Chapter 4: Social and Political Context

PURPOSE AND OVERVIEW

The success of conservation efforts ultimately depends on understanding the relationship humans have with each other and the environment in which they live. Indeed, attempting to implement a conservation plan that does not consider the complex interactions of social, economic, political, and cultural realities invites conflict. Such an approach may lead to an inefficient use of human and natural resources, and can potentially weaken local support for conservation efforts.

To help maximize the success of conservation efforts of GTRLC and other organizations in the Manistee study area, this chapter describes the following social context elements:

- Historical and traditional land use
- Current land use
- Land ownership
- Demographics
- Government influences on land conservation
- Stakeholder profile

The "land use," "land ownership," and "demographics" analyses demonstrate the urgency for conservation in the study area and describe the characteristics of the landowners with whom GTRLC will work. The "government influences" and "stakeholder" sections demonstrate that existing policies offer relatively limited protection of ecosystems, and highlight the myriad of opportunities for GTRLC and others to influence policies and land management practices by collaborating with landowners, private organizations, and public agencies.

HISTORIC AND TRADITIONAL LAND USE

PRE-SETTLEMENT HISTORY OF THE STUDY AREA

The earliest evidence of human occupation in northern Michigan is dated as being over 10,000 years old. It is likely that these earliest inhabitants were nomadic people who followed herds of game animals throughout the area. By 500 BC the region's original inhabitants had adopted a more settled lifestyle that relied in part on agriculture. Much of this evidence is garnered from numerous archeological sites in the area, including nearly 30 sites in Kalkaska County. These sites are most commonly burial mounds, village locations, and campgrounds and most date from between 8,000 BC and 500 AD (MDNR, 1998). Archaeological evidence is only one means of compiling a region's historical context. The spoken history of the area's original inhabitants and their descendants maintain that life on earth began in the Great Lakes, and that their existence in the Great Lakes region may actually exceed the 10,000 Years Before Present mark denoted by archeological evidence.

Because of glacial activity in the area, we may never have scientific evidence that supports or refutes the claims of pre-glacial human existence.

When the first European explorers made their way through the area, three primary tribes lived in the Manistee region. These include the Oddawa, the Potawatomi, and the Ojibwe tribes, and are often referred to collectively as the Aanishnabek. In fact, the name "Manistee" is an Aanishnabek word with various possible meanings. The Aanishnabek actively managed the land in the Manistee region prior to European settlement. This management included the planting of gardens, hunting, fishing, and perhaps most notably, the burning of certain areas to manage habitat and vegetation types.

EUROPEAN SETTLEMENT

Arriving in 1634, Jean Nicolet is thought to be the first white man to visit northern Michigan (MDNR, 1998). His foray into the region started a string of European exploration in the mid-1600s to investigate the area's trapping and trading potential. Trapping and trading opportunities were abundant, and these activities formed the backbone of the region's nascent economy throughout the years of French and British control. The Unites States claimed the Great Lakes area in 1776, and in 1805 an act of Congress created the Territory of Michigan. U.S. control of the region did not go uncontested, however. During the war of 1812 the Oddawa, Ojibwe, and Potawatomi joined a British-led effort to defeat the U.S. interests in the region. This effort was ultimately unsuccessful, and in October 1813 General Lewis Cass became the first Governor of Michigan.

The Government Land Office began to survey northern Michigan as early as 1830, but significant settlement in the area did not begin until the 1850s when workers dug a canal through a sand bar at the mouth of the Manistee to open the river to incoming boat traffic from Lake Michigan (MDNR, 1998). This event allowed for the development of the City of Manistee and for the timber harvest and log drives that would shape the area.

One of the earliest, and perhaps most telling, accounts of the study area before European settlement can be found in the words of A.S. Wordsworth, who lead a survey party into the Manistee's headwaters in 1869. He writes:

> *"September 18th, in two canoes, so light we could carry them upon our shoulders, we commenced descent of the Manistee, from Section 18, T28N, R4W (near Deward). The spring sources of this stream are in hardwood timber land, but changing to pine land near the south boundary of T29N; thence for sixty miles on either bank is good pine land, or pine plains, some cork pine, but mostly Norway pine…"*
>
> *"The Manistee River has been long known as one of the most remarkable streams in the Northwest in this, that it never floods, seldom freezes, and is never affected by droughts. The secret of these singular features of the river is found in the fact that it is fed with springs which flow into the stream from*

its banks every few rods, so that it is safe to say there are more than a thousand spring streams that bubble up and empty their pure waters into the river within fifty miles of Manistee. These streams vary in size from a small rill to a good mill stream. Everywhere along the banks of this beautiful river they boil out and bubble up in their crystal beauty, affording water as pure and sweet as any in the world…"

Source: MDNR, 1998

While numerous pursuits brought settlers to northern Michigan, nothing changed the economic, social, and ecological conditions of the region as markedly as logging. By the mid-1800s the timber resources of the northeastern U.S. could not keep up with increased demand and the nation's lumber barons turned to the forests of Michigan for a new supply. Northern Michigan's abundant timber resources, together with rivers such as the Manistee, which could be used to swiftly transport the logs downstream to the city of Manistee, provided an ideal setting for a growing timber industry. From 1869 to 1900, Michigan produced more lumber then any other state (Quinlan, 2002). While the lumber industry brought money and people into the area, it also devastated the area's ecology. Clearcutting and a lack of reforestation left vast stump forests with little or no vegetation to secure the area's topsoil. The erosion caused by the widespread clearcuts created a sediment load so high that it continues to damage fish habitat in the Manistee today (Michigan Environmental Council, 2002). In addition, the tinder-dry piles of slash fueled catastrophic fires, which burned thousands of square miles, consumed important organic soil layers, and took hundreds of lives.

POST-SETTLEMENT

During the early 1900s the United States, including northern Michigan, began to industrialize. Dams helped to power this industrialization. The Manistee River has a relatively steep, high river gradient, and in the early 1900s, the hydroelectric industry saw its unrealized potential for power production as its last great conquest in the state. Tippy Dam and Hodenpyle Dam, the river's only remaining hydropower dams, were completed in 1918 and 1925 respectively (MDNR, 1998). Although these dams were built far below the study area, numerous smaller dams remain on the river's upper tributaries, including 12 dams in Kalkaska County, one in Crawford County, and six in Missaukee County. Small dams can fragment aquatic habitats, increase water temperatures, and create non-natural habitats while providing little benefit to local residents (see Chapter 6).

While dams helped to modernize the area's economy, a more pressing issue was the restoration of northern Michigan's forests. The Civilian Conservation Corps (CCC) was created by President Roosevelt in 1933 to boost the economy and increase employment during the Great Depression. In addition to employing thousands of men in Michigan, the CCC began to repair some of the logging industry's damage. The CCC started reforestation efforts, built erosion control and fish habitat structures, stocked millions of fish in the area's streams, fought forest fires, and constructed numerous campgrounds in the watershed. The denuded forests were of little use to the lumber industry, which transferred them to state

and federal ownership in lieu of unpaid taxes. By 1949 Michigan had acquired more than 3.6 million acres of state forestland (Michigan Environmental Council, 2002). While state and federal ownership was a step in the right direction, the CCC and other managers usually made little effort to restore the forest to pre-settlement conditions. Instead, they actively suppressed the natural fire regime and replaced naturally diverse forests with replanted monoculture habitats that greatly reduced the region's biodiversity and altered its original ecosystems.

Another significant change in the area occurred when oil and gas exploration began in the 1940s. Oil and gas development is very common within the Manistee watershed and to an even greater extent, within the study area. In fact, the watershed has produced more oil and gas than any other watershed in the state. Frederic Township in Crawford County has more oil wells than any other township in the state (Pratt, 2002). Production of these resources in the watershed and the study area continues to increase. These operations pose a serious threat to the ecological integrity of the watershed, largely as a result of increased fragmentation caused in part by the wells themselves and even more so by the newly-constructed access roads (see Chapter 6).

Agriculture represents another historical land use still present in the study area. Incompatible agriculture can cause a number of ecological problems including sediment, chemical, and nutrient runoff into streams, habitat fragmentation, and a loss of biodiversity. The majority of the agriculture in the study area consists of pasture or Christmas tree farms. However, there are a few farms in the study area that produce potatoes. Potatoes are a relatively intensive crop that requires supplemental irrigation as well as significant amounts of nutrients and chemicals.

Today, the residents of the study area continue to depend on its natural resources. Large areas of public land, abundant wildlife, and beautiful natural areas make the upper Manistee region a popular recreational destination. The area's permanent residents and seasonal visitors either rely on or are attracted by the region's natural resources. Although many residents unknowingly may threaten the ecological integrity of the area through their actions, they consistently favor natural resource protection (Pratt, 2002).

CURRENT LAND USE

Land use is often closely correlated to land ownership. Both land use and land ownership are critical to assess protection possibilities and strategies, present and future land uses can determine a parcel's ecological integrity and what protection strategies; are most appropriate. For example, a private parcel used as residential land and for recreational uses may call for a different conservation strategy or management goal than agricultural land or a hunting reserve. While each of these landowners may be interested in protecting their land, past, present, and future land uses will affect the ecological resources of each site in different ways. Furthermore, one of the most common protection tools, a conservation easement, is usually tailored to meet the property's desired land uses. Although the team

recognizes a correlation between land ownership and land use, separate analyses are appropriate and should prove helpful to GTRLC and other audiences.

Figure 4.1 is a map of generalized land use and land cover from data collected by MDNR in 1978. The level one land classifications are derived from the pioneering work of Anderson *et al.* and the Michigan adaptation of the Anderson classification system (Olson, 1999).

PRIVATE LAND

There are approximately 150,000 acres of private land in the study area, or roughly 45 percent of the total. Private land, like public land, affords widely varying degrees of protection to ecological health. The majority of private land is used for residential and recreational purposes. However, other uses of private land include agricultural activities, hunting reserves, and other commercial uses. Private lands are the primary targets for protection efforts since the owners generally have the ability to subdivide and sell their land for development, thus threatening the health of local and regional ecosystems.

RECREATIONAL LAND USE

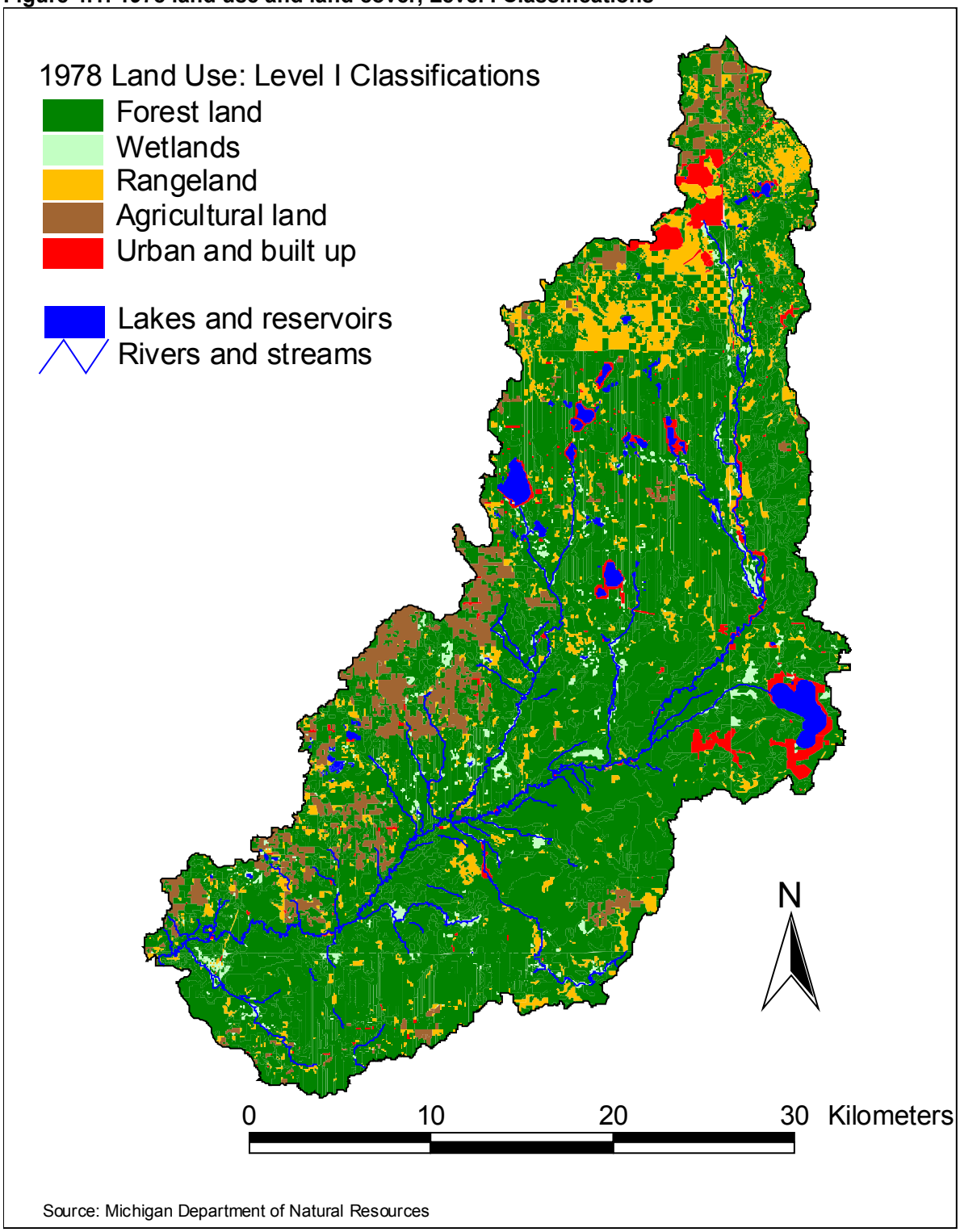
The most widespread land use in the study area is outdoor recreation. Most local residents participate in some form of outdoor recreation and the majority of the visitors to the area are interested in the wide range of recreational activities available on public or private lands. The impacts of recreational activities on the environment are highly variable, ranging from low-impact activities such as bird watching and hiking to high-impact activities such as off-road vehicle (ORV) use.

Warm Weather Recreation

Although outdoor recreation occurs throughout the year, the most popular activities take place during the warm weather months. The area's rivers and streams are some of the most popular summer destinations in Michigan. Such heavy recreational use, if uncontrolled, can seriously impact the area's natural resources. The popularity of outdoor recreation and its potential for negative impacts warrants the individual review of several of these activities.

- *Canoeing* - Canoeing is one of the most popular recreational activities in the study area. Some of the most heavily canoed stretches of river in the country are found in the Manistee River watershed (MDNR, 1998). In the study area, the main-branch of the Manistee between Cameron Bridge and Sharon and between Smithville and the U.S. 131 Bridge are the most popular stretches for canoeing (MDNR, 1998). Although canoeing is considered a passive form of recreation, it has the potential to negatively impact both aquatic and terrestrial resources. Canoeists frequently contribute to

Figure 4.1: 1978 land use and land cover, Level I Classifications



Source: Michigan Department of Natural Resources

erosion problems along the riverbank and can pollute the river with litter. The high demand for canoeing opportunities results in numerous canoe liveries along the river. These commercial properties have the potential to fragment the riparian corridor and increase human traffic in sensitive natural areas. However, canoeing also allows people of all ages and physical conditions to experience nature in a unique and valuable way. These experiences can change public attitudes and promote environmental conservation.

- *Fishing* - Fishing is also a major activity along the main branch of the Manistee and most of its tributaries. The lower segments of the Manistee River, below Tippy Dam, are the most popular due to the salmon and steelhead migration. However, excellent trout fishing also makes the upper main branch and many of its tributaries very popular among anglers. Various types of angling are popular in the area including spin cast wading, fly fishing, and drift boat or jet boat fishing. Fishing provides an income to numerous river guides, subsistence fishermen, and fishing supply retailers. Furthermore, many of the other local service industries such as restaurants and motels depend on anglers for much of their business. Fishing can create a number of ecological problems including stream bank erosion, introduction of exotic species, and over-fishing.

- *Non-motorized Trail Use* – The state lands within the study area provide residents and visitors with ample hiking, biking, and equestrian opportunities. The state forests that are partially within the study area include many miles of non-motorized trails and are visited by thousands of people each year. Non-motorized trail use is generally a low impact activity. However, the most heavily used trails can produce erosion problems and require frequent maintenance. Non-motorized trails can also aid in seed dispersal of nuisance species and can fragment the habitats of certain species.

- *Motorized Trail Use* – In addition to passive, non-motorized trail use, much of the public land in the study area is open to ORV use. In contrast to non-motorized trail use, ORV use can have more serious environmental effects. ORVs can create considerable erosion problems and can lead to increased noise, air, and water pollution in otherwise pristine areas. Trails wide enough for ORV use can serve as fragmenting agents for certain species and they can serve as a conduit for invasive seed dispersal (Watzman, 2001). There are hundreds of miles of trails open to ORV use within the study area and thousands of people visit them each year (see Chapter 6).

Cold Weather Recreation

Northern Michigan is a year-round recreational destination. While there are some who are not interested in braving northern Michigan's sometimes extreme winter conditions, others see winter as the best season for recreation. Many of the same activities that are popular during warmer weather continue throughout the winter, while some activities can only be experienced during the winter months. These winter activities are economically and socially important in the upper Manistee area and are outlined below.

- *Hunting* - Hunting is a year-round activity in Michigan, but it reaches a climax in November with the beginning of deer season. Some specialty retailers depend on hunters' business and find deer season to be one of their busiest times of the year. In general, hunting could be considered a low-impact recreational activity. Deer hunting in particular serves the important function of thinning deer populations that overgraze many native plant communities. On the other hand, many hunters rely on ORV trails to gain access to favorite hunting grounds. As discussed above, these trails harm ecosystem health by increasing erosion, creating pollution, and fragmenting natural systems. Most hunting occurs on public land, but many local private property owners manage their land to improve game habitat. Many landowners own land primarily for hunting purposes. As historic and current members of the conservation movement, hunters could play an important role in future protection efforts.

- *Snowmobiling* - Snowmobiling is another extremely popular winter activity in northern Michigan. There are over 6,000 miles of state snowmobile trails in Michigan (MDNR, Snowmobiles, 2002) and as of May 2001, there were over 370,000 snowmobiles registered in the state. This number has increased every season for the last nine years and is expected to continue to grow (MDNR, Snowmobile Program Report, 2001). Retailers in northern Michigan rely heavily on snowmobilers for business through the slower winter months. Snowmobiles use many of the same ORV trails that are popular in the summer months. They also make use of smaller trails and roadsides to get from place to place. Snowmobiles may have less impact on plant communities since many are dormant and buried under the snow during the winter. However, snowmobiles can cause erosion problems in sensitive areas, damage young trees, frighten wildlife, and contribute significantly to noise and air pollution.

- *Ice Fishing* - Frozen lakes and cold temperatures allow many northern Michigan fishermen to ice fish. Many of the area's lakes including Lake Margrethe, Bear Lake, and Manistee Lake are popular among ice-fishermen. Ice fishing has a very low impact on the environment while bringing much needed income to local retailers.

- *Skiing* - Cross-county and downhill skiing are also popular in northern Michigan. A very small downhill facility, Hanson Hills, exists just outside of the study area near Grayling. Cross-country skiing is more popular in the study area and has minimal impact on the environment. Skiers can use hiking trails, ORV trails, or no trail at all to gain access to remote areas. Cross-country skiing provides a unique opportunity to witness and interact with wildlife due to its lack of noise and low environmental impact.

NATURAL RESOURCE-BASED LAND USE

Silviculture

Silviculture, the cultivation of forest trees for harvest, is a major industry in the study area. A review of aerial photographs of the study area and conversations with local foresters reveal that natural hardwood woodlots as well as red pine, aspen, and Christmas tree

plantations are common. The size and management styles of these forests vary considerably depending on ownership and management goals. The ecological impacts of silviculture are also quite varied. The management practices of many small private tree farms may benefit local wildlife and ecological integrity. Selective harvest and planting practices can actually improve forest quality on many private woodlots. Conversely, large scale industrial tree farms and profit-driven management practices can severely fragment ecosystems, produce chemical and fertilizer pollution, destroy habitat, and encourage the spread of pests and disease (see Chapter 6). There are a number of ways to group silvicultural activities in the study area. For the purposes of this report, Christmas tree farms are considered separately from private woodlots or industrial tree farms.

