

## CHAPTER 2: LAND USE CHANGE FROM 1978 TO 1998

### SUMMARY

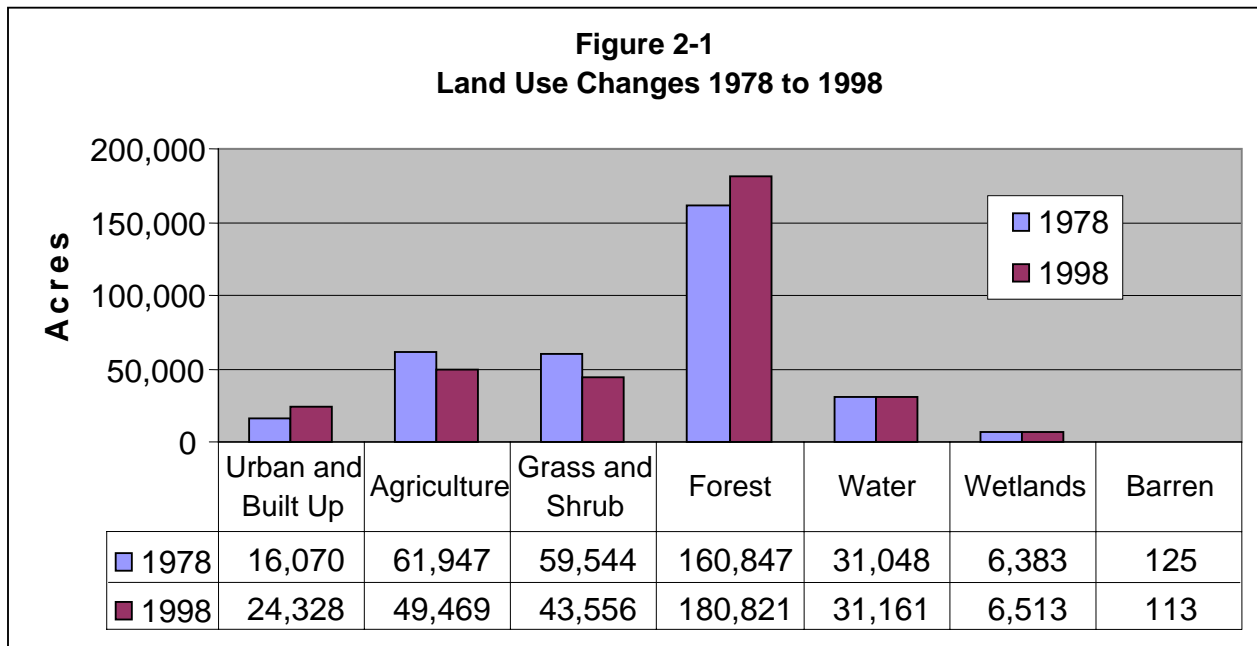
There are 335,961 acres (525 square miles) of land and water in Antrim County. A study performed by the Land Information Access Association (LIAA) indicated that 24.2% of the total area (81,226 acres) had undergone a land use change between 1978 and 1998. Much of the information in this section is taken from the LIAA study.

Figure 2-1 shows which land uses had the most pronounced changes. Figure 2-2 compares the land uses between 1978 and 1998.

Some land use changes between 1978 and 1998 are in the same general land use classification. This includes about 42.3 square miles or 27,045 acres of land. For example, an urban use may have changed, but it changed to another kind of urban use; or a forest use changed (or grew) into another kind of forest and thus remained in the forest use category. Figure 2-3 summarizes the changes within a particular land use classification between 1978 and 1998.

The amount of land that changed from one classification to another during this twenty-year period was 55,890 acres or 44.5 square miles. This represents approximately 8.5% of the total land and water area.

Note: Values may not sum due to rounding.



