 9%.

Personal income -- which includes earnings (wages and salaries minus Social Security deductions), dividends, interest payments, rent and transfer payments -- grew at a slightly faster rate than did employment. Growth averaged 1.5% annually in the Rock River area, slightly less than the 1.7% rate of growth experienced statewide. By 1993, personal income reached \$6.7 billion in the Rock River area, including \$1 billion in transfer payments. All three counties saw growth over the period, although Lee County experienced the slowest rate of growth.

Winnebago County is a significant source of employment for commuters living outside the county, as reflected by the negative \$218 million personal income residence adjustment.<sup>2</sup> Residents of Lee and Ogle counties make 10-20% of their earnings outside of their home county, much of that in the Rockford area.

**Table 20. 1993 Employment and Personal Income**

	Employment	% of state employment	Income (millions)	% of state income
Lee	15,720	0.2%	\$585.5	0.2%
Ogle	22,067	0.3%	\$844.0	0.3%
Winnebago	155,344	2.4%	\$5,247.2	2.0%
Rock River Area	193,131	3.0%	\$6,676.7	2.5%
Illinois	6,482,565	100%	\$263,630.0	100%

<sup>1</sup> Income and earnings discussed in this chapter are reported in 1993 dollars. Source of data: Regional Economic Information System, 1969-1993, United States Department of Commerce, Bureau of Economic Analysis.

<sup>2</sup> Adjustments are made in earnings to transfer 'place-of-work' income to 'place-of-residence' income. A negative adjustment means that more people commute to the county for work; a positive adjustment means that more people commute out of the county.

### Change in Employment and Income 1969-1993

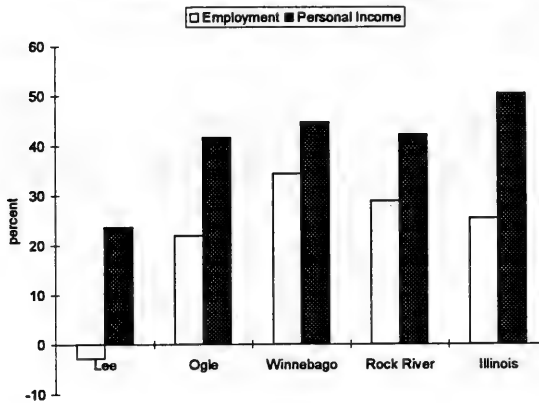


Figure 22

Thirty-one businesses in the Rock River area employ 500 or more persons (see Table 22 and Figure 24). Twenty-two are in Winnebago County -- all but two in the Rockford metro area -- seven of which employ more than 1,000 persons. Four are in Ogle County, located in Oregon, Mt. Morris, and Byron, and five in Lee County, all located in the vicinity of Dixon.

Table 21. 1993 Total Personal Income  
(in millions)

	Lee	Ogle	Winnebago	Rock River	Illinois
Sector Earnings	\$343.6	\$486.6	\$4,107.7	\$4,938.0	\$194,112.3
less contributions	23.6	34.3	290.4	348.2	1,350.9
plus residence adjust.	36.3	125.1	-218.7	-57.3	-336.2
Adjusted Earnings	356.4	577.5	3,598.6	4,532.5	180,266.8
Div., Int., & Rent	115.4	136.8	831.5	1,083.6	43,146.9
Transfer payments	113.7	129.8	817.1	1,060.6	40,222.8
Total Real Income	585.5	844.0	5,247.2	6,676.8	263,630.0

### Employment Shifts

Over the historical period, the structure of the U.S. and Illinois economies changed dramatically. Manufacturing declined in importance, while the service sector grew substantially. In Illinois, manufacturing dropped from 28% of the work force in 1969 to 15% in 1993, a 32 % decline. Service sector employment, on the other hand, increased 115.4%, from 17% to 28% of employed persons.

In the Rock River area, manufacturing employment in the three counties experienced more fluctuation and less decline than statewide. Statewide, manufacturing employment peaked in the late 1970s, but declined thereafter. In the Rock River area, Lee and Winnebago counties appear to have followed this pattern, while Ogle county's manufacturing employment peaked in 1988.

Even with the decline, manufacturing still represents a substantial level of employment in the region (47,105 workers in 1993). Until 1990, when the service sector overtook it, manufacturing had been the largest employer in the region and it remains the largest source of income, although it has declined in that area also. Manufacturing employment dropped from 39% of the total in 1969 to 24% in 1993 (a 1% annual decline), while earnings<sup>3</sup> dropped from 49% of the total in 1969 to 36% (\$1.8 billion) in 1993. Statewide, manufacturing earnings dropped from 33% of all earnings to 20%.

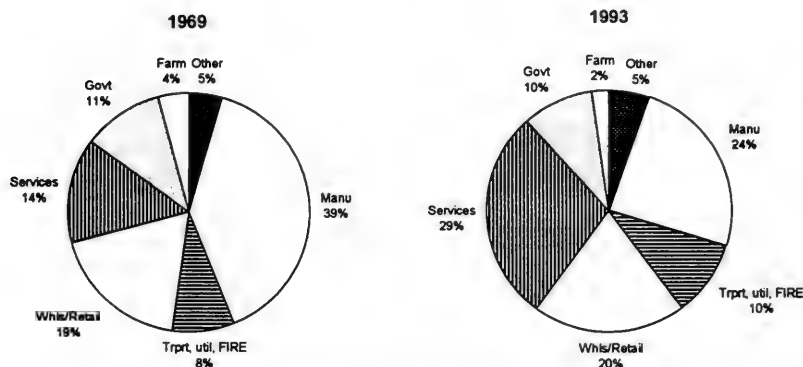


Figure 23. *Employment Distribution in the Rock River area, 1969 and 1993*

The service sector grew 3.3% per year in Illinois, jumping from 17% of employment in 1969 to 28% (54,433 workers) in 1993. Income from this sector jumped from 11% of income to 22% (\$1.1 billion) in the region, while statewide it went from 15% to 27%.

Although its numbers are smaller, the economic sector that grew at the fastest rate was the combined category of transportation, utilities, and finance, insurance, and real estate (FIRE). In the Rock River area this sector grew 1.4% annually, compared to 1.7% statewide. The remaining economic sectors also grew, except farm employment which fell 1.6% in the Rock River area and 1.3% statewide. The decline in farm income was even higher than the decline in farm employment -- -57% over the 24-year period. Even more striking, however, were the fluctuations in income from year to year, presumably in response to crop yields and commodity prices.

<sup>3</sup> Earnings are the sum of the wages derived from these sectors. They reflect the place of work rather than the place of residence.

**Table 22. Major Employers, Rock River Area**

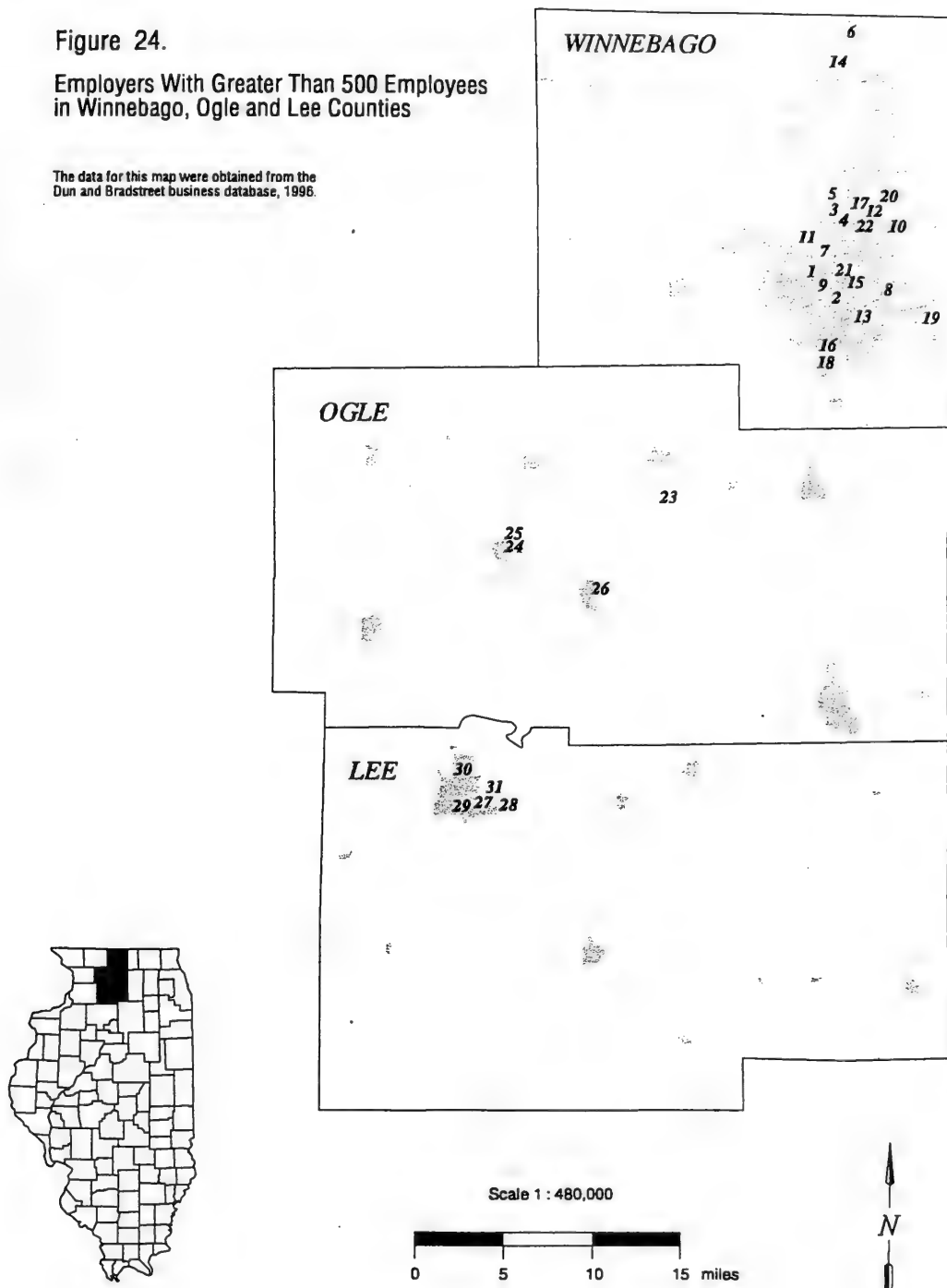
<b>Company<sup>4</sup></b>	<b>City</b>	<b>Map Legend</b>	<b>Business Classification</b>	<b>SIC</b>	<b>Employees</b>
<b>Winnebago County</b>					
Acacia Business Corp.	Rockford	1	Marketing Consultancy	874	650
Amcore Financial	Rockford	2	Bank Holding Companies	671	600
Atwood Industries	Rockford	3	Motor Vehicle Steering Systems	371	500
Barber-Colman Company	Rockford	4	Aircraft Flight Instruments	381	1,500
Carson, Pirie, Scott & Co.	Rockford	5	General Warehouse & Storage	422	800
Dana Corp.	South Beloit	6	Motor Vehicle Transmissions	371	700
Ingersoll Milling & Machinery	Rockford	7	Grinding, Polishing, Buffing	354	1,500
Osf Healthcare	Rockford	8	General Medical & Surgical Hospital	806	1,500
Pioneer Financial Services	Rockford	9	Life Insurance	631	600
Rock Valley College	Rockford	10	Junior College	822	1,130
Rockford Memorial Health Services	Rockford	11	Medical Centers	801	635
Rockford Powertrain	Loves Park	12	Motor Vehicle Transmissions	371	550
Rockford Products	Rockford	13	Fasteners	396	700
Specialty Equipment (Taylor)	Rockton	14	Dairy & Milk Machinery	355	627
Swedish American Hospital	Rockford	15	General Medical & Surgical Hospital	806	1,500
Textron	Rockford	16	Power Driven Handtools	354	650
Foxboro Co.	Loves Park	17	Process Control Instruments	382	1,400
United Parcel Service	Rockford	18	Air Courier Services	451	550
U. S. Postal Service	Cherry Valley	19	Post Office	431	750
Warner-Lambert Co.	Loves Park	20	Chewing Gum	206	1,119
Winnebago County	Rockford	21	Executive Offices-Government	911	900
Woodward Governor Co.	Loves Park	22	Aircraft Engines & Engine Parts	372	750
<b>Ogle County</b>					
Commonwealth Edison	Byron	23	Electric Services	491	739
Kable News Co.	Mt. Morris	24	Books, Periodicals, & Newspapers	519	850
Quebecor Printing	Mt. Morris	25	Wrapper & Seal Printing	275	700
Woods Equipment Co.	Oregon	26	Turf & Grounds Equipment	352	550
<b>Lee County</b>					
Bethea Katherine Shaw Hospital	Dixon	27	General Medical & Surgical Hospital	806	501
Borg-Warner Automotive	Dixon	28	Ignition Apparatus & Distribution	369	500
Ill. Dept. of Transportation	Dixon	29	Highway & Street Construction	161	540
Ill. Dept. of Corrections	Dixon	30	Correctional Institution	922	500
Raynor Manufacturing	Dixon	31	Metal Doors	344	800

<sup>4</sup> Source: Dun and Bradstreet, Dun's Direct Access Business Database, New York, 1995.

Figure 24.

# Employers With Greater Than 500 Employees in Winnebago, Ogle and Lee Counties

The data for this map were obtained from the  
Dun and Bradstreet business database, 1996.



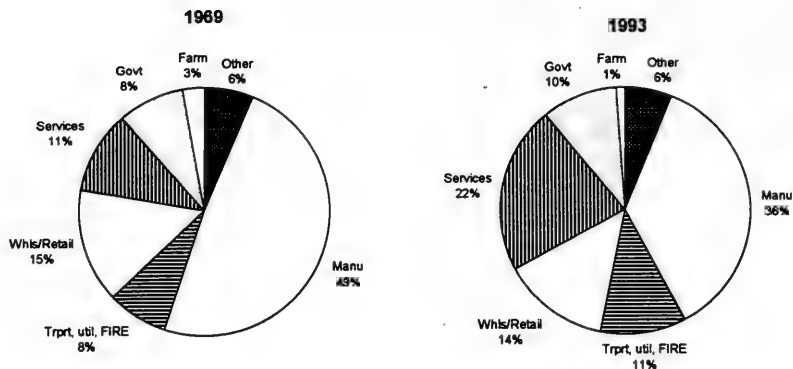


Figure 25. Earnings Distribution in the Rock River area, 1969 and 1993

Although the service and manufacturing sectors employ the most people in the 3-county area, other sectors are significant in various parts of the region (Figure 26).<sup>5</sup> For example, the census tract just west of Oregon in Ogle County has a high percentage employed in wholesale and retail trade, while tracts around Byron have a high proportion employed in public utilities. In most of Lee County a significant percentage are employed in farming or related industries, although residents of Dixon and nearby areas are employed disproportionately in government. Residents of central and northeastern parts of Rockford work in the service sector and wholesale and retail trade, while in the southwest part of the city residents most frequently are employed in manufacturing.

A look at the employment and earnings of the three counties individually reveals some similarities with the state and regional pattern, but also traits unique to each county.

## Lee County

In 1993 Lee County had 15,720 workers with a combined income of \$344 million. Service employment in the county followed the upward statewide trend until it dropped suddenly in 1992 (the same year that service sector employment and income increased

<sup>5</sup> "Significant" employment sector is defined as greater than one standard deviation above the mean percentage for the census tracts in the area. For example, among the 326 census tracts analyzed the mean percentage employed in the wholesale and retail trade sector is 20%, with a standard deviation of 7%. In census tract #48129 28% are employed in trade, which is more than one standard deviation above the mean; thus trade is a significant employment sector in this tract. For the 46 districts where more than one sector is significant, only the most significant one (the one most above the mean) is displayed. One third of the census tracts have no predominant sector, meaning that the percentages of employment in the sectors are all close to the mean.

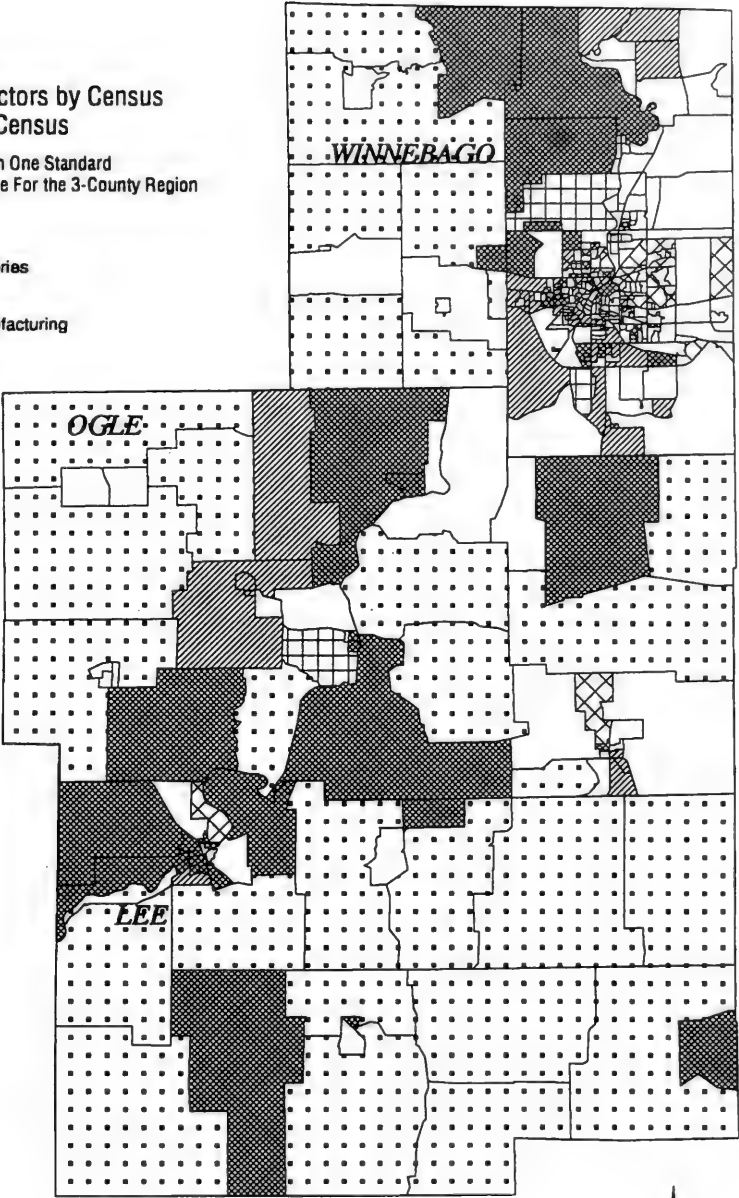


Figure 26.

Significant Employment Sectors by Census Tract From the 1990 U.S. Census

Significant is Defined As Greater than One Standard Deviation Above the Mean Percentage For the 3-County Region

-  Agriculture, Forestry, & Fisheries
-  Durable & Non-durable Manufacturing
-  Wholesale & Retail Trade
-  Service Industries
-  Other (See Footnote)
-  No Predominant Sector



Scale 1 : 480,000

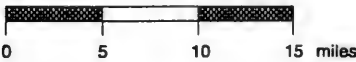


Table 23. 1990 Private Non-Farm Establishments by Size, Lee County

	Total	1 to 49 employees	50 or more employees
Total number of businesses	768	731	37
Agricultural services, forestry, fishing	9	9	0
Mining	4	4	0
Construction	65	65	0
Manufacturing	51	36	15
Transportation and public utilities	37	35	2
Wholesale Trade	83	81	2
Retail Trade	202	197	5
Finance, insurance & real estate	57	55	2
Services	216	205	11
Unclassified	44	44	0

dramatically in Ogle County). Service employment increased 202.5% from 1969 to its peak year of 1991. Over the 24-year period, to 1993, service jobs grew 134.4%, higher than the statewide growth of 115.4%. Income from this sector also grew substantially, increasing 146.9% to \$85.5 million. In the last few years, service income has remained higher than manufacturing income. In 1993, the service sector employed 4,335 workers, representing 27.6 % of Lee County employment.

Also experiencing a sudden drop in employment and earnings was the transport, utilities, finance, insurance, and real estate category. It had remained flat over 21 years until 1990

Lee County Employment

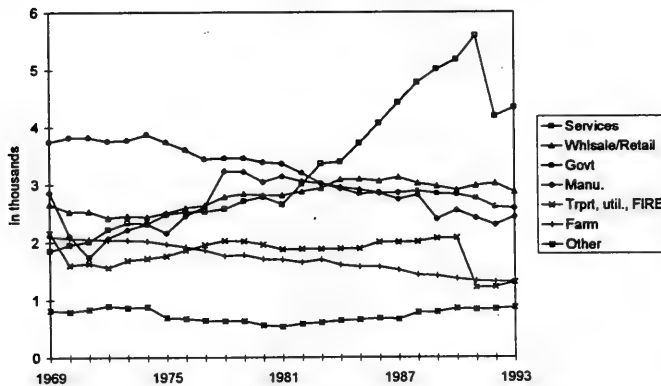
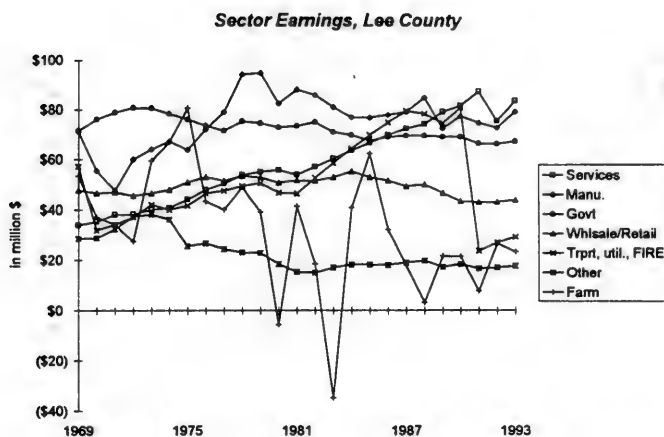


Figure 27



*Figure 28*

when employment dropped 41%. (The sector grew 59% in Ogle County that year.)<sup>6</sup>

Manufacturing followed the state's trend, and dropped in the 1980's. In 1993 it represented 15.5 % or 2,432 workers of Lee County's total employment. Earnings from manufacturing initially fell, but have recovered and remained steady at around \$80 million (23% of total earnings).

Farm income, on the other hand, has fluctuated considerably over the period, primarily because it is dependent from year to year on prices and yield. As in most of the state, farm employment has declined slowly over time, but agriculture remains a significant source of employment in Lee County.

## **Ogle County**

In 1993 Ogle County had 22,067 workers with a combined income of \$487 million. From 1969-1993 earnings increased 16.2%, 0.6% annually, below the state rate of 1.3%.

Manufacturing employs 24 % of the work force. Manufacturing employment fluctuated historically, but has been dropping since it peaked in 1988. Manufacturing income fluctuated around \$200 million over the period, but recently dropped to below \$160 million. However, manufacturing remains the largest employer (24%) and source of income (32%).

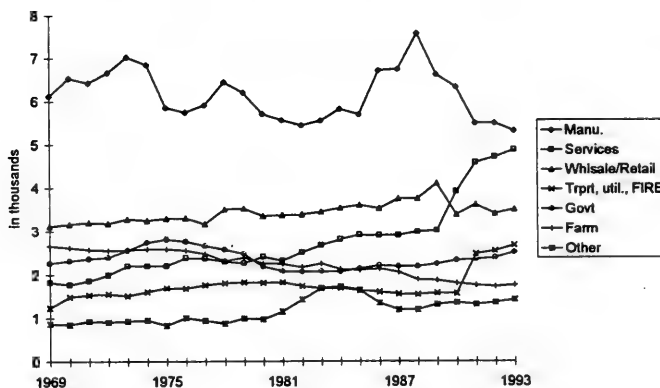
<sup>6</sup> The authors are not certain what caused the simultaneous employment decrease in Lee and increase in Ogle County. Perhaps a facility located in Lee County moved to Ogle.

**Table 24. 1990 Private Non-Farm Establishments by Size, Ogle County**

	Total	1 to 49 employees	50 or more employees
Total number of businesses	929	892	37
Agricultural services, forestry, fishing	13	13	0
Mining	4	4	0
Construction	98	98	0
Manufacturing	67	48	19
Transportation and public utilities	53	51	2
Wholesale Trade	71	69	2
Retail Trade	240	236	4
Finance, insurance & real estate	74	71	3
Services	266	259	7
Unclassified	43	43	0

Close behind manufacturing is the service sector -- up 167.8% (4.3 % annually) in employment and 90.3% in income. In 1993, services provided 22 % of total employment, but only 8.4% of earnings. It was surpassed in 1991 by the transport, utilities, finance, insurance, and real estate category, where earnings grew to \$71 million.