- *Christmas tree farms* - Christmas tree farming is a major land use in the study area. As recently as 10 years ago, 10,000 acres of land within Kalkaska County were used for Christmas tree production (Bromelmeier, 2002). However, market fluctuations and devastating pest and disease problems have led to a drastic decrease in Christmas tree farming in the region. There are currently around 4,000 acres of Christmas tree farms in Kalkaska County, over half of which are within the study area (LaRowe, 2002). Christmas tree farming falls somewhere between traditional agriculture and silviculture. Christmas trees require seven or eight years of growth before harvest. Historically, many of the area's Christmas tree farms were run by absentee landowners who were attracted by the relatively small amount of management needed to profit from the land (LaRowe, 2002). However, as the percent of regional acreage planted in Christmas trees grew, pests, and disease were able to spread with little resistance. To overcome these problems, large amounts of expensive chemicals were needed. With little expertise in chemical management and application, many of the smaller farmers were forced out of the market. This has resulted in thousands of acres of abandoned Christmas tree farms. The restoration of these lands to more natural land cover can be an expensive and slow process. Typically, retired farms are parceled off and sold to new residents, leaving them to deal with restoration efforts (LaRowe, 2002).

- *Private woodlots* - Private woodlots are a common land use in the study area. These "tree farms" are not always monocultural pine plantations planted in neat rows. A more typical woodlot in the area consists of a variety of tree species and forest types (Stone, 2002). While some portion of the woodlot may include the stereotypical rows of red pine, the majority are mixed hardwoods. Tree farms are defined by their management; owners manage the land with periodic timber harvesting as one of many management goals. Other goals may include recreation, wildlife, and watershed protection (Stone, 2002; Erickson, *et al.*, 2001). Many landowners that periodically harvest their timber resources are enrolled in the Michigan Tree Farm System. Enrollment requires a minimum acreage in forest cover and an approved forest management plan. Membership does not provide any financial incentives or tax breaks. While there is no stereotypical tree farm, an average tree farm may be 40 or 80 acres in size and family owned (MI Tree Farm System, 2002). Depending on the tree cover, forest thinning events may occur every 10 to 12 years and small clear-cuts will take place at considerably longer intervals.

- *Industrial tree farms* - There is also significant variability among industrial tree farms. They range from small 40 acre parcels to large tracts of land spanning more than 2,000 acres. In addition to corporate ownership, industrial tree farms differ from private tree farms in management style. To maximize profit, more emphasis is usually placed on timber harvest instead of recreation or wildlife management. Some of the major industrial timber managers in the area include Georgia Pacific, Weyerhaeuser, Mead, and AJD Forest Products. While some may own land in the area, it is more common that they rely on timber resources from other private landowners or from public lands. According to a Weyerhaeuser representative, the Weyerhaeuser OSB (oriented strand board) plant just south of Grayling consumes approximately 375,000 cords of timber annually. Roughly 65 to 70 percent of this timber comes from private land with the rest harvested from mostly state owned land (Malm, 2002).

Mineral Extraction

The area's geological features are rich in oil and gas resources and mineral extraction activities are commonplace. The majority of the mineral extraction rights have long been severed from the properties themselves (Korn, 2002). A typical oil or gas well requires a two acre clearing and an access road. Much of the mineral extraction is conducted on public land, but mineral developers also increasingly target private land. Because few of the area's property owners still possess their mineral rights, they have little say in the development of the mineral resources beneath their property (Korn, 2002). The development of more and more oil and gas wells poses a serious threat to ecological integrity (see Chapter 6).

Agriculture

Traditional agriculture is not a very extensive land use in the study area; according to 1978 land use data cropland encompasses just over 20,000 acres in the study area. The region's upland soils are typically either too sandy and nutrient-poor, or soils are too wet near the area's wetlands. The tilled cropland found in the study area is most commonly planted with potatoes. Potatoes are typically grown using large amounts of chemical and nutrient inputs as well as irrigation (Bromelmeier, 2002). Excess chemical or nutrient inputs can runoff into nearby surface water or sink through the area's highly permeable soils into shallow groundwater aquifers causing water pollution problems. Furthermore, there is very little biodiversity in the monoculture cropland. Agricultural land can, however, provide positive elements to the study area. Farmland can serve as migration routes for some mammal and bird species (Reisner, 1997). Additionally, farmlands have scenic and cultural values, providing open space free from residential development. Finally, farms contribute to the economic and social fabric of many rural communities.

Many of the area's farmers have taken their land out of production in recent years, mainly because many are becoming too old to work their land (Bromelmeier, 2002). The average age of farmers in Michigan and across the country has risen dramatically over the last few

decades (U.S. Department of Agriculture, 2002). Many farmers depend on the value of their land for retirement income. With limited restrictions on land division and conversion, farmers face tremendous pressure to sell their land for development.

Commercial

A very small amount of land in the study area is owned by commercial enterprises. These businesses mostly focus on tourism and include hotels and motels, restaurants, and retail supply stores. There are also numerous service-oriented businesses and industrial landowners. The most common industries in the study area are resource-based such as forestry or mining operations.

Right-of-Ways

The term "right-of-ways" is generally used to describe long linear strips of land owned or used by public utilities, railroads, telecommunication companies, or transportation departments. Right-of-ways are used to provide public services such as power distribution, phone lines, and roads. In some cases these strips of land are actually owned by private companies. One such example is a thin strip of land owned by Consumer's Energy that is over 11 miles long and runs through southeastern Antrim County. More commonly, private companies or public agencies will arrange easements across private parcels that allow for the construction of infrastructure across the property. The ecological implications of right-of-ways vary. Right-of-ways are often cleared of vegetation using large amounts of herbicide, which may adversely affect wildlife and water quality. They also serve as fragmenters for native flora and fauna, and as pathways for invasive species. The securing of right-of-ways may also be a precursor to development. Often times, new construction is not permitted until roads and utilities are made available to the area.

Private Hunting Reserves

There is at least one large private game reserve or "hunt club" within the study area. These landowners usually have a land management plan that emphasizes the protection and creation of game species habitat. A board of directors typically makes land management decisions to ensure that all members will be in favor of land management practices (Korn, 2002). Landowners usually erect tall fences around the perimeter of the property to eliminate trespassing and to keep desirable game species on the property (Bromelmeier, 2002). Access to the property and the associated wildlife is restricted to paying customers interested in this unique and usually successful hunting experience.

Hunting reserves present interesting opportunities and constraints for land protection. They are typically large (ranging from 40 to more than 1000 acres) and are managed to improve wildlife habitat - qualities that are attractive to land conservancies. However, they are almost always fenced, impeding normal wildlife movement and are usually managed with a

focus on large game species. Sometimes this management includes the introduction of non-native plant species as cover. Despite these limitations, hunting clubs present an opportunity to protect a large area of land while only dealing with one landowner.

RESIDENTIAL LAND USE

Residential development is a growing concern in many parts of the study area. There is a wide variety in size, density, and value of residential land across the study area. New homes are continuously being constructed, both on undeveloped land as well as in place of existing structures. The large amount of public land and wetlands makes the remaining vacant, buildable parcels prime targets for development. This is particularly true along waterfront property. Threats associated with future development are a prime concern to the project team, GTRLC, and other local and regional land trusts. Potential threats include the destruction or conversion of wildlife habitat, alteration of hydrologic regimes, fragmentation, and pollution (see Chapter 6).

The majority of the private land in the study area support year-round or seasonal residences. Residences within the study area are more or less equally split between seasonal homes and year-round residences (Pratt, 2002; Leach, 2002). Parcel size and density vary considerably ranging from 640 acre tracts of individually-owned private land to subdivisions composed of hundreds or even thousands of ¼ acre lots. According to the Michigan Association of Realtors' vacant land sales data for Crawford and Otsego Counties, over the last four years the average sized parcel sold is roughly eight acres in size. This average represents the product of widespread variability as the size of vacant land sold in the area ranged from over 370 acres to lots less than ¼ acre (Water Wonderland, 2002).

There are thousands of acres of privately owned land in the study area that contain no formal infrastructure or housing. The current and future land uses of these parcels vary. Eventually, many landowners hope to build a retirement home or seasonal home on the property. Other parcels may be effectively not suitable for development and are only used for recreational purposes such as hunting or camping.

LAND USE TRENDS

The most notable trend in land use change throughout the study area and much of northern Michigan is the parcelization and development of natural land. Not only is land ownership being dispersed, but the land is changing from forested or recreational land uses to residential, particularly along river corridors and lakefront property (Pratt, 2002). Unfortunately, this trend is difficult to document accurately. However, a review of land sales and discussions with local planners reveal that development pressure is high and available parcels are rarely on the market for any extended period of time (Pratt, 2002). While the state actively pursues the acquisition of valuable inholding properties (Rozich, 2001), there are limited opportunities and resources available to acquire expensive private land.

There is a close relationship between land ownership and land use, and indeed, both may affect future opportunities for land protection. Just as different landowners have various opinions about the protection of their land, different land uses may limit protection potential. Some land uses, such as hunting, correspond very well with traditional land use protection strategies, while others, such as residential development or mining operations, are generally incompatible with long-term protection. Due to the size of the study area and a lack of site specific data, this section was intended only as an introduction to the broad categories of land use and does not convey parcel-level information.

LAND OWNERSHIP

One of the most critical considerations for choosing land protection strategies is land ownership. Ownership of land in the study area helps determine what tools and strategies the GTRLC and others can use to protect ecological integrity and minimize threats. Private ownership generally affords less protection of ecological health than publicly owned lands and is thus the focus of GTRLC's conservation efforts. A majority of the land in the study area, approximately 55 percent, is publicly owned and is beyond the scope of traditional protection methods. However, these public lands are also vulnerable to ecological degradation through land management techniques or transfer of ownership to private individuals. Therefore, an inventory and analysis of the various landowners includes both public and private landowners. The team's intent is to identify non-traditional protection strategies and collaboration opportunities that will help the GTRLC further its efforts in the study area. Furthermore, the team is distributing this report to other audiences such as public land managers, watershed groups, and other land trusts, thereby creating opportunities for more comprehensive analysis and recommendations.

PROTECTED LAND

For the purpose of this project, "protected land" includes all areas on which development is limited or prohibited either through public ownership, land trust ownership, or conservation easement. Several different parties manage more than 187,000 acres of protected land in the study area for a variety of purposes. The vast majority is state land and is open to the public. There is also a significant amount of land that is not open to public use but is protected from commercial or residential development. Examples include the Camp Grayling military land, portions of which are closed to public recreational use but will probably never be parcelized and sold into private ownership, and a few parcels that are owned or managed by private land trusts such as the GTRLC. Although public access to these lands may be restricted, their use and management provide for long-term protection.

State Forest Land

Nearly all of the public land in the study area is state forest land managed by the Michigan Department of Natural Resources (MDNR). Major state forests in the study area include

portions of the Pere Marquette State Forest (roughly 125,000 acres), the Au Sable State Forest (roughly 30,700 acres), and the Mackinaw State Forest (roughly 16,000 acres). These areas make up over 50 percent of the study area. Ample recreation opportunities exist in these state forests including many miles of trails for ORV use, snowmobiling, biking, hiking, cross-country skiing, and horseback riding. There are also numerous campsites, boat launches, and other improved facilities for park visitors. Besides recreation, MDNR also manages state forest lands for timber and mineral production, fish and wildlife habitat, and environmental quality (MDNR, This is the DNR, 2002). This multiple-use doctrine can place ecological health at risk in areas that are not managed sustainably. While GTRLC generally concentrates its efforts on conserving privately-owned lands, the stakeholder analysis section of this report investigates the interests of MDNR and identifies collaboration opportunities between GTRLC and MDNR to promote better protection of the area's ecological integrity.

Camp Grayling

In addition to the vast areas of state forest land in the study area, there are a few areas of protected land managed by various organizations, agencies and companies. Most notable of these are a number of large tracts in eastern Kalkaska County managed by the Michigan Department of Military and Veterans Affairs (MDMVA). This tract, known as the Camp Grayling Maneuver Training Center – South Camp (Camp Grayling), is partially owned by MDMVA and partially leased through indefinite or long-term leases from MDNR. According to the Kalkaska County plat map approximately 14,500 acres of land in the study area are owned by the State Military Board for Camp Grayling (Rockford, 1999). The land is used for a variety of military training activities including small arms exercises, heavy artillery drills and air-to-ground bombing (MDMVA, 2001). The majority of this land is not open to the public and is protected from future development. The location of Camp Grayling activities is driven by its "Integrated Natural Resources and Management Plan" developed by MDNR and the U.S. Fish and Wildlife Service (MDMVA, 2001). This plan is very thorough and uses various GIS data to inventory and analyze Camp Grayling lands to assess which areas are more fragile, focusing more destructive exercises on less sensitive lands.

The Great Lakes Fishery Trust

The Great Lakes Fishery Trust (GLFT) was formed in 1996 as a result of a court settlement between the Consumer's Power Company (now Consumer's Energy) and the Detroit Edison Company - both co-owners of the Ludington Pumped Storage Project (LPSP) hydroelectric facility - and various plaintiffs including the Michigan Department of Natural Resources (MDNR), the Michigan United Conservation Clubs (MUCC), the National Wildlife Federation (NWF), the U.S. Department of the Interior, and several Native American tribes. The settlement sought to make reparations for the destruction of fish caused by normal operations at the LPSP over the past 20 years. Among other aspects of the agreement, Consumer's Energy deeded 14,000 acres of undeveloped land in Michigan

directly to MDNR. Consumer's Energy also transferred over 10,000 acres of land to GLFT. GLFT then sold this land to private and public landowners to raise money for GLFT to use to protect and restore the health of Great Lakes fisheries (Great Lakes Fishery Trust, 2002). Conservation easements, designating linear 100 ft. shoreline buffers, were attached to property shorelines to protect sensitive lands, water quality, and fish habitat. GLFT contracts with local and regional land trusts to monitor these easements to ensure that all aspects of the contract are being upheld. GLFT no longer owns land within the study area (Bails, 2002). However, the Grand Traverse Regional Land Conservancy still monitors a few easements on properties once owned by GLFT along the main branch of the Manistee in Kalkaska County (Rigney, 2002).

Conservancy Land

GTRLC has also protected roughly 1,260 acres in the study area through acquisitions and conservation easements. This includes approximately 160 acres of land in Oliver Township in Kalkaska County that has since been transferred to MDNR and approximately 1,100 acres of land with conservation easements that GTRLC manages directly. While private property protected with an easement is by no means public land, it is protected from future development even more strictly than most public lands.

Municipal Land

A small category of public land in the study area is local municipality land. This land primarily consists of county or township park land. These parcels are most commonly used as natural areas, athletic playing fields, picnic areas, campgrounds, or scenic overlooks and probably total less than 500 acres within the study area (Kutkuhn, 2002).

LAND VALUES

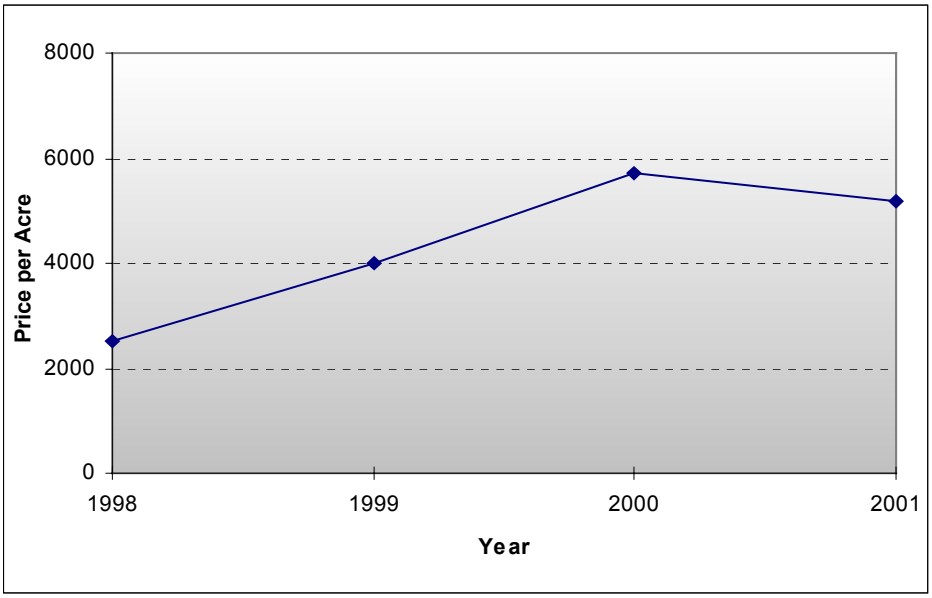
Land values greatly influence the ability of a land conservancy to conserve ecological integrity. There often exists a positive correlation between price per acre and a parcel's ecological or aesthetic value. For example, a diverse hardwood forest will probably have a higher selling price than an equally sized shrubland property. To help inform GTRLC's conservation decisions, the team investigated the distribution of average land values in the study area.

Many factors contribute to the selling price of an acre of land, including land cover, frontage, road access, location, buildable soils, neighboring land use, and overall size of the parcel. These factors can be witnessed in the large range in selling prices of land in the area. For example, lakefront or river front land will obviously be more expensive than land-locked or swamp land. However, according to vacant land sales in Otsego and Crawford Counties, the average price per acre is rising regardless of location or type (Figure 4.2). Land use can also have a significant impact on land value. For example, a

0.21 acre lot along the edge of a golf course in Hayes Township, Otsego County sold for $33,000 (over $150,000 per acre) in 2000. At the other extreme, a 10.05 acre parcel in Maple Forest Township, Crawford County sold for only $6,500 (less then $650 per acre) in 1999 (Water Wonderlands, 2002).

Data indicates that an acre of vacant land has risen in value from roughly $2,500 in 1998 to almost $6,000 in 2001(Water Wonderlands, 2002). The trend of rising local land values is confirmed by Tom Lowell, MDNR Office of Property Management, who estimated that land values in the area had nearly doubled over the last two to three years (Lowell, 2002).

Figure 4.2: Average selling price of an acre of vacant land in Crawford and Otsego counties from 1998 to 2001



TRENDS IN LAND OWNERSHIP

Ownership transactions represent a key component of the overall analysis of land ownership in the study area. One particularly critical process in the ownership of land over time is the subdivision of individual parcels into multiple parcels. These smaller parcels are frequently sold off to numerous new landowners. This subdivision of land can lead to serious ecological fragmentation and challenge conservation efforts by increasing the number of individual landowners and building sites in a specific area. State and local policies affecting land division are addressed later in this chapter.

There are also a number of transactions between state land managers and private residents. The Michigan Natural Resources Trust Fund (MNRTF) is the publicly created grant program that allocates money for acquisition of land and also for recreational infrastructure. MNRTF was created in 1976 through the passage of Public Act 204 (the Kammer Recreational Land Trust Fund Act of 1976) and signed into law on July 23, 1976 (Trust for Public Land, 2002). The bill established that revenues from oil, gas, and mineral leases on

state land would fund the purchase of natural and recreational lands. State land managers or local units of government may apply to MNRTF for grants that are awarded to protect specific parcels. Successful grants must secure at least a 25 percent local match. The grant applications are evaluated using 11 criteria (MDNR Information Center, 2002):

1. Protection and use of significant natural resources
2. Use of inland waters
3. Population served
4. Economic benefits
5. Hunting, fishing, and other wildlife-related values
6. Need for proposal
7. Capability of applicant
8. Site and project quality
9. Special initiatives of the MNRTF Board
10. Financial need of the applicant
11. Local match contribution

Over the last 25 years, MNRTF has distributed more the $325 million to support the protection of over 140,000 acres (Trust for Public Land, 2002). While year-to-year grant awards vary, MNRTF typically distributes between $20 million and $25 million per year. However, declining revenues from oil, gas, and mineral leases (MDNR Information Center, 2002) may lead to less land acquisition by local and state-level agencies.

State land is also frequently taken out of public ownership. Due to the limited amount of private and buildable land in the area, private citizens looking to own land in the area frequently turn to the state for potential sales. State lands are privatized though four basic processes (Thiel, 2002):

1. *Private purchase through state auctions* - During compartment reviews, state land managers may identify a state parcel as "excess" and put the parcel up for auction. These lands are frequently small parcels in or around population centers that have been acquired through tax reversions. The state has little use for these small and isolated parcels and sells them to private citizens.

2. *Private purchase through request* - People submit applications for the purchase of state land. This is very common and an increasing trend as the demand for private land increases. Requests are processed through a number of administrative reviews. Successful applicants work with the state's Office of Property Management to negotiate a fair selling price. A small proportion of requests are successful.

3. *Public/private land swap* - This process is very similar to purchasing, but other parcels are offered in exchange as opposed to financial payment. This option is usually more attractive to the state because they can evaluate both land parcels and determine what they are getting and what they are giving up. However, the popularity of this option began to overload MDNR field staff who were required to evaluate each proposal. About 12 years ago a $300 application fee was implemented to reduce the

number of unrealistic requests (Lowell, 2002). A "land exchange review committee" comprised of state employees evaluates each proposal using field staff notes and issues a decision on each independent proposal.