Source: 2003 Land Information Access Association Study

<b>Figure 2-2</b>					
<b>Land Use Changes 1978 to 1998 by Portion of County Area</b>					
	<b>1978 (acres)</b>	<b>% of County</b>	<b>1998 (acres)</b>	<b>% of County</b>	<b>Change (acres)</b>
Urban and Built Up	16,070	5%	24,328	7%	8,258
Agriculture	61,947	18%	49,469	15%	-12,478
Grass and Shrub	59,544	18%	43,556	13%	-15,988
Forest	160,847	48%	180,821	54%	19,974
Water	31,048	9%	31,161	9%	113
Wetlands	6,383	2%	6,513	2%	130
Barren	125	0%	113	0%	-12
<b>Total</b>	335,964 acres		335,961 acres		

Source: 2003 Land Information Access Association Study

<b>Figure 2-3</b>			
<b>Land Use Changes Within the Same Classification between 1978 and 1998</b>			
<b>Category of Use</b>	<b>Acres</b>	<b>Percent of Total Change</b>	<b>Square Miles</b>
Urban and Built Up	223	0.3%	0.4
Agriculture	5,324	6.6%	8.3
Grass and Shrub	13,852	7.3%	9.3
Forest	13,882	17.1%	21.7
Wetland	1,739	2.1%	2.7
<b>Total</b>	<b>27,045</b>	<b>33.4%</b>	<b>42.4</b>

Source: 2003 Land Information Access Association Study

**URBAN AND BUILT UP:** (Where development has and is occurring...)

The urban and built up land use category includes uses that are related to human activity, except agriculture. This includes houses, businesses, factories, airports, utilities, and recreational grounds, such as athletic fields and campgrounds. Cemeteries are also in this category.

In 1978, there was a total of 16,070 acres in this category. According to the LIAA study, 8,258 acres were added to this category from 1978 to 1998, while 223 acres changed from one urban use to another urban use. Interestingly, there were 362.4 acres that changed to a use that was non-urban: 42.7% became classified as grass, 23.4% became agriculture, 29.4% became forestland, and 4.5% became classified as wetland.

As of 1978, 4.8% of the county was in the urban and built up category. At the end of the 20-year period of the study, 7.2% of the county had this classification. This increase equals 8,258 acres or 2.5% of Antrim County: 44.2% came from the grass and shrub classification, 32.9% came from agricultural lands, 22.7% came from forestland, and .2% came from the wetland classification.

In Antrim County, two thirds of urban use changes are stemming from grass and forest uses, while one-third came from agricultural uses. The major changes to urban use are summarized in Figure 2-5.

Most of converted acreage (6,660 acres or 80.6%) was classified to a subcategory use under urban, titled single family/duplex. It is assumed that most of this was for single family residences. The two thirds of the 6,660 acres that became single family/duplex are broken down by township in Figure 2-4.

These townships represent where the larger urban use growth areas occurred in the county during the period of study.

There were small use changes to business and industrial during the twenty-year period. Of the 8,258 acres converted to urban use, only 391.8 acres were converted to the sub category of commercial, services, and institutional uses. In addition, only 425.9 acres were converted to industrial uses. This pattern may have some bearing on the employment needs in the county. Antrim County seems not to be a place that one both lives and works.

<b>Figure 2-4 Township Urban Growth (Single Family/Duplex)</b>		
<b>Township</b>	<b>Acres to Urban</b>	<b>% of 6,660 Acres</b>
Mancelona	796.6	12.0%
Banks	736	11.1%
Milton	699.1	10.6%
Jordan	648.24	9.7%
Central Lake	574.5	8.6%
Kearney	545.6	8.2%
Echo	454.6	6.8%

As stated, 6,660 acres changed to single family/duplex use from the period 1978 to 1998. In the period of the census count, from 1980 to 2000, the county population gained 6,916 persons.

<b>Figure 2-5 Changes in Urban and Built Up Uses (1978 to 1998)</b>		
<b>Changes to Urban and Built Up from Other Categories of Land Use</b>		
<b>Category Change</b>	<b>Total Acres</b>	<b>Percent of Total Acres</b>
Grass to Urban	3,807	44.0%
Agriculture to Urban	2,799.7	32.8%
Forest to Urban	1,982.3	22.9%
Wetland to Urban	119.7	0.2%
Barren to Urban	12.3	0.1%
Sub-Total	8,721	
<b>Changes from Urban and Built Up to Other Categories of Land Use</b>		
<b>Category Change</b>	<b>Total Acres</b>	<b>Percent of Total Acres</b>
Urban to Grass	154.8	42.8%
Urban to Agriculture	84.9	23.5%
Urban to Forest	106.4	29.4%
Urban to Wetland	16.4	4.4%
Sub-Total	362.5	
Urban County Total = 8721 acres – 362.5 acres = 8358.5 acres gained		

**AGRICULTURE:** (Where the farming has and is occurring....)

The major loss of agricultural uses in the county is not to urban uses, most of it is a conversion of grass and forest uses. Of the agricultural uses that changed to other uses, 84% converted to grass and forest uses, see Figure 2-6. This would indicate a loss of farming activity resulting in previous farmland being allowed to return to a natural state. Additionally, urban uses from agricultural uses converted 15.5 %. Most of the urban growth came from previous grass and forest uses.