**Ogle County Employment**



**Figure 29**

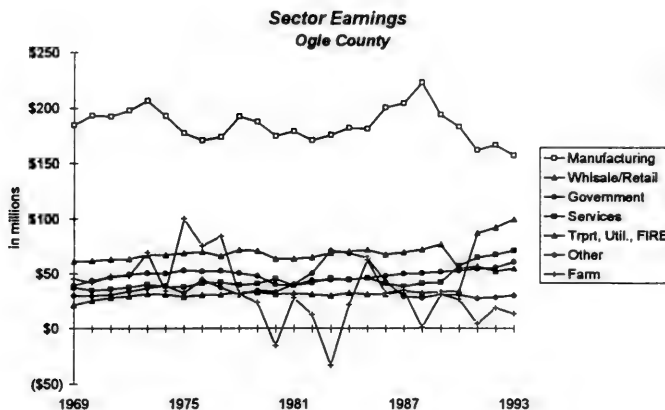


Figure 30

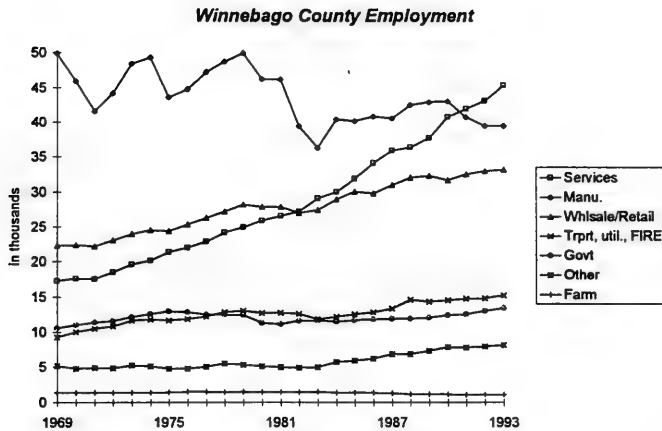
## Winnebago County

In 1993, Winnebago County had a larger work force than Lee and Ogle counties combined -- more than 155,000 workers -- with income at \$5.2 billion. Earnings grew at an average annual rate of 1.1 % from 1969-1993, just below the growth rate for the state.

Manufacturing employment fluctuated slightly above 45,000 workers until its decline in the early 1980s, but has since maintained employment around 40,000 (25% of total employment). It provides the largest source of earnings for the county (38%), fluctuating at around \$1.6 billion.

**Table 25. 1990 Private Non-Farm Establishments by Size, Winnebago County**

	Total	1 to 49 employees	50 or more employees
Total number of businesses	6502	6068	434
Agricultural services, forestry, fishing	81	81	0
Mining	8	8	0
Construction	580	565	15
Manufacturing	727	575	152
Transportation and public utilities	211	187	24
Wholesale Trade	564	536	28
Retail Trade	1,502	1,408	94
Finance, insurance & real estate	500	484	16
Services	2,050	1,945	105
Unclassified	279	279	0



*Figure 31*

The second highest source of earnings is the service sector. As elsewhere, the service sector in Winnebago County has grown steadily over the historical period. Service employment increased 263% over the 24-year period, or 4.1 % annually, while earnings jumped from \$365 million in 1969 to \$926 million in 1993, an average of 4% annual growth.

Also exhibiting healthy growth in Winnebago County was the wholesale and retail sector, up 84.5%, averaging 2.6 % annual growth in employment, compared to a statewide growth rate of 1.2%. Earnings growth, however, did not match employment; it was a mere 0.9 % annually, identical to the state rate of income growth in that sector.

## **Conclusion**

Winnebago County, which includes the city of Rockford, has employment and income levels almost seven times larger than the other two Rock River area counties -- 155 thousand workers and sector earnings at \$5,247 million. Lee County has 15,000 workers earning \$586 million and Ogle County has 22,000 employed with \$844 million in earnings.

### Sector Earnings, Winnebago County

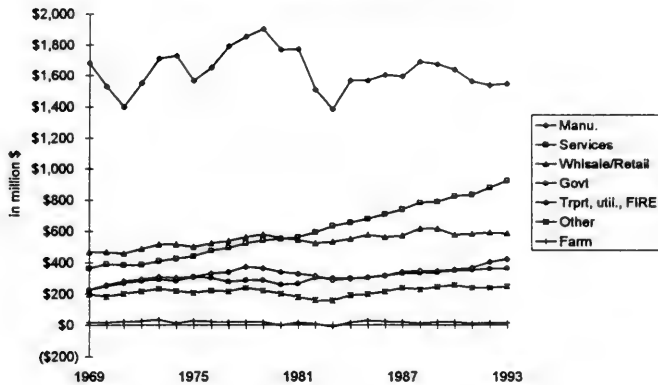





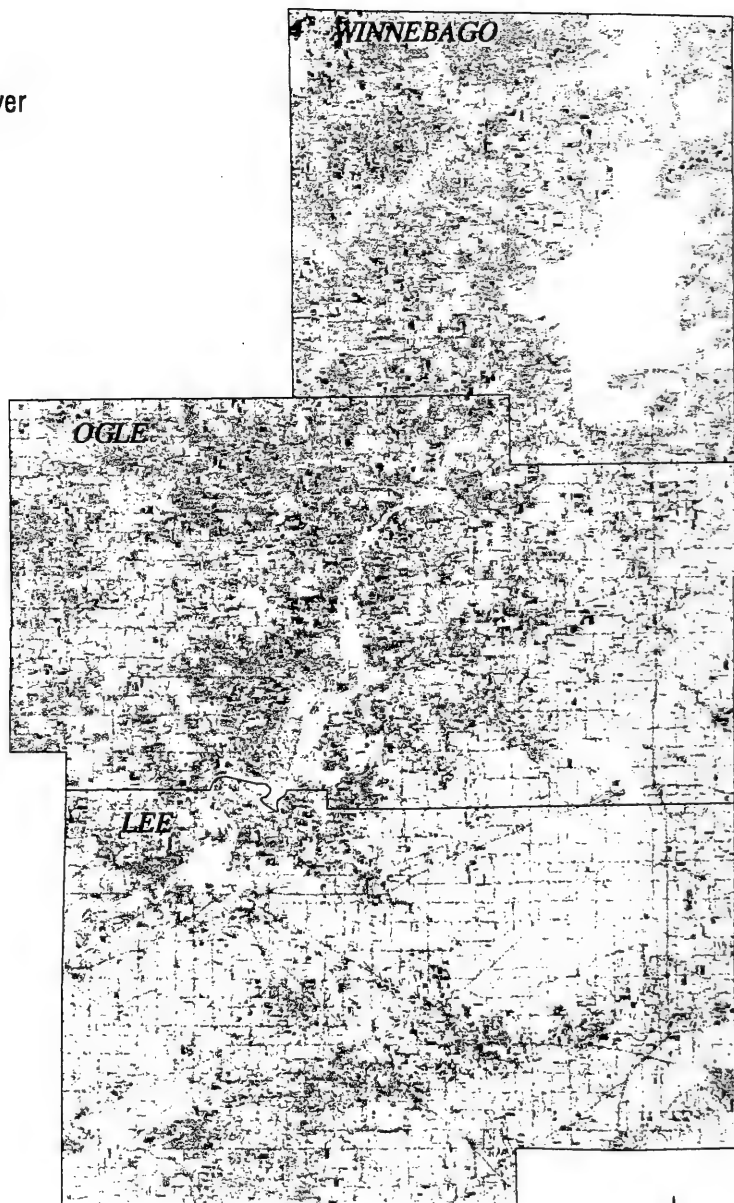
Figure 32

The service sector in the Rock River region has grown from 14% in 1969 to 29% in 1993. The manufacturing sector has lost ground over the years, declining from 39% of employment in 1969 to 24% in 1993, but it remains a substantial employer in Ogle and Winnebago counties. The manufacturing sector employs 5,320 of the 22,067 employed persons living in Ogle County and 39,353 of 155,344 employees residing in Winnebago County.

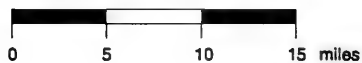
Figure 33.

Agricultural Landcover

-  Row Crops
-  Small Grains
-  Rural Grass



Scale 1 : 480,000





## Agriculture

Agriculture is a small but very important part of the economy in the Rock River area, particularly in Lee and Ogle counties. It is, moreover, the dominant land use in all three counties. Two-thirds of the land in Winnebago county is farmed, while about 90% of the land area of Lee and Ogle counties is used for agriculture.<sup>1</sup> Lee and Ogle counties each contain 360,000 to 380,000 acres of cropland and Winnebago about half that acreage.

Over the past ten years, acreage planted in crops has remained virtually constant in both Illinois and the three-county Rock River area.<sup>2</sup> There was, however, a 7% decline in acreage in Ogle County.

Even though acreage has remained fairly constant, the number of farms has been declining (Figure 35). In the three-county area, the number dropped 19% between 1982 and 1992; statewide farm numbers were down 21%.

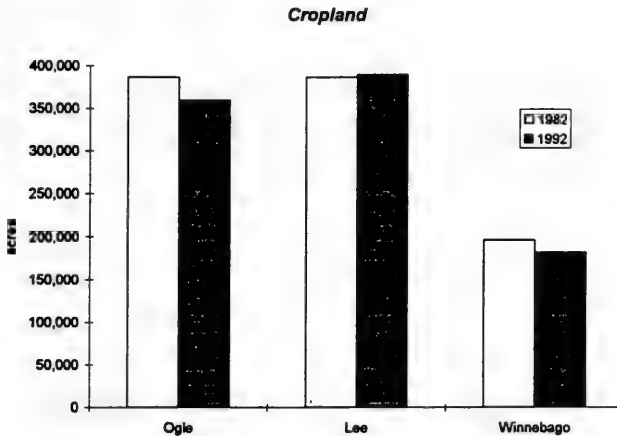
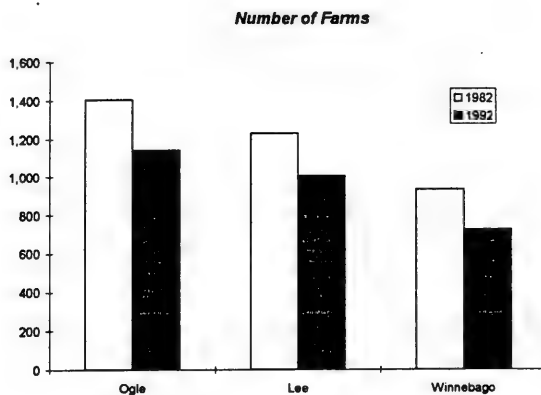


Figure 34

<sup>1</sup>Department of Natural Resources. *Landcover in Illinois Counties*. Draft Report, January 1996. Agricultural land is defined as cropland (planted in row crops, small grains, orchards, and nurseries) and rural grasslands (fallow fields, pasture, and greenways) and may include a small amount of non-farm grasslands.

<sup>2</sup>Information taken from *Agricultural Statistics*, Illinois Department of Agriculture, various years.



*Figure 35*

## **Cash Receipts**

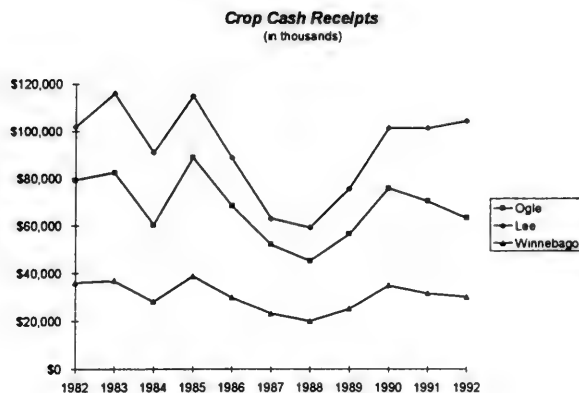
Between 1983 and 1988, cash receipts (the amount received from the sale of crops and livestock) fell 30% in the Rock River area and 24% in Illinois. Farm receipts recovered most lost ground in the succeeding years.

In 1992, total receipts for the three-county area represented four percent of Illinois farm receipts. Receipts in Lee and Ogle counties are twice those of the highly urbanized Winnebago County -- about \$135 million compared to \$60 million on average (1983-1992, discounting drought years such as 1988).

Farm cash receipts include both crop and livestock receipts. In 1992, the three-county crop receipts totaled \$197 million, 3.6% of Illinois' \$5.3 billion crop receipts (Table 26).

**Table 26. 1992 Farm Cash Receipts**  
(in thousands)

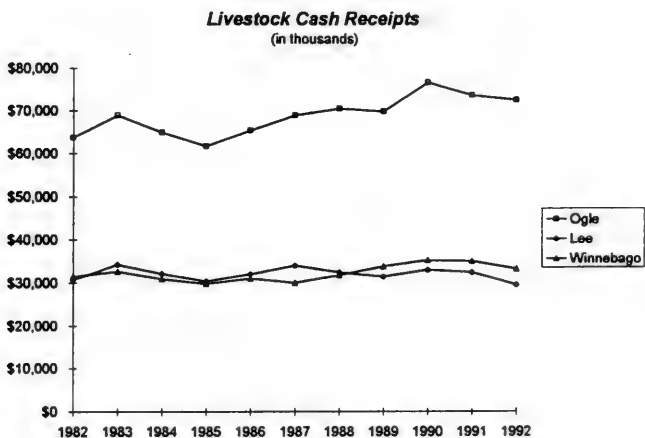
	Ogle	Lee	Winnebago	Rock River	Illinois
Crops	\$63,261	\$104,373	\$29,976	\$197,610	\$5,341,346
-Corn	42,209	70,491	15,705	128,405	2,779,942
-Soybeans	18,249	29,934	7,935	56,118	2,025,859
-Other	2,803	3,948	6,336	13,087	535,545
Livestock	72,511	29,573	33,255	135,339	2,202,346
-Cattle	33,374	16,832	12,189	62,395	719,720
-Hogs & Pigs	29,875	9,603	8,749	48,227	1,041,579
-Other	9,262	3,138	12,317	24,717	441,047



*Figure 36*

Lee County leads in crop receipts, followed by Ogle, then Winnebago County. The three counties show similar trends over the 1982-1992 period, although at different levels (Figure 36).

Livestock cash receipts accounted for 30% of the state's total farm receipts in 1992. The state total of \$2.2 billion has remained relatively stable over the historical period. In the three-county area, livestock receipts are about 40% of total receipts and have fluctuated between \$130 million and \$145 million. Ogle county has the highest cash receipts for livestock, with more than twice the receipts of the other two counties (Figure 37).



*Figure 37*

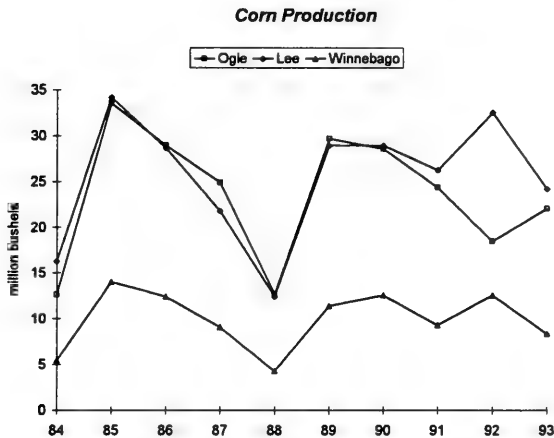
**Table 27. 1993 Acreage**  
(in thousands)

	Ogle	Lee	Winnebago	Rock River	Illinois
Cropland (acres)	359.6	389.8	182.2	931.6	24,164.5
Corn	188.6	205.4	81.1	475.1	10,000.0
Soybeans	74.0	116.0	34.0	224.0	9,100.0
Oats	4.4	2.7	2.8	9.9	550.0
Hay	25.3	8.7	18.6	52.6	1,250.0
Wheat	4.5	2.7	4.4	11.6	1,650.0
Other	62.8	54.3	41.3	158.4	1,614.5

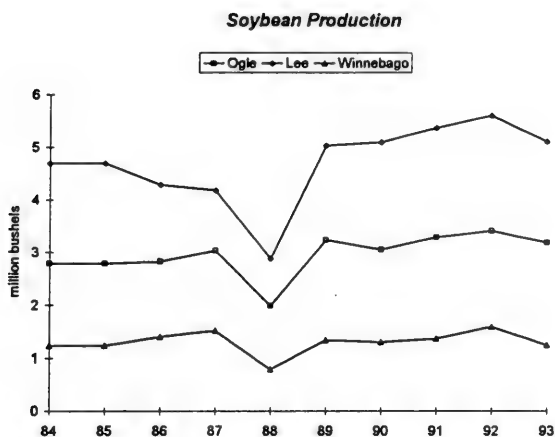
## Production

### Crops

As in the rest of the state, corn and soybeans are the predominant crops in the Rock River region (Table 27). Corn production fluctuated significantly between 1984 and 1993, ranging from a high of more than 34 million bushels in 1985 in Lee County to a low of four million bushels in Winnebago County during the 1988 drought. Soybean production, on the other hand, remained fairly steady except for a large decline during the 1988 drought. (Figures 38 and 39).



*Figure 38*



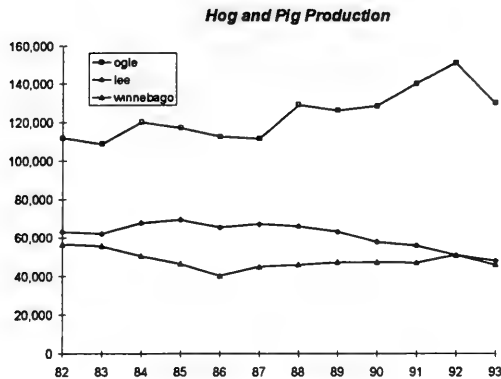
*Figure 39*

Trends in corn and soybean yields have been quite similar in the three-county area and the state. Corn yields fluctuated between 115 and 140 bushels per acre, while soybean yields fluctuated between 32 and 45 bushels per acre. All yields fell during the drought year of 1988. In 1993, Ogle County had the largest corn yield per acre in the area; Lee led in soybeans, and Ogle in oats.

In addition to corn and soybeans, the area is also planted in oats and hay, although at much lower production rates. Ogle County is ranked 4th in the state for oats production, harvesting 268,400 bushels in 1993; Lee is ranked seventh, producing 151,200 bushels, and Winnebago ranks ninth at 128,800 bushels. In addition, Ogle county is the eighth highest producer of hay in Illinois. Of the 4.1 million tons produced in Illinois, Ogle produced 90,740 tons, 2.2%, in 1993.

**Table 28. 1993 Selected Crop Yields**  
(bushels per acre)

	Ogle	Lee	Winnebago	Rock River	Illinois
Corn	122	118	103	114	130
Soybeans	43	44	37	41	43
Oats	61	56	46	--	51

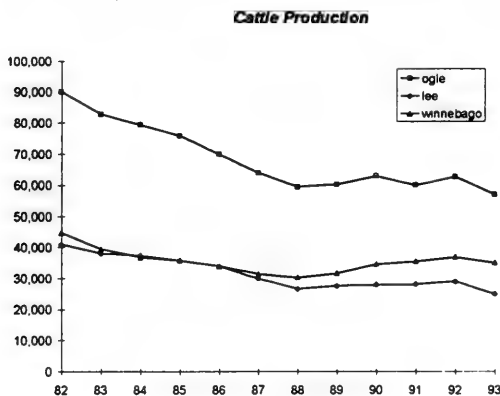


*Figure 40*

## Livestock

The three counties are among the top ten livestock producers in the state. Of the 5.5 million hogs in Illinois, Ogle county produced 130,000 head, ranking seventh in the state.

Ogle county is the sixth largest producer of cattle, with 57,000 head from a state total of 1.9 million head. In the "fed-cattle-marketed" sub-category, Ogle and Lee counties are the fifth and sixth top producers, producing 4.7% and 3.4% of the state total. In the "milk-cow" sub-category, Winnebago ranks seventh, providing 2.9% of the state's production. Ogle County also ranks fourth in sheep production, with 3.4% of the state total.



*Figure 41*

## ***Conclusion***

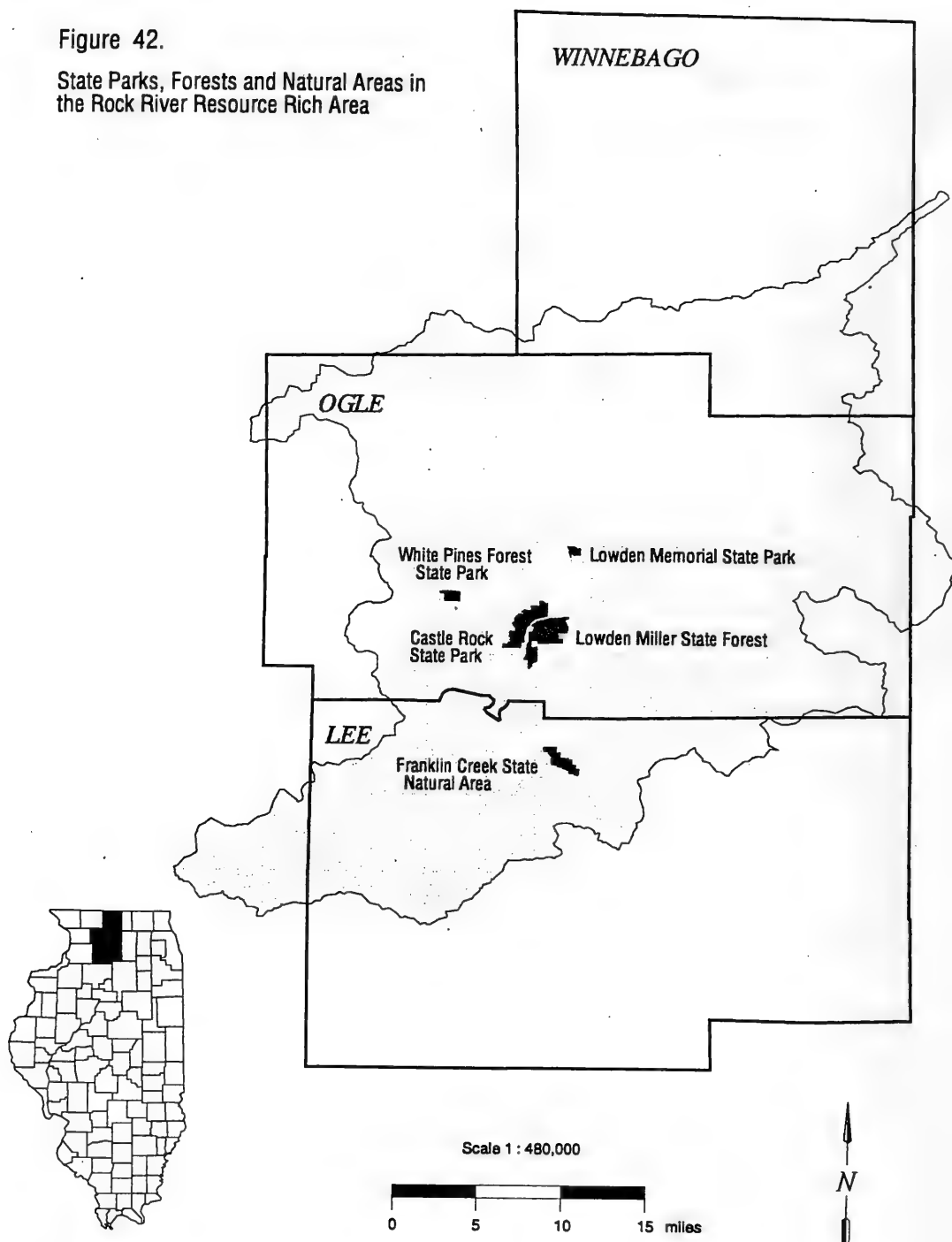
After dipping during the drought of 1988, cash receipts for crops and livestock have increased to their former levels. In 1993, Rock River region crop cash receipts were \$198 million, while livestock cash receipts were \$135 million.

The Rock River region, as with most of Illinois, is a large producer of corn and soybeans with 54.6 and 9.5 million bushels, respectively. It is also one of the state's top region's for producing oats and hay.

In addition, the area is a large producer of livestock, with Ogle County ranking seventh in hog and pig production, Ogle and Lee counties ranking fifth and sixth in fed-marketed cattle, Winnebago seventh in milk cows and Ogle fourth in sheep production.

Figure 42.

State Parks, Forests and Natural Areas in  
the Rock River Resource Rich Area





## ***Outdoor Recreation***

The Illinois Department of Natural Resources (IDNR) operates five state-owned sites within the watersheds of the Rock River area<sup>1</sup>: Castle Rock State Park, Lowden-Miller State Forest, White Pines Forest State Park, Lowden Memorial State Park, and Franklin Creek State Natural Area. These sites attract numerous visitors to the region and contribute to the local economy. Camping, hunting and fishing are important recreational activities that occur within and outside the state sites, and residents and visitors alike enjoy recreational boating on the Rock River and its tributaries.

### ***Illinois State Parks, Forests, and Natural Areas***

Together, the five sites total 5,303 acres, or 0.83% of the land area of the Rock River Resource Rich area. The lands are predominantly wooded and represent approximately 10% of the forest cover within the area. The natural and recreational resources and features of each site are described below.

#### **Castle Rock State Park/Lowden-Miller State Forest**

Over 4,225 acres (about 7.6%) of the forested lands present in the region are found within the Castle Rock State Park/Lowden-Miller State Forest complex. These parks are located south of Oregon along opposite sides of the Rock River. This forest complex provides extensive wildlife habitat and is known for a diverse flora. These forests support 22 state-listed species<sup>2</sup> (endangered or threatened) and the largest breeding community of warblers in the state.<sup>3</sup>

#### **Castle Rock State Park**

The 2,000 acre Castle Rock State Park and the 709 acre George B. Fell Nature Preserve within it, contain several designated<sup>4</sup> high quality communities, features, and endangered species occurrences. Castle Rock is dominated by dry-mesic and mesic upland forest. This site offers camping (walk in/canoe in only), picnicking, hiking, birdwatching, nature study, fishing, cross-country skiing, and hunting.

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<sup>1</sup> Only those state parks within the Rock River Area Watersheds (RRAW) -- as opposed to the borders of Lee, Ogle, and Winnebago Counties -- are discussed in this section.

<sup>2</sup> Illinois Natural Heritage Database, 1995.

<sup>3</sup> Robinson, 1995.