4. *Political land transactions* - The Michigan Department of Natural Resources is a political entity and is therefore subject to political dealmaking. To achieve other bureaucratic goals, the MDNR may deed specific state land to local units of government in return for political support.\

Land ownership and the associated protection status are critical components in the development of future conservation efforts. Land ownership is particularly important in the study area due to the large proportion of state land. Furthermore, the mission and management decisions made by MDNR do not always secure ecological integrity. The project team also recognizes that private landowners are far from homogenous. Some may desire the long-term protection of their property while others are most interested in maximizing their investment or protecting the full spectrum of their property rights. This section merely gives a brief overview of each of these issues. Further consideration must be given to every targeted conservation area to evaluate the potential for successful future protection efforts.

DEMOGRAPHIC PROFILE

This section provides a demographic analysis for the upper portion of the Manistee River watershed. This analysis is based upon census data information gathered on the counties and townships in which the study area is located.

Developing a basic profile of the human population living in and around the study area helps GTRLC and other stakeholders involved with conservation planning to 1) better understand the context of human-related sources of ecological stress, and 2) identify broad characteristics and values of various stakeholders and how these may affect the development and implementation of a conservation plan.

METHODOLOGY AND USE OF DATA

Creating an accurate portrait of the watershed-based study area poses a unique challenge because demographic data is almost always compiled and reported based on political boundaries. Since watershed boundaries do not conform to political boundaries, an accurate profile of the study area should be based on political boundaries that most closely correspond to the study area boundary. To this end, the project team relied on data at the township level whenever possible. However, in the absence of township-level data, the team used county-level data for some analyses. While such data may less accurately reflect the actual demographic characteristics of the study area, they are still useful in generating general assumptions on the study area's demographics.

In extending the demographic data from the township and county levels down to the watershed level, the project team has assumed a uniform distribution of the data. For example, although populations in a township may actually be more concentrated in some areas than others, the team assumed a uniform distribution of the population over the township in order to create population estimates for portions of the township which overlap the study area. Using this logic, the team combined some of the raw township demographic data with GIS data layers to generate population estimates for each portion of the study area by township. The team then derived the total population estimate for the study area by summing all township populations within the study area boundary. For example, if a township has a population of 1,000 and a GIS showed that 50 percent of the township falls within the study area, then the team has assumed that the population of the township within the study area is 500. By summing together this same information for each of the 17 townships clipped to the study area, the team calculated the total population of the study area. The townships contain three population centers – Grayling City, Kalkaska Village, and Mancelona Village – that are located outside of the study area boundary. In order to avoid the influence of these population centers on the study area (which has no concentrated population centers), the populations of these three areas were subtracted from the total township population before calculating the percentage of the township land occupied by the study area.

In instances where characteristics are normalized by area or percent, such as persons per kilometer or percent of persons over 65, no additional data manipulation was required to apply the data to the study area. For example, if the population of a township increased by 15 percent over a ten year period, the project team has assumed that the portion of the township in the study area also increased by 15 percent.

Except when otherwise noted, the team obtained all demographic data used in this section from the U.S. Bureau of the Census (2002). The team derived the area of townships and the study area, as well as percentages of public and private lands in the study area (all of which have been used to adjust data numbers to reflect the study area population) from GIS layers obtained from MDNR. Census data used in this demographic profile is detailed in Appendix H.

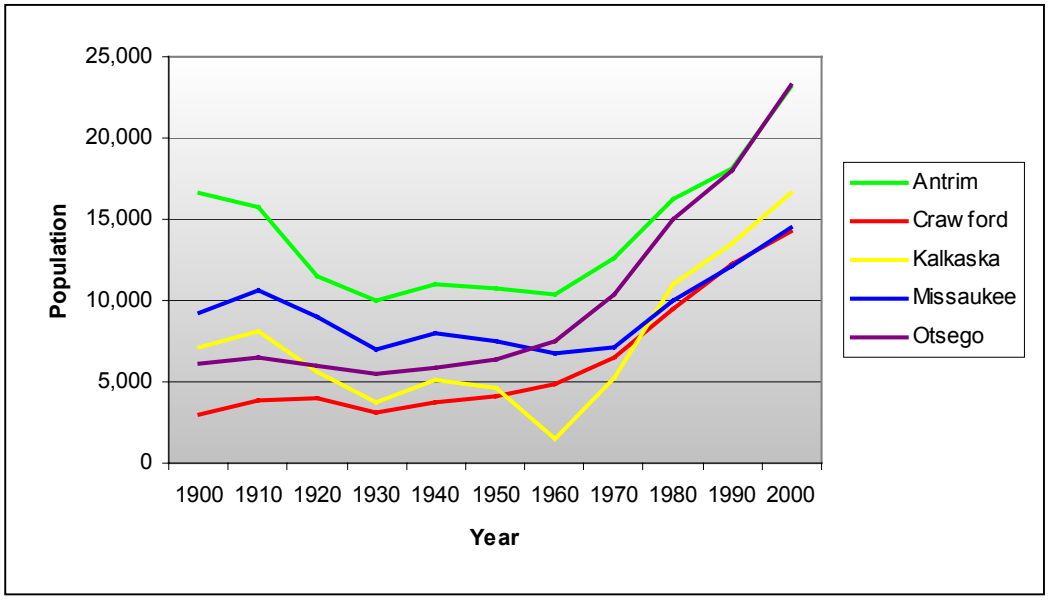
POPULATION AND HOUSING CHARACTERISTICS

Historic and Recent Population Change

Although all five counties are experiencing increasing populations, the historical data displayed in Figure 4.3 shows that this has not always been the case for the region. For the period from 1900 to 1930, Antrim, Kalkaska, and Missaukee counties experienced marked population declines, while declines in Crawford and Otsego counties were less dramatic. According to Ken Darga (2002), the Michigan State Demographer, this trend is consistent with larger state-wide and national population trends characterized by a shift from rural areas and agriculture toward urbanization and industry. This shift was particularly strong in Michigan due to the growing influence of the automotive industry (Darga, 2002). Between

1930 and 1960, Missaukee and Antrim counties remained reasonably stable, while Crawford and Otsego experienced steady but slow growth. Only Kalkaska County experienced a loss of population for this period. This general trend may have been influenced by the Great Depression, when many people migrated back to the relative stability of rural living (Darga, 2002). An obvious upturn in population growth began around 1960–1970, which continues to the present. This trend may also be associated with a larger statewide and nationwide "rural revival," characterized by increased interests in rural areas and a shift from urban centers toward urban fringe and rural areas (Darga, 2002). The study area's rural character and numerous recreational opportunities may make it especially attractive to people seeking such rural environments.

Figure 4.3: Population trends for the five counties surrounding the study area, 1900-2000



These population increases over the past three decades, adjusted for the study area boundary, are illustrated in Figure 4.4. The most significant period of population increase, both in terms of raw number and percent, occurred from 1970-1980 with an increase of 2,640 people (80.8 percent). From 1980-1990, the population increased by 1,824 people (30.9 percent) and from 1990-2000 it increased by 2,309 (29.9 percent). To put this most recent population growth rate in perspective, the average growth rate for Michigan from 1990-2000 was 6.9 percent. Therefore, the study area grew at a rate of more than four times the state average. While growth rates for the study area have slowed slightly from 1970 to 2000, the total increase for this thirty year period amounts to 6,773 people, or 207.2 percent.

While the population of the study area as a whole increased by 30.9 percent from 1990-2000, Figure 4.5 illustrates that the population change in the study area by township boundary varies widely across the study area. With a loss of 9.6 percent (only 28 persons) from 1990-2000, the portion of the study area occupied by Oliver Township was the only

area to have a negative growth rate. The largest percent increase was in the area within Hayes Township with an increase of 66.0 percent (442 people). Five other townships experienced growth rates above the study area average: Cold Springs (35.0 percent), Garfield (33.2 percent), Mancelona (49.3 percent), Orange (32.9 percent), and Springfield

Figure 4.4: Estimated population growth for the study area (based on township data adjusted for study area boundaries)

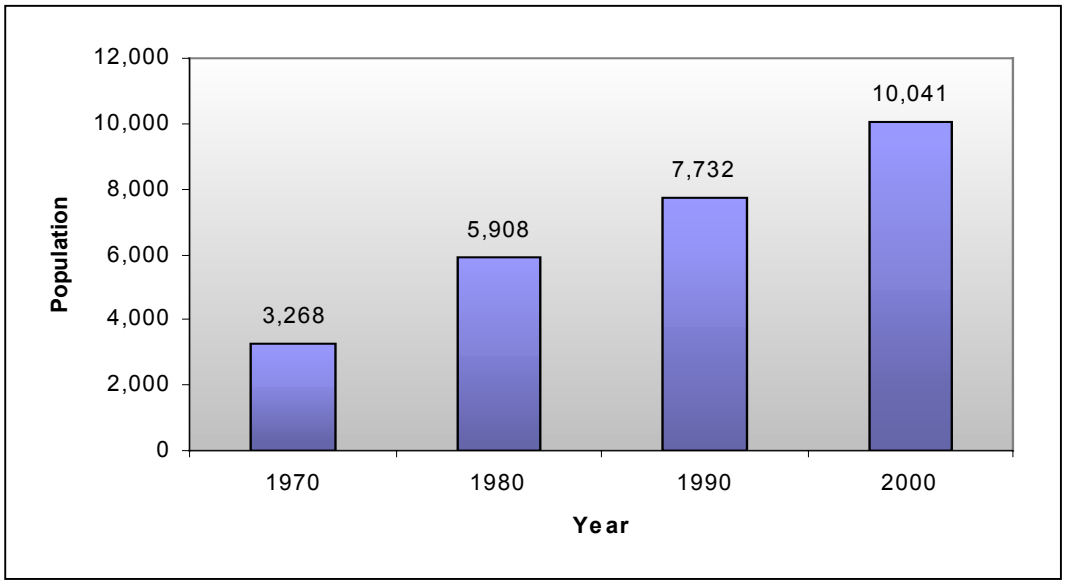
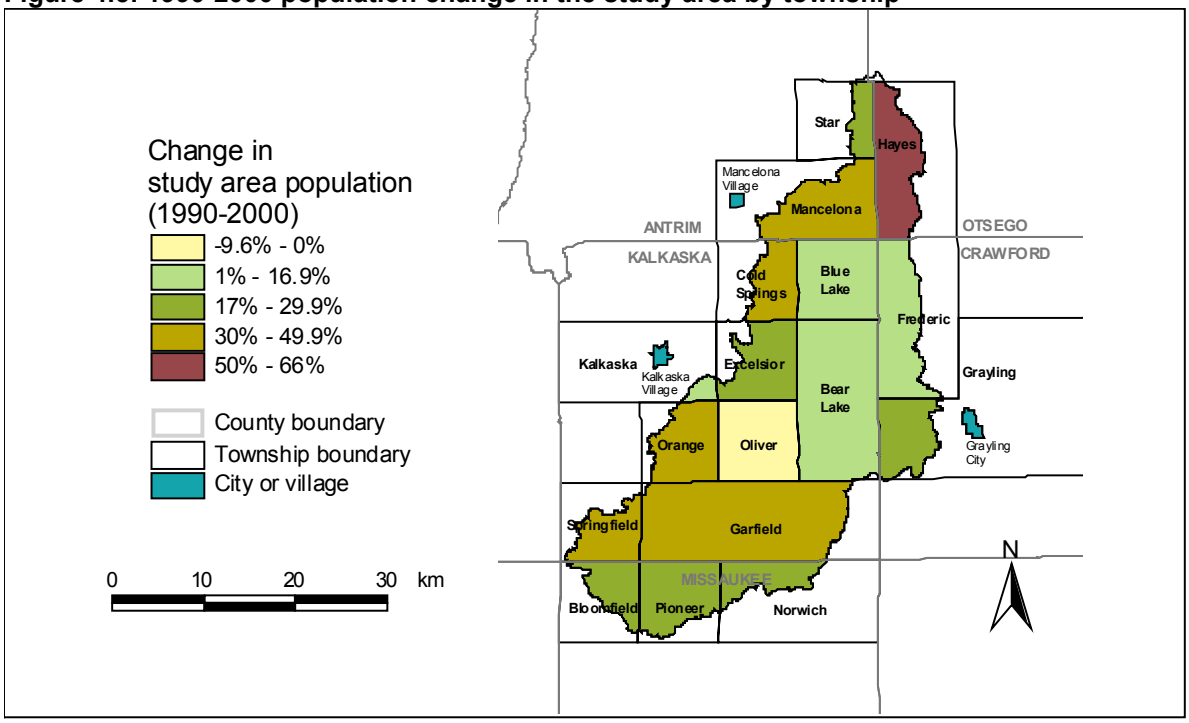


Figure 4.5: 1990-2000 population change in the study area by township



(45.8 percent). The remaining ten townships experienced growth rates ranging from 8.9 percent in Frederic to 27.9 percent in Norwich, all of which exceed the state average of 6.9 percent.

Population Distribution and Density

Table 4.1 shows the population for each township, as well as the population for each portion of the township within the watershed. This information is useful because it shows the distribution of the population in the watershed according to township boundaries. Populations within the study area according to township boundaries range from 132 people in Kalkaska Township to 1,396 people in Mancelona Township. These numbers can be misleading if not examined closely, however, as they are influenced by the amount of a township's land area within the study area. For example, within the study area, more than 10 times as many people live in Mancelona Township as in Kalkaska Township. However, this large difference is almost entirely due to the fact that Mancelona Township also occupies nearly 10 times as much land area within the study area as does Kalkaska Township. A more useful way to examine the population distribution within study area is

Table 4.1: Township and study area populations and population densities

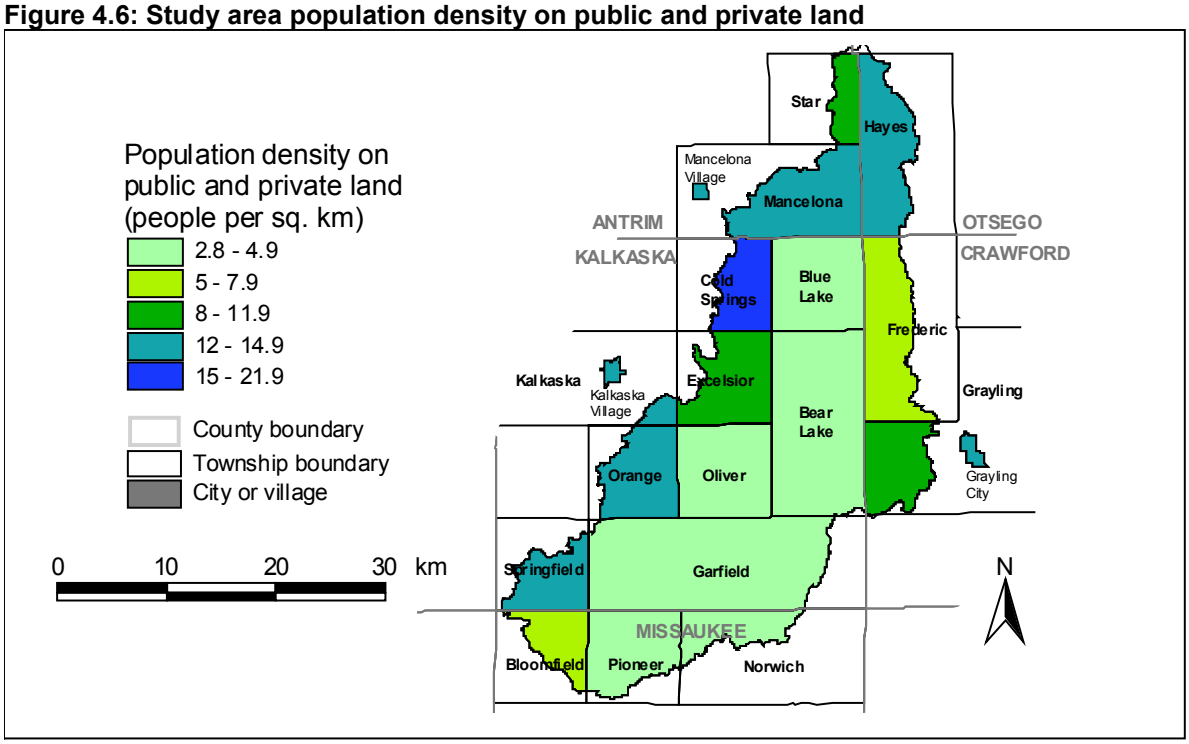
Township (County)	Population	Population Within Study Area	Population Density (People/km^2)	Percent of Study Area in Private Land	Study Area Population Density (Private Land Only)
Bear Lake (Kalkaska)	746	742	4.0	25.2	15.8
Bloomfield (Missaukee)	475	209	5.1	31.8	16.2
Blue Lake (Kalkaska)	428	428	4.6	29.7	15.4
Cold Springs (Kalkaska)	1,449	777	15.4	85.6	18.0
Excelsior (Kalkaska)	855	668	9.1	64.5	14.1
Frederic (Crawford)	1,401	720	7.5	21.3	35.3
Garfield (Kalkaska)	794	667	2.9	30.1	9.5
Grayling* (Crawford)	4,564	604	10.1	18.7	54.1
Hayes (Otsego)	2,385	1,113	13.1	89.7	14.6
Kalkaska* (Kalkaska)	2,604	132	14.1	100.0	14.1
Mancelona* (Anrim)	2,692	1,396	14.5	40.5	35.9
Norwich (Missaukee)	646	150	3.4	38.7	8.9
Oliver (Kalkaska)	263	263	2.8	38.7	7.3
Orange (Kalkaska)	1,176	901	13.1	98.5	13.3
Pioneer (Missaukee)	460	365	4.9	45.6	10.9
Springfield (Kalkaska)	1,270	687	13.8	67.7	20.4
Star (Antrim)	745	220	8.4	100.0	8.4
Total / Average	**22,953**	**10,041**	**8.6**	**44.9**	**16.2**

*excludes city and village populations

by population density. When the areas in Kalkaska and Mancelona townships are compared by population density, the two areas are very similar, with 14.1 and 14.5 persons per square kilometer, respectively.

While there is considerable variation in population density across the study area, and while the population in all areas is steadily increasing, the study area as a whole still has relatively low population densities. The U.S. Bureau of the Census classifies the entire study area as rural. Even the population centers outside the study area – Grayling City (population 1,952), Kalkaska Village (population 2,226), and Mancelona Village (population 1,408) – are classified as rural. Therefore, while the area is experiencing rapid growth, the population density is still relatively low with an average of 8.6 people per square kilometer, as compared to the state average of 67.6 people per square kilometer. The distribution of this population density, as illustrated in Figure 4.6, reveals that the six townships with the highest population densities, ranging from 13.1 to 15.4 people per square kilometer, generally extend in a band from the southwest to northeast portions of the study area. With the exception of Kalkaska, these townships also had the highest growth rates by percentage from 1990-2000 (Figure 4.5). The lowest population densities occur in the central to southeastern portions of the study area occupied by Oliver (2.8 people/km^2), Garfield (2.9 people/km^2), and Norwich (3.4 people/km^2) townships.

Figure 4.6: Study area population density on public and private land

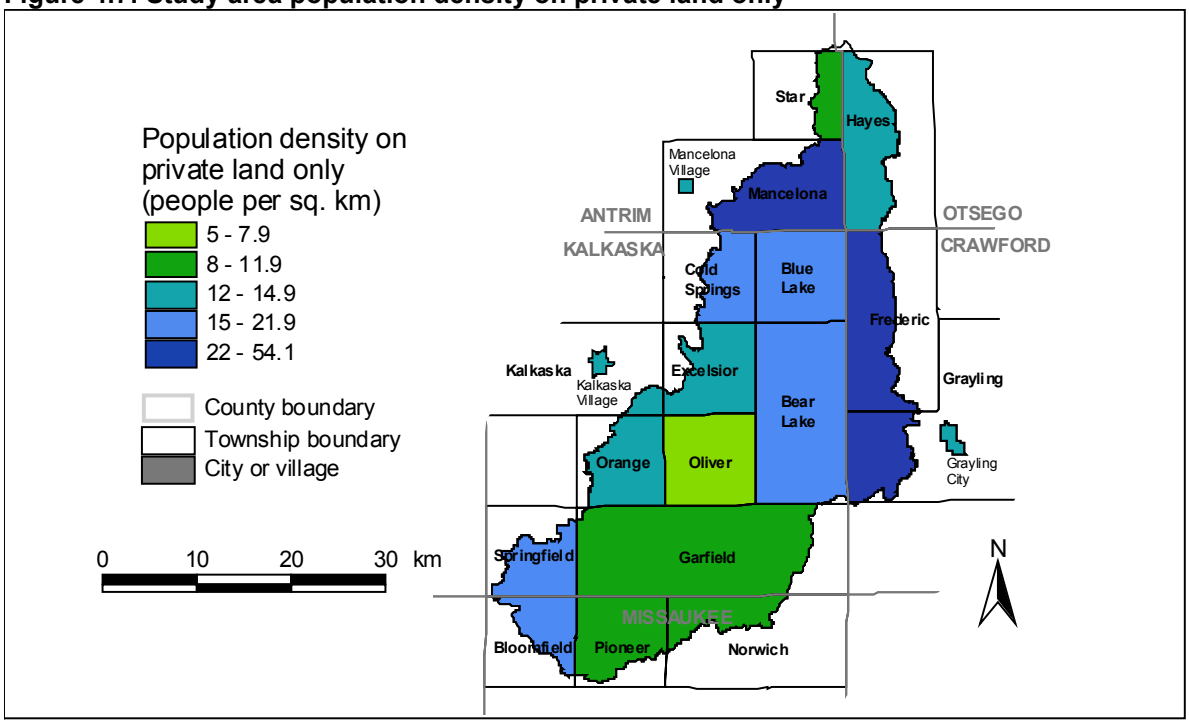


A significant factor in these low population densities is the large amount of public land (55.1 percent) within the study area. Given GTRLC's focus on conserving private land, and because most, if not all, of the study area's population lives on private property, a more useful analysis of population density should factor out public lands. Most of the public lands

are located in the southern and eastern portion of the study area, where population densities are generally lower than the northern and western edges of the study area.