The following list shows those townships where 81% of the Agricultural uses changed to grass:

<b>Township</b>	<b>Acres of Agricultural to Grass</b>	<b>Percent of 1978 Agricultural Acreage</b>
Jordan	1,666.0	38.8%
Banks	1,656.2	13.5%
Mancelona	1,326.2	35.1%
Echo	1,256.2	25.5%
Warner	952.9	15.4%
Milton	882.1	12.4%
Star	858.4	17%
Chestonia	690.86	60.1%
Custer	480.9	28.9%

Central Lake, Forest Home, Kearney, Elk Rapids, Helena, and Torch Lake Townships had relatively small number of acreage converted to grass.

Jordan, Banks, Mancelona, and Milton Townships also had the larger changes to urban uses.

There were also changes in use to agricultural uses. About 5,527.7 acres of new agricultural uses were observed between 1978 and 1998. Most of this change, 98%, was from grass and forest uses. Nearly half of the change from grass to agricultural was in the following townships: Forest Home, 769 acres, Echo, 488 acres, Central Lake, 481 acres, and Helena, 380 acres. This may indicate a modest increase in farming type activities in these townships.

It is also important to note that Torch Lake Township increased its agriculture acreage by 149 acres and Forest Home Township by 77 acres.

<b>Figure 2-6</b>		
<b>Changes in Agricultural Uses (1978 to 1998)</b>		
<b>Changes <i>from</i> Agricultural Lands to Other Categories of Land Use</b>		
<b>Category Change</b>	<b>Total Acres</b>	<b>Percent of Total Acres</b>
Agricultural to Grass	10,633.5	59.1%
Agriculture to Forest	4,495.6	25%
Agricultural to Urban	2,799.7	15.5%
Agricultural to Wetland	73.4	0.4%
Sub-Total	18,002.2	
<b>Changes <i>to</i> Agriculture from Other Categories of Land Use</b>		
<b>Category Change</b>	<b>Total Acres</b>	<b>Percent of Total Acres</b>
Grass to Agriculture	4,359	78.9%
Forest to Agriculture	1,073.3	19.4%
Urban to Agriculture	84.9	1.5%
Wetland to Agriculture	10.9	0.2%
Sub-Total	5,528.1	
County Total = 18,002.2 acres – 5,528.1 acres = 12,474.1 acres		

**GRASS AND SHRUB LAND:** (Where non-forested undeveloped areas are located...)

There was a large change in the county in the grass and shrub land classification. There was a net change of 15,987.6 acres (see Figure 2-7) to other uses from grass and shrub land. Approximately 72% or 21,343.1 acres changed to forest uses. An additional 4,359 acres was converted to agricultural uses. Urban growth comprises 3,807 acres of formally grass use areas. As it was previously noted, 44% of the change to urban uses came from grass uses. There was, however, a large gain of grass acreage.

A total of 10,633.5 acres of agricultural uses existing in 1978 became grass use by 1998. A lesser amount, 2,871.2 acres, was created from previous forest acreage. Some of this may have come from timber cutting.

**Figure 2-7  
Changes in Grass and Shrub (1978 to 1998)**

<b>Changes from Grass and Shrub Land to Other Categories of Land Use</b>		
<b>Category Change</b>	<b>Total Acres</b>	<b>Percent of Total Acres</b>
Grass to Forest	21,343.1	72%
Grass to Agriculture	4,358.5	14.7%
Grass to Urban	3,807	12.8%
Grass to Wetland	153.8	0.5%
Sub-Total	29,662.4	
<b>Changes to Grass and Shrub Land from Other Categories of Land Use</b>		
<b>Category Change</b>	<b>Total Acres</b>	<b>Percent of Total Acres</b>
Agriculture to Grass	10,633.5	77.8%
Forest to Grass	2,871.2	21.0%
Urban to Grass	154.8	1.1%
Wetland to Grass	15.3	0.1%
Sub-Total	13,674.8	
Grass/Shrub Land County Total = 29,662.4 acres – 13,674.8 acres = 15,987.6 acres lost		