<sup>4</sup> "Designated" natural communities are those recognized as high quality by the Illinois Natural Areas Inventory (INAI). INAI criteria and the initial inventory are set forth by White (1978). The most recent update of the inventory is presented in the 1995 Illinois Natural Heritage Database (IDOC).

### Lowden-Miller State Forest

The site conditions across the river at the 2,225 acre Lowden-Miller State Forest (formerly Sinnissippi Forest) are similar to Castle Rock State Park. The forest cover there is quite different, however, because this forest has been extensively managed for timber and Christmas tree production since 1948.

IDNR purchased the site in 1993 and designated it Lowden-Miller State Forest. At that time, the only high quality natural areas within the forest recognized by the INAI were the relatively undisturbed bluffs along the Rock River. After purchasing the land the IDNR commissioned plant and bird surveys of the forest that documented new occurrences of 10 state-listed plant species and three state-listed bird species.<sup>5</sup>

Hunting, hiking, nature study, and birdwatching are currently offered at this state forest. Hunting accounts for 90% of visitor activity at the site (see Table 29). Turkey and deer are the primary game species.

### **White Pines Forest State Park**

This 385-acre site contains one of the few native stands of white pines in Illinois. There are more than 50 acres of designated high quality dry-mesic upland forest, and several dolomite cliff communities on the bluffs along Pine Creek. Located about six miles west of Castle Rock State Park, White Pines is one of the most heavily visited sites in the Rock River area. Picnicking is the primary visitor activity at the park, and about one-quarter of the park's visitors dine or stay overnight at the lodge. Other activities include camping, hiking, fishing, birdwatching, nature study, and cross-country skiing.

### **Lowden Memorial State Park**

Located north of Oregon and east of the Rock River, Lowden Memorial State Park is the most visited IDNR site in the Rock River region. The 207-acre park contains 20 acres of designated high quality dry-mesic upland forest. Camping is the primary visitor activity, and picnicking, birdwatching, nature study, hiking, and fishing are also available.

### **Franklin Creek State Natural Area**

Franklin Creek State Natural Area is just northwest of Franklin Grove. The 520-acre park contains a 96-acre Illinois Nature Preserve and a 146-acre Illinois Natural Areas Inventory site. The primary activity at the park is picnicking.

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<sup>5</sup> Jones, 1994; Robinson, 1995.

**Table 29. Visitor Activity at State Sites in the Rock River Resource Rich Area**

Activities <sup>6</sup>	Castle Rock	Lowden-Miller	Franklin Creek	Lowden Memorial	White Pines
Camping	5%	--	--	40%	35%
Picnicking	80%	--	70%	30%	45%
Hiking	30%	10%	20%	10%	15%
Fishing	35%	--	15%	5%	10%
Hunting	20%	90%	5%	--	--
Lodge - dining or staying overnight	--	--	--	--	25%
Sightseeing	5%	--	5%	5%	5%
Horseback riding	--	--	10%	--	--
Snowmobiling	--	--	5%	--	--

Franklin Creek is the only park in the area that offers horseback riding; six miles of trails are maintained for this purpose. Other activities include hiking, fishing, hunting, cross-country skiing, birdwatching, nature study, and snowmobiling.

### Attendance at State Sites

In 1994, almost 1 million people visited the state sites described above. While collective attendance at these sites varies from year to year, it has ranged from 800,000 to 1,200,000 since the mid 1970's.<sup>7</sup> Meanwhile, the region's share of Illinois state park visits has fallen from a stable about 3% in the mid 1980's to about 2.5% in 1994.

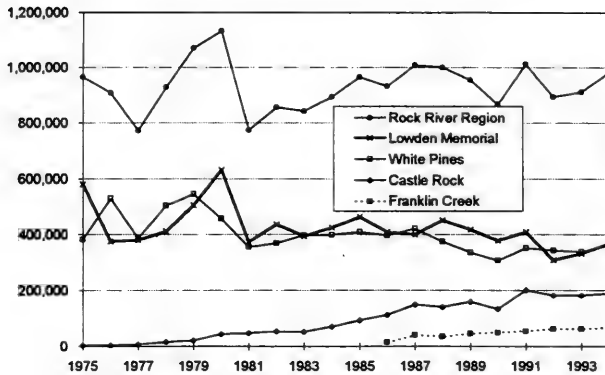
In 1975, over 99.5% of park visits in the Rock River region were to Lowden Memorial or White Pines. In 1994, they were still the busiest parks but their share of visits had dropped to under 75%, largely because of the rapid rise in attendance at Castle Rock. Inaccessible and unpublicized, in 1975 Castle Rock hosted only 3,800 visitors; improved roads and expanded facilities sparked a jump to nearly 200,000 visitors in 1991, roughly 20% of the region's attendance. Attendance at Franklin Creek, the region's least-visited park, has also more than quadrupled since 1986.

Figure 43 shows that annual attendance at state parks can be volatile. Factors such as abnormal weather, special events, park improvements, and more accurate counting techniques can cause significant fluctuations. For example, DNR's *Site Attendance*

<sup>6</sup> Data obtained from internal DNR files.

<sup>7</sup> State park attendance data obtained from internal DNR files.

**Attendance at Rock River Region State Parks**



*Figure 43*

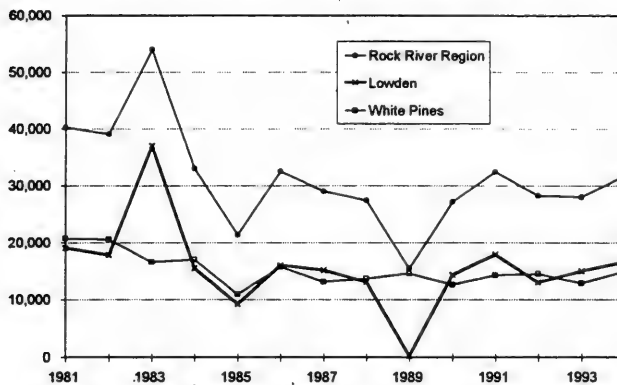
*Information* report for 1990 noted that Castle Rock experienced particularly strong attendance in 1989 because of favorable river conditions and the addition of a popular trail, while fears of Lyme disease kept some visitors away in 1990.

## Camping

Since 1981, campers have spent an average of 31,000 camping-days each year at state sites in the Rock River area.<sup>8</sup> Lowden Memorial and White Pines, class A camps with electricity, showers, and vehicular access, account for over 99% of the camping in the region. Campers at these locations average stays of 5.6 days per visit. Castle Rock, a class D camp with fewer amenities and more limited access, accounts for the rest. Campers here spend over 7 days per visit. Camping in all parks peaked in 1983 with 54,000 camping-days, and reached a low of 15,400 in 1989. Since 1984, average annual camping-days in the area have generally hovered near 30,000. In a given year, however, special events, abnormal weather, and temporary closures can cause significant departures from the norm.

<sup>8</sup> Camping data obtained from internal DNR files.

**Camping-Days at Rock River Region State Parks, 1981-94**



*Figure 44*

## ***Water Recreation***

The Rock River itself is the primary water body for recreational boating in the region. Along the 'Resource Rich Area' portion of the Rock River there are 39 access areas, 26 of which are publicly owned, and 11 of which have public boat ramps. Among streams that drain over a 10 sq. mile area within the Rock River Basin, more than 12% of stream miles are both canoeable and accessible at a publicly-owned site.<sup>9</sup>

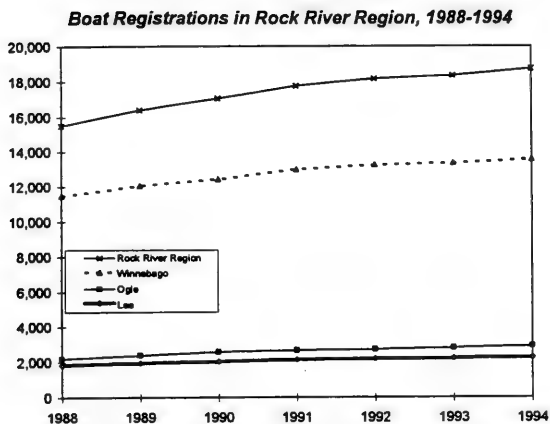
In 1994, Rock River residents registered more than 18,700 recreational boats -- roughly one for every eighteen residents.<sup>10</sup> Registration has grown 3.15% annually since 1988, compared to 2.6% for the entire state. Ogle County experienced the highest annual growth at 4.6%, while Winnebago County accounts for over 70% of the region's total registrations.

## ***Fishing and Hunting***

During the 1992 fishing season, 1,475,329 anglers (58% licensed) sport fished in Illinois. About 4.2% of fishing license purchases took place in the three-county area of Lee, Ogle, and Winnebago counties. Of anglers surveyed during the 1988-89 season along the Rock

<sup>9</sup> Kohler and Osborne, 1994.

<sup>10</sup> Boating registration data obtained from internal DNR files.



*Figure 45*

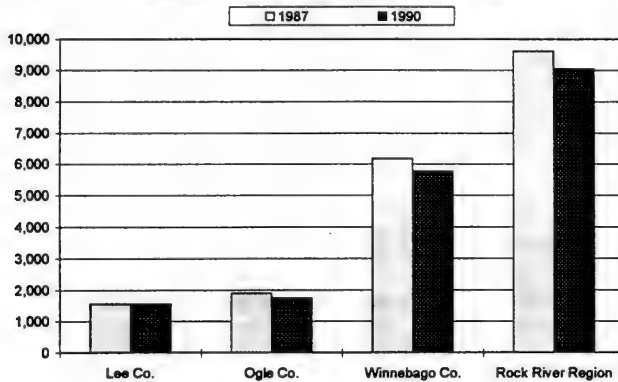
River, 33% fished from boats and 67% fished from the shore between the Rockford dam and the Oregon dam. The same survey reported that from the Oregon dam to the Dixon dam, 61% of anglers fish from boats while 39% fish from the shore.<sup>11</sup>

Fishing is available at four area IDNR parks. Franklin Creek and White Pines have access to Franklin Creek and Pine Creek, respectively, and Castle Rock and Lowden Memorial have access to the Rock River itself. About 16% of visitors to these four sites engage in fishing. Game species include walleye, largemouth bass, smallmouth bass, bluegill, channel catfish, and northern pike.

The number of licensed hunters in Illinois peaked in 1956 -- at more than 550,000; by 1979 the number had dropped 38% and has since ranged from 307,000 to 338,000. In the three Rock River counties, about 9,000 hunting licenses were issued in 1990. The majority (63.7%) of these licenses were issued in Winnebago County; Ogle and Lee counties accounted for 19.2% and 17.1%, respectively. Notably, between 1987 and 1990 licenses dropped in all three counties (by only a handful in Lee County); overall, Rock River area licenses fell almost 6%. Meanwhile, statewide totals *increased* by 4.3% during the same time period. As a result, the region's share of Illinois' licenses fell from 2.9% to 2.6%.

<sup>11</sup> Survey results are presented by Heidinger and Tetzlaff, 1989.

**Final Hunting License Sales, 1987 and 1990**  
(includes combination and non-resident licenses)



*Figure 46*

Deer hunting is the most popular hunting activity in the Rock River region. From 1989 to 1993, 5,067 long gun hunters and 2,851 bow hunters harvested almost 5,000 deer annually.<sup>12</sup> While rifle hunters greatly outnumbered bow hunters and accounted for 70% of the harvest, bow hunters actually spent almost three times as many days in the field. This result reflects both the longer season and greater difficulty of bow hunting. Ogle County accounted for roughly 57% of the region's deer harvest.

Pheasant was the region's second most popular game, based on its nearly 30,000 hunter-days in the field. Hunter-days were spread fairly even across the Rock River counties -- Winnebago County had the most with 38% of the region's total while Lee County, with the least, accounted for 30%. Even so, Lee County accounted for 42% of the region's pheasant harvest.

Hunters also spend over 20,000 days in the field hunting squirrel and rabbit. Hunters harvested about 35,000 squirrels and 18,000 rabbits annually, with Ogle County accounting for about half of the region's harvest of each species.

Turkey hunting opportunities greatly expanded in the past few years due to a successful reintroduction program. Eighty-five birds were harvested in Ogle and Winnebago counties in 1993. Other game in the region include coyote, raccoon, red and gray fox, dove, groundhog, quail, opossum, and gray partridge.

<sup>12</sup> Hunting data from IDNR's "Hunter Activity and Wildlife Harvest in Illinois: County Averages for 1989-1993". This report relied on mailed hunter surveys. The authors caution that no adjustments were made to account for known biases inherent to this sampling technique.

**Table 30. Hunting Activity in the Rock River Region, 1989-1993**

	Hunters	Hunter-Days	Harvest
Deer		78,780	4,973
Rifle	5,067	20,953	3,494
Bow	2,851	57,827	1,479
Pheasant	5,281	29,879	15,811
Squirrel (Fox and Gray)	5,334	29,025	34,725
Rabbit	4,425	23,548	17,918

### ***Economic Impact of State Sites***

Parks and other state-owned lands contribute to the local economy due to both increased tourism and the inflow of IDNR fiscal expenditures. To examine this economic impact, DNR used an input-output model built on county-level data.<sup>13</sup>

In 1995, IDNR spent \$791,000 on park employee salaries, auto maintenance, and other park 'inputs'; roughly 87% of these funds were spent locally. The effect of tourism and visitor spending is based on attendance estimates, the proportion of local vs. non-local visitors, and spending per visitor per day.<sup>14</sup> About 134,000 local residents visited the parks in 1995 and 847,000 non-local visitors. Total visitor expenditures were estimated at \$5.81 per visitor per day for local visitors and \$9.93 for non-local visitors.

Based on these assumptions, area parks add \$9.2 million in economic output to Lee and Ogle counties.<sup>15</sup> The parks also create almost 240 jobs -- almost 1% of the two counties' total employment -- and increase personal income by more than \$5 million. When incorporating Winnebago County into the analysis, the effects are a \$12.4 million increase in economic output, an increase of almost \$7 million in personal income, and 280 jobs. The 40 jobs in Winnebago County represent a very small percentage of that county's employment, suggesting that the economic benefits of the parks are concentrated in Lee and Ogle counties, in percentage as well as absolute terms.

**Table 31. Economic Impacts of State Sites (in millions)**

Increase in	Lee and Ogle counties	Lee, Ogle & Winnebago
Economic Output	\$9.21	\$12.40
Personal Income	\$5.14	\$6.98
Jobs	237	280

<sup>13</sup> The model used, IMPLAN, is designed to trace the ultimate impacts of a stimulus (such as increased or decreased tourism) as it "ripples" through the economy. The input-output analysis is premised on the relationships between sectors of the economy.

<sup>14</sup> *Estimating Visitor Expenditures at Illinois Department of Conservation Properties*, June 1982.

<sup>15</sup> Total industry output is the sum of all industries' gross sales.



Over half of all jobs in the Rock River counties created by the state sites are in wholesale and retail trade. Trade also accounts for the largest increases in economic output and personal income. The services sector is second in jobs, income and output. Government ranks third in jobs created, while FIRE (finance, insurance and real estate) ranks third in income and output gains.

**Table 32. Employment Effects by Sector**

<b>Industry</b>	<b># Jobs</b>
Wholesale & Retail Trade	165
Services	68
Government	21
Finance, Insurance & Real Estate	9
<u>Other</u>	<u>16</u>
Total	280

The state sites contribute to the local economy primarily by encouraging expenditures by non-local visitors; eighty-one percent of job creation is generated by non-local visitors. The same pattern holds for economic output and personal income. The residual impacts of the parks are attributable to IDNR fiscal and local visitor expenditures.

The economic impact analysis is sensitive to assumptions made about attendance and spending. IDNR is currently studying visitor attendance and spending patterns in order to better refine estimates and the economic analysis.







## **Conclusion**

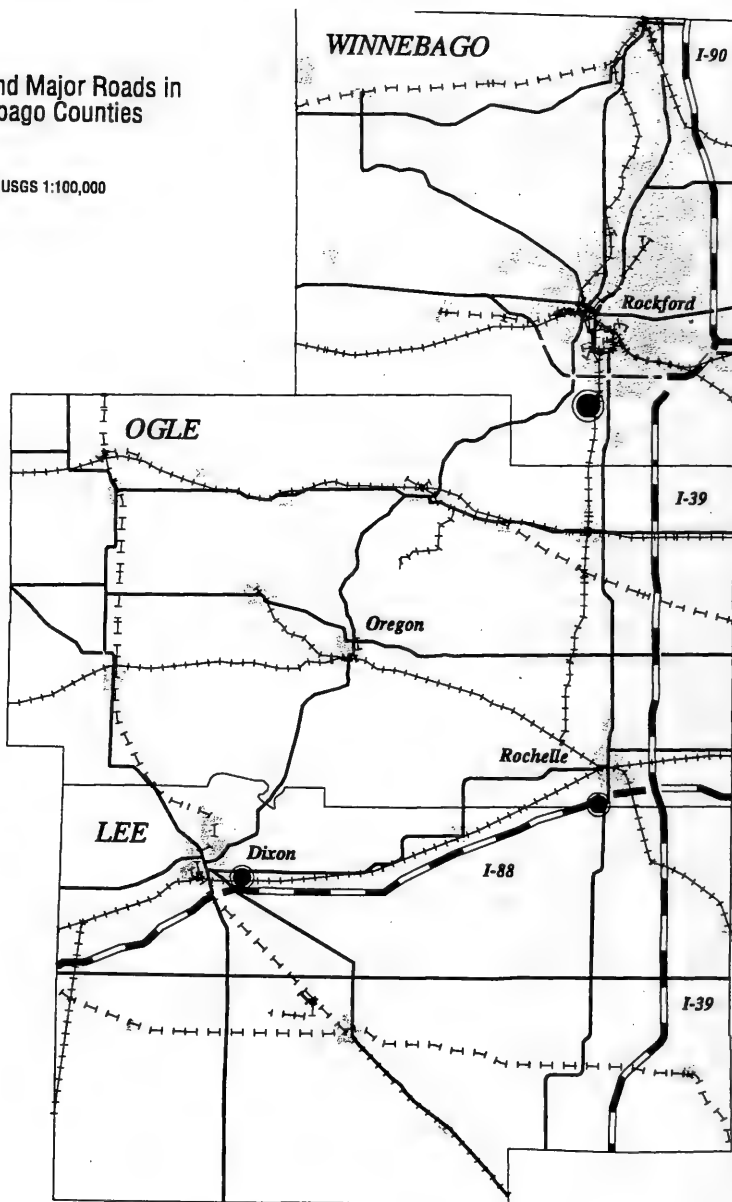
In 1994 more than one million people visited state sites in the Rock River area and while attendance fluctuates from year to year, it has hovered around the million mark for the last decade. White Pines and Lowden Memorial are the area's busiest parks, and Castle Rock is emerging as a significant attraction. Hunting license sales may be declining in the area, but deer, pheasant, squirrel, and rabbit remain popular game. The state sites are important economically to the Rock River area.

Figure 47.

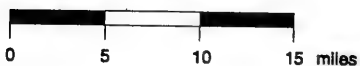
# Airports, Railroads, and Major Roads in Lee, Ogle, and Winnebago Counties

Road and railroad information from USGS 1:100,000 digital line graph files.

-  Interstates and Tollways
-  US and State Highways
-  Active Railroads
-  Abandoned Railroads
-  Commercial Airports
-  General Aviation Airports



Scale 1 : 480,000



# Transportation Infrastructure

A region's transportation infrastructure -- its roadways, airports, waterways, and railways -- enables businesses and residents to move goods and people. Coupled with information regarding demographics and economics, trends in transportation infrastructure and its usage are strong indicators of the nature of a region's development and its suitability for various resource management strategies.

## Auto Traffic

### Roads

Rockford, like most Illinois cities, is served by multiple major highways. The I-90 Tollway runs east towards Chicago and north towards Madison, Wisconsin. I-39, converted from a US Highway to an Interstate in 1985, runs from Rockford through southern Winnebago county, Ogle County, and Lee County en route to Bloomington-Normal. In addition, Tollway I-88, connecting Chicago and the Quad Cities, runs through Lee County and the southeast corner of Ogle County.

From 1973 to 1993, the total miles of road in the Rock River region grew from 4,650 to 5,107, about 3.7% of the state's total (Figure 48). From 1973 to 1980, the region's average annual growth was over 0.6 %. It has since dropped to around 0.4%.

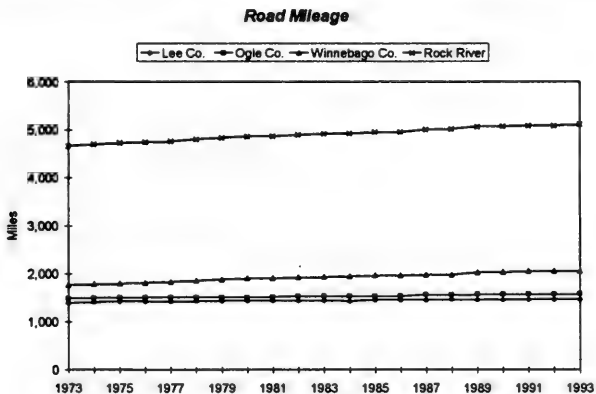


Figure 48

Winnebago County has the most extensive network, currently accounting for 40.3% of the region's road-miles. Ogle and Lee counties account for 31.0% and 28.7%, respectively.<sup>1</sup>

The region's 0.47% annual growth in road-miles has consistently outpaced the statewide average of 0.29%, mostly because Winnebago County has averaged 0.76% growth since 1973. The bulk of Winnebago County's increase is attributable to municipal roads, reflecting ongoing urbanization.

### **Vehicle Registration**

Residents of Rock River counties registered more than 211,000 passenger cars in 1992.<sup>2</sup> Car registrations have grown by a fairly stable rate of 1.3% annually since 1972, compared to the state average of 1.4%. Winnebago County has had the region's highest annual growth at 1.4% and accounts for over three-fourths of car registrations. Ogle County has experienced 1.2% growth in registrations and accounts for about 13% of the region's cars. Lee County's growth has been much slower at 0.8% and rounds out the last 10%.

Motorcycle registrations have been more volatile. Registrations jumped from 4,900 to 11,800 from 1972 to 1982, then declined to 7,800 by 1992. All three Rock River counties exhibit this pattern. The rapid growth in the 1970's and early 1980's may have been partially due to high gasoline prices. The subsequent decline is probably due to better fuel efficiency in cars, lower gas prices, changing styles, and an aging population.

Registrations for trucks (excluding semis) and buses in the Rock River region increased from 27,100 to 55,750 between 1972 and 1992. Growth averaged 4.2% between 1972 and 1982 and 3.0% between 1982 and 1992, somewhat above the state average for both periods. All three counties have experienced similar growth since 1982. Over 85% of the vehicles in this category are pick-ups, which have been reported separately since 1988.

About 31,000 semis and trailers were registered in the Rock River region in 1992, nearly double the numbers for 1972.<sup>3</sup> Like trucks and buses, growth was considerably lower from 1982 to 1992 than it was the previous decade. About 70% of Rock River's semi-trailers are based in Winnebago County. Of course, semis usually function as long-distance haulers; locally-registered semis may spend little time at "home", while out-of-town semis routinely drive through. How many miles semis drive locally is impossible to determine from available data.

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<sup>1</sup> Mileage data from Illinois Department of Transportation: Office of Planning and Programming; *Illinois Travel Statistics*, various years.

<sup>2</sup> Vehicle registration data from the State of Illinois Office of the Secretary of State; *County Statistical Report for Motor Vehicle License Units and Transactions Received*, various years.

<sup>3</sup> This figure includes roughly 3500 "regional" trucks -- mostly semis -- registered through IDOT's IRP program, where licensees pay prorated fees based on the percentage of miles driven in Illinois.

## Vehicle-Miles Traveled (VMT)

Since 1973, annual vehicle-miles traveled (VMT) in the Rock River counties have grown by an average annual rate of 2.2%, compared to a statewide average of 1.9%.<sup>4</sup> This growth level has not been constant. Between 1973 and 1980, an era marked by severe oil shortages in 1973 and 1978, Rock River's VMT grew by only 0.6% annually. Winnebago County's annual growth of less than 0.2% was particularly low. Clearly, drivers adjusted to high gas prices by driving less.

During the first half of the 1980's, growth increased to 2.4% in the Rock River region and 1.8% statewide. From 1985 to 1993, Rock River's VMT growth rose to 3.82%, well above the statewide rate of 1.95%, rising to a total of 3.07 trillion miles annually -- 3.4% of the state's total. Notably, Winnebago County's VMT grew by 3.86% annually for that period. Reasons for the steady increase in auto travel since the 1970's include economic growth, more fuel-efficient vehicles, and significantly lower fuel prices. Construction of I-39 probably contributed to post-1985 VMT growth in all three Rock River counties.

Despite containing just over 40% of the road mileage in the Rock River region, Winnebago County accounts for more than 67% of the VMT, primarily due to the greater urbanization and congestion in the Rockford area. By way of comparison, Lee County, the least urbanized of the Rock River counties, accounts for 29% of the road mileage but only 15.9% of the VMT.