However, as demonstrated in Figure 4.7 and Table 4.1, when population density is adjusted to consider the number of people per square kilometer of private land, many of the townships show a considerably higher population density. Frederic Township, with only 21.3 percent privately owned land, shows the greatest adjustment of more than four-fold from 7.5 people per square kilometer to 35.3 people per square kilometer. In contrast, portions of the study area occupied by Kalkaska and Star townships are entirely privately owned, and therefore, densities in these areas did not change when public lands were subtracted from the analysis. When only using private land to calculate population density for the study area, the adjusted average density for the study area is 16.2 people per square kilometer.

Figure 4.7: Study area population density on private land only



Another important factor to consider in estimating population and population density is the effect of non-residents on seasonal population fluctuations. Because the study area and surrounding lands are popular recreation and vacation destinations, populations may increase dramatically during the summer months. For example, Otsego County, a popular golfing destination, increases from approximately 23,000 people in the winter months (mostly county residents) to 100,000 in the summer (Schlink, 2002). Therefore, actual human impacts on the landscape and natural resources may be significantly greater than expected from population estimates derived from U.S. Census data, that do not include second homeowners and other non-residents.

County Population Projections

Figures 4.8 and 4.9 display projected population increases through 2020 in raw numbers and percentages for the five counties encompassing the study area (Michigan Department of Management and Budget, Office of the State Demographer, 1996). In raw numbers, Otsego County is projected to have the largest increase with approximately 11,600 additional people over the next 20 years – nearly twice the projected population gains of 6,000 people each in the next two largest gaining counties of Antrim and Crawford. Kalkaska and Missaukee Counties are projected to have the smallest increases over the next 20 years with respective increases of 5,300 and 4,200 people. The total projected growth for the five-county area over the next 20 years is 33,100 people – an increase of 35.3 percent over the 2000 Census population of 97,733.

Figure 4.8: County population projections to the year 2020

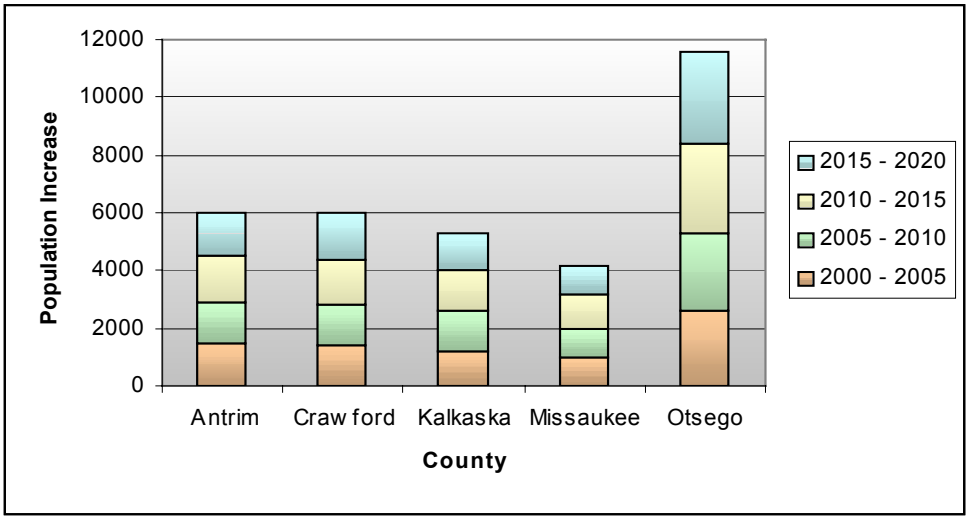
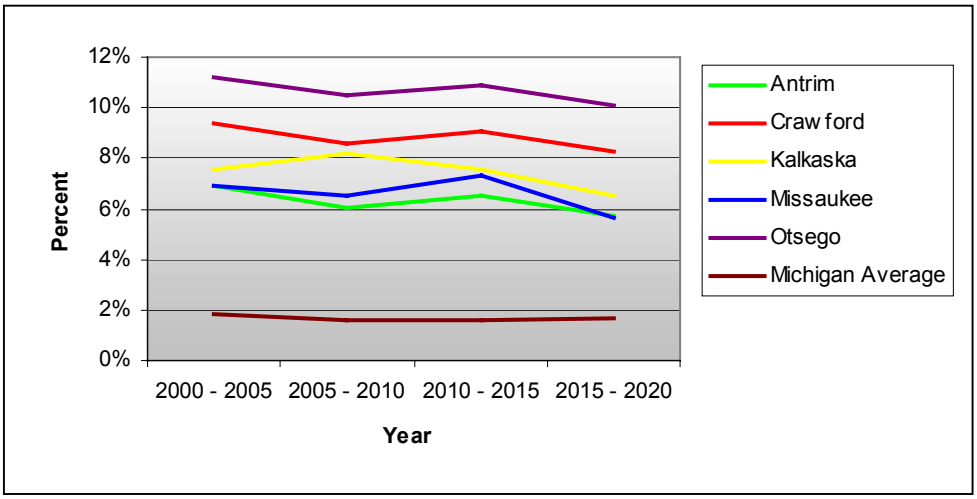


Figure 4.9: Projected county growth rate by percent through the year 2020



When the same data is presented in terms of percentage increase, Otsego stands out again as the county with the steepest projected growth rate, followed by Crawford, Kalkaska, Missaukee, and Antrim counties. With the exception of Kalkaska County, the other four counties are projected to follow a similar pattern of slightly slowed population growth rates, followed by increased growth rates, and finally ending in 2020 with slowing growth rates.

However, compared with the projected state average growth rate of between 1.6 percent to 1.8 percent over the same time period, all five counties are expected to grow at a rate many times the statewide average.

Housing Units

The estimated number of housing units (H.U.) in the study area for 2000 is 8,281 or an average of 6.0 H.U.s per square kilometer. As with population estimates for the study area, the team factored out the number of housing units in Mancelona and Kalkaska Villages and Grayling City to avoid any bias toward erroneously high estimates from more populated areas outside the study area. Figure 4.10 displays the density of housing units for the study area and surrounding townships. Cold Springs Township has the highest H.U. density at 14.4 H.U. per square kilometer, followed by Mancelona Township with 8.5 H.U. per square kilometer, Blue Lake Township with 7.7 H.U. per square kilometer, and Springfield Township with 7.5 H.U. per square kilometer. The lowest housing unit densities are found in Oliver, Garfield, and Norwich Townships ranging from 2.6 to 2.9 H.U. per square kilometer.

As with population density, the project team also calculated housing unit density on private land only. The changes, as shown in Figure 4.11, are proportionately equal to the changes in population density. Therefore, just as Bear Lake Township had an increase in population density of nearly four-fold, the same increase occurs in housing density. Overall, the adjusted housing unit density for the study area on private land only changes from 6.0 to 9.6 H.U. per square kilometer.

When the ratio of population to housing units is examined, the study area has an average of one housing unit for every 1.3 people. This ratio is considerably lower than the state average of one housing unit for every 2.4 persons. However, the total number of housing units in the study area includes a high percentage of housing units used for seasonal, recreational, or occasional use. When the number of seasonal/recreational housing units (3,639) is factored out, the ratio more closely matches the state average. This high percentage of seasonal housing units is significant because it demonstrates the influence of recreational activity on the human and natural environments. A high number of seasonal housing units indicates a seasonally fluctuating population base that is likely to be much higher during the warmer months when residents from outside the study area occupy second homes in the study area. Therefore, the actual population of the study area during times of peak recreational activity is probably much higher than the reported residential population of 10,041.

Figure 4.10: Study area housing unit density on public and private land

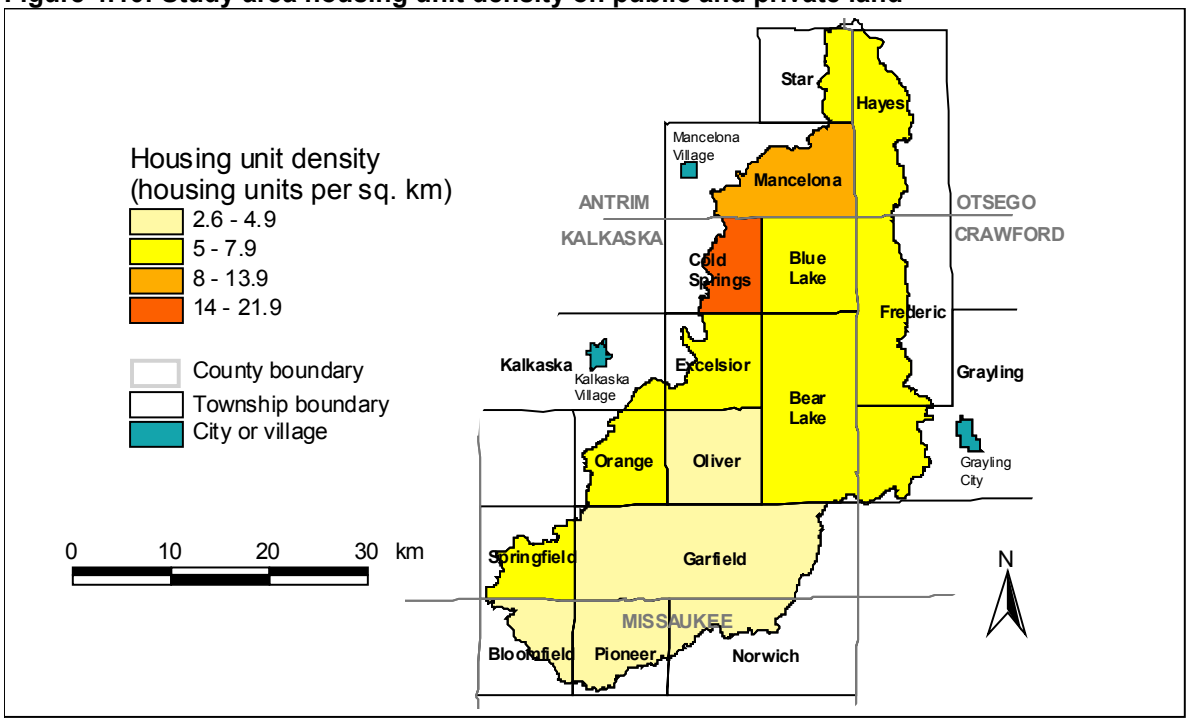
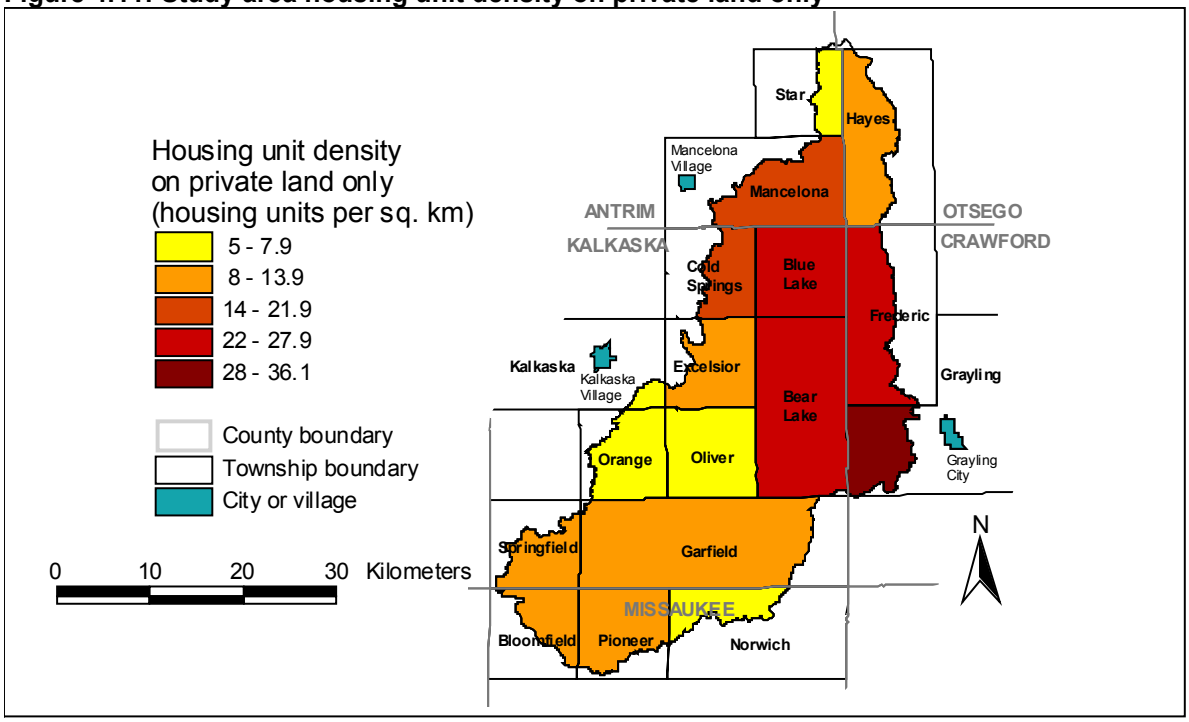


Figure 4.11: Study area housing unit density on private land only



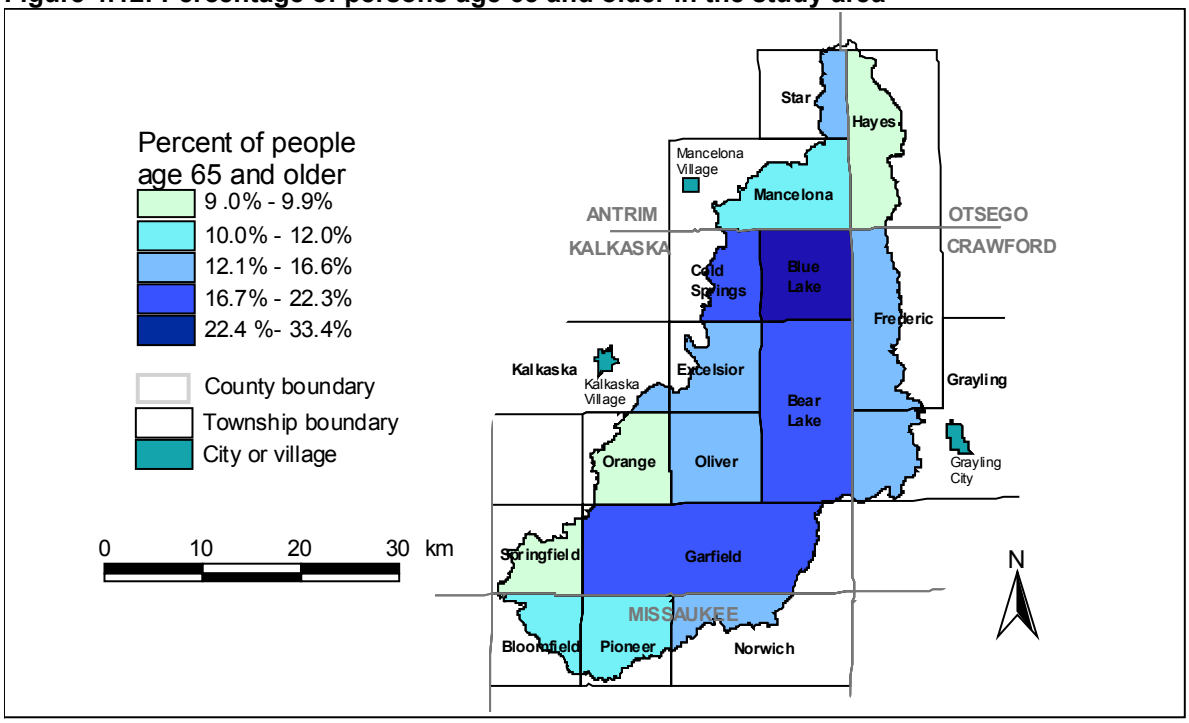
SOCIO-ECONOMIC CHARACTERISTICS

Population Age 65 and Older

The number of people age 65 and older is of particular interest to GTRLC because older landowners tend to own most of the large, intact properties. Many of these landowners inherited forested or farmed land from their parents or grandparents when land was less expensive, or in some cases, homesteaded. Many others purchased parcels before land prices increased to reflect the recreational and scenic values (Rigney, April 2002). In addition, landowners that have owned or inhabited their property for longer periods of time tend to have a higher sense of environmental stewardship and personal attachment to the land. Furthermore, as a landowner grows older, the landowner may desire to stipulate that the land be protected from future development (Ochterski, 1996).

Figure 4.12 shows the distribution of persons aged 65 and older by township for the study area. Of the 17 townships, six have a percentage of people aged 65 and older less than the state average of 12.3 percent. These townships are centered around the southeast and northern portions of the study area. The percentage of persons aged 65 and older for the remaining 11 townships is higher than the state average, with the highest two being Blue Lake (33.4 percent) and Bear Lake (22.3 percent) townships, which are located in the center of the study area. The estimated number of people aged 65 and older for the study area is 1,602, or 15.9 percent of the total study area population, which is well above the average for Michigan as a whole.

Figure 4.12: Percentage of persons age 65 and older in the study area



Median Household Income and Poverty Rates

Median household income and percent of a population in poverty are both important factors to consider when designing and implementing a conservation plan. Receptiveness to conservation activities may be tied to the real or perceived economic impact of such activities on individuals and the community as a whole. Individuals with lower incomes may be under greater pressure to subdivide their property and sell to development interests. Similarly, if property values increase due to development pressures, a parcel may be thought of as a financial investment and one that a landowner may not wish to compromise by allowing restrictions to be placed on future development and use.

Figure 4.13 displays 1997 median household income for the five counties (U.S. Economic Census, 1997). All five counties show a lower median household income than the state average of $38,883. The average median household income for the five counties is $32,579, which is $5,253 below the state average. Crawford County shows the lowest median household income at $29,587. Otsego County ranks highest with $37,938 per household, which is only $945 below the state average.

Figure 4.13: Median household income for counties comprising the study area and for Michigan

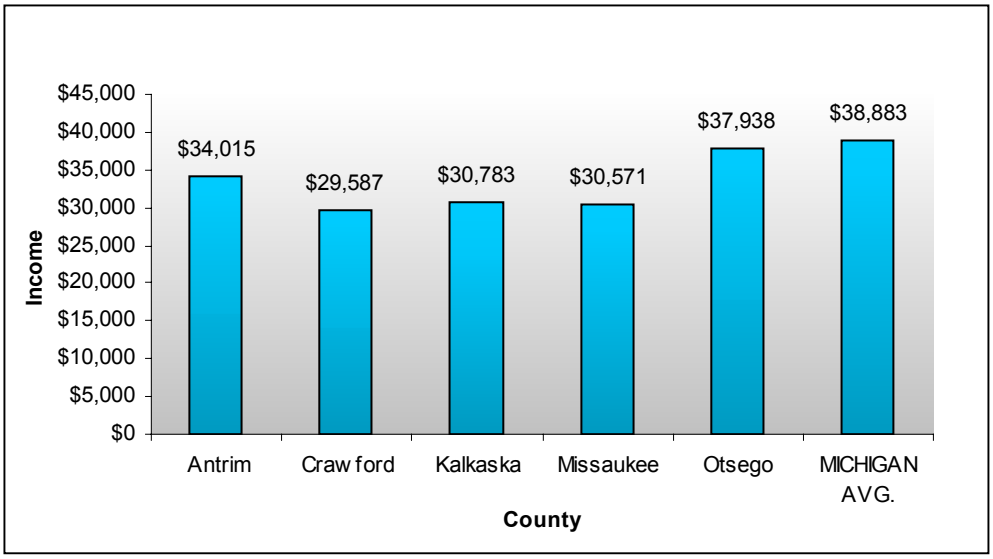
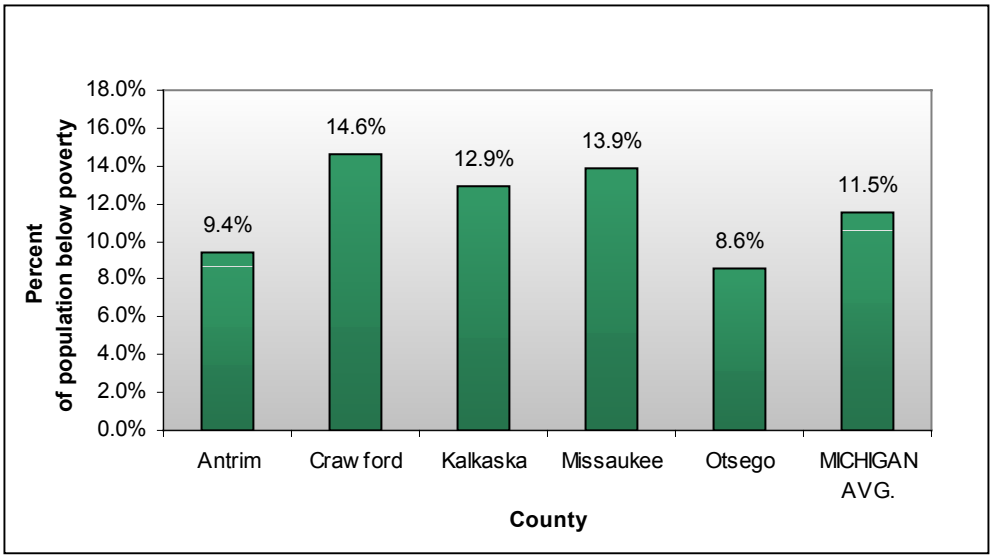


Figure 4.14 shows percent of persons below the poverty level for each of the five counties and the state average according to 1997 U.S. Economic Census data. Poverty levels range from a high of 14.6 percent in Crawford County to a low of 8.6 percent in Otsego County. Antrim and Otsego counties are below the state average of 11.5 percent, while Crawford, Kalkaska, and Missaukee Counties have poverty levels that exceed the state average. The combined average of persons below poverty for the five counties is 11.9 percent, just slightly higher than the state average.