The large change from grass to forest is in part due to a natural process called succession. If an area were to begin with bare ground, there would be an initial growth of plants on that ground that could survive under those conditions. These plants would then begin to create conditions that would be conducive to a next stage of plants. In Antrim County this would be grass and low-to-the-ground broader leafed plants. Next, short woody shrubs and bushes appear. These create conditions for larger bushes and shrubs and then some fast growing softwood trees. As these trees mature, they create conditions for larger, long-lived evergreens and hardwood trees. This resulting forest, which often takes hundreds of years to mature, continues, unless dramatically challenged by environmental changes or natural disasters. This final condition is called a Climax Forest or Climax Fauna.

The grass and shrub acreage of Antrim County has become, for the most part, a young forest. In the twenty-year period of the study, the county had a net loss of 15,987.6 acres of grass uses. It gained, however, 19,974 acres of forest uses.

**FOREST LAND:** (Where treed undeveloped areas are located...)

The county had a net gain of forest uses of 19,974 acres (see Figure 2-8). Most of this was from the natural succession process from grass and shrub acreage. There was also a gain of 4,495.6 acres from uses that were agricultural in 1978. If both the grass use loss and the forest use gain are combined, the county gained 3989 acres of new natural kinds of areas. As noted in the previous section, 4,358.5 acres of grass uses were converted to agricultural uses. However, there was a conversion of 4,495.6 acres that was in agriculture uses 1978 to forest uses in 1998.

Antrim County continues to be forested county with over 180,000 acres of forested land. This is more than half the area of the entire county. The following eight townships contain 74.2% of the forest use acreage in the county:

<u>Township</u>	<u>Forest acres</u>
Mancelona	29,593
Chestonia	18,556
Jordan	15,885
Kearney	15,402
Custer	14,538
Warner	14,348
Echo	14,277
Banks	11,819
Star	11,542
Central Lake	8,838
Forest Home	8,565
Milton	5,841
Helena	5,644
Torch Lake	4,506
<u>Elk Rapids</u>	<u>1,346</u>
Total	180,718

It should be noted that all of these townships are east of the county seat, Bellaire. Only one township located west of Bellaire, Banks Township has a comparable amount of forest uses totaling 11,819 acres. The forested lands are a highly valued natural resource.

**Figure 2-8  
Changes in Forest Land Uses (1978 to 1998)**

<b>Changes to Forest Land to Other Categories of Land Use</b>		
<b>Category Change</b>	<b>Total Acres</b>	<b>Percent of Total Acres</b>
Grass to Forest	21,343.1	82.1%
Agriculture to Forest	4,495.6	17.3%
Wetland to Forest	62.7	0.2%
Urban to Forest	106.4	0.4%
Sub-Total	26,008	
<b>Changes from Forest Land to Other Categories of Land Use</b>		
<b>Category Change</b>	<b>Total Acres</b>	<b>Percent of Total Acres</b>
Forest to Grass	2,871.2	47.5%
Forest to Urban	1,982.3	32.9%
Forest to Agriculture	1,073.3	17.8%
Forest to Wetland	107.2	1.8%
Sub-Total	6,034	
Forest Land County Total = 26,008 acres – 6034 acres = 19,974 acres gained		

**WATER AND WETLANDS:** (Where significant features are located...)

In both the water and wetland categories, there was a small gain in acreage. Antrim County gained 113 acres of water and 130 acres of wetlands. It is not clear from the LIAA data the source of this additional acreage. It may relate to the amount of accumulated precipitation up to 1998 as compared to the beginning of the study in 1978. It may also be related to the time of year the land use data was collected or to construction of various kinds, such as large buildings, roads, marinas, and lake/river enhancements that created additional water areas or wetlands. It may also represent awareness on the part of the people of the county to keep the water and wetland areas safe from unreasonable intrusion.

Jordan Township during this period gained 38 acres of water, but lost 66 acres of wetland area. Echo Township gained 54 acres of wetland. There is not a clear pattern suggested by the data. The county gained a total of 243 acres of water and wetlands during this twenty-year period.

**IMPLEMENTATION:** (What should be done next?)

1. Commission a new aerial land use study and compare the findings to the 1978 and 1998 results.