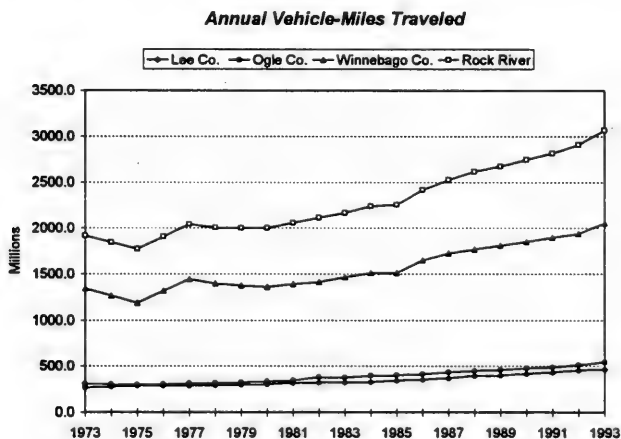
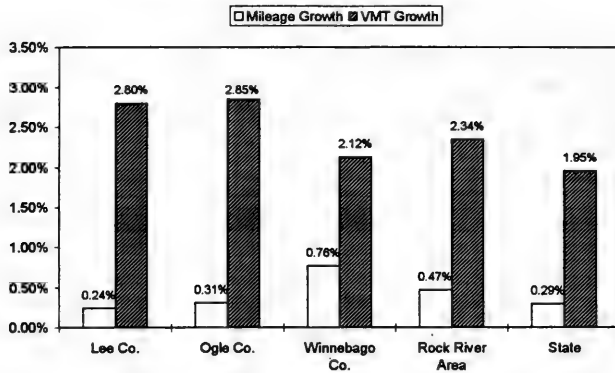


Figure 49

<sup>4</sup> VMT data from *Illinois Travel Statistics*.

**Annual Road Mileage Growth & VMT Growth  
1973-1993**



*Figure 50*

As shown in Figure 50, VMT has grown more rapidly than road mileage in all three Rock River counties, as well as statewide. This suggests that roadways are growing more congested. In Lee County, VMT has grown eleven times faster than road mileage, compared to seven times faster statewide. In Ogle County, the ratio is a fairly high 9:1 and in Winnebago County it is slightly less than 3:1.

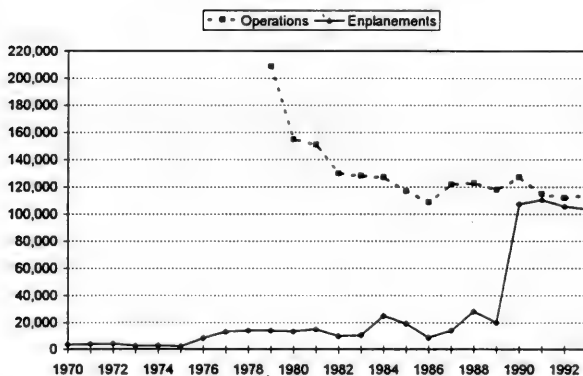
## **Air Traffic**

Greater Rockford Airport, located in Winnebago County several miles south of Rockford, is the most important air travel center in the Rock River region. Based on its estimated 103,700 passenger boardings (enplanements) in 1993, Greater Rockford was Illinois' seventh-busiest airport. Overall, Greater Rockford accounted for 0.3% of the state's enplanements, 10.1% excluding Chicago-area airports.

**Table 33. 1993 Enplanements, Busiest Illinois Airports**

	Enplanements	% Total	% Non-Chicago
Chicago O'Hare	30,394,589	88.09%	
Chicago Midway	3,051,253	8.84%	
Moline	290,639	0.84%	28.20%
Peoria	213,907	0.62%	20.76%
Champaign	139,681	0.40%	13.55%
Springfield	132,125	0.38%	12.82%
Rockford	103,664	0.30%	10.06%
Bloomington	75,944	0.22%	7.37%
Decatur	38,264	0.11%	3.71%
Chicago Meigs	25,961	0.08%	

**Enplanements and Operations  
Greater Rockford Airport**



*Figure 51*

As shown in Figure 51, the character of Greater Rockford airport changed dramatically in the early 1990's. Enplanements (number of people boarding planes) jumped from 20,000 in 1989 to 106,800 in 1990, and have remained above 100,000 since. This jump occurred while operations (the combined total of take-offs and landings) hovered near the low end of its recent annual range of 110,000 to 130,000.<sup>5</sup>

This apparent contradiction was caused by an influx of commuter airlines which displaced the operations of smaller aircraft. American Eagle, Northwest AirlinK, and Skyway now connect Rockford with the midwestern hubs of Chicago, Minneapolis, and Detroit. This influx marks an important addition to the region's transportation infrastructure, especially given the lack of commuter rail service.

The region also includes general aviation airports, with the largest in Dixon and Rochelle, as well as several private landing strips. These secondary airports serve smaller aircraft and do not offer commercial service.<sup>6</sup>

<sup>5</sup> Enplanement and Operations data from Illinois Department of Transportation, *Illinois Airport Inventory Report 1995*.

<sup>6</sup> See Illinois Department of Transportation, Division of Aeronautics, *Illinois Airport Directory*.

## **Water and Rail**

The Rock River region contains no waterways suitable for commercial shipping. See the section on "Outdoor Recreation" for a discussion of recreational boating.

The Rock River Region has not had commuter rail service since the "Blackhawk" line, connecting Chicago and Dubuque via Rockford, was discontinued in October 1981. In 1980, its last full year of operation, the Blackhawk averaged 3,614 passengers per month. Revenues covered less than one-third of expenses incurred each state fiscal year between 1974 and 1982.<sup>7</sup> While plans for extending commuter service to the Rockford area have been explored, including restoring the Chicago-Dubuque line<sup>8</sup> and connecting Greater Rockford Airport and O'Hare via high speed rail<sup>9</sup>, no such plans are imminent.

## **Conclusion**

Miles of road are being added faster in the Rock River region than in the state as a whole, and vehicle-miles of travel are growing at an even faster rate, especially in Lee and Ogle Counties. While commuter rail service has not been available for many years, commuter air service at Greater Rockford Airport has emerged as a viable alternative to driving. Overall, Rockford stands out as the transportation hub of the Rock River region. As their stable populations indicate<sup>10</sup>, Lee and Ogle Counties retain their rural character, despite indications that traffic densities are increasing.

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<sup>7</sup> Source of data regarding Blackhawk line: Internal documents supplied by IDOT

<sup>8</sup> See Illinois Department of Transportation, Bureau of Railroads, *Restoring Amtrak Service Between Chicago and Dubuque: An Investigation* (1984)

<sup>9</sup> See Illinois Department of Transportation, *Illinois Rail Plan: 1991-1992 Update*.

<sup>10</sup> See chapter on "Demographic Trends".



# Energy Facilities

Energy facilities are an important part of the infrastructure of Ogle, Lee and Winnebago counties. The area is served by three electric companies and two natural gas suppliers. The capacity, generation, prices, etc. of each company are described in this chapter.

## Electricity

Three utilities provide electric energy to the Rock River region: Commonwealth Edison Company, Rochelle Municipal Utilities, and South Beloit Water, Gas and Electric Company. Each of the utilities has one or more generation plants in the region and supplies electricity to residential, business and government customers in part of the region. In total, plants in the region generated 16.5 billion kilowatt-hours of electricity in 1994 (11.7% of total Illinois generation) from a capacity of more than 2,900 megawatts (7.8% of statewide capacity).

### Rochelle Municipal Utilities

Rochelle Municipal Utilities supplies electricity to 6,118 customers in and around Rochelle in Ogle County. The company is owned and operated by the city government. Its customer base includes 5,300 residential customers, 786 commercial, 18 industrial, and 14 government customers.

Table 34. Electric Utilities

	Rochelle Municipal Utilities <sup>1</sup>	So. Beloit Water, Gas and Electric Company <sup>2</sup>	Commonwealth Edison <sup>3</sup>
Rock River Service Territory	City of Rochelle, Ogle County	City of South Beloit, Winnebago Co.	Lee, Ogle, and Winnebago Co.
Customers	6,118	6,726	120,000 (est.)
Population Served	9,000	7,000	317,000
Capacity	32.2 MW	1.1 MW	2,903 MW
Generation	181,442 MWh	5,010 MWh	16,309,065 MWh

<sup>1</sup> Data source: General Manager's Office, Rochelle Municipal Utilities.






<sup>2</sup> Data source: Finance Division, Wisconsin Power and Light Company.

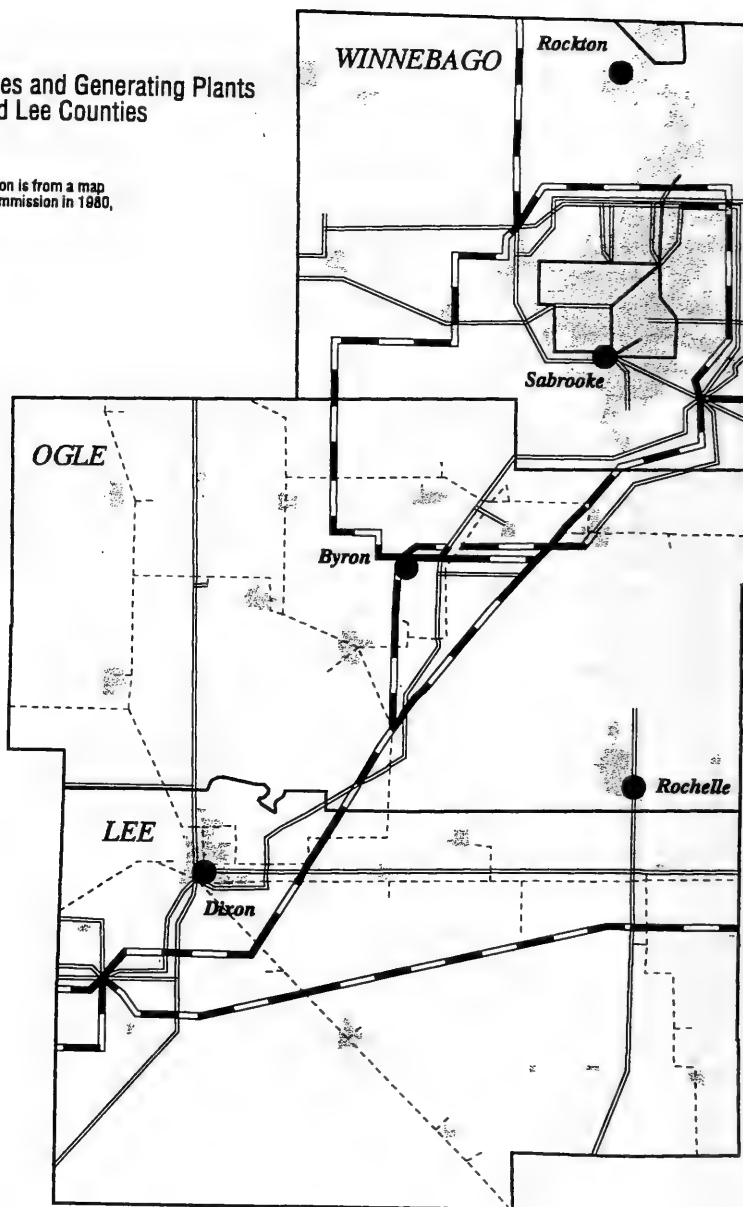
<sup>3</sup> Data source: Commonwealth Edison Company, FERC Form 1, 1994.

Figure 52.

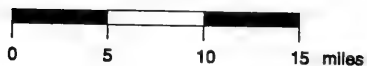
# Major Transmission Lines and Generating Plants in Winnebago, Ogle, and Lee Counties

The electric transmission line information is from a map published by the Illinois Commerce Commission in 1980, entitled, *Electric Utilities in Illinois*.

-  34,500 volts
-  69,000 volts
-  138,000 volts
-  345,000 volts
-  Generating Plants



Scale 1 : 480,000



Rochelle Municipal Utilities operates two base load cogeneration units<sup>4</sup>, as well as 10 diesel units used specifically for summer peaks (Table 35). Located in Rochelle, the plants have a current rated capacity of 32.2 megawatts; during the past year they generated approximately 181,000 megawatt-hours. In 1995 summer demand peaked at 38,024 kilowatts and winter demand at 26,850 kilowatts.

The two boilers at the cogenerator have been modified to burn micronized coal that is mixed with limestone during combustion to remove sulfur dioxide. Six miles of transmission lines run from the utility's sub-stations to the cogeneration facility, and distribution facilities cover 100 square miles in and around Rochelle.

The utility also has a tie line with Commonwealth Edison's Byron power plant from which it purchases 21 megawatts of firm power. It also purchases some interruptible short-term and limited-term power -- in 1995 it purchased 135,320 megawatt-hours.

**Table 35. Generating Units, Rochelle Municipal Utilities<sup>5</sup>**

Plant	Unit	Fuel Source	Capacity (MW)
Cogeneration	1,2	coal/natural gas	11.5
Cogeneration	3,4	oil/natural gas	5.0
Diesel	1	oil	0.6
Diesel	3	oil/natural gas	2.0
Diesel	4	oil	0.8
Diesel	6	oil/natural gas	2.3
Diesel	7	oil/natural gas	3.5
Diesel	8	oil	0.8
Diesel	9	oil/natural gas	3.3
Diesel	10	oil/natural gas	2.4
<b>Total capacity</b>			<b>32.2</b>

### **South Beloit Water, Gas and Electric Company**

South Beloit Water, Gas and Electric Company, an investor-owned subsidiary of Wisconsin Power and Light Company, serves northern Winnebago County, including the city of South Beloit and village of Rockton. Most of the electricity supplied by the utility is generated by the parent company. South Beloit's single plant, located on the Rock River, is a small hydropower plant with a capacity of 1.1 megawatts.<sup>6</sup>

<sup>4</sup> Cogeneration is the simultaneous production of electric and thermal (i.e., heat or steam) energy.

<sup>5</sup> Data source: General Manager's Office, Rochelle Municipal Utilities.

<sup>6</sup> Data source: South Beloit Water, Gas and Electric Company, ILCC Form 21, 1994.

The utility supplies 6,726 electric customers (5,944 residential, 742 commercial, 28 industrial, and 12 government). Although most (88 percent) of its customers are residential, more than half (55 percent) of its 193,807 megawatt-hours of electricity sales are to industry. In 1994, the company sold 49,768 megawatt-hours to the residential sector, 30,802 megawatt-hours to the commercial sector, and 106,464 megawatt-hours to the industrial sector.

### Commonwealth Edison

Commonwealth Edison provides electric service to most of the Rock River region. The company is one of the largest investor-owned electric utilities in the country, with a generating capacity of more than 22,500 megawatts. It serves over three million customers throughout northern Illinois (approximately 70% of Illinois' population) and most of the population of 333,000 living in the Rock River region -- all but the 16,000 living in Rochelle, South Beloit and Rockton.

With its Dixon plant in Lee County, its Byron plant in Ogle County and its Sabrooke plant in Winnebago County, Commonwealth Edison Company maintains a combined generating capacity of 2,903 megawatts in the Rock River area. This represents 13% of its total generating capacity.

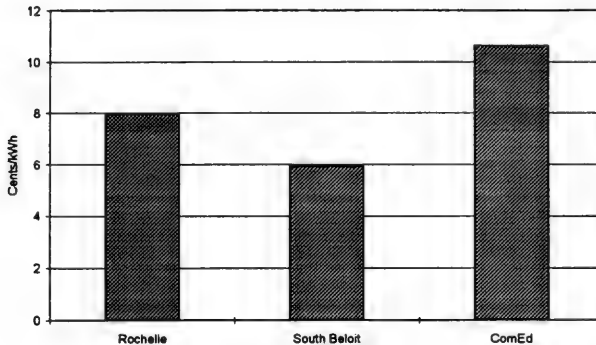
Dixon is a small hydropower plant located on the Rock River at the city of Dixon; the company is currently in the process of selling the plant. Sabrooke is an oil-fired peaking unit located at Rockford. Byron is the newest of Commonwealth Edison's nuclear power plants; the second of two units was completed in 1987. It is located on the Rock River in northwest Ogle County near the city of Byron. In 1994, the Byron nuclear plant experienced a maximum 2,258 megawatts net peak demand and a net generation of 16,296,064 megawatt-hours.

**Table 36. Generating Units, Commonwealth Edison<sup>7</sup>**

Plant	Location	Unit	Fuel Source	Capacity (MW)
Sabrooke	Rockford, Winnebago Co.	31,32	oil	73.7
Sabrooke	Rockford, Winnebago Co.	33,34	oil	76.0
Dixon	Dixon, Lee County	1-5	hydropower	3.2
Byron	Byron, Ogle County	1,2	uranium	2,450
<b>Total capacity</b>				<b>2,603</b>

<sup>7</sup> Data source: Commonwealth Edison Company, ILCC Form 21, 1994.

**Residential Electricity Rates**



*Figure 53*

## **Rates**

Electricity rates vary considerably among the three utilities serving the Rock River area. The city council of Rochelle sets rates for Rochelle Municipal Utilities; the Illinois Commerce Commission sets the rates for Commonwealth Edison and South Beloit. Because the latter two are investor-owned utilities, rates not only cover costs of service but also provide for a reasonable rate of return.

As shown in Figure 53<sup>8</sup>, residential customers of South Beloit pay a relatively low rate of 5.9 cents per kilowatt-hour, and customers of Rochelle Municipal Utilities pay a moderate rate of 8 cents per kilowatt-hour. In contrast, residential customers of Commonwealth Edison, which include most of the population of the Rock River area, pay the highest rate in the state, more than 10.6 cents per kilowatt-hour.

Table 37 compares the residential, commercial, and industrial rates of the three utilities. Electric rates for each group differ based on the level of consumption, type of usage, time of usage and the individual customer's ability to defer or delay its maximum demand to off-peak periods. In general, rates for commercial and industrial customers are lower than for residential customers, although they may pay a higher fixed or demand charge. Unlike residential customers, commercial and industrial customers may choose a declining block rate schedule -- rates that drop as they consume more electricity -- and lower rates for electricity consumed during off-peak hours (at night).

<sup>8</sup> Rates information obtained from personal communication with Ray Schuatzs, Rochelle Municipal Utilities; Cindy Kesseem, Wisconsin Power and Light Company; and Norb Mizwicki, Commonwealth Edison Company.

**Table 37. Utility Rates**

ROCHELLE MUNICIPAL UTILITIES			
Customer Class	Fixed Charge (monthly)	Energy Charge (cents/kWh)	
Residential	\$4.50	7.95	
Commercial <sup>9</sup>			
Standard	\$7.50	10.00	<1000 kWh
		8.08	>1000 kWh
Demand charge	\$6.00	<200/kW	6.72 <5000 kWh
			5.52 5000-35000 kWh
			4.67 >40,000 kWh
Industrial			
Standard	\$8.00/kW	4.56	<200 kW
		3.71	200-500 kW
Time of day	\$50+\$6.00/kW	3.30	off-peak
		5.50	peak
SOUTH BELOIT WATER, GAS AND ELECTRIC COMPANY			
Customer Class	Fixed Charge (monthly)	Energy Charge (cents/kWh)	
Residential	\$4.00	5.719	
Commercial	\$5.00	2.89	
Industrial			
Standard	\$7.00/kW	2.89	
Time of day	\$7.00/kW	2.02	off-peak
		3.01	peak
COMMONWEALTH EDISON			
Customer Class	Fixed Charge (monthly)	Energy Charge (cents/kWh)	
Residential	\$14.24	10.64	
Commercial			
Standard	\$39.93	10.287	< 30,000 kWh
Time of day		9.207	next 470,000 kWh
		9.158	to 750,000 kWh
Industrial			
Standard	\$246.39	<10,000 kW	7.88
	\$524.61	>10,000 kW	
Demand Charge (basic)	\$12.85/kW	<10,000 kW	2.273 off-peak
	\$5.03/kW	>10,000 kW	5.17 peak
Demand Charge (summer)	\$16.41/kW	<10,000 kW	2.273 off-peak
	\$6.51/kW	>10,000 kW	5.17 peak

<sup>9</sup> Commercial and industrial customers usually have a choice of rate schedules other than the standard schedule, such as a demand charge or time of day schedule.

Just as with residential customers, South Beloit and Rochelle charge lower rates to their commercial and industrial customers than does Commonwealth Edison. For example, industry pays 2.89 cents per kilowatt-hour in South Beloit, 6 cents or less in Rochelle (depending on the level of consumption), and 7.88 cents in Commonwealth Edison's territory. The industrial and commercial rates charged by Commonwealth Edison are generally the highest in the state.

## ***Natural Gas***

Natural gas is supplied to the Rock River region by two companies -- Northern Illinois Gas Company and South Beloit Water, Gas and Electric Company. Figure 54 shows the major pipelines and natural gas storage facilities in the area.

Northern Illinois Gas is the largest natural gas company in Illinois, supplying the Rock River region in Ogle, Lee and Winnebago Counties (except in South Beloit).

The company has an underground storage facility with 3.2 billion cubic feet capacity, located in the Pecatonica Village in Winnebago County. It can accommodate the three counties with a peak day delivery averaging 75 billion cubic feet. Northern Illinois Gas also owns 29 natural gas wells in the area and a 22-inch transmission line running from Dubuque, Iowa to Elgin, Illinois. Twenty-seven miles of the transmission line runs through Ogle County.

The South Beloit Water, Gas and Electric Company provides gas to the area in and around South Beloit in Winnebago County. In 1994, the company sold 7,469,412 million cubic feet of natural gas to its 4,847 natural gas customers. Facilities include 3-, 4- and 5-inch steel pipes and 2-, 3-, and 4-inch plastic pipes totaling 101.67 miles of gas lines.




## ***Conclusion***

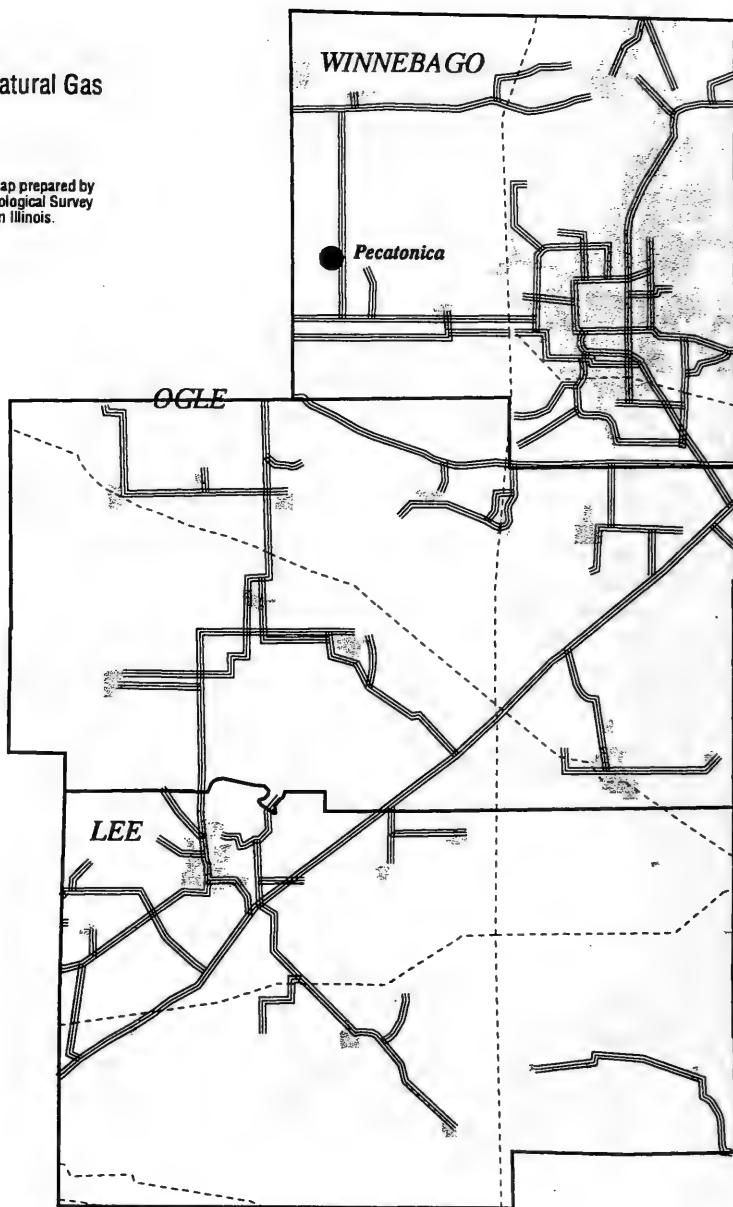
Three companies provide electric service and two supply natural gas in the Rock River area. Commonwealth Edison is the largest electric supplier with 13% of its capacity located in the region and 95% of the local population served by its system. The electric rates charged by Edison are generally higher than those charged by the two smaller companies in the area. Northern Illinois Gas is the primary natural gas supplier in the region with a large underground storage facility in Winnebago County.

Figure 54.

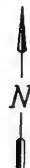
## Major Pipelines and Natural Gas Storage Facilities

The pipeline information is from a map prepared by W. F. Meents of the Illinois State Geological Survey in 1977 titled, *Oil and Gas Industry in Illinois*.

-  Natural Gas Pipeline
-  Refined Products Pipeline
-  Natural Gas Storage Facility



Scale 1 : 480,000





# ***Property Taxes***

Property taxes<sup>1</sup> are the major source of tax revenue for local government in Illinois, providing more than 75% of total revenue. These taxes finance the majority of local government services, including school districts, county, township, and municipality governments, and special districts such as fire, park, sanitary, library, and airport.

Property taxes depend primarily on the equalized assessed valuation<sup>2</sup> (i.e., tax base) of property in the county and the tax rates. Changes in the tax base are based primarily on the assessed values, which are usually reassessed every four years, and the amount of residential, commercial, and industrial expansion. The tax rate is dependent on the amount of revenue sought by the local governments (tax levy), the assessed value of the property (tax base), and the legal maximum tax rate.

## ***Tax Revenues***

Property tax revenues in Illinois have increased significantly in the last ten years, after a steady decline during the 1970's and early 1980s. As illustrated in Figure 56, property tax revenues rose more than one percent annually from 1971-76 and about a half of a percent a year from 1977-82. However, since then taxes increased more than three percent annually from 1983-88 and over two percent a year from 1989-93. Real property taxes collected in Illinois went from over \$9 billion in 1971 to almost \$11.5 billion in 1993.