Figure 4.14: Percent below poverty line for counties comprising study area and for Michigan



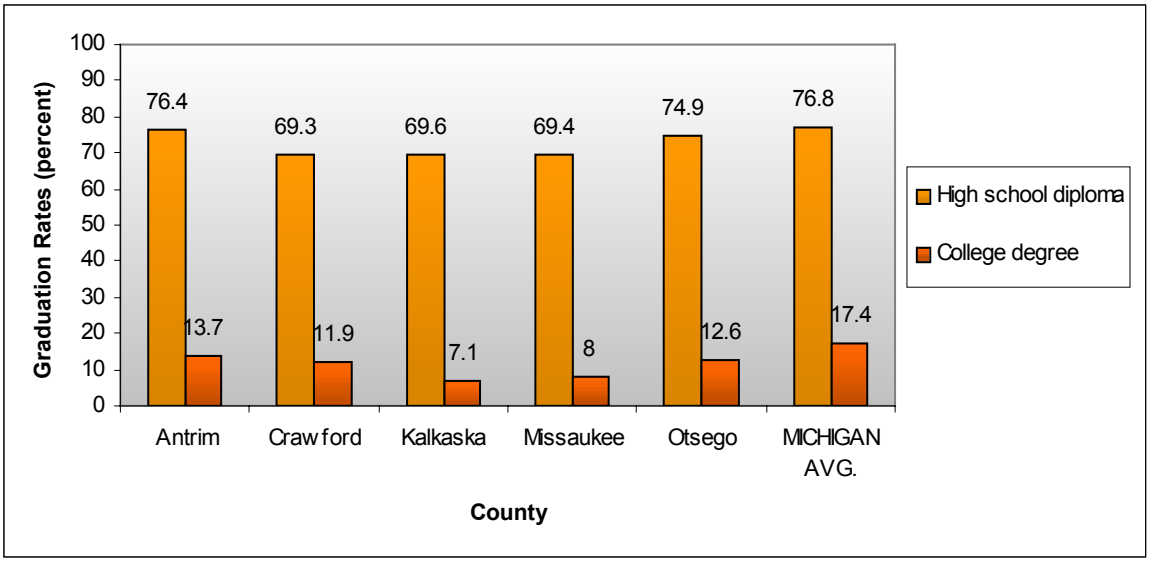
Race

The vast majority (94.7 percent) of the study area's residents are Caucasian. Blue Lake Township has the highest percentage at 98.8 percent, while Grayling Township has the lowest percentage of Caucasians with 94.8 percent. All townships have a consistently higher percentage of Caucasian residents than the average for the state of Michigan, which is 80.2 percent. Of the remaining average of 2.6 percent non-Caucasian population for the townships, American Indians are the greatest in number at 0.6 percent, followed by African American/Blacks at 0.3 percent and Asians at 0.2 percent. The remaining 1.5 percent of the area's population consist primarily of two or more races.

Education

Figure 4.15 shows the 1990 rates of high school and college graduation rates for people over age 25 for the five counties in which the study area is located, as well as the average for Michigan. Crawford, Kalkaska, and Missaukee counties have similar high school graduation rates, all of which are lower than those for Antrim and Otsego counties. All five counties show high school graduation rates that are lower than the state average of 76.8 percent, although Antrim County is quite close to the state average. Similar trends are evident for college graduates. All five counties are below the state average of 17.4 percent, ranging from 7.1 percent in Kalkaska County to 13.7 percent in Antrim County.

Figure 4.15: 1990 high school and college graduation rates



SUMMARY OF DEMOGRAPHICS

This demographic analysis provides insight into the potential opportunities and constraints that the Grand Traverse Regional Land Conservancy may face when developing and implementing a conservation plan in the study area. In general, the upper Manistee River watershed still maintains a relatively dispersed and low-density population when compared to the average for Michigan. This rural quality of the study area works to the advantage of land conservation efforts.

However, this analysis also shows that population and development pressures have increased substantially over the past thirty years. These growth patterns are expected to continue, placing increased pressure on the ecological integrity of the study area. Population distribution varies widely across the study area, with areas in the west and north generally showing higher population and housing densities, while areas in the south and east exhibit lower densities. However, the disparity between low density and high density areas is muted when only private lands are considered. Therefore, while areas with lower population and housing unit densities generally have more land under public protection, the pressures on the remaining private lands may be some of the highest in the study area, particularly in the northeast portion of the study area. The popularity of recreational activities in the study area is also an important factor to consider when planning land conservation strategies. Seasonal population fluctuations due to the presence of visitors from outside the study area significantly impact land use and natural resources in study area.

In constructing a demographic profile of human habitation in the study area, some broad socio-economic characteristics can be applied to the general population. The study area shows little racial diversity; most residents are Caucasian. Median household income for

the study area and surrounding areas is generally well below the state average, and poverty levels are slightly above the state average. High school graduation rates are slightly lower than for Michigan as a whole, and college graduation rates are significantly below the state average. The percentage of people age 65 and older is well above the state average, with the highest percentages occurring in Kalkaska County, GTRLC's primary area of interest within the study area.

A long-term goal of implementing a landscape-scale conservation plan requires careful coordination among a range of stakeholders. At the most fundamental level, the characteristics and composition of these stakeholders is closely tied to the population which they represent. While GTRLC focuses on individual property owners, which may or may not fit the general demographic profile for the study area, this demographic analysis may be helpful in determining successful techniques for gaining community support for land conservation efforts within the study area.

GOVERNMENT INFLUENCES ON LAND CONSERVATION

Government policies and programs at all levels – federal, state, and local – greatly affect the ecological integrity of public and private lands. Federal and state regulations broadly guide land use through the protection of natural features, such as wetlands and endangered species. At the local level, county and township officials frequently use master plans, zoning ordinances, and other tools to direct specific land uses. Local governments can dictate the types of land uses that can occur across the landscape; the types of structures that can be built; the location of structures in relation to property boundaries, roads, and natural features; and other specific land use details. Federal and state regulatory frameworks guide local land use policies, but in many cases, federal and state policies have little to no impact on local land controls. Combined, federal, state, and local regulations direct private and public land use at multiple scales and provide many societal benefits, several of which influence the conservation of landscape ecosystems.

The project team investigated federal, state, and local policies and programs to determine the level of environmental protection that currently exists on private lands in the study area. The team conducted this analysis because it did not want to recommend that GTRLC conserve areas that existing government activities and regulations already adequately protect. In addition, the analysis provides GTRLC and other conservation organizations and planning entities with an inventory of land use policies as well as a basis for evaluating opportunities to influence local zoning and land use provisions.

The analysis demonstrates that a variety of existing provisions contribute to the protection of the study area's natural features and ecosystems. However, current regulations fail to protect ecosystems effectively over the vast majority of the landscape, leaving lands highly vulnerable to conversion or destruction. Therefore, GTRLC's efforts to protect and conserve land will not be duplicative or unnecessary, but instead will help ensure the area's ecological integrity.

FEDERAL AND STATE REGULATIONS AND PROGRAMS

Federal and state regulatory programs can have a considerable but varying effect on land use and behavior at the local level. Environmental regulations and programs at the state level are often a reaction to federal initiatives that require state compliance or action. A state that creates their own environmental policy or program in response to a federal mandate gains independence and flexibility in the implementation of the mandate. While states must meet minimum federal standards, a state may rely upon implementation and funding strategies to increase or decrease the level of protection that the federal policy was intended to provide. The state's implementation then has a significant influence on implementation at the local level.

Michigan is a state that has chosen to pursue its own plans in response to most federal environmental and natural resource policies. As a home rule state, autonomous governments are the norm in Michigan and the state's pursuit of its own environmental objectives has led to an increasing number of county and local initiatives. This autonomy has contributed to a climate at the local level that is reluctant to allow state or federal governments to influence land use. The following sections discuss the policies and programs that influence conservation in Michigan as they relate to the study area and the local political climate.

River Protection

Segments of the Manistee River that lay within the study area are protected only by environmental regulations that strive to maintain water quality and protect wetlands at the same level guaranteed to the rest of the state. These segments do not have any protection measures that ensure that the unique ecology of these river segments remains relatively undisturbed. However, increased public support could lead to future protection of the Upper Manistee through either the Federal Wild and Scenic Rivers Act or the Michigan Natural Rivers Act.

In 1968, the U.S. Congress enacted the Wild and Scenic Rivers Act, declaring that "certain selected rivers of the Nation, which with their immediate environments, possess outstanding and remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations" (National Park Service, 2002). The National Park Service classifies designated rivers into three categories:

- Wild - meaning the river is free from impoundment
- Scenic - meaning the river has outstanding beauty
- Recreational – meaning the river is highly accessible by road and may have relatively high levels of development but is heavily used by river enthusiasts

The federal government regulates each designated river area using an individual management plan that aims to protect the qualities that warranted the river's designation.

Future development in the riparian corridors of designated rivers is mitigated and addressed through federal acquisition programs and planning processes.

In 1983, the U.S. Forest Service (USFS) assessed the entire Manistee River, from its source to its mouth, for potential inclusion in the Federal Wild and Scenic Rivers program. In 1992, Congress designated a 26-mile segment of the Manistee River, stretching from the Tippy Dam to the Michigan State Highway 55 Bridge (downriver from the study area), as a Wild and Scenic River based on its recreational value. While not within the study area, the designation of the lower Manistee River segment increases public visibility of the entire river system and draws visitors to recreate and enjoy the surrounding area.

USFS also proposed recommendations for an additional designation of 25 miles between Lincoln Bridge and Stronach Pond for the segment's scenic value, but Congress did not approve the proposed designation. Designation of this segment failed, mainly because it had a higher percentage of private landowners compared to the section that was designated, which is primarily owned by USFS (U.S. Forest Service, 1983).

The Federal Wild and Scenic River Act contains provisions that direct funding toward states that have programs in place to protect valuable river corridors. Michigan responded to this funding opportunity by passing the Natural River Act of 1970. This legislation was modeled after the Federal Wild and Scenic Rivers Program but is more specific in its mission and methods to protect Michigan's rivers. The Act states that "rivers should be protected for the purpose of preserving and enhancing their values for water conservation, free flowing condition, and fish, wildlife, boating, scenic, aesthetic, flood plain, ecologic, historic and recreational values and uses" (Michigan Public Act 231). The Act gives authority to the Michigan Natural Resources Commission (which supervises MDNR) to recommend zoning regulations across designated watersheds and to impose zoning regulations upon private landowners along river corridors. The Act also promotes protection by directing the Michigan Natural Resources Commission to utilize acquisition, lease, and easement methods to protect sensitive areas. Additionally, the Act has a non-degradation provision, which may prohibit new dams, water quality degradation, channelization, and mining activity, and a consistency provision that requires actions taken by all state agencies to be consistent with river management plans promulgated under the program (American Rivers, 2002).

In 1998, MDNR released two reports that prompted debate over the designation of the Manistee River as one of Michigan's "natural rivers." The first report, the "Manistee River Assessment," provides an ecological overview and history of the river as related to fisheries management. The report identifies impacts to the river that stem from uncontrolled land use and development, including erosion, changes to hydrology, and deforestation. The report also discusses management options, several of which highlighted the need for comprehensive protection measures in the Manistee River corridor.

The second report was released by MDNR's Natural Rivers Program, the office responsible for overseeing and implementing Michigan's Natural River Act. The report was a draft "Natural River Plan" for the Manistee and Pine River watersheds that was developed by

four Citizen Advisory Groups that met over a three-year period throughout different portions of the watersheds. The draft plan was released along with legislation to designate the Manistee and Pine as Natural Rivers.

The draft Natural Rivers Plan examined the entire Manistee River as well as several small tributaries that the federal study did not assess. The plan made zoning recommendations for private and public land across the watershed and proposed specific zoning standards along the river corridors. A summary of these standards is listed in Table 4.2.

Table 4.2: Michigan Natural River Plan zoning recommendations

Zoning Measure	**Upper Manistee River (study area)**	**Middle Manistee River**	**Lower Manistee River**	**Lower Manistee River**
	Wild-Scenic*	**Wild-Scenic***	**Wild Scenic***	**Country Scenic***
Natural Vegetation Strip (Mainstream)	75 ft	75 ft	100 ft	NA
Natural Vegetation Strip (Tributaries)	75 ft	50 ft	50 ft	50 ft
Building Setback (Mainstream)	150 ft	100 ft	150 ft	NA
Building Setback (Tributaries)	100 ft	75 ft	100 ft	75 ft
Bluff Setback (Mainstream)	50 ft	50 ft	50 ft	NA
Bluff Setback (Tributaries)	25 ft	25 ft	25 ft	25 ft
Minimum Lot Area (Mainstream)	80,000 sq ft	80,000 sq ft	80,000 sq ft	NA
Minimum Lot Area (Tributaries)	80,000 sq ft	80,000 sq ft	80,000 sq ft	40,000 sq ft
Minimum Lot Width (Mainstream)	200 ft	200 ft	200 ft	NA
Minimum Lot Width (Tributaries)	200 ft	200 ft	200 ft	150 ft

* The Michigan Natural River Act designates segments as either “Wild-Scenic” or “Country-Scenic,” with each classification having different protection measures that are specific to the river segment.

The report recommends additional standards and guidelines, but the above table provides the quantifiable standards that were most contentious upon the release of the report.

A coalition of private landowners, many represented by the Citizens Alliance for Regulatory Reform, objected to the proposed designation and organized an opposition campaign. Several opponents gave presentations to the township boards and drafted a proposal that would give zoning control only to local authorities. Over 40 townships signed the proposal and sent it to Michigan Senator George A. McManus. Shortly afterwards, the State of Michigan reduced the staff of the Natural Rivers Office from four to two people,

making it very difficult for it to respond to criticism on proposed designation of the Manistee and Pine Rivers. The Michigan Legislature never debated the proposed legislation and the designation attempt therefore failed (Pearson, 2001). In January of 2002, the Pine River Watershed Coalition, the Upper Manistee River Association, and an alliance of other conservation and angler organizations announced the development of a strategic plan to revive Natural River designation efforts on the Pine and Manistee Rivers. The group intends to work with local citizens, governments, and businesses to build support for the original draft plan (Michigan Land Use Institute, 2002).

If this coalition succeeds in securing Natural River designation for the Manistee, GTRLC and other land trusts may find opportunities in new funding sources related to the designation. If the new designation attempt fails, it would be advantageous for conservation organizations to work with local governments that may have an interest in independently adopting the Natural Rivers Plan recommendations or similar protection measures

Clean Water

The U.S. Clean Water Act (CWA) requires all municipal and industrial wastewater to be treated before being discharged into waterways, with the objective of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters and, where possible, achieving water quality that is both "fishable" and "swimmable." The Act puts the onus of implementation of most CWA provisions on state governments but gives the federal government enforcement authority. The U.S. Environmental Protection Agency currently administers the program.

The CWA as amended in 1972 focused on “point-source” pollution and did not direct regulation of “nonpoint source” pollution. In 1987, Congress passed additional amendments that authorized measures to address non-point source pollution by directing states to develop and implement nonpoint pollution management programs. States were encouraged to develop programs to protect groundwater resources as part of their overall nonpoint source pollution control efforts. The legislation also authorized federal financial assistance for states to support demonstration projects and actual control activities (Copeland, 1999).

Michigan has adopted and amended several versions of a State Clean Water Act over the last 40 years. Today, the Michigan Department of Environmental Quality (MDEQ) oversees the implementation of the CWA. MDEQ promulgates rules, establishes pollution standards, and oversees permitting operations. Several of the state provisions are more stringent than federal regulations due to efforts to protect the Great Lakes. However, recent records indicate that MDEQ may not enforce CWA provisions according to federal standards (Environmental Working Group, 2000). For example, in January, 2002, the EPA delivered a one month notice to the state of Michigan to enforce federal and state clean water laws on concentrated animal feeding operations (CAFOs). The notice accuses Michigan of intentionally neglecting to enforce CWA provisions and requires the state to

develop a permitting program to address water pollution from CAFOs (Environmental Protection Agency, 2002).

Wetlands

Section 404 of the Federal Clean Water Act prohibits the filling of waters, including wetlands, without a permit from the Army Corps of Engineers, or in Michigan's case, from a state wetlands protection permitting program that is approved by the EPA. The five subsections of CWA Section 404 that are pertinent to wetland protection in Michigan include: (Copeland, 1999)

- Section 404(a) – Requires permits for the filling of waters, including wetlands.
- Section 404(b) – Requires that permitting agencies follow guidelines developed by the EPA when issuing fill permits. If practical alternatives exist, the guidelines require that the permit not be granted.
- Section 404(c) – Authorizes EPA to veto fill permits.
- Section 404 (f) – Exempts certain activities from the permit requirements. Exemptions include some farming practices (landowners cannot drain or fill a wetland that was not farmed prior to the legislation without permit), some silviculture, minor draining, and upland water and soil conservation practices.
- Section 404 (g) – Allows states to administer permit programs if approved by EPA. The state program is supposed to be stricter than the federal regulations.

Michigan is one of only two states to which EPA has given permitting approval. Michigan's version of the Clean Water Act, the Goemaere-Anderson Wetland Protection Act of 1979 (now Part 303 of the Michigan Natural Resources and Environmental Protection Act), has strict protection measures accompanied by stiff fines. Those laws were developed during an era when Michigan was viewed as a role model for state environmental protection efforts. Provisions in these regulations include buffer distances around wetlands and a "no net-loss" wetland policy. Michigan's CWA defines wetland as "land characterized by the presence of water at a frequency and duration sufficient to support, and that under normal circumstances does support, wetland vegetation or aquatic life, and is commonly referred to as a bog, swamp, or marsh" (Michigan Clean Water Act, §324, Sec. 30301 (d)). The Act only protects wetlands that are more than five acres in size, unless the state determines that "the protection of the area is essential to the preservation of the natural resources of the state from pollution, impairment, or destruction" (§324, Sec. 30301(d)(iii)).

The Michigan Clean Water Act also allows local governments to enact wetland ordinances, as Antrim County has recently done. Michigan's wetlands permitting program, given authority by EPA in 1984, is now administered through MDEQ (formerly part of the Michigan Department of Natural Resources). MDEQ's recent record for protecting wetlands is as controversial as the other CWA programs it administers, as it has streamlined the permitting process to allow development of wetlands to occur more rapidly and has

reduced its staff that is responsible for enforcing wetlands provisions by more than 40 percent (National Wildlife Federation, 2002).

While significantly weakened in the 1996 U.S. Farm Bill, another federal wetland protection measure that should be noted is the Farm Bill's Wetland Conservation Provision. This provision requires that agricultural producers who receive aid from the U.S. Department of Agriculture must not farm wetlands that were not converted before 1985 or have not been farmed for five consecutive years. New mitigation provisions and exemptions significantly weaken this measure but still make it necessary for farmers to obtain a permit to farm wetlands that have not been previously converted.

