

## RURAL LANDSCAPE

*study conducted by*

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Significant changes have occurred in the rural areas of the Great Lakes region during the last few decades. Two trends in land use can be identified that have relevance to this change. The amount of land under cultivation decreased from 1987-1997 by 5%. At roughly the same time (between 1980-1993) forest cover increased 3% (Chapter 6). In combination, the pressures of rural development and the urbanization of formerly rural lands (in many cases prime agricultural land) are dramatically changing the face of the region's landscape.

### Current Stresses

The two main stresses are sprawl and climate change. The most significant current stress to the rural landscape is the urbanization and general sprawl of population beyond the traditional boundaries of the large metropolitan areas. For instance, while the traditional metropolitan areas of Milwaukee and Detroit have either lost population or held steady, the surrounding rural areas have dramatically increased in the classification of urban land that was formerly rural.

The negative aspects of this trend are considerable. They affect energy consumption by increasing commuting and home heating requirements. They affect runoff by decreasing vegetation, increasing pavement and other hard surfaces, and introduce new pollutants (lawn fertilizers, automobile emissions etc.) into the nearby watercourses and airsheds. They

threaten local wetlands with increased runoff and pressure from contractors and developers seeking to increase buildable lots. They require additional infrastructure in the form of roads, water, sewer, and energy delivery systems that require construction and disruption of local landforms and ecosystems.

Not all of the rural development is simply from families escaping the traditional urban neighborhoods. It also represents the trend of "rural sprawl" which marks the trend of aging baby boomers, desire to retire and vacation near bodies of water. While vacationers once traveled to relatively primitive cottages near lakes and rivers "up north" in the Great Lakes region, now vacation residences of 2000 square feet complete with the "urban yard ethic" are commonplace beyond the traditional suburban areas near major metropolitan centers [8-8].

Good examples of this type of threat include the Lake Superior shoreline in northern Wisconsin and the Lake Michigan shoreline around Grand Traverse Bay and the Leelanau Peninsula in northern lower Michigan. Where "... all the best sites already sprouting seasonal and permanent homes, developers went to work on 'marginal' lands — sites with steep slopes, adjacent to large bogs or wetlands, shallow weedy bays, poor access, or terrain that block a view or access to the water [8-8]." People are willing to travel farther and farther for a larger home on a smaller lot.

Grand Traverse County is another region experiencing the effects of rural sprawl. Here in the Cherry Capital of the World the year-round population of 90,000 swells to 2 million in the summer with the influx of seasonal visitors and tourists [8-9]. It is also a prime place for retirees. A recent national survey placed the region as number 8 in a list of the nation's Top Ten places for retirement. Human waste disposal alone has become a prob-

lem of epidemic proportion. Local septic systems designed for less intense and less frequent use have become almost universally overloaded. Consequently, the flows of nutrients and pathogenic bacteria have increased – both into the local ground and surface water. Temporary strategies for managing this additional waste have been further jeopardized by insufficient capacity for the treatment of septage (pumped material from septic tanks) at the few local sewage treatment plants. So traditional strategies of “pump and treat” for the septic needs of lake homes can no longer be predictably undertaken [8-10]. The sudden need to expand sewerage service to many new residents and visitors has taxed municipal budgets. The problem will probably continue for the foreseeable future.

Of course, all of these pressures lead directly to the degradation of the attractive features of the rural landscape that attracted the population shift in the first place. The challenges of managing growth in areas facing both urban and rural sprawl are significant and currently occupy a great deal of planning and political effort.

## **Climate Change and Related Stresses**

The current stresses on the rural landscape are already significant. Climate change in the form of increased temperatures and anomalous severe weather events will serve to further challenge a landscape that is already in the process of profound change.

Some examples of exacerbated change that might be expected include the following:

- Higher water temperatures in combination with development-related storm water management issues (e.g. increased runoff, greater concentrations of pollutants, decreased buffering capacity from wetlands) will increasingly stress fish stocks and decrease the attractiveness of lakeside or riverside home ownership for some.

- Climate-related lowering of lake levels will have a dramatic effect on shoreline [8-11]. In some cases, this will result in reclamation of beach areas (primarily around the Great Lakes) but in other cases it will make real estate along lower inland lakes and rivers less attractive.
- Challenge to arboreal forests from both the warming of the climate and development will lead to further forest loss and species weakening.
- Rural parcelization will reduce of migration pathways for both plant and animal species that become challenged by warming and development could have a dramatic effect on the ecosystem’s ability to relocate and recover from warming.

A third stress comes from the non-indigenous species that have entered the Great Lakes region for hundreds of years. The harmful species quickly take hold often without any natural predators. The results can be costly to the economy and the environment. Probably the most destructive invader in the region’s waterways is the sea lamprey. Millions are spent annually to reduce their populations, for left uncontrolled, sea lampreys can decimate fish harvests – from 17 million pounds to virtually zero [8-11]. On land, the gypsy moth caterpillar is well known in many forests. In Michigan, large forest tracts have been defoliated [8-12]. Many trees in the region are favored by the caterpillar including oak, aspen, birch, basswood, tamarack and apple. Usually, if the forest is healthy, the trees can survive a gypsy moth attack. Unhealthy trees will die because of the fungal disease and insects that descend on the forests following a gypsy moth attack.

It seems that the greatest effect on the rural landscape is the current trend of sprawl – whether it is urban or rural. While climate change will no doubt worsen the effects of this trend, it also seems clear that the primary driver is sprawl.

## Coping Strategies

During a review of the current stresses and impacts of future climate change, a number of critical areas were identified that might need extra special coping strategies. Some of these strategies include:

- 1) Public programs for purchase of greenspace and wildlife corridors
- 2) Investment in rural sewerage services, particularly around developed rivers and lakes
- 3) Consistent zoning approaches to encourage minimum impact development, and
- 4) Stronger enforcement of existing wetland and stormwater runoff requirements