The Rock River area followed a similar pattern, with declines in property tax revenues in the 1970s and early 1980s and increases in revenues since. The one exception is Ogle County, where property tax revenues began increasing significantly in the mid 1970s. The increases in Ogle County have also been higher than the state average and the other Rock River counties. Ogle County has had higher annual increases in property tax revenues since the mid 1970s because of the building and operation of Commonwealth Edison's Byron nuclear power plant (two generating units were added in 1985 and 1987) which contributes millions of dollars to the county in property taxes annually.




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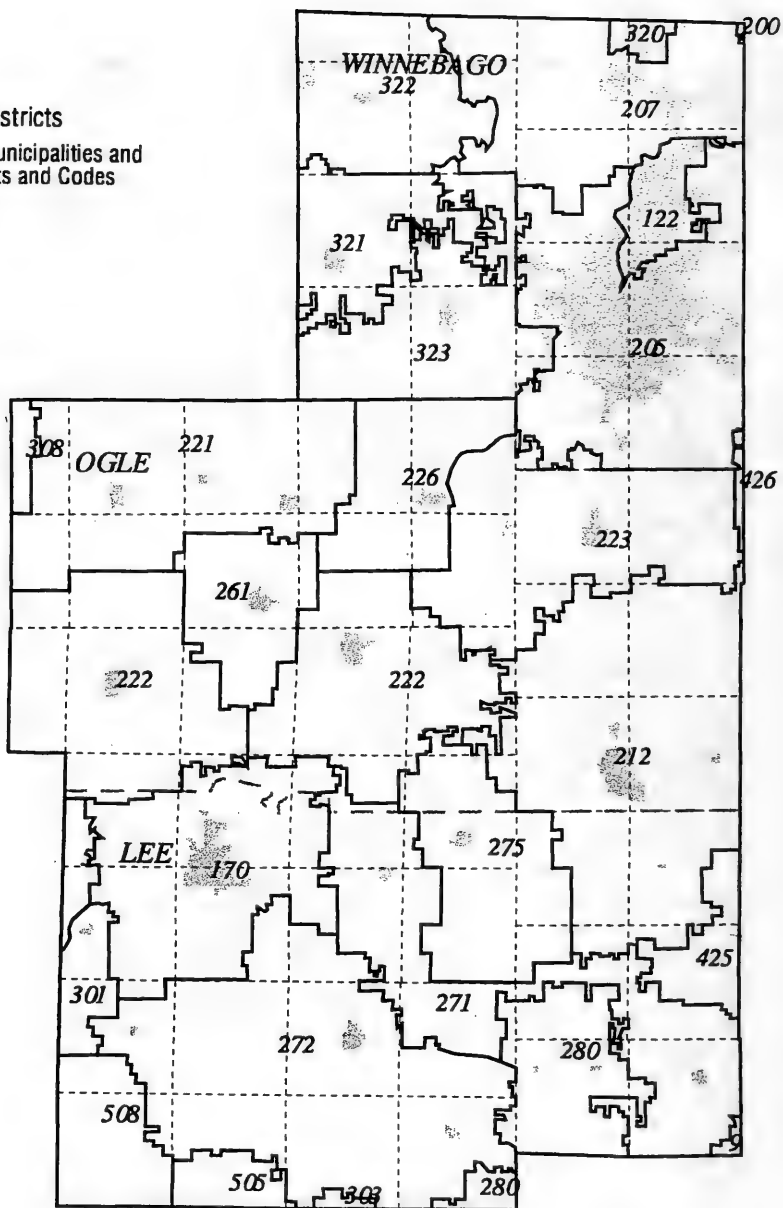
<sup>1</sup> All property tax data is from Illinois Department of Revenue, *Illinois Property Tax Statistics*, various years.

<sup>2</sup> Equalized assessed valuations are determined by several factors including:

- property is assessed at 33.3% of fair market value (except where property is classified);
- equalization process is to correct for counties which over- or under assess property;
- the amount of farmland in a county, which is assessed on productivity instead of market value.

## Major Property Tax Districts

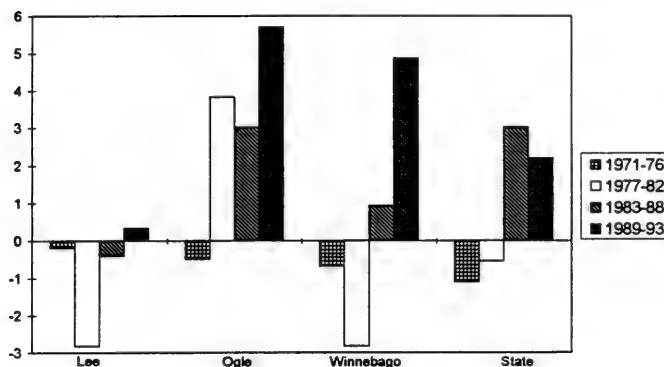
-  Unit School Districts
-  Township Boundaries
-  County Boundaries



**Scale 1 : 480,000**



**Average Annual Percentage Change in Property Tax Revenue  
(using 1993 dollars)**



*Figure 56*

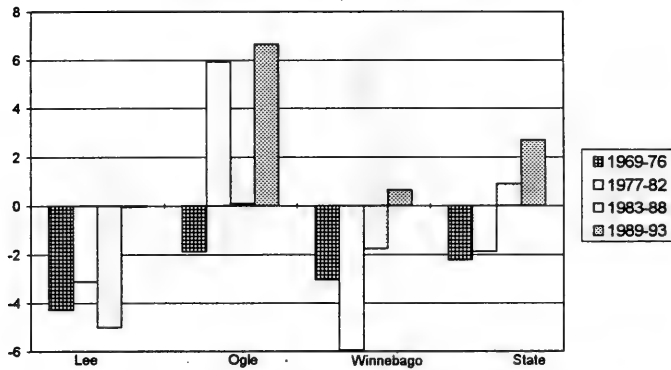
Just recently, however, the Illinois Property Tax Appeal Board ruled that the Byron plant was being overassessed and cut its tax base and resulting revenues two-thirds. In 1994, Commonwealth Edison paid \$40.1 million in taxes for Byron, representing more than 50% of the county's property tax revenues. The Board's ruling would reduce those taxes to \$13.3 million. Furthermore, the ruling is retroactive to 1989, meaning that local taxing districts in Ogle County will have to refund more than \$110 million in taxes. Ogle County is expected to appeal the ruling.

Of the three counties, Lee County has had the lowest growth in property tax revenues, with larger declines in the 1970s through the mid-1980s and minimal increases since 1988. Winnebago County experienced significant declines in revenue, particularly from 1977-82, but has had strong growth since then, with almost 5% growth between 1988-1993.

**Table 38. Real Property Taxes Collected  
(Million 1993\$)**

	1971	1975	1980	1985	1990	1993
Lee	30.54	30.20	25.93	24.45	22.86	23.83
Ogle	32.97	28.86	38.67	40.86	50.15	64.80
Winnebago	182.44	179.76	125.32	147.89	164.50	196.68
Region	245.95	238.82	189.92	213.20	237.52	285.31
State	9283.35	8616.34	8149.24	8450.35	10673.27	11496.63

**Average Annual Percentage Change in  
Real Property Tax Base**



*Figure 57*

### **Property Tax Base**

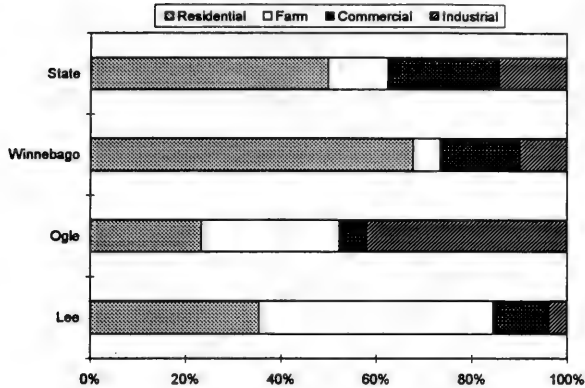
The property tax base in Illinois has declined significantly since 1969, though it has increased since the low point in 1985. Lee and Winnebago Counties also had a declining tax base; falling 50% between 1969 and 1993. In Ogle County, the tax base has doubled over this same time period, due to the addition of a nuclear power plant owned by Commonwealth Edison.

**Table 39. Real Property Tax Base  
(Million 1993\$)**

	1969	1975	1980	1985	1990	1993
Lee	833	613	500	396	301	316
Ogle	782	594	856	1,031	992	1,446
Winnebago	4,139	3,404	2,194	1,884	1,912	2,194
Region	5,754	4,611	3,311	3,311	3,205	3,956
State	167,175	136,665	120,427	112,565	130,953	144,469

Figures 58 and 59 show the make up of the tax base by the different classes of property in 1981 and 1993. In 1993, residential property provided the largest chunk of the state's tax base (50%), followed by commercial (28%), industrial (14%), and farm property (4.3%). This was not much of a change since 1981 except that farm property dropped from 12.4% to 4.3% of the tax base. Because of this decline, residential and commercial properties accounted for a higher proportion of the tax base in 1993 than in 1981.

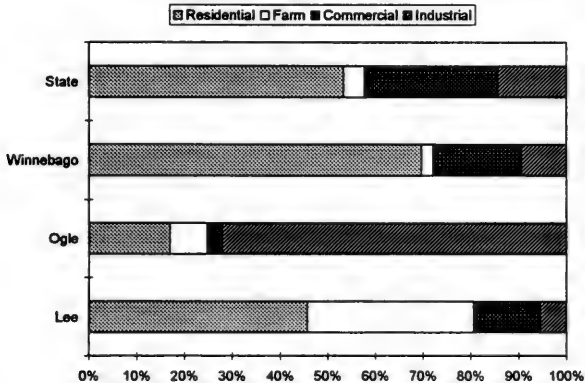
**1981 Property Tax Base by Class of Property**



*Figure 58*

The make up of the tax base varies greatly among the counties of the Rock River area because of the different types of economic activity dominating each county. Lee County, for example, is predominantly a rural farm community and subsequently obtains a large proportion of its tax base from farm property, 35% in 1993. This is down from 50% in 1981. Residential property now accounts for more than 45% of the tax base.

**1993 Property Tax Base by Class of Property**



*Figure 59*

Ogle County's tax base is dominated by the Commonwealth Edison nuclear power plant -- industrial property accounts for more than 70% of its tax base, considerably higher than 1981, when industrial property provided 42% of the tax base. Residential property accounts for less than 20% of the tax base, much less than the state average of 53%.

The tax base in Winnebago County reflects its highly urban character, with residential property providing 70% of the taxes.

## Tax Rates

Over the past couple of decades the average property tax rate has risen in the state and the Rock River area (Figure 60). The tax rate is typically expressed in dollars collected per \$100 dollars of tax base. Since 1969, the statewide average property tax rate has risen from \$4.60 to \$8.00 per \$100 of tax base -- almost an 80% increase. In Winnebago and Lee counties property tax rates have more than doubled. The tax rate in Ogle County has risen only 18% since 1969 and is actually below the peak rate of \$5.30/\$100 of tax base in 1975 and 1990.

Tax rate increases are directly related to a greater need for revenue and/or a significant decline in the tax base. For example, between 1969 and 1993 the tax base in Winnebago County declined by almost 50%, while the need for revenue continued to grow. As a result, tax rates were increased to the point that in 1993 more property tax revenue was collected than in 1971. In contrast, the tax base in Ogle County has grown since 1975, with the result that tax rates have increased only moderately, and have at times actually decreased.

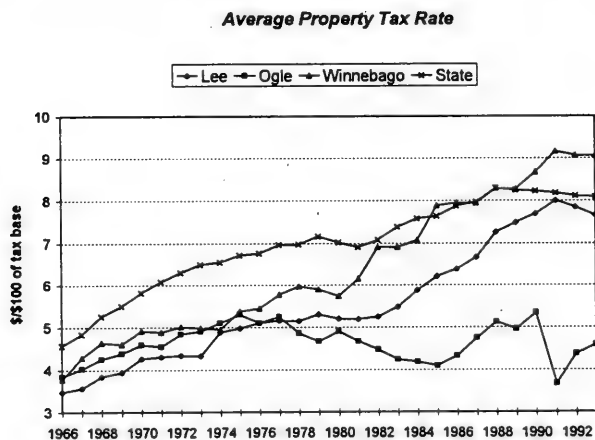


Figure 60

## ***Property Tax Distribution***

Property taxes are used to finance a variety of local government services, with the majority going to school districts (Figure 61). Statewide, 60% was distributed to school districts in 1993. The remainder of property tax revenues went to municipal (16%), county (10%), and township governments (3%), and to other services (11%) such as fire, sanitary, park, library, and airport services.

In the Rock River area slightly more of the revenue goes to schools, ranging from 61% in Winnebago County to 66% in Ogle County. In Winnebago County the remaining revenue was distributed in similar proportions as the state average. The more rural counties, however, distribute less to municipal government and allot more to county and township governments. The distribution of property taxes in the state and the Rock River area has not changed much since 1980.

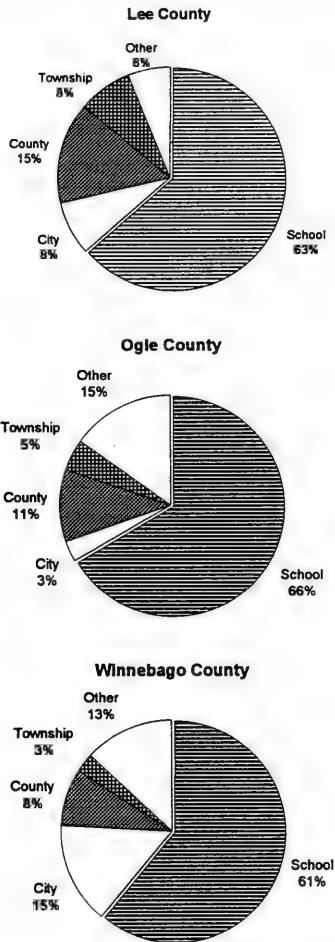
## ***Conclusion***

Property tax revenues have increased significantly in the Rock River area and the state. Ogle County has had the largest increase, while revenues have declined in Lee County.

The property taxes are determined by the tax base and the tax rate. Overall, the tax base has declined and the tax rates have risen in the Rock River area and the state. The one exception to the declining tax base is Ogle County, where the tax base has doubled due to the addition of a nuclear power plant in the county. (However, if a recent ruling by the Illinois Property Tax Appeal Board is upheld, the county would lose two-thirds of its tax base.) Given the large increase in the tax base, the increase in the tax rate in Ogle County (18%) is much lower than the increases in the other Rock River counties (>100%) and the state average (>80%).

For the state, the majority of the tax base is from residential property. This trend is also true for Winnebago and Lee County. Lee County also obtains a large percent of its tax base from farm property. Ogle County obtains most of its tax base from industrial property. For both the Rock River area and the state, a majority of property tax revenues (> 60%) go to school districts.

### 1993 Property Tax Distribution<sup>3</sup>



*Figure 61*

<sup>3</sup> The property tax distributions are based on total property taxes extended, which is the dollar amount of taxes billed to property taxes extended. This is different from the amount collected due to charges against collections such as protest, delinquencies, certificates of error and other changes. The amount collected is typically more than 97% of the amount of taxes extended.



# ***Environmental Quality***

Human activities have a significant potential impact upon the environment; air emissions, point and non-point discharges to water, solid and hazardous waste all affect environmental quality. Because of its predominantly rural character, the Rock River area does not have major pollution problems.

This section discusses the air quality of the area and the generation and disposal of solid and hazardous waste.

## ***Air Quality***

Of the three counties in the Rock River area, only Winnebago County, specifically the Rockford area, has been monitored as part of the Illinois Environmental Protection Agency's statewide air quality network.<sup>1</sup> Ozone, sulfur dioxide, carbon monoxide, lead, and particulate matter are the regulated pollutants monitored in Rockford.<sup>2</sup> Measurements for particulate matter included both total suspended particulates (TSP) and particles less than ten micrometers (PM<sub>10</sub>) in size.

### **Sulfur dioxide**

No sulfur dioxide standards were violated during the period of 1978 through 1986 when the Rockford monitoring station collected and reported SO<sub>2</sub> measurements. Table 40 shows that measured levels of SO<sub>2</sub> declined during the period. Illinois ambient air quality standards for SO<sub>2</sub> are:

- Primary -- 0.14 ppm (parts per million) in a 24-hour period  
0.03 ppm annual arithmetic mean
- Secondary -- 0.5 ppm in a 3-hour period

---

<sup>1</sup> Data on the air quality in the Rock River Macrosite region was obtained from a database put together by the State Water Survey for the Critical Trends Assessment Project. The database was developed from IEPA's Annual Air Quality Reports for the period 1978 through 1990.

<sup>2</sup> TSP and lead were measured in South Beloit in 1979-1981.

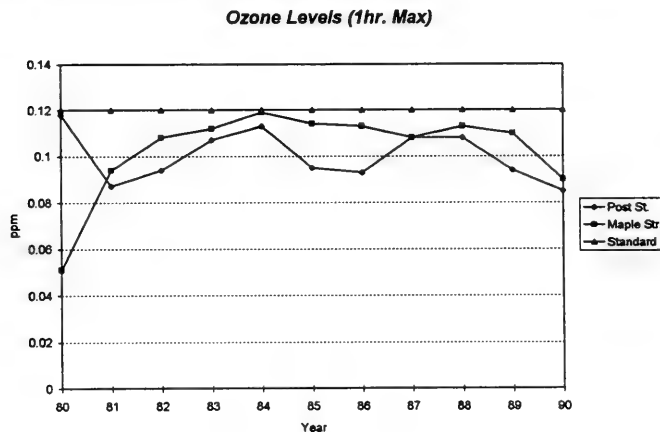
**Table 40. Sulfur Dioxide Measurements**  
(in parts per million)

	Number of Samples	Maximum 3-hour*	Maximum 24-hour*	Annual Mean
1978	7844	0.074	0.037	0.009
1979	6688	0.118	0.039	N/A
1980	7998	0.039	0.021	0.005
1981	8266	0.06	0.033	0.004
1982	8501	0.06	0.034	0.004
1983	8331	0.053	0.027	0.004
1984	8013	0.056	0.031	0.004
1985	8607	0.044	0.019	0.003
1986	8406	0.043	0.021	0.003

*\*average for the time period*

## Ozone

The one-hour 0.12 ppm ozone standard was never violated at the two Rockford monitoring stations during the reporting period of 1980-90. (A third station collected samples in 1980 and 1981). Measurements during the 10-year period hovered around 0.1 ppm, although they began declining in 1988.



*Figure 62*

## Carbon Monoxide

The carbon monoxide standard has not been exceeded at the Rockford monitoring station since 1984 when the 8-hour standard of 9 ppm was violated three times. The 8-hour standard was also exceeded once in the years 1981, 1982, and 1983. The 1-hour standard of 35 ppm had no violations during the 1981-1990 time period. Table 41 shows that the 1-hour maximums have fluctuated, while the 8-hour maximums have declined since their peak in 1984.

**Table 41. Carbon Monoxide Measurements**  
(in parts per million)

	Number of Samples	Maximum 1-hour	Maximum 8-hour
1981	8211	21.0	9.5
1982	7515	13.7	9.5
1983	5941	17.3	9.7
1984	7962	19.7	10.5
1985	7708	12.4	8.2
1986	8342	12.9	9.4*
1987	7902	15.5	9.1*
1988	8117	11.4	8.2
1989	8300	12.6	6.7
1990	8613	15.8	6.7

*\*Because data are rounded, values have to be equal to or greater than 9.5 to exceed the standard.*

## Lead

During the 1978-1992 study period, the lead standard was never exceeded in the Rockford area. Lead was monitored at five different locations, four in Rockford and one in South Beloit, with three stations collecting data for only one year and South Beloit collecting no data after 1982. The highest mean was slightly above .2 ug/m<sup>3</sup> (micrograms per cubic meter), well below the standard of 1.5 ug/m<sup>3</sup> (based on the quarterly arithmetic mean).

## Particulate Matter

Only twice in 1983 (one time each at two different monitoring stations) and once in 1985 was the 24-hour total suspended particulate standard (TSP) exceeded in Rockford. Initially five stations collected TSP data, but two Rockford stations stopped collecting in 1980 and the South Beloit station stopped in 1981. The other two Rockford stations collected data from at least 1981 through 1990; their findings are reported in Table 42. At that time, the TSP standards were:

- Primary -- 75  $\mu\text{g}/\text{m}^3$  for annual geometric mean  
260  $\mu\text{g}/\text{m}^3$  for 24-hour
- Secondary --60  $\mu\text{g}/\text{m}^3$  for annual geometric mean  
150  $\mu\text{g}/\text{m}^3$  for 24-hour

Based on U.S. EPA standards promulgated in 1987, Illinois replaced TSP standards with  $\text{PM}_{10}$  standards in 1992. ( $\text{PM}_{10}$  standards are based on the size of the particulates -- 10 micrometers and smaller.) For 1988-1990 one station reported  $\text{PM}_{10}$  measurements for the 24-hour standard; no measurements exceeded the  $\text{PM}_{10}$  standard.

**Table 42. Total Suspended Particulate Measurements**  
(in  $\mu\text{g}/\text{m}^3$  -- micrograms per cubic meter)

	15th Avenue		First Street	
	Highest	2nd Highest	Highest	2nd Highest
1980			106	86
1981	133	112	101	93
1982	86	83	115	99
1983	284	118	480	109
1984	183	106	118	101
1985	318	233	180	91
1986	81	78	98	84
1987	120	99	124	107
1988	156	145	120	101
1989	137	127	225	111
1990	237	142	212	106

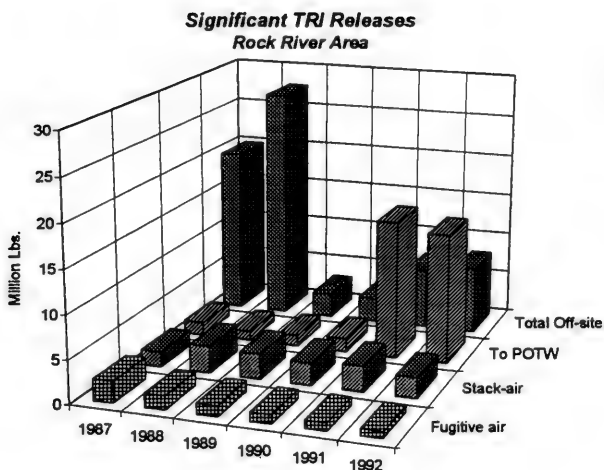
## Waste Generation and Disposal

### Toxic Release Inventory

Federal law requires that manufacturing firms report environmental releases<sup>3</sup> of toxic chemicals to the Toxic Release Inventory (TRI).<sup>4</sup> Between 1987 and 1992, five to six percent of Illinois facilities reporting were from the Rock River area. Facilities in the area released between three and ten percent of the statewide total released to all environmental media. Figure 63 illustrates significant releases in the Rock River area.

<sup>3</sup> In figure 1 and following tables, "Fugitive Air" means indirect releases such as leaks to the atmosphere (i.e. not from the smokestack). "Stack Air" means direct releases to the atmosphere from the smokestack. "To Water" means direct release to a stream or river. "To POTW" means discharge to a publicly-owned sewage treatment works, where the chemicals are generally removed prior to release to a stream or river. "To Land" means landfilled, put in an impoundment, or otherwise disposed at the facility. "Off-site" means shipped off-site to another facility to be recycled or disposed of by that facility.

<sup>4</sup> Data on the Toxic Release Inventory is from the Illinois Environmental Protection Agency's Annual Toxic Chemical Reports from 1989 to 1994.



*Figure 63*

In Winnebago County, the number of facilities reporting TRI data increased from 37 firms in 1987 to 66 firms in 1992. This increase was due primarily to changes in reporting requirements. The amount of chemicals released increased from 3.4 million pounds to 23.3 million pounds. Between 1990 and 1991 total emissions jumped because of a significant increase in the reported release of sulfuric acid and copper and related compounds to publicly-owned treatment works. Table 43 shows the total amounts released to different parts of the environment over the six-year period.

In Ogle County the number of manufacturing facilities reporting TRI releases varied around a dozen. Over the six years, estimated releases declined roughly 20%. Between 1988 and 1992 total releases ranged between 2.5 and 2.8 million pounds per year.

**Table 43. Toxic Release Inventory – Winnebago County**  
(in thousand pounds)

Environmental Releases	1987	1988	1989	1990	1991	1992
Fugitive Air	963.9	1,328.1	786.4	786.4	757	581.7
Stack Air	1,341.4	1,023.7	978.2	978.2	1323.3	1,078.3
To Water	1.5	1.5	3.2	3.2	5.1	3.1
To POTW	136.1	1,012.5	1,371.1	1,371.1	15,893.8	14,908.9
To Land	92.1	22.9	.5	.5	0	0
Off-Site	877.9	2,300.3	2,041.9	2,041.9	5,891.2	6,720.9

**Table 44. Toxic Release Inventory -- Ogle County**  
(in thousand pounds)

Environmental Releases	1987	1988	1989	1990	1991	1992
Fugitive air	1,484.6	200.3	224.6	193.5	141.3	200.87
Stack-air	439.2	2,094.3	1,972.2	1,634.5	1,624.9	1,327.1
To water	.5	1.5	1.5	.4	.3	.5
To POTW	1,421	97.1	64.5	200.4	171.9	251.9
Off-site	192.4	328.1	298.2	780.8	1,037.6	1,051.1

Table 44 presents the environmental releases reported for the period 1987 through 1992 for manufacturing facilities in Ogle County.