Despite current wetland protection regulations, the existence of a permitting process for filling wetlands in Michigan makes it clear that wetlands cannot be considered protected in perpetuity under existing state and federal regulations. GTRLC and other conservation organizations should therefore take measures to protect these highly valued ecological resources.

Wildlife and Biodiversity

The Federal Endangered Species Act (ESA) is the most powerful legislation aimed at the protection of plant and animal species. ESA forbids the killing or harming of species that are officially listed under the Act. Significant modification of habitat that directly harms or kills a listed species is also illegal. Michigan enacted its own Endangered Species Act in 1974 and, as a result, is permitted by the U.S. Fish and Wildlife Service to maintain the list of threatened and endangered species and oversee enforcement of the federal statute. The Michigan Endangered Species Act does not protect insects, as the act states that their protection would "present an overwhelming and overriding risk to man" (§§299.221).

The MDNR contracted with The Nature Conservancy to survey the state and inventory the occurrence of listed species. The MDNR uses this information to work with landowners to ensure the protection of the listed species on individual properties. Landowners who want to be sure they are complying with the Act must take the initiative and consult with MDNR and the U.S. Fish and Wildlife Service to be sure there are no endangered species in their area (Michigan State University Extension, 1997). Species are listed based on scientific data only, and critical habitat designation or agency consultation is not required when working or developing in an area where endangered species are located (unless direct harm to the species will result). Violations of the ESA are punishable as a misdemeanor offense with maximum penalties of a $1,000 fine and/or 90 days in jail (Defenders of Wildlife, 2002).

Michigan's Biological Diversity Conservation Act supplements the ESA by recognizing the importance of conserving diversity and establishing a joint legislative working committee charged with the development of a state biodiversity conservation recommendation. Since its inception in 1993, the only action that the working committee has taken has been the development of proposed guidelines for the establishment of old growth forest preserves.

In addition to these regulations, Michigan has several laws that regulate activities that take place on state-owned and adjacent land:

- *Michigan Environmental Protection Act (MEPA)* - Similar to the federal National Environmental Policy Act (NEPA), MEPA requires a detailed assessment of all major state agency actions that may impact the environment.
- *Michigan Wilderness and Natural Areas Act (Mich. Comp. Laws Ann. §§322.751 et seq.)* - State-owned lands can be designated "wilderness" or "natural areas" and protection of these areas often requires cooperative agreements between private landowners and government agencies when these lands transcend state-owned boundaries (Defenders of Wildlife, 2002).
- *Michigan Natural Resources Trust Fund Act* - The state can acquire private lands that are deemed scenically beautiful or environmentally important by using monies collected from oil and gas leases on state lands.
- *Michigan's Conservation and Historic Preservation Easement Act, PA 197 of 1980* – The legislation authorizes the use of conservation easements to protect areas of high conservation value.

Federal and state agricultural departments have also been very active in developing programs to support biological conservation. The United States Department of Agriculture (USDA) has led the way in establishing over 20 different conservation programs directed towards farmers. These programs include USDA's Conservation Reserve Program, the Forestry Incentives Program, the Wetlands Reserve Program, and the Wildlife Habitat Incentives Program. Most of these programs are reward-based, where farmers are compensated for not putting sensitive lands into agricultural use. Some programs also use a technique called cross-compliance, whereby crop subsidies are withheld unless conservation plans are developed and implemented.

The Michigan Farm Bureau, a state lobbying group, has developed a conservation program structure similar to USDA's. The Farm Bureau is now experimenting with its Conservation Reserve Enhancement Program (CREP), but CREP currently offers incentives only to farmers in the southern portion of the state. The program receives 80 percent of its funding from the federal government and will likely expand to other areas of the state in the near future.

While there is a myriad of state and federal programs that work to protect biological and ecological diversity, many are voluntary and some are not as effective as intended. GTRLC and other conservation organizations should consider how their activities can work in conjunction with government programs to meet their shared programmatic objectives.

Land Division

The aforementioned policies and programs either regulate or encourage the protection of specific natural features. At a broader scale, legislation that regulates permissible land division influences the likelihood of conservation or development on private lands across the entire landscape. The State of Michigan is responsible for all land division regulations.

Two pieces of legislation have far-reaching influences on the shape and size of Michigan's land parcels – the Subdivision Control Act of 1967 (P.A. 288) and its successor, the Land Division Act of 1996 (P.A. 591).

From 1967 to 1996, The Subdivision Control Act permitted two types of land parcelization. The Act defined a "land division" as the parcelization of parent tracts (the original tracts of land) that produced parcels of *more* than ten acres each. Parcels could be further divided and become parent parcels after ten years. The state did not require approval of divisions, thereby resulting in a cost-free method of parcelization for landowners. By contrast, the Act defined a "plat" as parcelization of a parent tract that produced five or more parcels of *less* than ten acres each. The state required landowners to submit requests for plat approval, which was a costly and potentially time-consuming process.

Not surprisingly, these distinctions generated incentives for landowners to avoid plat costs by creating as many land divisions as possible. As a consequence, parcels of just over 10 acres (i.e., 10.1 acres) abound throughout Michigan. Landowners typically designed long and narrow parcels due to the relatively small minimum road frontage requirements of communities and the lack of provisions on depth-to-width ratios.

The Land Division Act of 1996 revises the provisions of the Subdivision Control Act in an attempt to change the size and shape of lots (to limit the narrowness of lots), reduce the cost of platting, and eliminate the incentive to create lots just slightly larger than 10 acres (to encourage higher density developments).

The Land Division Act creates three types of parcelization. At the largest scale, "exempt splits" produce parcels of more than 40 acres each. The state does not require approval for such divisions. At the smallest scale, "subdivisions" generate the smallest-sized parcels, and are essentially the plats that the Subdivision Control Act defines. The state requires approval for subdivisions, and submitting applications can be costly to landowners.

At the intermediate scale, "divisions" produce at least one parcel of less than 40 acres in size. The maximum number of parcels into which landowners can divide the parent tract is based on the following criteria:

- A parent tract of less than 10 acres can be divided into four parcels.
- One additional parcel is permitted for each 10 acres beyond the first 10 acres of the parent tract, up to 120 acres.
- One additional parcel is permitted for each 40 acres beyond the first 120 acres of the parent tract.

Figure 4.16 displays examples of different parcelization scenarios under the Act.

Land divisions must also meet a few other requirements. For one, parcels must be accessible – driveways must be located either along existing or proposed roads or easements. In addition, parcel shapes and sizes must also adhere to the width and area requirements of local land division ordinances. Regardless of local land ordinance

requirements, the Act stipulates that parcels less than 10 acres cannot be more than four times as deep as they are wide, as Figure 4.17 depicts.

Figure 4.16: Sample land divisions with acreage, based on size of parent tract according to the Land Division Act

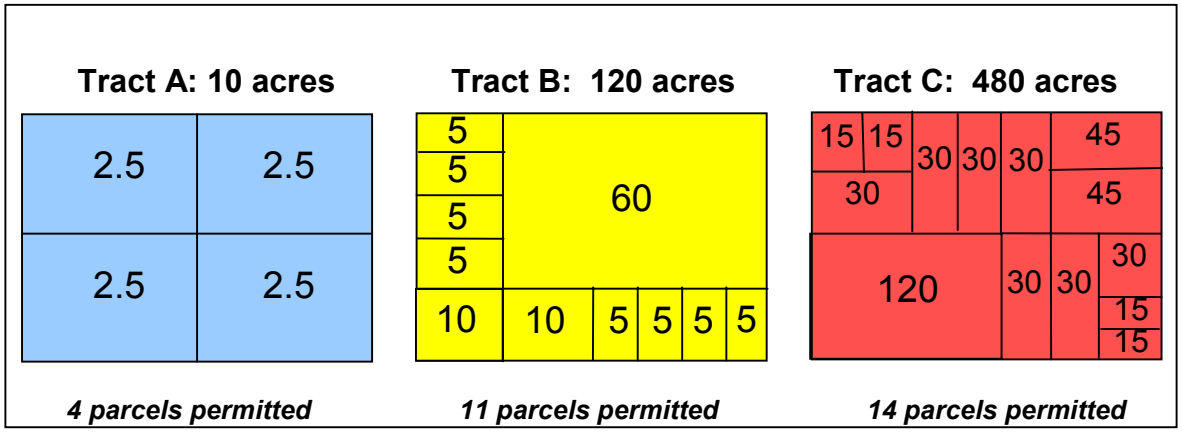
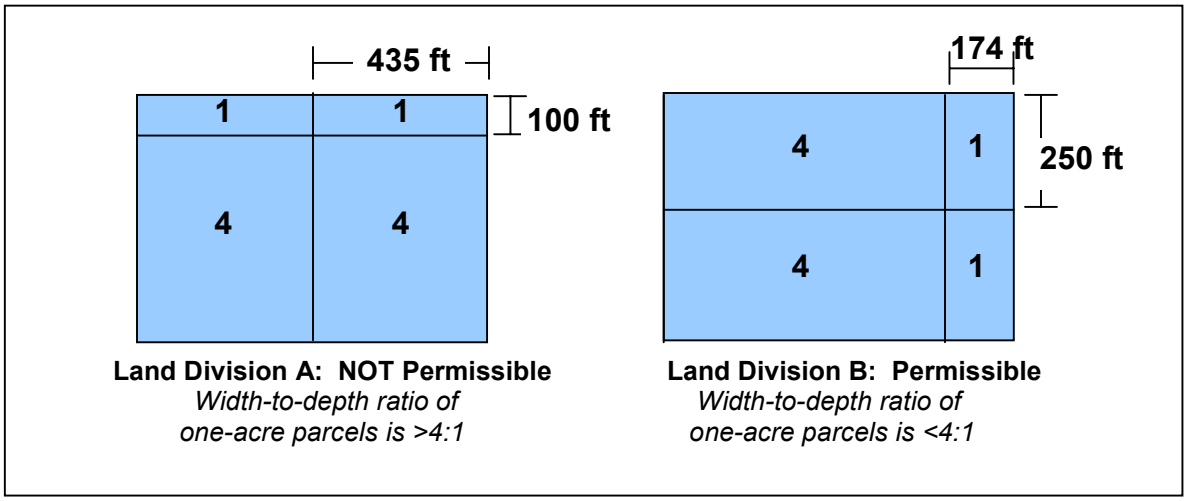


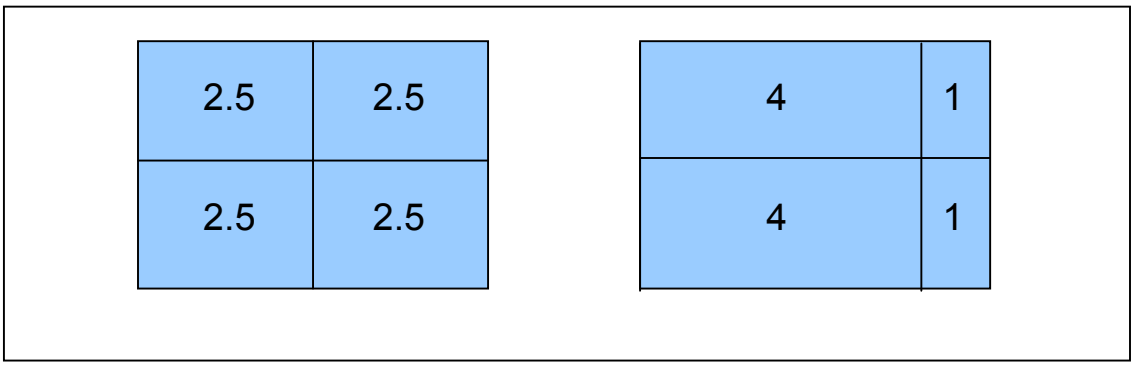
Figure 4.17: Permissible vs. non-permissible land divisions based on width-to-depth ratio for parent tracts under ten acres in size



Most land use planning authorities feel that the Land Division Act promotes at least marginally better land use than did the Subdivision Control Act. However, the Land Division Act still leaves the landscape vulnerable to haphazard and scattered development and the associated ecological damage, primarily through fragmentation. For example, while the Act establishes a depth-to-width ratio for parcels of less than 10 acres, it fails to establish such requirements for parcels of more than 10 acres. Therefore, a landowner could create multiple long and narrow parcels of more than 10 acres each. Land management practices such as logging or housing development will have a greater likelihood of fragmenting the landscape with such a parcel design.

Also, the Act determines only the number, not the size or location, of parcels permissible under the "land division" category. For example, as Figure 4.18 shows, a parent tract of 10 acres could be divided into four 2.5-acre parcels, or two four-acre parcels and two one-acre parcels. This division is problematic in that it fails to encourage clustering of smaller parcels, which can lead to ecosystem fragmentation.

Figure 4.18: Sample permissible land divisions of two parent tracts of 10 acres each under the Land Division Act



Overall, the Land Division Act provides landowners with a great deal of flexibility in parcelizing their land. The Act greatly threatens ecological integrity, however, as it permits widely varying numbers, locations, shapes, and sizes of parcels. The vast potential for land division across the study area emphasizes the need for organizations such as GTRLC to conserve land sooner rather than later, so that they can work with as few landowners as possible.

LOCAL PLANNING EFFORTS

As authorized by states, counties and townships have the ability to engage in planning and zoning activities, although not all of these jurisdictions in the Manistee study area have chosen to do so. Four of the five counties in the study area – Antrim, Crawford, Kalkaska and Otsego – have developed master plans. Crawford, Kalkaska, and Otsego counties also utilize zoning ordinances.[1] Antrim County has a master plan, but it leaves zoning responsibilities to the individual townships. Missaukee County uses neither a master plan nor a county-wide zoning ordinance to guide its land use.

Several townships in the study area have developed their own master plans and zoning ordinances, as permitted under the Township Rural Zoning Act of 1943 (Public Act 184). In Crawford County, Frederic and Grayling townships (the only two Crawford County townships in the study area) have established their own planning guidelines. Similarly,

[1] Township-level zoning is much more typical than county-level zoning in Michigan. However, the resource-intensive nature of zoning administration, in combination with relatively low township populations, prompted the townships in Kalkaska County to request and support county-level zoning starting in 1974 (Leach, 2002).

Kalkaska County's Blue Lake and Garfield townships use their own master plans and zoning ordinances. The Antrim County townships in the study area, Mancelona and Star, have neither county-wide zoning nor their own zoning regulations. Table 4.3 displays the planning entities in the study area and provides the revision dates for their master plans and zoning ordinances. Figure 4.19 displays the locations of these planning entities.

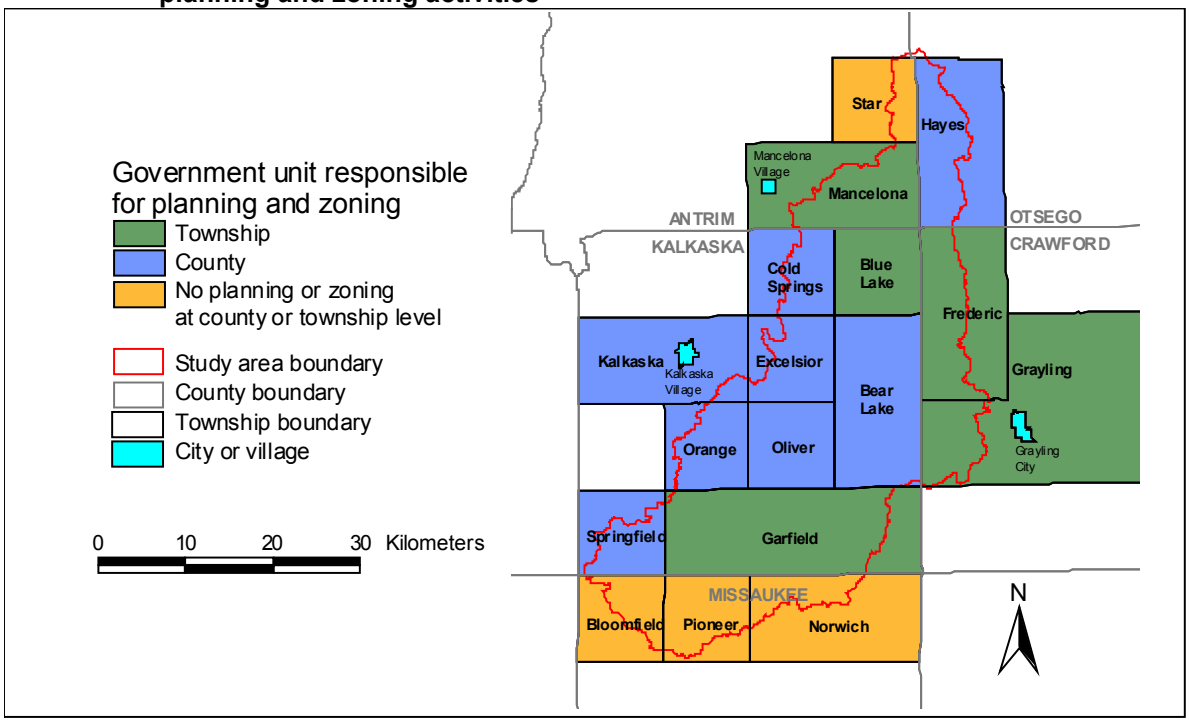
Table 4.3: Master plans and zoning ordinances for counties and townships within the study area

	MASTER PLAN			ZONING ORDINANCE		
Counties & Townships	**Last major revision**	**Revision expected**	**Team reviewed**	**Last major revision**	**Revision expected**	**Team reviewed**
Antrim County	1964	2003	No	none	-	-
• Mancelona Twp*	2002	-	No	2002	-	-
• Star Twp	none	-	-	none	-	-
Crawford County**	-	-	-	-	-	-
• Frederic Twp	2001	2006	Yes	2002	2007	No
• Grayling Twp	1997	2002	Yes	1992	2002	Yes
Kalkaska County***	1995	2002	Yes	2001	-	Yes
• Blue Lake Twp	1988	2005	Yes	1976	2003	Yes
• Garfield Twp	1993	-	No	1992	2002	No
Missaukee County	none	-	-	none	-	-
Otsego County	1996	2002	No	1996	2002	Yes

* Mancelona Township is in process of creating a Master Plan and Zoning Ordinance for the first time.
** Crawford County's master plan and zoning ordinance do not apply to this project, as Frederic and Grayling Townships comprise all of Crawford County that lies within the study area.
*** For the portion of the study area that lies in Kalkaska County, all townships except Blue Lake and Garfield adhere to Kalkaska County's master plan and zoning ordinance.

To learn about local planning in the study area, the project team collected and reviewed planning documents (master plans and zoning ordinances) from as many jurisdictions as possible, and conducted informational interviews with planning officials throughout the region. The team's interviews demonstrated that communities support conservation and hope to retain the rural character of the landscape (Bidle, 2002; Durand, 2002; Ingersol, 2002; Leach, 2002; Riley, 2002). At the same time, the team's analysis of master plans and zoning ordinances demonstrates that these planning documents alone will not ensure adequate conservation of natural features. Master plans often communicate goals of steering development in desirable directions and ensuring preservation of natural features, but zoning ordinances are not stringent enough to ensure the implementation of these well-intended goals. Therefore, conservation efforts by organizations such as GTRLC are needed to help ensure ecological protection.

Figure 4.19: Jurisdictions within the study area that have adopted or are responsible for planning and zoning activities



The remainder of this section details the primary conservation provisions of local master plans and zoning ordinances. County-specific and township-specific information is provided whenever available. Note that the information is not entirely complete, as the team was unable to obtain all master plans and zoning ordinances for the study area. However, the information that is cited offers valuable insights into many of the overall planning goals and specific conservation provisions for the study area. In addition, the analysis demonstrates opportunities for conservation organizations to enhance conservation through local planning and zoning efforts.

Local Conservation Visions

The study area boasts an array of irreplaceable natural features that cover the vast majority of the study area. Residents recognize the aesthetic and economic values of natural areas in attracting tourists, new residents, and resource-based industries such as logging (Ingersol, 2002; Leach, 2002; Schlink, 2002). Not surprisingly, therefore, all of the master plans that the team investigated considered the protection of natural features as primary planning goals:

- Crawford County: Frederic Township – In 1999, the township surveyed residents in preparation for the development of its master plan. Though less than two percent of residents responded, those that did respond communicated clear concern for environmental protection. Specifically, responses suggested that citizens desire

policies that protect groundwater and support the sustainable use of natural public assets (Frederic Township Planning Commission, 2001).

- Crawford County: Grayling Township – At a township meeting in 1996, local residents imagined themselves in Grayling Township and the City of Grayling in the year 2020. Among other ideas, residents expressed the following sentiments that suggest their support of conservation activities: "[We] appreciate and are good stewards of the natural environment, protecting wetlands and floodplains from encroachment and from siltation or dumping. Riparian owners plant and maintain buffer vegetation….Grayling Township and the City of Grayling are models of residential, commercial and industrial resource protection and havens for wildlife. The protection of natural features has resulted in an improved visual character of the community" (City of Grayling City Council *et al.*, 1997).