In Lee County, the number of facilities reporting TRI data has ranged from one to three, with three facilities reporting in 1992. During the six years reported, releases declined from more than 25 million pounds to less than one thousand pounds by 1992, the lowest amount reported from any county in the state. The decline was due to aluminum oxide being removed from reporting requirements.

**Table 45. Toxic Release Inventory -- Lee County**  
(in thousand pounds)

Environmental Releases	1987	1988	1989	1990	1991	1992
Fugitive air	8.7	2.2	0	.2	0	0
Stack-air	2.6	16.5	3.54	2.6	5.6	.5
To water	0	2.1	.03	.03	0	0
To POTW	1.8	0	0	0	.5	.5
Off-site	18,727.7	25,011.8	7.5	10.6	6	0

### **Hazardous Waste Generation, Storage and Disposal**

Between 1987 and 1992 the total amount of hazardous waste generated<sup>5</sup> in the region increased by 97%, compared to a 86% increase statewide. In 1992, the amount generated in the 3-county area was two percent of the state's total.

Table 46 shows that hazardous waste generation in Winnebago and Ogle counties was fairly stable until 1991, when it increased significantly in both counties. Most of that increase was managed on-site. The small amount of hazardous waste generated in Lee County is mostly shipped off-site.

<sup>5</sup> Note the total amount of hazardous waste generated is the sum of two classifications, "generated and shipped off-site" and "generated and managed on-site". The data is from IEPA's reports, Table K, Hazardous Waste Generated and Managed by County, 1987-1989 & 1989-1992. This approach was used to compare county generation with statewide since the data was not available to calculate it in the same manner as the IEPA.

**Table 46. Hazardous Waste Generation and Management**  
(in tons)

	1987	1988	1989	1990	1991	1992
Winnebago County	10,185	9,876	9,542	8,196	87,800	366,676
Shipped Off-Site	9,655	9,314	9,503	8,094	12,711	241,947
Managed On-Site	530	562	39	102	75,089	124,729
Ogle County	624	815	1,015	3,158	43,654	18,425
Shipped Off-Site	624	815	1014	2039	1413	699
Managed On-Site	0	0	1	1,119	42,241	17,726
Lee County	47	173	102	166	118	88
Shipped Off-Site	47	173	102	166	112	83
Managed On-Site	0	0	0	0	6	5

### Solid Waste Generation and Disposal

In 1993 the region had four operating landfills; two others had closed between 1987 and 1993.<sup>6</sup> Statewide, 70 of 146 landfills closed during that time, mostly in response to stricter environmental regulations. During the six years, the amount of solid waste generated increased 24% in the region and 30% statewide.

**Table 47. Solid Waste Generation and Disposal**  
(in thousand cubic yards)

	1987	1988	1989	1990	1991	1992	1993
Rock River Area							
Generated	1,065.8	1,066.8	1,225.2	1,352.9	1,375.5	1,229.0	1,319.3
Disposed	996.8	1,221.9	1,301.1	984.7	893.2	1088.6	838.1
Statewide							
Generated	37,819.0	37,925.6	43,459.2	47,895.3	51,957.8	47,280.6	49,052.3
Disposed	51,906.7	51,236.3	45,869.6	45,228.4	42,741.1	42,048.9	42,245.7

The amount of waste disposed, however, decreased 16% as more of the waste was recycled or composted (Figure 64). Statewide, the amount declined 19%.

In 1993, solid waste generated in the region comprised approximately two and half percent of the statewide total, while solid waste disposed comprised two percent of the statewide total.

<sup>6</sup> Data on solid waste from IEPA annual solid waste reports entitled, Available Disposal Capacity for Solid Waste in Illinois, years 1987 through 1994.

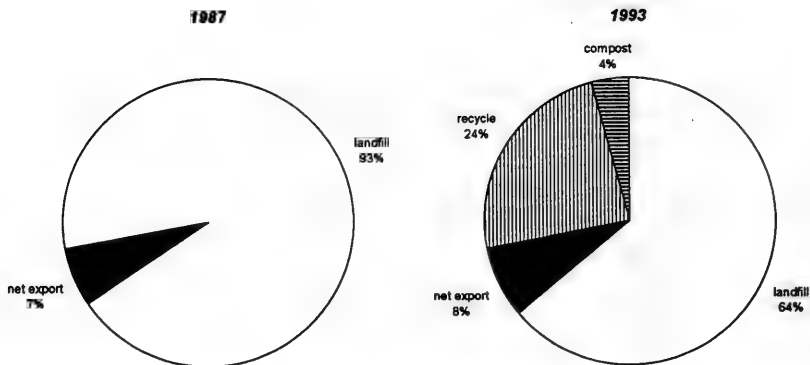


Figure 64. Solid Waste Disposal, Rock River Area

### Winnebago County

From 1987 to 1993, solid waste generation increased 27% in Winnebago County. Most of this waste was either exported or landfilled in the county's landfill, Pagel Pit. After 1991, only one landfill was operating, but more waste was being recycled or composted -- 30% recycled and 5% composted in 1993.

Table 48. Winnebago County Solid Waste Generation and Management  
(in thousand tons)

	1987	1988	1989	1990	1991	1992	1993
Generated	253	252	280	309	318	277	321
Exported	152	97	142	249	211	120	147
Landfilled	100	155	138	60	72	139	63
Recycled	0	0	0	0	24	5	95
Composted	0	0	0	0	11	13	16

### Ogle County

Up to 1990 Ogle County had three licensed landfills; only two were in operation as of 1993. The landfills are known as the Browning Ferris Industries landfill and the Rochelle Municipal #2 landfill. No distinct trends were discernible; waste generation increased until 1991, when it began dropping. In 1993, less waste was generated than in 1987.



**Table 49. Ogle County Solid Waste Generation and Management**  
(in thousand tons)

	1987	1988	1989	1990	1991	1992	1993
Generated	39	39	51	56	51	51	35
Imported	119	132	156	139	105	102	121
Landfilled	158	171	207	195	156	149	156
Recycled	0	0	0	0	0	4	0

### Lee County

For the past seven years Lee County has had one licensed landfill, the Dixon Municipal Group #2. The amount of solid waste generated steadily increased from 1987 to 1991, after which it began decreasing. In 1991 generation was 54% more than in 1987; in 1993 it was only 30% more than in 1987. During the seven year period, the amount landfilled peaked in 1989 at 45 thousand tons and dropped to 33 thousands tons by 1993.

**Table 50. Lee County Solid Waste Generation and Management**  
(in thousand tons)

	1987	1988	1989	1990	1991	1992	1993
Generated	28	28	37	40	43	40	39
Exported	0	0	0	0	2	0	6
Imported	12	12	37	1	0	10	0
Landfilled	40	40	45	41	41	39	33
Recycled	0	0	29	0	0	11	0

### **Low-level nuclear waste**

The significant low-level nuclear waste generators<sup>7</sup> in the Rock River area are the University of Illinois at Rockford and Commonwealth Edison's Byron Nuclear Plant in Ogle County. The volume of waste at both varied greatly over the eight years of available data (e.g., no waste was reported by U of I in 1985 and 1990), but over the long-term the reported amount stayed fairly constant.

Radioactivity (curies) was reported only for the Byron waste. The trend in curies was upward between 1984 and 1990, but in 1991 levels were half those of 1990.

<sup>7</sup> Data on low-level waste was from Illinois Department of Nuclear Safety's annual reports, *Annual Report on the Survey of Low-Level Radioactive Waste Generators in Illinois*, for the years 1984 through 1992

**Table 51. Low-Level Nuclear Waste Generation**

Generator	Units	1984	1985	1986	1987	1988	1989	1990	1991
U of I-Rockford	Cubic Feet	270	0	60	46.6	38.9	46.6	0	53.5
Byron Nuclear Plant	Cubic Feet	0	6,277	11,215	10,788	7,713	12,986	10,099	11,774
Radioactivity	Curies	0	14	100	876	509	1122	1574	623

Five medical generators also produce low-level nuclear waste in the area; however, the amounts are too small to be published in the state's annual report.

## **Conclusion**

Air quality in the Rock River area is generally good; none of the five criteria air pollutants measured in the Rockford area has exceeded the standard since 1985. Hazardous waste is being generated at a higher level, however -- up 97% between 1987 and 1992. The amount of solid waste being generated has also increased, although not at quite the level of hazardous waste; it increased 24% between 1987 and 1993, while the amount disposed in the region declined 16%.

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## **PART II**

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# **EARLY ACCOUNTS OF THE ECOLOGY OF THE ROCK RIVER HILL COUNTRY**

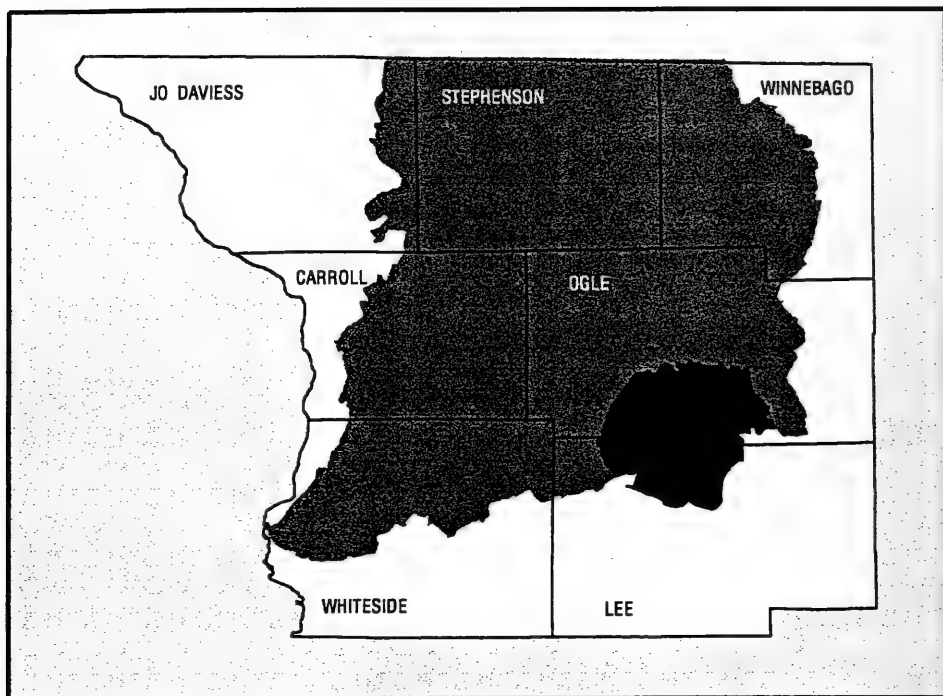




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# Rock River Hill Country Natural Division



## Rock River Hill Country Natural Division



 Freeport Section  
 Oregon Section



0 5 10 15  
  
Miles



## INTRODUCTION

THE ROCK RIVER HILL COUNTRY extends across seven counties in northwestern Illinois. As defined by *The Natural Divisions of Illinois*,<sup>1</sup> the Rock River Hill Country is a region of bedrock hills that are thinly mantled with glacial drift.

The Rock River Hill Country Natural Division is divided into two sections. The Freeport Section consists of rolling hills underlain primarily by dolomite and limestone. The Oregon Section is generally more rugged and is underlain by sandstone.

The following accounts of the region's ecological features are from the writings of explorers, pioneers, early visitors, and early historians.\*

## FREEPORT SECTION

### *General Accounts*

AN EXPLORATORY AND SCIENTIFIC MISSION headed by Major Stephen H. Long crossed the Freeport Section in 1823.<sup>2</sup> A local man named Wennebea led them on a route that took them from the junction of the Pecatonica River and Yellow Creek (near the site of present-day Freeport) northwestward to the northwest corner of Stephenson County. Here is how expedition member William Keating described the segment of the journey that the men made on June 15:

Wennebea led us in a general north-westerly direction, at first through thin woods, which gradually disappeared, their place being supplied by an extensive and apparently boundless prairie, which occupied us a whole day in crossing it. The woods consisted of small oaks without undergrowth; the prairie, upon which we were travelling, was undulated, and extended itself along the base of the dividing ridge between the streams tributary to the Mississippi and those which fall into Rock river. This ridge stretched on our left, in a direction nearly parallel to our general course; it appeared to be in some places from one hundred to one hundred and fifty feet high, and from six to eight miles distant.<sup>3</sup>

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\* Most of the research for this report was conducted at the library of the Illinois Historical Survey at the University of Illinois at Urbana—Champaign. John Hoffmann and other staff members at the Illinois Historical Survey were a great help to the effort. Beverly Miller, Lisa Bell, Paula Hamman, Suzanne Wagner, and Connie Carroll of Ecological Services took part in various stages of preparation of the manuscript.

Quotations are reproduced as they appear in the published source materials, which are listed in the References Cited. Spelling, punctuation, and grammar were not well standardized in the 1800s.

This ridge is the watershed divide that runs northwest from Freeport. An old stage-coach road follows this high divide, and the Illinois Central Railroad was built on the ridge through Lena, Waddam's Grove, Nora, and Warren. <sup>4</sup>

CALEB ATWATER DESCRIBED THE REGION in a book titled *Remarks Made on a Trip to Prairie du Chien; Thence to Washington City, in 1829*:

The surface of the country, is undulating sometimes gently, sometimes greatly, and in most places, is covered with a succession of flowers, from early spring, to late Autumn. One week, nay even one day, you see, far as your delighted eye can reach, flowers of a reddish hue—the blue—the white—the yellow, and of every intervening shade, indeed, follow in succession, day after day, and week after week, ever varying, ever new, and always delightful. Ascending any little eminence, my eye was always riveted for many minutes, on the vast, the charming, and the beautiful prospect before me—spread out immense, intersected by glittering streams, with here and there a grove of woods, and at all times, several mounds, some nearer, others further off—some of them, from their nearness, showed their dark green forests, while others, from their distance, showed their pale blue summits, in the very edge of the horizon, resting on the earth, and touching the heavens above them. Generally too, I saw a cloudless sky, a flaming sun by day, and brilliant heavens at night.

Sometimes I traveled, during four or five hours, either by day or by night, across some prairie, without seeing even a bush, or a tree—above me, were the wide spread, and lofty heavens, while the prairie, with its grasses and flowers, extended in all directions around me, far beyond the reach of my vision.

In such a situation, man feels his own littleness, in the immensity of space, he feels alone too, in this loneliness, universal silence and repose.

I was delighted at the sight, even of a prairie wolf, and the chirping of a grass hopper, was music to my ear.

The trees of this region, are confined, mostly, to the streams, and to rough places; and oaks, black, white and red are the forest trees, in high grounds, at least, they are the principal ones, while, in wet places and low grounds, the botany is richer. Along Sugar creek, a large branch of the Pickatolica river, <sup>\*</sup> extensive groves of the sugar maple, exist near its mouth, and for many miles upwards.

On naked cliffs, I sometimes saw the red cedar tree.

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<sup>\*</sup> Pickatolica river = Pecatonica River.

Of flowering plants, among the millions of them, the helianthus \* offers the greatest variety, in all seasons of the year. <sup>5</sup>

*Our vast natural meadows produce grass enough now, to feed and fatten all the domesticated animals, whose food is grass, now existing in Europe and America; and they will one day furnish grass, grain and meat enough, for all mankind.*

— Caleb Atwater (1831).

IN 1834 CHARLES FENNO HOFFMAN travelled the stagecoach route from Dixon to Galena. He had already spent a few weeks on the Grand Prairie of central Illinois, so he noted the difference in the countryside when he crossed the Rock River at Dixon and entered the Rock River Hill Country.

The aspect of the country changes considerably soon after passing Rock River. The prairie is frequently broken by sudden ravines; the number of groves increases; the streams run more rapidly over their pebbly beds; and huge masses of crumbling rock rise like the ruined walls of old castles along the mimic vales through which they take their way. <sup>6</sup>

AMONG THE CHARACTERISTIC FEATURES of the Rock River Hill Country is the thin soil and shallowly buried bedrock on knolls and crests of bluffs. S. Augustus Mitchell described this situation in his 1838 geography of the "Rock River Country."

The soil on the brow of the bluffs, as might be expected from the unceasing washing of ages, is thin and unproductive; but when you ascend to the elevated *table-land* — which is generally characteristic of the bluffs after you leave the breaks, gullies formed by springs and rains on the edge of the bluffs, — you will find, most usually, a soil of the richest kind — high and dry, and fanned, in the warmest days of summer, by breezes of the most refreshing character. <sup>7</sup>

MARGARET FULLER WROTE OF THE LANDSCAPE north of Oregon in 1843:

Two of the boldest bluffs are called the Deer's Walk, (not because deer do not walk there,) and the Eagle's Nest. <sup>†</sup> The latter I visited one glorious morning; it was that of the fourth of July. . . . Woe to all country folks that never saw this spot, never swept an enraptured gaze over the prospect that

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\* Helianthus = sunflower; or, more generally, any other member of the sunflower family that superficially resembles the genus *Helianthus*.

<sup>†</sup> The Eagle's Nest bluff is at the Laredo Taft Field Campus of Northern Illinois University at Oregon.

stretched beneath. I do believe Rome and Florence are suburbs compared to this capital of nature's art.

The bluff was decked with great bunches of a scarlet variety of the milk-weed, like cut coral, and all starred with a mysterious-looking dark flower, whose cup rose lonely on a tall stem. This had, for two or three days, disputed the ground with lupine and phlox.<sup>8</sup>

JAMES SHAW WROTE THIS TRIBUTE FOR Volume V of the *Geological Survey of Illinois* (1873):

The valley of Rock river, if indeed the high rolling prairie on either side can be called a valley, in fertility and beauty of prairie land, is perhaps unequalled in the West. The river itself—swift flowing, broad, clear as crystal—affords one of the most magnificent water powers in the world.

. . . Rock river and its valley, in their present and prospective resources, salubrity of climate and beauty of location, have not their equal in the State, or perhaps in the nation.

. . . This noble and beautiful stream, and its broad rich valley, fills the mind of the beholder with admiration. The waters of this stream are silvery and clear beyond any other river in the State; its bottom, for the most part, rocky and sandy, its current swift and strong, its flow and volume constant.<sup>9</sup>

**Carroll County.**—ONE OF THE MOST SCENIC AND DIVERSE PARTS of the Freeport Section is near Mount Carroll along Carroll Creek. In 1913 the editorial team of Bateman, Selby, and Hostetter described "the Dalles of the Waukarusa" in this neighborhood:

These now famous walls of rock and beautiful scenery begin just below the city park, Mount Carroll, at Point Rockpark, as it is now called, and line the creek on either side for several miles. They are at some places a hundred feet or more in height almost perpendicular. In pioneer days they were crowned with great tall pines that towered an equal distance towards the sky. These walls of rock are so close together at some places, they form what might be called a mountain gorge. They shut out the sunlight, except for a short time during the day, and in the hottest days in summer furnish a delightful shade and cool resort. At other places they also modify the climate in winter; so that at one place, it is as mild as the climate of St. Louis and Southern Illinois; here the paw paws grew and nowhere else so far north. These bushes used to fill the narrow valley along the stream, together with other shrubs and flowers that belonged to a more southern clime. The rocks, which were not entirely perpendicular, were covered with vegetation, and were festooned at all seasons of the year with various kinds

of flowers and vines; in some of the damp nooks hanging moss drooped from the branches of the cedars. In winter they were covered with the cedar, and the beautiful dark green hemlock; \* that drooping over the rugged bluffs seemed to try to cover their nakedness. <sup>10</sup>

... In spring time these lovely valleys were carpeted with flowers . . . . Later in the fall of the year high up on the overhanging precipices where there did not seem to be soil enough for anything to grow but the mosses and the lichens, of which there was a great variety, grew the beautiful blue hair bell with its long black stem and bell shaped flower, the same that is so much prized by travelers in the mountains of Switzerland. †

... To gallop over the open prairie, and then plunge into the shady recesses of the dell was not an infrequent pastime of the young people of the pioneers. <sup>11</sup>

**Stephenson County.**—THIS COUNTY LIES ENTIRELY within the Freeport Section. James Shaw wrote the following about Stephenson County in the 1873 *Geological Survey of Illinois*:

The general surface or face of the county is composed of gently undulating and rather rolling prairie land, interspersed with small groves, and narrow belts of timber land skirting the streams. A small portion of the county is made up of barrens and oak orchards or openings. . . . The oak openings and other poorer portions of the county produce the best wheat and other cereal grains, the best potatoes raised in the State, very excellent apples, and pears of the hardier varieties, and with proper care and cultivation will nourish the vine and ripen its fruitage to a greater extent than is now dreamed of by the grape growers and wine makers of the West. Indeed, the day is coming, in our opinion, when its gravelly hills and loess clays will not only blush with the purple clusters of such vines as best endure our cold climate, but will also become sources of profit to their cultivators and sources of exquisite pleasure to those who delight in using healthful, invigorating, pure wines. <sup>12</sup>

THE 1880 *History of Stephenson County* describes the vegetation pattern of woodland, shrubland, and grassland in relation to topography:

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\* The "hemlock" was almost certainly Canada yew (*Taxus canadensis*) rather than eastern hemlock (*Tsuga canadensis*), which is not known to be native to Illinois. Canada yew was often called hemlock, ground hemlock, or spreading hemlock in early writings.

† The harebell (*Campanula rotundifolia*) ranges across northern North America and Eurasia, extending south along mountain ranges; the species finds suitably cool habitat on shady ledges and canyon walls in northern Illinois.

The Pecatonica is skirted, more especially along its eastern bank, with a body of rather heavy timber, spreading out northward into the town of Oneco, for a considerable distance. Yellow Creek is fringed, for a part of its course, with a scattering growth of white oak-groves and clumps spreading across from Mill Grove to Eleroy and Sciota mills, into oak openings and a somewhat rough soil. Part of the town of Loran, in the southwest portion of the county, is a regular white-oak barren, with scattering trees and some brush-wood. Crane's Grove, lying south of Freeport, is about three miles long and more than a mile wide. Lynn\* and walnut groves dot the broad expanse of prairie in the northeastern part of the county, with grateful exchange in the monotony of the prairie view. Cedar Creek has some good timber along its course.<sup>13</sup>

IN GENERAL THE HILLIER PARTS of Stephenson County had the most wooded land. The valley of the lower reaches of Rock Run, a tributary to the Pecatonica River, is described in the *History of Stephenson County* as being "precipitous, brush-covered, timber-covered hills." The headwaters have gentler topography and are described as "murmuring along through rich prairie farms and woodland groves." Richland Creek, which flows through some of the most rugged country in Stephenson County, was "shadowed by the heaviest body of good timber perhaps in the whole county."<sup>14</sup>

**Whiteside County.**—IN THE 1873 *Geological Survey of Illinois*, James Shaw wrote about the Mississippi River bluffs of Niagara limestone in the Freeport Section.

But the grandest development of this formation, perhaps, in this part of the State, may be seen along the Mississippi bluffs, near the north line of the county. After viewing these beetling cliffs, the appropriateness of the old name "Cliff Limestone," becomes apparent. This bold exposure rises at its highest altitude to the height of one hundred and seventy-five feet above the level of the bluff road, and this is but the upper portion of the formation at this place. The talus and debris of ages have accumulated along the base, rising in slopes half way up the steep acclivity. Loose stones, sometimes weighing tons, loosened by the frosts and other atmospheric agencies, have rolled down, and thickly strew the roadside. Sweet, sparkling, deliciously cool water gushes in strong springs from little ravines. Wild grape vines, dense thickets and old monarch oaks cover these talus slopes for the most part; but sometimes the scene is varied by a slope covered with short tufts of prairie grass, or the richer and softer blue grass. The upper part of the exposure resembles dilapidated Cyclopean walls of the mystic times. A long mural escarpment rises from the top of the slopes, and presents its castellated face to the broad Mississippi Valley, whose lacustrine waves in older geologic epochs beat against the rocky barrier and wore it into fantastic shapes. Many caverns exist, some of them almost inaccessible, out

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\* Lynn = eastern basswood (*Tilia americana*).



of which issued, the day I spent among them, the half human cries of wild cats and the growls of a small species of lynx. <sup>15</sup>

**Winnebago County.**—MARY SACKETT WROTE IN HER JOURNAL about riding the 18 miles from Laona to Rockford on March 28, 1842:

Our road now lay along the banks of Sugar river which are very pleasant but unhealthy. From the bridge we rode through barrens for about 3 miles when we crossed quite a wide spring brook (an a slough) after which our road lay for 12 miles on one wide Prairie over which were scattered a very few houses. <sup>16</sup>

On the morning of April 12 Miss Sackett took a ride on old Charley to view the neighborhood, then headed home in the afternoon.

Coming home it was delightful. The birds were singing, the frogs croaking and numerous insects were humming and buzzing about, not excepting the musquitoes. When I came to the top of the hill I was delighted with the scene. I had to stop my horse and gaze upon it. To my left and right were thickets that contained many small poplar trees. Before was a large flat through which run many brooks which causes the grass to grow very fast. Near the brooks the grass is of a lighter green than on dryer spots, making it appear very handsomely shaded.

The first of May found Mary Sackett and a companion on another excursion:

Today I went on Charley with Oliver who rode Jim to a meeting over 7 miles from here. We went in about an hour and a quarter. The road was first rate most of the way excepting a few sloughs which were pretty bad. We had a most delight ride. Sometimes our road lay across the prairie, sometimes through the thickets where the crabapples, choke cherries, strawberries and other fruits were all in bloom, making the air very fragrant. Then again we were riding through the woods where the birds were singing, the leaves rustling and every was delightful here.