- Kalkaska County – Similar to Grayling's township meeting, the residents of Kalkaska County were asked about the characteristics they would like to see in the county in the year 2020. The creators of the county's master plan summarized the responses into five main areas of interest. According to the planners, the second highest-ranked interest is for the county to boast "a natural environment which has been respected, integrated into the rural setting, and generally preserved" (Kalkaska County Planning Commission, 1995).

- Kalkaska County: Blue Lake Township – As stated in the township's master plan, residents hope to preserve the environment while limiting development. The plan's authors specifically state, "To increase the tax base…should not be our main objective…the main objective is to preserve the environment we have and enjoy now…We see a 'no growth' to a 'slow growth' philosophy" (Blue Lake Township, 1976). Though the Master Plan is now 25 years old, planners assert that residents still support the limiting of development.

Location and size of development

The various planning entities permit residential development on virtually all private lands in the study area for two reasons. First, most of the study area is publicly owned, which limits opportunities to expand tax bases through additional development. Grayling Township provides an example of this point – the township's master plan (1997) describes the private land of the township as "the hole in the donut" of publicly owned land cites the large amount of public land as limiting the potential of private residential and economic development. Second, limiting development on private land is challenging because most landowners feel they have an inherent right to split and sell off parts of their land, as permitted under the Land Division Act.

Although the local planning entities have placed few absolute restrictions on private land development, they have attempted to *guide* development to help conserve natural features. For example, most counties and townships have "forest recreational" zones that are

intended to promote the enjoyment and conservation of natural features. The effectiveness of these zones in ensuring conservation is questionable. Certainly the establishment of more conservation-focused zones is a positive step toward greater overall environmental protection, but the lot sizes should be increased to prevent further fragmentation of the landscape.

At least two planning entities within the study area have generated some guidelines that affect large-scale development beyond simply creating different zones.

- Crawford County: Grayling Township – Grayling's master plan offers three strategies to guide the location and extent of future residential development. First, the plan recommends (but does not create incentives or enforce) that housing density be concentrated within the growth boundaries of the City of Grayling to reduce rural development pressures and the associated infrastructure and services costs. Second, the plan proposes that the township and the state work together to consolidate public lands. This consolidation would involve the release of some state lands to the township, and vice versa, and would enable more intact public and private lands and thus more efficient and effective management of each (City of Grayling City Council *et al.*, 1997).

- Kalkaska County – The county's master plan advocates the concentration of residential land uses, mainly by suggesting that residential development be limited in areas where (a) few public facilities exist, (b) roads are unpaved, (c) no plans exist for new roads or public utilities, and (d) soils do not permit residential land uses. In addition, the plan recommends that development and redevelopment along inland lakes be permitted only if the land "includes a potable water supply, safe disposal of [waste], water and land carrying capacities, water quality protection, preservation of open space, and minimal additional intrusion upon the natural environment" (Kalkaska County Planning Commission, 1995).

Kalkaska County's guidelines exemplify the type of qualitative criteria that can encourage or discourage development in specific locales. However, planning entities should strive to complement their qualitative goals with more objective measures. For example, county planners may have difficulty in determining whether a home designed for a lakefront lot would ensure "water quality protection" as their master plan recommends. Reducing the subjectivity of the criteria for locating developments would help both planners and landowners better understand the permissible locations for constructing homes and would help ensure that the goals in the master plan are put into practice on-the-ground.

Subdivision design

Single-family homes are by far the most common form of development in the study area. The vast majority of these homes are scattered throughout the study area, and concentrated subdivisions occur sporadically. In anticipation of future additional subdivision-style developments, several of the planning jurisdictions provide ordinances that support

"cluster" or "open space" developments to help ensure the conservation of natural features. Cluster and open space developments involve the grouping of buildings in less environmentally sensitive portions of the site, while preserving the overall density of the tract. Rood *et al.* (2000) cite the value of cluster developments particularly for rural areas that wish to maintain their rural character while accommodating additional growth. Several planning jurisdictions within the study area encourage cluster and open space developments through their master plans and zoning ordinances:

- Crawford County: Grayling Township – The township's zoning ordinance requires that open space cover at least 40 percent of the total area of Planned Unit Developments (PUD). Over half of this open space (at least 25 percent of the total area of the PUD) must be used for recreational, park, or environmental purposes (The Township Board of Grayling Township, 1992).

- Kalkaska County – The county's master plan encourages the use of carefully designed cluster and open space developments. However, it does not specify any criteria for these developments, such as percentage of open space that should remain post-construction (Kalkaska County Planning Commission, 1995).

- Otsego County – The county's zoning ordinance requires that 75 percent of the total acreage of a cluster development must remain as open space for Forestry Recreation and Agricultural Resource districts, while 50 percent of the total site must remain as open space in all other districts. Additionally, the homes in these cluster developments must be contiguous (Otsego County Board of Commissioners, 2001).

Riparian setbacks

The planning jurisdictions in the study area consistently place emphasis on the protection of lands immediately adjacent to lakes, rivers, and streams through the use of "riparian setbacks." For the zoning ordinances investigated, the widths of required setbacks range from 30 to 150 feet (9.1-45.7 meters). Specific details are provided below:

- Crawford County: Grayling Township – The township's zoning requires a 30 foot (9.1 meter) deep strip of natural vegetation wherever residential land borders a body of water. Landowners can trim and prune a 50foot (15.2 meter) wide section from within the strip for a view of the water and for dock construction (The Township Board of Grayling Township, 1992).

- Kalkaska County – The county's zoning ordinance mandates that landowners maintain a waterfront setback of 60 feet (18.3 meters). However, the setback can decrease by one foot for every one foot rise in the bank height above the water's edge, for a maximum distance of 30 feet (9.1 meters). To obtain a view and access to the river, landowners can prune trees and shrubs, remove dead, diseased, or "nuisance" plants (poison ivy, poison sumac, etc.), or selectively remove trees and shrubs for the

harvest of timber. Clear cutting is prohibited (Kalkaska County Zoning Ordinance, 2001).

- Kalkaska County: Blue Lake Township – For residential uses, the township's zoning requires a minimum of 30 feet (9.1 meters) between the high water mark of lakes and a home. For all land uses, the zoning requires the maintenance of a buffer (or "green belt" as Blue Lake terms it) that is 25 feet (7.6 meters) from the high water mark of lakes. This buffer must be maintained in its natural state, though landowners can trim trees and shrubs to provide water views and construct docks and stairs. Unique to Blue Lake Township, the zoning also forbids the construction of channels to increase water frontage (Blue Lake Township, 1976).

- Otsego County – Otsego provides the most stringent regulations relative to the other jurisdictions in the study area. The county's zoning ordinance requires that landowners maintain a natural (though not necessarily native) shrub and vegetative cover within 50 feet (15.2 meters) of lakes and within 150 feet (45.7 meters) of all rivers and streams. Landowners may prune live trees or remove dead, diseased or dying trees to obtain views of the water. However, they may not extract any roots as removal may decrease shoreline stability (Otsego Board of Commissioners, 2001).

Wetland protection

In general, the planning entities in the study area do little to protect wetlands beyond adhering to the state guidelines for wetland protection. However, Antrim County is in the process of becoming the first county in Michigan to create its own wetland protection ordinance. In December 2001, Antrim's County Commissioners passed a wetland protection ordinance. The ordinance will become official should it pass an upcoming referendum – opponents of the measure collected enough signatures to warrant a county-wide vote (Yamaguchi, 2002). Upon passage of the ordinance, landowners will need to obtain permits from the county before filling, draining, or working in wetlands that are at least half an acre or larger. The ordinance as currently worded will require permits regardless of whether the wetland lies near a lake or a stream (Matheny, 2001). The environmental protection in which this ordinance results will depend on the county's adherence to permitting guidelines.

Landscaping

Some counties have developed landscaping regulations, which both positively and negatively impact natural features, depending on the specific criteria. In terms of positive impacts, requirements to plant trees, for example, can reduce the potential for soil erosion and lead to additional habitat for wildlife. Conversely, a requirement that landowners regularly water their yards can tax the water supply, and a failure to encourage the planting of native species can lead to infestations of exotic species. Specific landscaping provisions are cited below:

- Crawford County: Grayling Township – The township's zoning ordinance requires that yards or open areas be landscaped within six months of the date of occupancy. In addition, the ordinance mandates that plants or other materials cover the soil to prevent erosion. The ordinance does not require or explicitly encourage the use of native plants (The Township Board of Grayling Township, 1992).

- Kalkaska County – The county's zoning ordinance encourages (but does not require) planting of perennial native species in the natural vegetation strip along water courses, especially where exposed soils and steep slopes exist (Kalkaska County Zoning Ordinance, 2001).

- Otsego County – The county's zoning ordinance requires landscaping for all land uses except single family residences located on individual lots. On regulated properties, landowners should plant trees, shrubs, vines, and groundcover to present "an aesthetically pleasing whole." The ordinance does not mention whether plantings should be native or exotic. Landscaped areas must be equipped with watering systems and watered regularly (Otsego County Board of Commissioners, 2001).

CONSERVATION OPPORTUNITIES

The analysis of federal, state, and local regulations and programs demonstrates several ways in which GTRLC and other organizations can work with governments to help implement or expand upon existing policies and programs. At the state level, for example, conservation organizations could support efforts to designate the upper Manistee River as one of Michigan's Natural Rivers.

At the local level, conservation organizations can influence the creation and revision of master plans and zoning ordinances. Table 4.4 cites the anticipated revision dates for these planning documents within the study area; note that many planning entities will revise their plans and ordinances in 2002.

By reviewing the current master plans and zoning ordinances, the project team has identified the following opportunities for strengthening conservation through future revisions:

- Encourage the incorporation of the land use standards proposed in the draft Natural Rivers Plan for the Manistee River, even if the river is not officially designated
- Promote large (i.e., >40 acre) minimum lot sizes in areas in Conservation Focus Areas and more dense development in less ecologically sensitive areas
- Recommend or require the use of native plants for landscaping
- Help generate quantifiable implementation measures for qualitative goals

Because the public must approve all master plans and zoning ordinances, it will be critical that planning entities carefully consider the implications of any proposed changes on

landowners, explain the rationale behind the proposed changes to local citizens, and involve residents in the planning process. GTRLC could coordinate efforts with local planners and other organizations to help raise residents' awareness of conservation opportunities.

Table 4.4: Anticipated revision dates for master plans & zoning ordinances

Counties & Townships	2002	2003	2004	2005	2006	2007
Antrim County • Mancelona Twp* • Star Twp	Master Plan & Zoning	Master Plan				
Crawford County • Frederic Twp • Grayling Twp	Master Plan & Zoning				Master Plan	Zoning
Kalkaska County • Blue Lake Twp • Garfield Twp	Master Plan Master Plan	Zoning		Master Plan		
Missaukee County						
Otsego County	Master Plan & Zoning					

* Mancelona Township is in the process of creating a Master Plan and Zoning Ordinance for the first time.

STAKEHOLDER ANALYSIS

Local and regional land conservancies such as GTRLC typically engage in land protection efforts through one-on-one contact with landowners. The conservancy contacts individual landowners who own high value, unique, or threatened land that deserves protection and discusses the importance of land conservation and the various protection options available. If the landowner is interested, the conservancy crafts a protection strategy that best suits the individual landowner's needs. While this traditional approach to land conservation has proven successful at some scales, the team feels that GTRLC can achieve large-scale success by establishing new partnerships with state and federal land managers, local municipalities, recreation groups, and other local and regional land trusts. Such partnerships can be effective ways of sharing resources and making sound conservation decisions, particularly when working at a regional scale. The following section aims to inventory the region's stakeholder groups and identity their programmatic activities, resources, and interests. From these groups, the team identified potential partnerships and

collaboration opportunities between agencies, organizations, and other interest groups working in the study area.

PUBLIC LAND MANAGERS

Michigan Department of Natural Resources

The Michigan Department of Natural Resources (MDNR) owns and manages over half of the study area, making them the primary stakeholder in the study area. The MDNR "focuses on promoting diverse outdoor recreational opportunities, wildlife and fisheries management, forest management, state lands and minerals, state parks and recreational areas, and conservation and law enforcement" (MDNR, This is the DNR, 2002). An extensive agency employing over 1,600 permanent and 300 seasonal personnel working in over 70 different programs, MDNR is responsible for the management of more public land than any other state agency east of the Mississippi River (MDNR, This is the DNR, 2002). The Natural Resources Commission, a seven-member, governor-appointed board oversees the agency.

MDNR has a budget of over $250 million for fiscal year 2001-2002. The funds are directed from state general fund revenues, federal funds, and restricted use funds. Restricted use funds, which contribute over 70 percent of MDNR's total budget, come from a diverse group of sources including hunting and fishing licenses, state park entrance and camping fees, a portion of the state gas tax, and ORV and snowmobile registration fees (MDNR, This is the DNR, 2002).

Within MDNR, agency staff face a variety of constraints that hinder their success. A number of MDNR staff mentioned funding constraints as an obstacle in recent years (Lowell, 2002; Stone, 2002; Rozich, 2001). Furthermore, at least one MDNR employee felt that the 1995 split of the MDNR into the current MDNR and Michigan Department of Environmental Quality has decreased the coordination of environmental protection efforts at the state level. The employee went on to say that the state has been pushing to separate the two departments even more over the past year (Hoskins, DNR/DEQ split impact debated, 2002).

According to MDNR, the agency is working to improve communication within the agency and with other agencies and stakeholder groups (MDNR, Joint Venture, 2002). In 1997, MDNR began what is referred to as the Joint Venture. MDNR divisions have been working together to create goals, principles, and objectives that will allow the MDNR to manage the state's ecosystems more holistically (MDNR, Joint Venture, 2002).

When asked about a lack of communication between MDNR, the U.S. Forest Service, and other land managers, at least one MDNR employee felt that communication channels were in place and frequent collaboration was present (Mark Tonello, 2001). However, additional partnerships and increased communication should be viewed positively.

Michigan Department of Environmental Quality (MDEQ)

Athough not a land manager in the traditional sense, the Michigan Department of Environmental Quality (MDEQ) is also a major stakeholder in the study area. The MDEQ's mission is "to drive improvements in environmental quality for the protection of public health and natural resources to benefit current and future generations… through effective administration of agency programs, providing for the use of innovative strategies, while helping to foster a strong and sustainable economy" (MDEQ, About DEQ, 2002). This mission makes them a potential partner for GTRLC's land protection efforts. The MDEQ is responsible for reviewing various activities that affect the environment in the study area, including filling or draining of wetlands and release of point source pollution into local waterways.

Governor John Engler created the MDEQ in 1995 when he issued Executive Order No. 1995-18. This order split the MDNR into the present day MDNR and MDEQ (MDEQ, History, 2002). Prior to this action, the MDNR was responsible for all environmental protection and the permitting programs now held between the two agencies. Some people regard the 1995 creation of MDEQ as an important programmatic shift, believing that the split from MDNR improved economic efficiency and environmental regulation. However, many observers, including some MDEQ staff, feel that the split has decreased environmental protection in the state. A survey conducted by the Michigan chapter of Public Employees for Environmental Responsibility (PEER) asked MDEQ employees for their opinion on the affects of the split and the effectiveness of the agency in its environmental protection. Roughly 40 percent of the over 1,400 employees responded to the survey. The survey revealed that most employees (81 percent) feel that the departmental split resulted in weaker environmental protection and that management regularly stresses economic development over resource protection. In addition, the survey shows that staff morale has decreased since the split; almost 75 percent of those surveyed rated staff morale as extremely poor or poor (Hoskins, DEQ staff polled on the issues, 2002).

Rulings made by MDEQ are critical to other stakeholders in the study area including MDNR, developers, recreational groups, and residents. This connection illustrates that MDEQ should be working closely with these groups to ensure that the interests of local groups are being met. However, collaboration on permitting decisions is not the norm and individual permit applications are frequently approved with little to no public or stakeholder review.

Local Municipalities

County and township governments are minor landowners in the study area. Management of this land varies from the provision of picnic and scenic overlook areas to more traditional natural areas. Locally elected officials play a critical role in the management of both municipal land and privately owned parcels through the creation of land use plans and local

zoning decisions. Michigan's home-rule political structure gives more power to local units of government than in most other states. Local policies help to determine the environmental, social, and economic quality of an area. While the importance of local decision-makers is clear, the rural townships and counties in the study area often face significant resource deficiencies. For example, Crawford County has been unable to update its outdated master plan because of recent budget constraints (Compo, 2002). Local political entities are encouraged to pool their resources, expertise, and visions to create regional plans and zoning regulations that will protect their shared natural, social, and economic resources.

The Great Lakes Fishery Trust

The Great Lakes Fishery Trust (GLFT) was formed in 1996 as a result of a court settlement regarding the operation of the Ludington Pumped Storage Project hydroelectric facility (see land ownership section for more information). The GLFT mission statement is "…to provide funding to enhance, protect, and rehabilitate the Great Lakes fishery resources. The Trust will manage its resources to compensate for lost use and enjoyment of the Lake Michigan fishery resulting from operation of the Ludington Pumped Storage Plant" (GLFT, 2002). Although they are no longer property owners in the study area the GLFT has the ability to influence local land management decisions by providing funds to activities that will improve Lake Michigan fisheries. However, because Tippy and Hodenpyl dams cut off the study area from Lake Michigan it is less likely that the GLFT will direct many resources to the area.

PRIVATE LANDOWNERS

As discussed in the demographic section, the study area is sparsely populated with an average of less than 15 people per square kilometer for townships within the study area. The typical resident of the study area is Caucasian, with a high school diploma, makes less than $35,000 per year per household, and is older than the state average.

Private landowners in the study area generally favor the protection of their natural resources (Pratt, 2002). They value their quality natural areas and will often take steps to protect those resources. However, they are also weary of state and federal oversight in land use decisions (Bromelmeier, 2002). In general landowners in the study area value their property rights and are reluctant to allow the government to restrict their ability to do as they please on their property. These sentiments were illustrated quite clearly through the failure to designate the upper Manistee as a Natural River.

Unlike the previously discussed stakeholder groups, there is only weak organization of the general public living in the study area. While a few homeowner associations and lake associations do exist, these represent only a small fraction of the general public. However, many of the residents in the area are associated with one or more of the following

stakeholder groups: recreational groups, conservation groups, and major industrial stakeholders.

Recreational Groups

The vast amounts of public land and ample recreational opportunities in the study area attract residents and visitors alike. Recreational groups provide a voice to a wide range of citizens who may otherwise be detached from state or local decision-making. These groups have significant potential to educate and organize their members to influence the decision-making process. Thus, more effort should be made to include these groups in collaborative endeavors.

River-Specific Groups

Some of the most popular recreational activities in the study area focus on the Manistee River and its tributaries. These groups are usually most concerned with the protection of water quality, river access, and aquatic habitats. However, there is a close connection between the health of a river and the surrounding land uses. Therefore, many of these groups may be interested in working with the GTRLC to protect valuable parcels.

- *Trout Unlimited (TU)* – Trout Unlimited is a national nonprofit organization that could be considered both a conservation organization and a recreational group. The mission of the Michigan Council of Trout Unlimited (the Council), "to conserve, protect, and restore Michigan's watersheds which support wild trout and salmon," (Sabina, 2002) hints at this dual role. The Council serves to organize the more than 20 individual chapters in Michigan as well as to coordinate other fishing and conservation groups such as Anglers of the AuSable, Michigan River Guides Association, Pere Marquette Watershed Council, Michigan United Conservation Clubs (MUCC), Federation of Fly Fishers (FFF), Lake Michigan Task Force, the Michigan Fly Fishing Club, MDNR, MDEQ, the United States Forest Service (USFS), the county drain commissioners, and others (Sabina, 2002). While the Council lobbies for improved protection of the state's rivers and fish habitat, individual chapters are frequently directly involved with restoration and protection activities. The George Mason Chapter of TU was established roughly 20 years ago and is the study area's local chapter, representing roughly 200 active members. Prior to the formation of the Upper Manistee Restoration Committee in 1989, the George Mason Chapter coordinated a number of erosion control and habitat improvement projects (Andrus, 2002). Today, its main role in the restoration and conservation of the upper Manistee is fundraising from their members and community-wide efforts. Funds are usually directed to action-oriented organizations such as the Upper Manistee Restoration Committee. Chapter members are also active in a number of other local conservation boards and projects (Andrus, 2002).

- *Federation of Fly Fishers (FFF) and the Anglers of the Au Sable* – The upper Manistee and its neighbor, the Au Sable River, are considered two of the region's premier fly fishing rivers. Thus, it is not surprising that a group like the Federation of Fly Fishers has a local chapter, the Anglers of the Au Sable (the Anglers). The Anglers are based out of Grayling and work in both the Au Sable and the upper Manistee Rivers. They have over 600 local members and participate in a wide range of activities including involvement with state-level lobbying, state and federal land management decisions, education, in-stream improvements, and environmental research (Anglers of the Au Sable, 2002). The Anglers have worked closely in the past with other land managers and stakeholder groups including MDNR, Camp Graying, and USFS to protect and improve the Au Sable and Manistee River watersheds.

- *Paddler groups* – Although canoeing and kayaking are major recreational activities in the study area, there seems to be little organization among paddlers. However, the area's half dozen canoe liveries are represented by the Michigan Association of Paddelsport Providers (MAPP). MAPP works to protect the abilities of its members to provide canoeing opportunities, often through the protection of the state's rivers (Michigan Association of Paddlesport Providers, 2002).

Hunting Groups

Hunting is a major activity for Michigan residents. In 2001 roughly 1.8 million hunting licenses were issued for a variety of game including deer, waterfowl, small game, and fur-producing species (MDNR, Wildlife Resources, 2002). To meet the needs of the state's hunters, a wide range of hunting organizations are available across the state. The following profiles single out a few of these groups that may have partnership potential for land protection and management opportunities in and around the study area.

- *Michigan United Conservation Clubs (MUCC)* – MUCC acts as both a hunting and fishing organization as well as a conservation organization. Established in 1937, MUCC is the largest statewide conservation organization in the nation, with nearly 100,000 members and more than 500 affiliated clubs. With a mission of "uniting citizens to conserve Michigan's natural resources and protect our outdoor heritage," MUCC informs and educates the public on conservation issues. MUCC's focus on environmental education reaches a broad audience of adults and children through a wide range of education curricula, special recreational courses and events, Michigan Out-of-Doors Magazine, television programs, and radio broadcasting.

  MUCC also "advocates for the wise and scientific management of Michigan's natural resources through public policy and litigation." Through working relations with state and federal agencies, legislators, and other key leaders, MUCC influences the direction of natural resource issues. Within their Resource Policy Department, staff members specialize in fisheries, wildlife, land use, solid waste, water quality, air quality, energy, and forestry. MUCC also maintains a legal department with a corporate counsel and

law clerks to provide technical assistance on natural resource laws (Michigan United Conservation Club, 2002).

- *National Wild Turkey Federation (NWTF)* – The National Wild Turkey Federation has roughly 15,000 members in Michigan, participating in roughly 75 local chapters. Members include all types of hunters including women, youth, and physically handicapped individuals (Sharp, 2002). NWTF's mission is "the conservation of the wild turkey and the preservation of the hunting tradition" (NWTF, 2002). Although the NWFT works on a variety of issues, ITS primary focus is on improving turkey habitat throughout the state. Working with MDNR and USFS, NWFT plants shrubs, restores native grasslands, plants warm season grasses, and conducts prescribed burning. It also educates the state's youth about the wild turkey and occasionally lobbies the State Legislature on hunter's rights and hunter safety issues. The National Wild Turkey Federation worked closely with other organizations including Pheasants Forever, Mead Paper, Weyerhaeuser, and Consumer's Energy on a variety of projects (Sharp, 2002).

- *Whitetails Unlimited* – Whitetails Unlimited is a national organization that includes roughly 65,000 members across the country, with 12,000 in Michigan (Rice, 2002). The organization identifies three goals: 1) education, 2) habitat conservation, and 3) preservation of the hunting tradition. Since the group's inception in 1982, Whitetails Unlimited has spent over $22 million in their efforts to meet these goals (Whitetails Unlimited, Our Mission, 2002). One of the organization's many programs, the HOPE (Habitat Options & Planned Enhancement) for Wildlife Program promotes activities such as acquisition, restoration, and management of wildlife habitat (Whitetails Unlimited, Programs, 2002). However, according to WTU field director, George Rice, there has been little habitat restoration or protection effort in the study area due to the sizable existing deer population (Rice, 2002).

ORV User Groups

As discussed in the land use section of this chapter, off-road vehicle use is a common and popular activity in the study area year round. While this list is not comprehensive, it describes a few of the groups that depend on public and private land for their enjoyment. As discussed in Chapter 6, ORV use can be detrimental to ecological integrity. However, individual ORV users and local ORV clubs are often active land stewards. Local chapters of ORV clubs may organize trail maintenance workdays where members work to repair trails and improve signage to minimize damaging ORV practices. These activities may help to reduce environmental impacts. Furthermore, they often establish relationships with major private landowners and public land managers to secure more extensive trail systems and protect access to existing trails.

- *Michigan Snowmobile Association (MSA)* – The Michigan Snowmobile Association is the state chapter of the American Council of Snowmobile Associations (ACSA). ACSA works to coordinate the nation's snowmobilers and protect their recreational rights. Currently, two main issues that ACSA is focusing on at the national level are keeping public lands open to snowmobile use and limiting the regulation of snowmobile

emissions. At the state level, the MSA includes roughly 25,000 members. The organization provides a variety of services to its members including education, outing organization, and lobbying. Roughly 170 clubs exist throughout the state and they are dedicated to the creation and maintenance of the more than 6,200 miles of marked and groomed trails in Michigan (Manson, 2002). Most notable are their trail maintenance efforts at the beginning and end of the season as well as their frequently close relationships with private landowners who own trail segments. These personal contacts could benefit land conservancies interested in forming local relationships to implement long term protection strategies.

- *Michigan ATV Association (MATVA)* - The Michigan ATV (all-terrain vehicles) Association is a nonprofit organization that works closely with federal, state, and local government agencies as well as other clubs and organizations to maintain, improve, and expand ATV riding privileges (Michigan ATV Association, 2002). It works to educate members on issues such as rider safety and the protection of the state's natural resources.

- *Cycle Conservation Club of Michigan (CCCM)* – Although there does not appear to be a local chapter of the Cycle Conservation Club of Michigan near the study area, it also warrants attention in this section of the report due to its lobbying efforts at the state level. Like MATVA, CCCM works to protect the rights of members to access public land for motorized vehicular use.

Conservation Groups and Agencies

Several groups are active in the upper Manistee River watershed that have similar goals and interests related to conservation issues. While each organization has its own priorities and strategies for achieving success, there appears to be a high level of interaction, cooperation, and information sharing among these groups, as well as with the other stakeholder groups discussed in this section.

<u>Upper Manistee River Association</u>

The Upper Manistee River Association (UMRA) is a membership organization comprised primarily of riparian landowners who are dedicated to the enhancement and protection of the upper Manistee River. The Association's purpose is "to help improve and maintain the upper Manistee River and its subwatersheds so that they achieve and sustain their maximum potential for recreational use consistent with necessary safeguards." UMRA works to fulfill this goal through financial support and cooperation with other conservation-minded public and private entities.

In addition to active involvement and lobbying for river protection in local and state policy, UMRC finances river rehabilitation initiatives, assists in river and corridor maintenance programs, monitors riverflow quality, and provides river and riparian guidelines for property owners. UMRA is also the parent organization of the Upper Manistee River

Restoration Committee (see below) and has been a long-time advocate for securing Natural River status for the upper Mansitee River (Powers, 2001). Recently, UMRC has partnered with the Pine River Watershed Coalition to organize a regional campaign involving 11 citizen organizations to revive pursuit of Natural River designation for the Pine River and upper reaches of the Manistee River (Guy, 2002).

Upper Manistee River Restoration Committee

Created in 1989 by the Upper Manistee River Association (UMRA) and aided and administered by the Huron Pines Resource Conservation and Development (RC&D) Area Council, the Upper Manistee River Restoration Committee (UMRRC) focuses primarily on restoring trout habitat. UMRRC's two goals are "to restore system potential for top-rank trout fishery supported by self-sustaining stocks" and to "upgrade public and private use, maintenance, and protection of riparian lands." These goals are supported by several objectives: controlling streambank erosion, removing streambed sediment, enhancing trout cover, maximizing trout production, improving public access, providing adequate sanitation, securing Natural River status, and perpetuating maintenance funding. UMRRC is comprised of 13 partner groups, including the Huron Pines RC&D Council, USDA National Resources Conservation Service, MDNR, Michigan Department of Military Affairs, three soil and water conservation districts and county road commissions, the Michigan chapter of Trout Unlimited, the Manistee River Association, and UMRA (Upper Manistee River Restoration Committee, 2000).

To date, UMRRC has spent over $1 million on stream bank and road crossing erosion control. In 1999, UMRRC successfully completed its original 10 year action plan. Because of the program's success, the Committee chose not to dissolve and has operated since 1999 under reduced funding to help service and maintain erosion control measures, assist with annual trout surveys, and monitor the performance of restoration measures, among other activities (Kutkhun, April 2002).

Grand Traverse Regional Land Conservancy

As discussed in Chapter 1, the Grand Traverse Regional Land Conservancy (GTRLC) is a leading regional land conservancy with a history of successful accomplishments within its service area of Antrim, Benzie, Grand Traverse, Kalkaska, and Manistee counties. GTRLC's mission is "to protect significant natural, scenic, and farm lands for present and future generations." Within the study area, GTRLC is primarily interested in conserving land for its ecological value. GTRLC plans to focus its initial attention on significantly expanding its existing land holdings in portions of the Upper Manistee River watershed that fall within Kalkaska County. Future efforts by GTRLC may eventually lead to expanded conservation efforts in other counties, either through direct involvement or partnering with or assisting other conservation organizations (Rigney, 2001).

The Nature Conservancy

The Nature Conservancy (TNC) is a leader in the conservation of wild and natural lands

around the world. Its mission is "to preserve the plants, animals, and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive" (TNC, About Us, 2002). The Nature Conservancy has been conserving natural places for over 50 years and has protected over 92 million acres worldwide (TNC, About Us, 2002). Sources of financial support for TNC's activities come from its one million members as well as communities, businesses, governments, and partner organizations.

The Michigan Chapter of TNC has protected over 72,000 acres of land across the state (TNC, Michigan Chapter, 2002). To date, TNC has had limited involvement in conservation activities in the upper Manistee River watershed. However, a team of TNC freshwater ecologists included the Upper Manistee River as part of their *Camp Grayling-Au Sable* conservation area. TNC identified this area for future conservation efforts because of its high groundwater, its headwater streams in outwash and ice-contact features, its headwater and unconnected lakes in ice contact, and its small, headwater lakes on outwash plains (DePhillips, 2001). Furthermore, the Upper Manistee contains a number of potential aquatic conservation targets including groundwater-fed headwater streams, wetland-influenced, groundwater-fed headwater streams, and a groundwater-fed mainstem (DePhillips, 2001).

TNC Michigan hopes to increase land conservation collaboration by developing a "partnership program" that will work to coordinate the efforts of approximately 40 land trusts across the state (McCort, 2001). Although this project is still in its infancy it aims to improve statewide conservation efforts by pooling expertise, technology, data, and funding. However, success depends in part on a significant commitment by numerous local land trust staff who are already inundated with local endeavors. Whether or not the partnership program is successful, TNC Michigan presently has a close relationship with a number of other important statewide stakeholders including GTRLC, other Michigan land trusts, MDNR and the USFS (McCort, 2001).

<u>HeadWaters Land Conservancy</u>

The HeadWaters Land Conservancy (HeadWaters) works in 11 counties in northeast Lower Michigan. However, only a small portion of the Manistee River watershed in western Crawford and Otsego counties lies within its service area. To date, HeadWaters does not have any conservation properties in the study area, but it could potentially manage land in the area in the future. Founded in 1993 by a small grassroots group of concerned citizens, the HeadWaters' mission is "to foster the preservation of open space as an irreplaceable part of our environment, and to advance the protection of ecologically sensitive areas, scenic landscape, and historic features." HeadWaters is a small organization that has traditionally relied exclusively on volunteer work and hired its first paid Executive Director in December 2001.

HeadWaters relies primarily on donations of property and conservation easements rather than purchasing properties. According to Liz Zimmerman, an active volunteer and Board Member, HeadWaters is faced with more conservation opportunities than they can handle, and inquiries on potential easements come in nearly every day. As a result, HeadWaters is

not proactively contacting landowners but is working to accommodate those landowners who take the initiative. Zimmerman estimates that they presently have 15 potential easements in progress. Because HeadWaters is a small organization with limited resources and experience, working with other groups, agencies, and organizations is critical to its success. HeadWaters cooperates with local government agencies and MDNR in land stewardship activities and is also currently working on an initiative to expand wildlife corridors in the Pigeon River watershed that involves the Tip of the Mitt Watershed Council and Michigan chapters of Trout Unlimited, Ducks Unlimited, and The Nature Conservancy. HeadWaters also works closely with other conservancies, particularly the Little Traverse Conservancy and GTRLC, which often serve in a mentoring capacity to HeadWaters (Zimmerman, 2002).

Natural Resources Conservation Service and related partners

The Natural Resource Conservation Service (NRCS) is a division of the U.S. Department of Agriculture that works in an educational and advisory capacity with private landowners to assist them with the management and conservation of their property's natural resources. Using scientific and technical expertise, the NRCS partners with local Resource Conservation and Development (RC&D) service districts to promote conservation of natural resources in rural areas while improving the social and economic stability of those areas. The NRCS and local RC&D districts assist landowners with issues such as water quality, soil erosion, forestry, wildlife habitat, and conservation buffers. Portions of the study area in Antrim, Kalkaska, and Missaukee counties are under the jurisdiction of the North West RC&D Council, while the Huron Pines RC&D Council is responsible for portions of the watershed in Otsego and Crawford counties. As previously discussed, the NRCS has several conservation programs that target farmers in the study area.

Huron Pines: Huron Pines works with a variety of state and local government agencies, such as MDNR, MDEQ, county road commissions, and township governments. As mentioned above, Huron Pines has been active in administering and funding the Upper Manistee River Restoration Committee to control stream erosion and point source runoff in the study area. According to Brian Benjamin, Watershed Coordinator for Huron Pines, a major concern of the agency is the accelerated development and subdivision of private land. Benjamin feels that these activities have been increasing due to the "perceived threat" of the potential designation of the Upper Manistee as a Natural River. Landowners perceive an incentive to subdivide their property in the near future, before Natural River designation could restrict such activities. Benjamin also expressed a need for improved local involvement at the township level in planning and zoning, which is limited by a lack of resources and education (Benjamin, 2001).

Conservation Resource Alliance: The Conservation Resource Alliance (CRA) is a nonprofit organization that works under the guidance of the North West RC&D Council. Established 30 years ago, CRA serves a 13 county area in Lower Michigan, including Antrim, Kalkaska, and Missaukee counties. Consistent with the goals of the Natural Resource Conservation Service and the North West RC&D Council, CRA's biologists, engineers, and field technicians work with landowners "to plan, locate funding options, cut through red

tape, and implement programs to enhance the habitat value and beauty of the region" (Conservation Resource Alliance, 2002). CRA strives to facilitate collaborative land use solutions among private landowners, government agencies, and commercial businesses. Through its River Care Program, CRA has worked with the Upper Manistee River Restoration Committee and actively prevents erosion and restores eroded stream banks and sedimentation along the Manistee River (Johnson, 2001).

Major Industrial Stakeholders

Timber Companies

A number of major timber companies operate in the study area. These include Mead Paper (Escanaba, MI), Weyerhaeuser (Grayling, MI) and Georgia Pacific (Gaylord, MI). All three corporations are members of the Sustainable Forestry Initiative and work to improve their management through land stewardship activities. The Sustainable Forestry Initiative (SFI) program is an 11-point commitment addressing reforestation, water quality protection, wildlife conservation, visual quality, biological diversity, and efficient use of forest resources (Mead, 2002). Regional and nationwide timber companies have a significant amount of clout in public land management decisions. They are a valuable source of income to the state through timber sales on public land and can be critical to local economies. One such example is the Weyerhaeuser OSB (oriented strand board) plant just south of Grayling that employs 165 people and has been in operation for 20 years (Malm, 2002). The role of timber companies in local, regional, and national economies gives them a significant amount of political power over land use policies.

Oil and Gas Extraction and Transmission Companies

Oil and gas development is a major industry in the study area. Like timber companies, oil and gas developers have significant influence over land use decisions because of the amount of money and number of jobs the industry brings to the state. There are a number of companies that are active with oil and gas development in the area including:

- Muskegon Development Company, of Mount Pleasant, Michigan
- MCN Oil & Gas Company, of Traverse City, Michigan
- KCS Michigan Resources, Inc. of Traverse City, Michigan
- Savoy Energy, L.P., of Traverse City, Michigan
- Paxton Resources, L.L.C. of Gaylord, Michigan
- Aurora Energy, Ltd. of Traverse City, Michigan
- H & H Star Energy, Inc. of Traverse City, Michigan
- CMS Gas Transmission and Storage Company, of Dearborn, Michigan

Other Stakeholder Groups

Citizens Alliance for Regulatory Reform

Citizens Alliance for Regulatory Reform (CARR) was founded by Calvin Ackley, the Oceana County Drain Commissioner, as a result of a conflict with the federal government over a wetlands protection law. According to CARR's brochure, it is "an organization born in the hearts of conservationists and based in the heartland of farms, forests, and great lakes. We recognize that the growth encroachment of the government with "Environmental" laws and regulations threatens our basic freedom" (Great Lakes Bulletin, 1997). CARR has proven that they hold a significant amount of power in local politics. As previously mentioned, CARR played an important role in the failure to designate portions of the Manistee River as a state recognized Natural River (Pearson, 2001).

Michigan Militia

The Michigan Militia has a small but real presence in the Manistee River watershed. According to one Michigan Militia web site, its mission is to help Michigan's citizens "become more able to support, uphold, and defend the Constitution for The United States, and the Constitution for The State of Michigan" (Michigan Militia, 2002). Members also state that "to further promulgate the concept of an armed, informed, and educated citizenry, is to better 'secure the blessings of liberty'" (Michigan Militia, 2002). While the team was unable to obtain accurate local information on the Michigan Militia in the study area, according to one MDNR employee, it has a significant presence in the watershed and played an important role in opposing the Manistee's Natural River designation (Rozich, 2001).

COLLABORATION OPPORTUNITIES

The list of stakeholders presented in this section is not exhaustive. Nevertheless, the team hopes that, at minimum, it illustrates both the wide range of interests and issues at play within the study area, as well as the many similar interests among those with a stake in the future of the study area. Many of these organizations and agencies are already working together to achieve common goals. However, the project team believes there is substantial potential to advance conservation efforts in the upper Manistee River watershed through additional communication and improved collaboration among stakeholders. This potential exists among stakeholders with overlapping interests, as well as between parties with differing priorities, motives, and goals.

Including stakeholders that represent a full spectrum of interests is important to minimizing conflict and building trust. While achieving a high level of trust among stakeholders requires tremendous patience, understanding, and commitment, (particularly among adversarial parties or parties with little former interaction) it is an essential component in developing long term working relationships that are needed for complex, ongoing, and large-scale issues such as conservation planning. Cultivating collaboration among a diverse

range of stakeholders builds opportunities for creative problem solving that broadens the range of alternatives to best meet the needs of all stakeholders.

GTRLC already has a strong record of working with a broad range of stakeholders, including township and county government officials, MDNR and MDEQ, other land conservancies and conservation organizations, sportsmen groups, and local naturalists and landowners (Rigney, March 2002). As an organization with limited resources, GTRLC recognizes the necessity and benefits of working with others to share information and pool resources. The project team sees opportunity for GTRLC to build upon these existing ties. In addition, because GTRLC has limited knowledge of, and experience in, the study area, building new partnerships with local stakeholders is critical to acquiring detailed data and information necessary to implement a conservation plan in the area.

However, the potential benefits of collaboration extend well beyond sharing information. Establishing ties to local groups may help to establish GTRLC's credibility in local communities and improve local awareness and understanding of the benefits of conservation efforts. By supporting educational outreach and lobbying efforts of other groups that help with land protection efforts, GTRLC may increase support for its cause without direct involvement. Ultimately, building trust and increased awareness and understanding of conservation issues among local communities translates into better working relationships with private landowners.

Perhaps most significantly, collaboration is essential in promoting a true landscape approach to conservation planning. Expanding beyond a narrowly-focused, piecemeal approach to land protection requires coordination among many groups, all working toward a larger unified goal. To this end, GTRLC should expand coordination with local groups focused on a limited geographic range as well as its larger, more regionally focused organizations and agencies such as TNC and MDNR. For example, the Office of Property Management within MDNR, which is responsible for acquiring and selling state land, will occasionally sell a parcel of land and use the proceeds to purchase a more ecologically valuable piece of property, often an inholding in public land. There may be the potential for the Office of Property Mangement to notify GTRLC of such pending transactions, thus giving GTRLC an opportunity to either purchase the development rights or place an easement on the property before it is sold to a new private landowner. In more general terms, a landscape approach to conservation is only possible by coordinating the strategies of both local and regional land managers. GTRLC should continue to expand its current collaboration efforts in the area to meet its goals and objectives most effectively.