On the 12th of May, she wrote, "The prairies in some places are covered with wild flowers. Caroline & I keep keep five or six mugs and pitchers full all the time." And on June 1, 1842, she penned, "This afternoon Caroline and Washington took a bushel basket and went out to gather flowers. After they came back I arranged 11 pitchers or mugs full."

IN 1877 H.F. KETT AND COMPANY DESCRIBED THE PATTERN of woodlands and shrublands among open prairies and wetlands in Winnebago County; this pattern is the same as described for Stephenson County.

In the northwestern part of the county, along Sugar river and its tributaries, and along portions of the north bank of the Pecatonica, there is much scattering timber and brush land, interspersed with occasional swampy tracts. A few miles below Rockford, along the north bank of Rock river, and extending north and west from the same, there is a tract of barrens covered with brushwood and a rather light growth of white oak and black jack timber.

. . . The usual alluvial bottoms exist along the Rock, Pecatonica, and Sugar rivers. These are from one to five miles in width. On the two latter named streams, the deposit is deep, black, fat and rich, supporting in places a heavy growth of timber . . . .<sup>17</sup>

IN 1891 JOHN THURSTON PUBLISHED A DESCRIPTION of islands in the Rock River at Rockford as they appeared in the years after the town was founded in 1835:

Opposite to what is now Knightville, were two islands, the upper and larger one having a few small trees growing on its surface; the lower one covered with grass only. Some ten rods above Jonathan Peacock's place, was an island of about two acres, on which were oak trees twenty inches in diameter and a dense thicket of wild fruit. Just below this island was a sand bar ten to fifteen rods long.<sup>18</sup>

Mr. Thurston also penned a picture of the uplands on the west side of the Rock River in nascent Rockford:

On the west shore below the abutments of the C. & N.W. railway bridge, the river widened abruptly, and the banks were lined with tall timber to the mouth of the creek. Above this bridge for half a mile the ground as far west as Main street, was covered with brush eight to ten feet high, with an occasional black oak tree. In June there were acres here where one could not step without crushing the strawberries. Some twenty rods above G.A. Sanford's residence on Main street, and extending west in places as far as Court street, was a thicket of twenty acres or more, so dense as to be impassable except at the expense of torn clothing and loss of time.

### *Streams*

A CONSIDERABLE PORTION OF THE FREEPORT HILLS drains into the Mississippi River, but most of it is drained by the Rock River and its tributaries.<sup>19</sup> A.D. Jones described the Rock River after he visited Dixon and Sterling in 1838:

It is a sight to make one leap with delight, as he gazes for the first time on this beautiful stream. Its wild rush of waters, tumbling, foaming, sparkling, as it passes over its rocky bed, its clear, bright waves reflecting the minutest

object that lies upon its bottom, and ploughed by countless shoals of pike, catfish, \* redhorse or perch, each weighing from three to ten pounds, not to speak of lesser fry,—all this is a sight to gladden the eye, and give a most vivid idea of health and comfort.<sup>20</sup>

SEVENTY-ONE YEARS LATER THE *History of Ogle County* offered a contrasting view of the Rock River.

At the time of the making of the first settlements in the Rock River Valley the water of the river was clear; the rocky, pebbly bottom could easily be seen, with many kinds and great numbers of fish lying upon it, or darting hither and thither nearer the surface. It was this clearness, showing the nature of the river bed as well as the cliff formation along its sides, which caused the Indians to give to Rock River its name of "Sinnissippi," or "rocky water." . . . But the possession of the white man has changed all that! The surrounding soil, bared of its protecting forests with their natural growth of herbs, moss, tree seedlings, shrubs, and rich receptive mold, is carried by the heavy rains into the once sparkling water, clouding it most of the year and depriving it of its former transparency; and the fisherman, with his exterminating nets and seines, has added his share to the destruction of the finny dwellers of the stream.<sup>21</sup>

THE PECATONICA RIVER IS THE BIGGEST TRIBUTARY to the Rock River in the Freeport Section. In contrast to the Rock River, the Pecatonica had a meandering channel and a muddy bed—even before its watershed was converted to agriculture. James Shaw described the Pecatonica in Stephenson County in 1873:

Its waters are turbid, and muddy as the "Yellow Tiber;" its course is serpentine and crooked beyond comparison, winding and doubling upon itself in the most capricious manner; its current slow flowing, treacherous and silent, notwithstanding the general difference in level between the northern and southern portions of the county, affording few water powers, and they of limited fall, but heavy and constant in their action.<sup>22</sup>

Calling the Pecatonica River a "tortuous body of flowing mud," Shaw remarked, "Along portions of its course, its oozy banks and stagnant waters might breed miasms and fevers, were its influences not counteracted by the general healthfulness and salubrity of the climate of Northern Illinois." Shaw also described Yellow Creek, a tributary of the Pecatonica, and attributed its turbidity to the weathering and erosion of shale outcrops:

Its waters have a yellowish, somewhat creamy color, and are slow flowing like the Pecatonica. The color of its waters is derived from the Cincinnati

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\* In a footnote, Jones wrote, "The catfish sometimes weighs 150 lbs."

shales along its banks, which dissolve and mingle with the water like yellow cream with muddy coffee.

*Rock river is termed, in the languages derived from the Algonquin, Sinsepe, and in the Winnebago Weroshanagra, both which names have the same signification as the English term. — William Keating, in his narrative of an 1823 scientific and exploratory mission that crossed the Rock River in the Freeport Section.*

*Pecatonica, as before mentioned, means "crooked stream" or "muddy waters," and so far as the stream is descriptive of the name, it ought to mean them both. Sinissippi, the Indian name of Rock river, signifies "rocky river." Kishwaukee means "clear waters" or "sycamore," a name reasonably descriptive of the stream. — H.F. Kett and Company's History of Winnebago County (1877).*

## Woodlands

IN ADDITION TO THE DESCRIPTIONS of woodlands in the general accounts at the beginning of this chapter, a few other early writings offer edifying descriptions of the region's woodlands.

**Carroll County.**—ON OCTOBER 17, 1835 ALFRED BRUNSON WROTE about Elkhorn Grove, "We passed through one of the most beautiful groves, this morning, we had seen in all the Prairie country. It was 6 miles thro' it, & composed of young thrifty timber, on the waters of Elkhorn creek (Dogs head on the Map.)" <sup>23</sup>

EDITORS BATEMAN, SELBY, AND HOSTETTER wrote in their 1913 *History of Carroll County*, "Cherry Grove was so named from the great number of wild cherry trees the early settlers found growing in this grove. They were very tall and straight trees and could be seen a considerable distance from the prairie, towering above the oaks and other trees." <sup>24</sup>

**Stephenson County.**—JAMES SHAW ENUMERATED THE COUNTY'S TREES in the 1873 volume of the *Geological Survey of Illinois*:

The prevailing timber consists of white, black and burr oak, sugar maple, black walnut, butter-nut, pig-nut, shell bark and common hickory, slippery and water elm, yellow poplar, with occasional laurel, red cedar, white pine, paw-paw, and some of the rarer oaks, interspersed. Sumach and hazel also abound in and around all the groves. Wild cherry, honey locust, linden or bass wood, ash, cotton-wood, sycamore, and some other varieties of timber are more or less to be noticed, and in some particular localities are found in considerable abundance. <sup>25</sup>

**Whiteside County.**—JAMES SHAW REPORTED, "Along the western bluffs, and through the township of Ustick, the surface is rough and covered with oak barrens." Mr. Shaw described the uplands bordering Cattail Slough in Union Grove Township as "low, abrupt, oak covered hills." <sup>26</sup>

REGARDING MOUNT PLEASANT TOWNSHIP in Whiteside County, Charles Bent recalled in 1877, "The timber growth found by the pioneers was large and of good quality. Trees that would produce three rail cuts \* were abundant." <sup>27</sup>

## *Shrublands*

THE SHRUBBY CHARACTER of the pioneer-era vegetation is emphasized in the general accounts at the beginning of this chapter. In addition to these quotations, the region's county histories have remarks such as this one for Stephenson County: "For fruits the people had crabapples, wild-plums, thorn apples, blackberries, grapes and raspberries." <sup>28</sup>

## *Grasslands*

**Carroll County.**—ON APRIL 16, 1839, J.H. and Sarah A. Smith wrote from their new home at Elkhorn Grove to a relative in Maryland . . .

The prairies in the summer present one vast natural garden of delights spreading before the eye such a beautiful and variegated scenery decked with flowers of every shape, size, and hue, that he that could not admire them must be destitute of a sense of beauty and elegance. <sup>29</sup>

MESSRS. BATEMAN, SELBY, AND HOSTETTER described the grassland east of Mount Carroll during pioneer times:

Above the upper dells the explorer emerges upon the beautiful prairie, which extends for miles towards the rising sun. . . . The prairie had a beauty of its own, which beggars description; it has vanished forever; we shall never see its like again. <sup>30</sup>

**Ogle County.**—MESSRS. BATEMAN, SELBY, KAUFFMAN, AND KAUFFMAN quoted two pioneers who described the blooming of prairies in Ogle County:

Mrs. John Rutledge (Mary S. Hawthorn), who came with her father's family to Washington Grove, in 1838, says there were "Indian pinks, wild roses,

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\* Fence rails usually were cut about 10 feet long. A tree with a trunk that was straight and free of major forks for at least 30 feet would be required to make three rail cuts.

star flower, — just a bed of flowers in 1840 from Washington Grove towards Old Chapel — no timber there then, only prairie." Mrs. H.J. Farwell, who came to Mount Morris in 1846, tells of "a great mass of bloom on prairies everywhere, — white, yellow, purple, red, blue." The rosin-weed, or compass-plant, whose forked leaves incline to point north and south, growing among the flowers, was sometimes seen with delight by the traveler across these "prairie-lands," for other reasons than those of beauty; and by the small child of those days for the chewing-gum that could be made out of the juice it exuded. \* <sup>31</sup>

**Stephenson County.** — JOHN MUIR GREW UP IN SOUTHERN WISCONSIN and sometimes visited northern Illinois. In 1867 he wrote to a fellow botanist, Mrs. Ezra S. Carr, and presented data from a transect across dry prairie. This may be the first such systematic survey of vegetation in Illinois:

I botanized one week on the prairie about seven miles southwest of Pectanica. I gathered the most beautiful bouquet there that I ever saw. I seldom make bouquets. I never saw but very few that I thought were at all beautiful. I was anxious to know the grasses and sedges of the Illinois prairies and also their comparative abundance; so I walked one hundred yards in a straight line, gathering at each step that grass or sedge nearest my foot, placing them one by one in my left hand as I walked along, without looking at them or entertaining the remotest idea of making a bouquet. At the end of this measured walk my handful, of course, consisted of one hundred plants *arranged in Nature's own way* as regards kind, comparative numbers, and size. I looked at my grass bouquet by chance — was startled — held it at arms length *in sight of its own near and distant scenery and companion flowers* — my discovery was complete and I was delighted beyond measure with the new and extreme beauty. Here it is: —

Of <i>Koeleria cristata</i>	55
" <i>Agrostis scabra</i>	29
" <i>Panicum clandestinum</i>	7
" " <i>depauperatum</i>	1
" <i>Stipa spartea</i>	7
" <i>Poa alsodes</i>	7
" " <i>pratensis</i>	1
" <i>Carex panicea</i>	4
" " <i>Novæ-Angliæ</i>	1

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\* The "wild roses" probably are pasture rose (*Rosa carolina*). The identities of the "Indian pinks" and "star flower" are uncertain, though Indian paintbrush (*Castilleja coccinea*) and shooting star (*Dodecatheon meadia*) are possibilities. The "rosin-weed, or compass-plant" is *Silphium laciniatum*, which now is generally called compass plant. Now the name "rosin weed" usually is applied to *Silphium integrifolium*.

The species list \* shows that Muir had made a transect across a dry prairie. The Freeport Section is characterized by well drained ridges with a thin, eroded veneer of glacial materials over dolomite bedrock. Muir's location, "about seven miles southwest of Pecatonica," placed him in Ridott Township in Stephenson County, not far from Seward Bluff Forest Preserve in Winnebago County.<sup>32</sup>

## *Peatlands and Marl Deposits*

**Stephenson County.**—IN THE 1873 *Geological Survey of Illinois*, James Shaw reviewed the peatlands in the county:

Some bog iron ore may be found in some of the marshes but it is of little value and limited extent.

. . . At several localities peat beds of some value have been discovered. On the farm of a Mr. White, in township 26, range 9, a bed of about fifty acres exists. It is from three to six feet deep, and is underlaid by a tough, tenacious, dark-colored fire clay; the peat is of a rather poor quality, and with our present knowledge of preparing fuel from this substance, is, perhaps, of no great value as a fuel. Near Lena and Burr Oak Grove, very small beds were examined. On the low, level prairies south of Yellow creek, and ranging between Florence and Crane's Grove, almost every swale and marsh has in it more or less peat. One of these beds is quite extensive, and will become valuable as soon as the peat experiment succeeds. It is found in the township of Florence, between sections twenty-five and twenty-six, the section line running along near its middle. It is from forty to fifty rods wide and about one hundred and sixty rods long, containing well nigh fifty acres. About one-half of it is owned by G. Purington; the other half is owned by parties whose names we did not obtain. So far as we could obtain the depth of peat, it ran from six to about nine feet. Careful borings would, perhaps, show a greater depth. Through its center, a small stream of pure water runs in a little ditch dug to drain the marsh. The current of the water is rapid, on account of the great fall along the ditch. At the lower end of the marsh large bodies of the peat have broken off, turned over, and slidden down the declivity for several rods along the declining, underlying, slippery clay, resembling the action of ice blocks sliding away from the lower end of an Alpine glacier. . . . The ease with which this bog can be drained, and its proximity to one of the depots of the

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\* *Koeleria cristata* = June grass (*K. macrantha*); *Agrostis scabra* = tickle grass; *Panicum clandestinum* = broad-leaved panic grass; *Panicum depauperatum* = panic grass; *Stipa spartea* = porcupine grass; *Poa alsodes* = woodland bluegrass (*P. sylvestris*), probably a misidentification; *Poa pratensis* = Kentucky bluegrass; *Carex panicea* = the sedge *C. tetanica*, perhaps a misidentification; *Carex Novae-Angliae* = a sedge, modern name unknown.

Western Union Railroad, afford peculiar facilities for manufacturing the fuel, and transporting it when so manufactured. <sup>33</sup>

HISTORIAN A.L. FULWIDER paraphrased part of Shaw's report:

Almost every swamp south of Yellow Creek has some peat formations. Small beds have been found about Lena and Ridott. The best peat bed is in the township of Florence, between section 25 and 26. It is 40 rods wide and over 100 rods long, and contains about 50 acres. It is from 6 to 9 feet deep. <sup>34</sup>

**Whiteside County.**—CHARLES BENT DESCRIBED A MARL DEPOSIT in his 1877 *History of Whiteside County*:

Marl. — A calcareous clay or soft shelly limestone, is quite common, but is usually called a clay. These marls where found in sufficient quantities are valuable fertilizers and are worthy of much more attention than they have received. . . . The deposit known as quick clay is a marl. A bed of shell marl occurs on Dr. Pennington's land in Jordan, but seems to be thin. <sup>35</sup>

It is not known whether these marls were associated with active calcareous seepage. Perhaps they were fossil deposits, formed long ago under different environmental conditions.

*The Cattail Slough was a great hunting ground for furs, and in the proper season the Indians would pitch their tents wherever they chose, over this ground, and hunt and trap for fur-bearing animals. They were not troublesome to the settlers. — Charles Bent, in the History of Whiteside County (1877).*

**Winnebago County.**—JAMES SHAW STATED, "Bog iron ore exists about many of the springs, but for economical purposes the deposit is worthless," and he went on to observe,

No peat beds of value were noticed in the examinations of this county. . . . In the region of Sugar river, in the sloughs, swales and marshes there existing to a limited extent, and about the rise of the small streams south of Rock River, some small beds of imperfect peat and black muck doubtless exist; but they will never be of value as a fuel, and are only adapted for use as a fertilizer of the soil. <sup>36</sup>



## *White Pines*

THIS REGION OF THE STATE is famed for White Pines Forest State Park, where a grove of white pines and other northern relictual plants grow along a stream canyon in dolomite. The 1909 *History of Ogle County* describes the area:

The evergreen tree tract, for which Ogle County has in recent years become well known throughout the State of Illinois, is situated along Pine Creek. . . . This forest is traversed by Pine Creek, which rises farther to the north, flowing in a winding course, and entering Rock River near Grand Detour. Pine Creek is a most picturesque stream along its course at other points besides that where it cuts through this forest; but in what is known as the "White Pine Woods," it reaches the height of its picturesque beauty and variety, as it runs by the high, rocky, vine-and-flower-covered banks, mirroring them in its clear ripples as it eddies by. . . . The red cedar is also found along this stream, chiefly on the west side, and the American yew, or ground hemlock, a third evergreen, creeps down long stretches of its rocky walls on the east.<sup>37</sup>

THE ILLINOIS GENERAL ASSEMBLY called for an investigation of the desirability and feasibility of protecting the white pine grove, and the eventual result was White Pines Forest State Park. The legislators relied in part on the following report:

The piece of land should be made into a State forest reserve, since it is the only *White Pine Grove* in the State and shows excellent prospects of enlarging itself by natural seeding—in time, perhaps, overrunning the greater part of the tract—if a little care is taken to cut out a little oak, now and then, as the young pines become larger and denser. The natural beauties are exceptional.

The tract contains about 500 acres. Natural conditions are favorable to good tree growth. The present forest is young and evidently very few of the trees in it are over 75 years old.<sup>38</sup>

## *Caves and Springs*

THE FREEPORT SECTION HAS A NUMBER of caves and springs. Some of the springs issue from caves and smaller cavities dissolved from the dolomite bedrock, but other springs are supplied by groundwater emerging from glacial drift that overlies the bedrock. The largest known and most famous cavern in the region is Carroll Cave, or Waukarusa Cave. The 1913 *History of Carroll County* describes this cave, which is along Carroll Creek in Waukarusa Canyon:

The cave was a great crevice in the wall of rock, and extended back from the face of the bluff a hundred feet or more, was enlarged, and extended deeper into the ground by the miners digging for lead, which here was found in tiny veins running through the solid rock, so that it and some side chambers could be traversed by man for several hundred feet.<sup>39</sup>

AS CHARLES BENT SAID IN 1877, the springs in this region "do not seem to have attracted much attention." In reference to mineral springs, Mr. Bent wrote . . .

We have heard of but few, and these have no representation as far as we can learn for medicinal qualities. The most widely known is located in Newton township . . . charged with iron and sulphuretted hydrogen gas. . . . A similar spring exists near Hough's mill in Clyde. . . . About two miles east of Sterling there is a spring owned by Mr. Albertson, the water of which is said to contain soda, iron, magnesia, potassa in the form of bicarbonates — lithia and silica, and some chlorides and phosphates.<sup>40</sup>

CAVES AND SPRINGS OFTEN ARE ASSOCIATED with a kind of landform known as karst. This topography is characterized by sinkholes, which are closed depressions without an opening for drainage of water except perhaps a crevice in the bottom. Karst topography often develops where limestone or dolomite has been dissolved and eroded away by groundwater. Lee County has a relatively minor area of karst topography, which Oliver Everett described in 1861:

. . . where the Trenton Limerock underlies the drift, there are frequently found deep pits in the ground. These pits are generally more or less circular, and are from one to two or three rods in diameter, at the surface of the ground, and run to a point below. They are from ten to twenty and sometimes thirty feet deep, and have, evidently, been produced by the earth, in these places, falling into and being carried away by subterranean streams of water in the loose rock below.<sup>41</sup>

## *Fauna*

IN 1831 CALEB ATWATER REMARKED about a species of fish in the Pecatonica River: "Of fishes, of the finest flavor, the rivers, ponds, lakes and rivulets are literally full. The Pickatolica river, takes its name, from a fish, \* about the size of, and equal in its flavor, to the rock fish, caught in the Delaware, at Philadelphia."<sup>42</sup>

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\* The identity of the pickatolica is problematic. Mr. Atwater provided this clue: "The only difference between the Philadelphia rock fish, and the pickatolica of the Upper Mississippi, that I could perceive, was in the former having scales, while the latter has none." Atwater was not referring to a kind of catfish, for he also mentioned "the different species of cat fish," but few Illinois fishes other than catfishes lack scales. Perhaps Atwater was describing the burbot (*Lota lota*), a relative of the cod that has scales which are so tiny that they can be overlooked.

WILLIAM KEATING DESCRIBED some of the birds encountered on the prairie northwest of Freeport on June 15, 1823:

Soon after we entered the prairie, a deer crossed our route about two miles ahead of us: Wennebea started in pursuit, but returned in the course of an hour, after a fruitless and fatiguing chase. He brought back, however, a curlew (*Numenius longirostris*), a bird of which we occasionally roused a pair or two. We frequently observed the majestic sand-hill crane (*Grus Canadensis*), striding across the prairie. This animal, if taken young, can, it is said, be domesticated with ease. Two or three of them were kept last season at Chicago, being allowed to pass freely before the sentinels; but they never failed to return to their nests. We also saw on the prairie the fine swallow-tailed Hawk (*Falco [Milvus] furcatus*), flying over us. \* <sup>43</sup>

IN HIS REMINISCENCES in 1891 after 55 years in Rockford, John Thurston recalled some of the former animal life in the Rock River:

In places, the bottom of the stream was nearly covered with clams and piles of shells a foot or more in depth, which the muskrats left close to the edge of the water were frequent. We tried to prepare these clams for our table. I gathered half a bushel in twenty minutes in the immediate vicinity of the ferry landing in the summer of 1837, only to find they were too tough for my sound teeth . . . .

. . . Opposite the town of Rockford, and above the rapids, the river bottom was smooth and free from all obstructions. <sup>44</sup> We procured a seine of very considerable length, by a single draw of which we could supply the whole population of the town with fish to last them several days. . . . the seine was then drawn by parties at either end slowly toward the shore, and when within twenty or thirty feet of the bank the excitement began. Such a kicking and jumping and splashing! There was the monster Mississippi catfish, weighing from fifty to eighty pounds, the huge sturgeon from three to four feet long, the 'buffalo' weighing as high as eighty pounds, 'red-horse' and other fish without number. <sup>45</sup>

Mr. Thurston also recounted the waterfowl and other migratory game birds around Rockford:

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\* William Keating travelled in the company of Thomas Say, who was one of America's earliest zoologists. The "curlew (*Numenius longirostris*)" is the long-billed curlew (*Numenius americanus*). The "sand-hill crane (*Grus Canadensis*)" is still known by this name. The "swallow-tailed Hawk (*Falco [Milvus] furcatus*)" is the swallow-tailed kite (*Elanoides forficatus*). The ranges of the long-billed curlew and the swallow-tailed kite no longer come near Illinois: the curlew usually does not range very far west of the Rockies during the breeding season, and the kite is generally limited to the coastal areas of the Southeast.

There was a multitude of water fowl at an early day, but we had little success in hunting them. The modern method of using decoys never occurred to us. In the spring, the ponds along the Killbuck were fairly black with ducks and geese. Turkeys were plentiful in the timber on the Pecatonica bottoms, but elsewhere in this county were seldom found. Sand hill cranes—quite equal to a turkey—were common, but like the geese, could only be shot with a rifle. The long bill curlew disappeared more than forty years ago. They were here in great numbers up to about 1846, and were excellent for the table. There was a small bird which at that time was called a plover,\* that came in the spring in countless numbers just before the grass started. They fairly covered the earth where the prairie had recently been burned over, but could only be approached with a team. A few were shot, and we might have made large bags but for the expense of ammunition . . . .<sup>46</sup>

## *Flora*

IN AN 1860 LETTER shared with the readers of the *Prairie Farmer*, Dr. M.S. Bebb described "The Flora of Ogle and Winnebago Cos., Ill."

Dear Friend: I have often thought I would attempt to give you some account of the vegetation of the district in which I collected the specimens sent you last Fall, and as often I have allowed my good intent to fade away somewhere between resolve and execution. This afternoon I find myself at leisure, and will therefore begin at once a brief sketch in lieu of the more extended description which I had promised myself I would write. My observations will be confined to Winnebago and Ogle Counties.

. . . Generally the water-courses traverse a valley of greater or less breadth, this valley margined by a somewhat abrupt bank, where the water has acted upon the rocks in place, above which begins the rolling prairie.

Thus a variety of stations are produced which have plants peculiar to each. I shall omit from my enumeration those species which seem to flourish about equally well every where.

I. The margin of the water-course, characterized by *Diplopappus umbellatus*, *T. & G.*; *Mimulus Jamesii*, *Torr.*; *Veronica Anagallis*, *L.*; *Salix* dis-

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\* Thurston's plover probably was the American golden plover (*Pluvialis dominica*), which still alights in Illinois during its migration between the Arctic and southern South America.

color, *Muhl.*; *S. eriocephala*, *Mx.*; *S. cordata*, *Muhl.*; *S. rostrata*, *Rich.*; *S. lucida*, *Muhl.* \*

... II. The level valley. This frequently exhibits a heavy growth of two grasses—*Andropogon furcatus* and *Sorghum nutans*—with Carices † in springy places. We find here—

*Liatris pycnostachya*, *Mx.* *Solidago Riddelli*, *Frank.* *Rudbeckia subtomentosa*, *Ph.* *Cypripedium candidum*, *Muhl.* *Cypripedium spectabilis*, *Swartz.* *Scilla fraseri*, *Gray.* *Heuchera hispida*, *Ph.* *Valeriana edulis*, *Nutt.* *Artemisia Leudoviciana*, *Nutt.* var *serrata*. *Lysimachia longifolia*, *Ph.* *Pedicularis lanceolata*, *Mx.* *Gentiana detonsa*, *Fries.* ‡

III. The rise at the border of the valley is usually covered with forest trees which have here found protection from the prairie fires, such as *Quercus macrocarpa*, *Tilia Americana*, † &c., with a variety of undershrubs and herbaceous plants, common every where in the woods of this latitude, viz.:—

*Hepatica triloba*, *Chaix.* *Sanguinaria Canadensis*, *L.* *Dentaria laciniata*. *Viola pubescens*. *Mitella diphylla*, *L.* *Trillium recurvatum*, &c. §

IV. Back of this, as I remarked before, the rolling prairie begins, but between the rich soil of the prairie and the bank, there is generally found a strip of light soil where the rock is nearly exposed, and the surface of the ground is strewn with fragments of the chert and limestone. Here it is that

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\* *Diplopappus umbellatus* = flat-top aster (*Aster umbellatus*); *Mimulus Jamesii* = yellow monkey flower (*Mimulus glabratus* var. *fremontii*); *Veronica Anagallis* = water speedwell (*Veronica catenata*); *Salix discolor* = pussy willow; *Salix eriocephala* = pussy willow (*Salix discolor*); *Salix cordata* = heart-leaved willow (*Salix rigida*); *Salix rostrata* = Bebb's willow (*Salix bebbiana*); *Salix lucida* = shining willow.

† *Andropogon furcatus* = big bluestem (*Andropogon gerardii*); *Sorghum nutans* = Indian grass (*Sorghastrum nutans*); Carices = sedges (*Carex* spp.).

‡ *Liatris pycnostachya* = prairie blazing star; *Solidago Riddelli* = Riddell's goldenrod; *Rudbeckia subtomentosa* = sweet black-eyed Susan; *Cypripedium candidum* = white lady's slipper; *Cypripedium spectabilis* = showy lady's slipper (*Cypripedium reginae*); *Scilla fraseri* = wild hyacinth (*Camassia scilloides*); *Heuchera hispida* = prairie alumroot (*Heuchera richardsonii*); *Valeriana edulis* = valerian; *Artemisia Leudoviciana* var. *serrata* = wormwood (*Artemisia serrata*); *Lysimachia longifolia* = whorled loosestrife (*Lysimachia quadriflora*); *Pedicularis lanceolata* = wood betony (*Pedicularis canadensis*); *Gentiana detonsa* = small fringed gentian (*Gentianopsis procera*).

† *Quercus macrocarpa* = burr oak; *Tilia Americana* = eastern basswood.

§ *Hepatica triloba* = hepatica (*Hepatica nobilis* var. *acuta*); *Sanguinaria Canadensis* = bloodroot; *Dentaria laciniata* = toothwort; *Viola pubescens* = downy yellow violet; *Mitella diphylla* = bishop's cap; *Trillium recurvatum* = wake robin.

the botanist finds his "best things," interesting plants, many of them stragglers from the plains west of us:—

*Pulsatilla Nuttalliana*, Gray. *Draba Caroliniana*, Walt. *Draba micrantha*, Nutt. *Viola delphinifolia*, Nutt. *Alsine Michauxii*, Fenzl. *Geum triflorum*, Ph. *Liatris cylindracea*, Mx. *Artemisia caudata*, Mx. *Hieracium longipilum*, Torr. *Troximon cuspidatum*, Ph. *Castilleja sessiliflora*. *Scutellaria parvula*. *Lithospermum longiflorum*.

I believe this is about the southern limit of *Pulsatilla* east of the Mississippi, but it extends southward along the Rocky Mountains, as far as Santa Fe, at which place it was collected by Fendler.

V. As characteristic of the higher prairies, I may mention—*Ranunculus rhomboideus*. Goldie. *Viola pedata*. *Petalostemum violaceum*, Mx. *Petalostemum candidum*, Mx. *Baptisia leucantha*, T. & G. *Liatris Scariosa*, Willd. *Aster sericeus*, Vent. *Aster ptarmicoides*, T. & G. *Solidago speciosa*. *Gentiana puberula*, Mx. *Platanthera leucophaea*. *Coreopsis palmata*.<sup>†</sup>

To avoid confusion I have thus far left out of consideration "the Groves," but my sketch would be incomplete with an entire omission of this prominent feature in the distribution of the Flora of Northern Illinois—the plants of the Grove being essentially different from those of the prairie.

The Groves usually occupy the valleys, where they have grown up under the protection from fire afforded by the water course, the timber consisting principally of Burr Oak—*Quercus macrocarpa*—(strangely stunted with acorns not larger than those of Post Oak) and White Oak, with here and there Poplar and Wild Cherry interspersed. Beneath we find an abundant growth of shrubs, principally Hazel (*Corylus Americana*) and *Cornus pani-*

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\* *Pulsatilla Nuttalliana* = Pasque flower (*Pulsatilla patens* ssp. *multiflora*); *Draba Caroliniana* = common whitlow grass (*Draba reptans*); *Draba micrantha* = common whitlow grass (*Draba reptans*); *Viola delphinifolia* = prairie violet (*Viola pedatifida*); *Alsine Michauxii* = stiff sandwort (*Minuartia stricta*); *Geum triflorum* = prairie smoke; *Liatris cylindracea* = cylindrical blazing star; *Artemisia caudata* = beach wormwood (*Artemisia campestris*); *Hieracium longipilum* = hairy hawkweed; *Troximon cuspidatum* = prairie dandelion (*Nothocalais cuspidata*); *Castilleja sessiliflora* = yellow Indian paintbrush (*Castilleja sessiliflora*); *Scutellaria parvula* = small skullcap; *Lithospermum longiflorum* = fringed puccoon (*Lithospermum incisum*).

† *Ranunculus rhomboideus* = prairie buttercup; *Viola pedata* = bird's foot violet; *Petalostemum violaceum* = purple prairie clover (*Dalea purpurea*); *Petalostemum candidum* = white prairie clover (*Dalea candida*); *Baptisia leucantha* = white wild indigo; *Liatris Scariosa* = rough blazing star (*Liatris aspera*); *Aster sericeus* = silky aster; *Aster ptarmicoides* = stiff goldenrod (*Solidago ptarmicoides*); *Solidago speciosa* = showy goldenrod; *Gentiana puberula* = prairie gentian (*Gentiana puberulenta*); *Platanthera leucophaea* = eastern prairie fringed orchid; *Coreopsis palmata* = prairie coreopsis.

*culata*, \* the Hazel often extending out into the prairie for a mile or more, forming what is called "Hazel ruff."

The plants that are not usually found out of the Grove are *Anemone cylindrica*, Gray. *Helianthus occidentalis*, Rid. *Cacalia atriplicifolia*, L. *Nabalus albus*. *Gerardia quercifolia*, Ph. *Gentiana alba*, Muhl. *Sporobolus heterolepis*. *Pteris aquilina*, L. †

A few species, viz., *Silphium integrifolium*, *Pedicularis Canadensis*, and *Carex Pennsylvanica*, ‡ follow the hazel beyond the timber. 47

Dr. Bebb concluded his letter, "I had intended to say something of the heavily timbered tracks that are found along the Pecatonica river, with a vegetation similar to the forests of the central portion of the State, and also to notice the changes which cultivation has wrought in the extermination of some species and the increase of others; but my letter already reaches an impertinent length."

Yours, cordially, M.S. Bebb

*The town of Dixon takes its name from its oldest inhabitant—Na Chusa, or white head, as the Indians called him, who was ferryman at this part of Rock river at a time, now thirty years since, when the country was still the home of the Indians . . .*

—William Hancock, writing in 1860.

*John Ankeney came from the southern part of Illinois in the spring of 1829, and made a claim at "Nanusha," or Buffalo Grove, by marking some trees on Buffalo Creek, near where the bridge on the "Galena Road" was afterwards built.*

—*Sketches of the History of Ogle County* by H.R. Boss (1859).

*Buffalo Grove, from "Nanusha," Indian for buffalo, large herds of which grazed around there until white men drove them away.*

—*History of Carroll County* by H.F. Kett and Company (1878).

\* *Cornus paniculata* = gray dogwood (*Cornus racemosa*).

† *Anemone cylindrica* = thimbleweed; *Helianthus occidentalis* = western sunflower; *Cacalia atriplicifolia* = pale Indian plantain; *Nabalus albus* = white wild lettuce (*Prenanthes alba*); *Gerardia quercifolia* = smooth false foxglove (*Aureolaria flava*); *Gentiana alba* = yellowish gentian; *Sporobolus heterolepis* = prairie dropseed; *Pteris aquilina* = bracken fern (*Pteridium aquilinum*).

‡ *Silphium integrifolium* = rosinweed; *Pedicularis Canadensis* = wood betony; *Carex Pennsylvanica* = Pennsylvania sedge (*C. pensylvanica*).

## OREGON SECTION

### *General Accounts*

THE OREGON SECTION EXTENDS down the Rock River into the east side of Dixon. Here is how Eliza Farnham saw this part of the town in 1839:

There is much natural beauty about the upper part of the town. The bank of the river is broken, and bold bluff of lime-rock rises abruptly to a considerable height above the lower level, the summit of which is wooded with open, beautiful barrens. The trees hang on the brow of the ledge, and wave their arms pleasantly to those below. A fine spring issues from the foot of the rock, but I did not visit it. <sup>48</sup>

IN 1843 MARGARET FULLER STOPPED AT DIXON and then headed upstream through the Oregon Section:

The river flows sometimes through these parks and lawns, then betwixt high bluffs, whose grassy ridges are covered with fine trees, or broken with crumbling stone, that easily assumes the forms of buttress, arch and clustered columns. Along the face of such crumbling rocks, swallows' nests are clustered, thick as cities, and eagles and deer do not disdain their summits. One morning, out in the boat along the base of these rocks, it was amusing, and affecting too, to see these swallows put their heads out to look . . .

. . . Passing through one of the fine, park-like woods, almost clear from underbrush and carpeted with thick grasses and flowers, we met (for it was Sunday,) a little congregation just returning from their service . . .

. . . At Oregon, the beauty of the scene was of even a more sumptuous character than at our former "stopping place." Here swelled the river in its boldest course, interspersed by halcyon isles on which nature had lavished all her prodigality in tree, vine, and flower, banked by noble bluffs, three hundred feet high, \* their sharp ridges as exquisitely definite as the edge of a shell; their summits adorned with those same beautiful trees, and with buttresses of rich rock, crested with old hemlocks, † which wore a touching and antique grace amid the softer and more luxuriant vegetation. Lofty natural mounds rose amidst the rest, with the same lovely and sweeping outline, showing everywhere the plastic power of water, — water, mother of

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\* The bluffs are generally about 100 to 150 feet high.

† No native hemlocks (*Tsuga canadensis*) are known from Illinois, but the Canada yew (*Taxus canadensis*) was commonly known as "hemlock" in the last century.



beauty, which, by its sweet and eager flow, had left such lineaments as human genius never dreamt of.

Not far from the river was a high crag, called the Pine Rock, \* which looks out, as our guide observed, like a helmet above the brow of the country. It seems as if the water left here and there a vestige of forms and materials that preceded its course, just to set off its new and richer designs. <sup>49</sup>

THE EXTENT OF THE OREGON SECTION closely coincides with the area where the St. Peter sandstone comes to the surface. In 1861 Oliver Everett described the area in which this massive sedimentary formation crops out to form bluffs on either side of the Rock River in the Oregon Section:

It is the prevailing rock along the river, from a mile above Oregon to about three miles below Grand De Tour, a distance of thirteen or fourteen miles. On the north-west side of the river, I think that in no place does this rock appear on the surface more than two or three miles from the river, On the south-west † side it extends several miles back from the river. I should think that the thickness of this rock could not be less than two hundred feet, and probably more. The country where this rock prevails is characterized by great unevenness. It is frequently cut up into deep and sharp ravines, and, in many places, there are bold, precipitous bluffs, from one to two hundred feet high. <sup>50</sup>

JAMES SHAW PENNED THE FOLLOWING about Lee County for the 1873 volume of the *Geological Survey of Illinois*:

To one familiar with the sublimity and grandeur of mountain scenery, as displayed in Alpine regions, or among the canons and wonders of our own Sierra Nevada or Rocky Mountain chains, where the slow-moving glacier creeps among eternal rocks down to the evergreen forests and the smiling valleys; where the mountain-born torrent leaps in foam along its rocky channel; where gorge and precipice and adamantine rocks, in wild confusion piled, fill the soul with awe—to one, I say, familiar with such scenes as these, the scenery along Rock river, in Ogle county, may seem tame; but to the inhabitant of the prairies, accustomed only to the grassy plains and green slopes of his native State, bedecked though they be in their native wildness with flowers of gayest hue, to him there is a charm in such scenery, as a ride along the river bank from Byron to Dixon discloses.

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\* Pine Rock is an isolated knob of St. Peter Sandstone. It was dedicated as an Illinois Nature Preserve in 1966.

† Everett should have written "south-east" rather than "south-west."

The resemblance to the old feudal castles of England, as, half-ruined, moss-covered and ivy-draped, they are preserved to us in picture galleries, is constant and recurring. The limestone bluffs, covered half way up their steep sides with the accumulated talus of ages, look like mural escarpments and Cyclopean walls among the wild hills. The sandstone cliffs of various hues, now glancing like snow hills in the sunshine, or glowing like hills of flame or yellow, when stained with the red oxide of iron, are weathered into all sorts of fantastic shapes. The rounded, tower-like, castellated masses, which stand out in bold relief at the Indian Pulpit, \* three or four miles below Oregon, and at other places along this heavy outcrop of the St. Peter's sandstone, need not the aid of imagination or fancy to shape themselves into dome and minaret, spire or cupola, or the graceful flutings, carvings, mouldings and columns of Gothic, Doric or Corinthian architecture. If well painted in oil, some of the more striking scenes would illustrate Illinois landscapes of no mean order of beauty.<sup>51</sup>

E.W. HICKS MENTIONED THE MASSIVE ST. PETER SANDSTONE in 1877, but he was not much impressed with its economic value: "It is found deepest on Rock river, above the village of Oregon, but is so stained with oxide of iron, or drippings of iron, as to be useless, except for scenery. It looks at a distance like masses of painted rock."<sup>52</sup>

## Woodlands

IN 1861 OLIVER EVERETT DESCRIBED THE WOODLANDS along the length of the Rock River in the Oregon Section:

... between Dixon and Oregon, a considerable portion of the country along the river is covered with timber. The timber is not generally of very heavy growth, although, in some places, on the bottom lands, it is quite large. It consists of the various species of oak and hickory common to the State, the black and white walnut, the sugar and silver-leaved maple, box-elder (*Negundo accrifolium*), sycamore, the red and white elm, hackberry, ash, linden, cottonwood, etc. The red cedar, the white pine, the ground hemlock, (*Taxus Americana*), the black and the paper or canoe birch (*Betula lenta* and *Betula papyracea*), † are found on the extreme verge of the rocks overhanging the river and creeks, beyond the reach of the prairie fires. All these last mentioned species, except the red cedar, are found, as

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\* The Indian Pulpit, or Black Hawk's Pulpit, is a sandstone eminence that rises above the Rock River downstream from Oregon.

† Box-elder (*Negundo accrifolium*) = box elder (*Acer negundo*); ground hemlock (*Taxus Americana*) = Canada yew (*Taxus canadensis*); black birch (*Betula lenta*) = yellow birch (*B. lutea*); paper or canoe birch (*Betula papyracea*) = paper birch (*B. papyrifera*).

far as I have observed, only upon the bluffs formed by the St. Peter's Sandstone.<sup>53</sup>

WRITING OF OGLE COUNTY IN THE 1873 *Geological Survey of Illinois*, James Shaw related, "The rough, hilly part of the county, along the streams, is covered with a fair growth of the usual white and black oak timber. None of it could be called heavy timber, and some of it is brushy barrens."<sup>54</sup> Shaw was not commenting specifically on the Oregon Section, but his remark most likely could be applied to this part of the county. In the same publication Mr. Shaw also wrote a chapter about Lee County, in which he addressed the Oregon Section specifically: "The north-western part of the county, where Rock river cuts across the corner, is rough, hilly, and in places picturesque, especially in the vicinity of that stream. The hills and ravines in this locality are partially covered with dense underbrush and scattering timber."<sup>55</sup>

### *Fauna*

ON NOVEMBER 23, 1846 O.H. WALLACE of Mt. Morris wrote to a friend in Maryland, encouraging him to come to Ogle County:

... it would do your hart good to sea the ... \* prairie hens partredges rabbits wild geese ducks and then go to Rock River with us when we cetch pike that will way from 20 to 25 pounds and sturgeons that way from 70 to 100lb. and all kinds of the best fish—I am a nitting a sain 50 yards long for Mr. Heth brother James and myself ....<sup>56</sup>

### *Flora*

IN AN 1860 LETTER PUBLISHED IN THE *Prairie Farmer*, Dr. M.S. Bebb enumerated some of the plants to be found on the sandstone outcrops:

A few words concerning the southern part of Ogle county. Here the surface rock is sandstone, forming cliffs and dry ravines. On some of the prominent cliffs that face Rock river, such for instance as one three miles below Oregon, known as "Black Hawk's Pulpit," the botanist will find a vegetation so entirely similar to that of some parts of Massachusetts, and so entirely unlike that of the prairies ten miles above, as to excite astonishment. Take this list of plants collected among others one afternoon I spent there botanizing:

*Rhus copallina*, *L.* *Hamamelis Virginica*, *L.* *Gaylussacia resinosa*, *T. & G.* *Penstemon pubescens*. *Polypodium vulgare*, *L.* *Polygonum articulatum*, *L.*

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\* A portion of the original manuscript is omitted here because it cannot be read.

*Smilacina bifolia*, Ker. *Polytrichum commune*, L. *Dicranum undulatum*.  
*Allosorus Gracilis*, Preat. \*

Here, as in the limestone district, where the stone and prairie meet and mingle, there may be found several rare plants: *Astralagus Mexicanus*, A.D.C. *Oenothera riparia*, Nutt. *Synthyris Houghtoniana*, Benth. *Lithospermum hirtum*, Lehm. † <sup>57</sup>

THE REGION AROUND OREGON is famed for the rich northern flora that finds the requisite habitat on cliffs and canyons of St. Peter Sandstone; this rock flanks the Rock River, lines small interior valleys, and forms isolated knobs. The 1909 *History of Ogle County* emphasizes the region's fern flora:

On the northwest slope of Pine Rock, . . . one passes through "a sea of osmundas." . . . Along the roadway that follows this "Hudson of the West" ‡ are found, as one lady expresses it, "just stacks and stacks of ferns." Here are found extensive and luxuriant beds of Interrupted and Cinnamon Ferns, and on their outskirts and nearby ledges are found an abundance of Brake, Maidenhair, Lady Fern, Spinulose and Evergreen Wood Ferns, as well as occasional fronds of Rattlesnake Fern. From a more extensive search into their favorite haunts collectors have reported New York Fern, Ostrich Fern, Royal Fern, Marsh Fern, Oak and Beech Ferns, Ebony, Narrow Leaved, and Maidenhair Spleenworts, Rusty Woodsia, and Hayscented Fern. <sup>58</sup>

*The forests and rocky fastnesses of the region of Rock river have been so preserved in their rude native character, as not only to be attractive to the eyes of men who appreciate the charms of nature, but to the fowls and wild beasts of former days.*

*—History of Lee County (1881).*

\* *Rhus copallina* = winged sumac; *Hamamelis Virginica* = witch hazel; *Gaylussacia resinosa* = huckleberry (*Gaylussacia baccata*); *Penstemon pubescens* = hairy beard tongue (*Penstemon hirsutus*); *Polypodium vulgare* = common polypody (*Polypodium virginianum*); *Polygonum articulatum* = jointweed (*Polygonella articulata*); *Smilacina bifolia* = false lily-of-the-valley (*Mianthemum canadense*); *Polytrichum commune* = pine-tree moss; *Dicranum undulatum* = hook moss; *Allosorus Gracilis* = slender cliff break (*Cryptogramma stelleri*).

† *Astralagus Mexicanus* = large ground plum; *Oenothera riparia* = small sundrops (*Oenothera perennis*); *Synthyris Houghtoniana* = kitten tails (*Besseyia bullii*); *Lithospermum hirtum* = hairy puccoon (*Lithospermum carolinense*).

‡ In the 1800s the Rock River received the appellation of the "Hudson of the West" on account of its beautiful water and the scenic cliffs that tower over it in the Oregon Section.

## NOTES

1. Schwegman *et al.* (1973).
2. Major Long's expedition was the first organized government investigation of northernmost Illinois. At the time of this excursion in 1823, Major Long had already distinguished himself in three expeditions farther west. Long's Peak in Colorado was named in his honor.
3. Keating (1825).
4. Based on observations made with a sextant, Keating reported the location of the expedition's encampment on the night of June 15 as 90 degrees 4 minutes 45 seconds west, 42 degrees 30 minutes 10 seconds north. This longitude and latitude would place the camp less than a mile east of the present town of Apple River and less than a mile south of the state line. However, Keating said that they camped on the "Wassemon, a beautiful tributary of the Pektannon." If they had camped on a tributary of the Pecatonica River in Illinois, they must have been at least five miles to the east of Apple River, near Warren. An encampment near Apple River or Warren would correspond with the location shown on a map by E.L. Burchard (1925). (Burchard's map indicates that the expedition camped at this point on July 16, but the actual date was June 16; Burchard's dating of the encampments may have been thrown off because Keating wrote "the 14th of July" in one passage of his narrative for June 14.)
5. Atwater (1831).
6. Hoffman (1835).
7. Mitchell (1838).
8. Fuller's travelogue was published in 1844 as *Summer on the Lakes, in 1843*. It was reprinted in 1991 by the University of Illinois Press.
9. Worthen and Shaw (1873).
10. Bateman, Selby, and Hostetter also mentioned that the Waukarusa canyon had "in great abundance thong wood, of so much use to the Indians in tying together the bark with which they formed their canoes and wigwams." Perhaps this was leather-wood (*Dirca palustris*).
11. Bateman, Selby, and Hostetter (1913).
12. Worthen and Shaw (1873).
13. Western Historical Company (1880).
14. Western Historical Company (1880).
15. Worthen and Shaw (1873).

16. Mary Sackett's journal has been edited by William Murray Underwood, who kindly made the unpublished manuscript available for this report. Miss Sackett's writings were brought to the attention of this project by George Johnson.
17. H.F. Kett and Company (1877). This discourse was adapted from James Shaw's treatment of Winnebago County in the *Geological Survey of Illinois* (Worthen and Shaw, 1873).
18. Thurston (1891).
19. Jones (1838).
20. Mr. Jones' enthusiastic account of the Rock River should be tempered by considering the fact that he visited the area to purchase land and lay out a new town at the junction of Elkhorn Creek and the Rock River, immediately downstream from Sterling.
21. Bateman, Selby, Kauffman, and Kauffman (1909).
22. Worthen and Shaw (1873).
23. Alfred Brunson's writings were published in 1900. His journal provided more information about Elkhorn Grove in 1835: "About 40 families had settled themselves about this grove. . . . They had also meted & bounded every mans *wood land*, allowing each family 40 acres of timber, & as much *Prairie* as he pleased to take up. Timber being the great disideratum of the country, they would not allow any one man to monopolise." Mr. Brunson's reference to "(Dogs head on the Map.)" is obscure.
24. Bateman, Selby, and Hostetter (1913).
25. Worthen and Shaw (1873).
26. Worthen and Shaw (1873).
27. Bent (1877).
28. Fulwider (1910).
29. Illinois State Historical Society (1908).
30. Bateman, Selby, and Hostetter (1913).
31. Bateman, Selby, Kauffman, and Kauffman (1909).
32. John Muir became a pioneering leader of the nation's nature preservation movement. A collection of his letters to Mrs. Carr was compiled and published as *Letters to a Friend* in 1973.
33. Worthen and Shaw (1873).

34. Fulwider (1910).
35. Bent (1877).
36. Worthen and Shaw (1873).
37. Bateman, Selby, Kauffman, and Kauffman (1909).
38. This report is quoted in Bateman, Selby, Kauffman, and Kauffman (1909).
39. Bateman, Selby, and Hostetter (1913).
40. Bent (1877).
41. Dr. Everett read his report at the June 27, 1860 meeting of the Illinois Natural History Society, and it was published in the 1861 *Transactions of the Illinois State Agricultural Society*.
42. Atwater (1831).
43. Keating (1825).
44. Elsewhere in his reminiscences, Thurston said of the Rock River at Rockford, "the rock bottom being as smooth as a floor."
45. Thurston (1891).
46. Thurston's reminiscences are about the Rockford region in general, and are not limited to the Rock River Hill Country Natural Division. Thurston mentioned the Pecatonica bottoms, which are in the Rock River Hill Country Natural Division, but he also did much of his hunting on the east side of the Rock River, which is in the Northeastern Morainal Natural Division. The Killbuck Creek valley, which Thurston described as having ponds that were black with waterfowl, is in the Grand Prairie Natural Division. Most likely this account of game birds around Rockford pertains well to the region in general and does not need to be limited to a specific natural division.
47. Bebb (1860).
48. Mrs. Farnham's 1839 visit is recounted in *Life in Prairie Land* (1846), which was republished by the University of Illinois Press in 1988.
49. Fuller (1991).
50. Everett's account originally appeared in the *Transactions of the Illinois State Agricultural Society* for 1859-60, and it is quoted in Stevens (1914).
51. Worthen and Shaw (1873).
52. Hicks (1877).

53. Everett (1861).
54. Worthen and Shaw (1873).
55. Worthen and Shaw (1873).
56. Illinois State Historical Society (1908).
57. Bebb (1860).
58. Bateman, Selby, Kauffman, and Kauffman (1909).



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