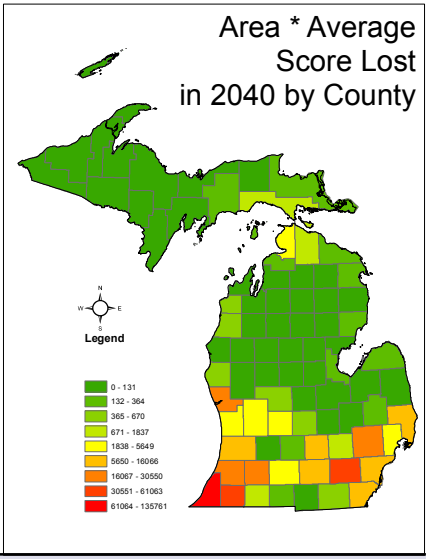
Our ability to develop truly effective strategies for state and local protection is currently hampered by the lack of better modeling and complete resource data. Taken as a whole the loss we face due to land consumption could be as severe as the collapse of our natural resource based industries in southern Michigan including farming, tourism, hunting and fishing, and general outdoor recreation. Can we afford to lose this?

"Land use and land cover change analysis is an important tool for state and local government decision makers. It can enable better planning for Michigan's future, however, we must help people understand what changes mean by painting clear pictures of the impacts on the things that matter to the people of Michigan."

- MSU Land Policy Program Director Soji Adelaja



For Further Information Please contact the PMT Coordinator:

Charles McKeown at (517) 432-8800 or mckeownc@msu.edu

Land Policy Program Overview

The Land Policy Program, a signature program of Michigan State University (MSU), provides leadership and coordination of multi-disciplinary land policy research and outreach activities at MSU. The program also promotes collaboration with other institutions of higher learning and stakeholder organizations in addressing critical land policy problems at local and statewide levels. The Land Policy Program brings to bear the vast array of expertise at MSU and other Michigan institutions of higher education to address land use issues relevant to decision makers and provide science-

Michigan State University
Land Policy Program
Soji Adelaja, Director
www.landpolicy.msu.edu
E-mail:
mail@landpolicy.msu.edu
Address:
317 Manly Miles Bldg.
East Lansing, Michigan
48823

Phone: 517-432-8800
Fax: 517-432-8769

MICHIGAN STATE UNIVERSITY

MSU is an affirmative-action, equal-opportunity institution.

Related Websites

Michigan Natural Features Inventory: http://web4.msue.msu.edu/mnfi/

Public Sector Consultants: http://www.publicsectorconsultants.com/

Computational Ecology: http://www.cevl.msu.edu/pages/lulc/peopleland.htm

People and Land: http://www.peopleandland.org/

Picture Michigan Tomorrow Project Team

Soji Adelaja, Principal Investigator, MSU Land Policy Program

Bill Rustem, Co-Principal Investigator, Kellogg Foundation People and Land

Charles McKeown, Co-Principal Investigator

Jessica Moy, Co-Principal Investigator

Stuart Gage, Co-Principal Investigator

Manuel Garcia, Participating Investigator

David Lusch, Participating Investigator

Mary Beth Lake, Participating Investigator

Michigan State University Land Policy Program
Technical Bulletin # PMT2005-1

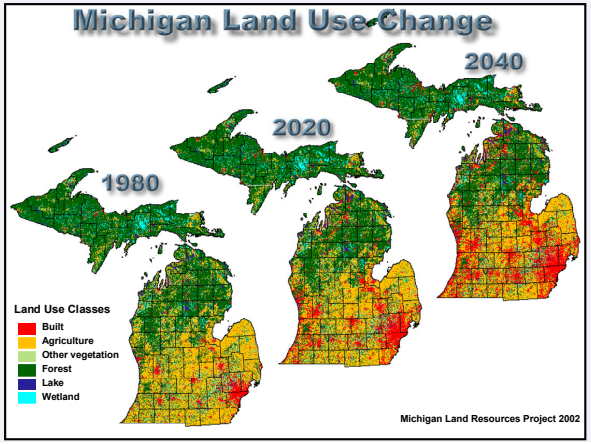
Picture Michigan Tomorrow Examines the Effects of Land Conversion on Michigan's Natural Features

Michigan's diverse natural resources have supported robust land based industries including some of the most diverse agriculture in the nation; this natural resource base has been the core of our high quality of life. Many feel that we in Michigan have not yet reached the tipping point where our quality of life is substantially impaired by urban sprawl and land use change.

In 2001, a team of researchers from Michigan State University in conjunction with Public Sector Consultants and the Planning and Zoning Center developed the Michigan Land Resource Project, with funding from the W.K. Kellogg and the Frey Foundation. A land consumption model was developed for the state of Michigan. These projections show a scenario of land development. The sequel to that project is Picture Michigan Tomorrow. The MSU Land Policy Program and the W.K. Kellogg Foundation's People and Land are translating that projection into things that are important to people. Picture Michigan Tomorrow is developing new models to expand our knowledge of the impacts of land use decision making in Michigan. Part of this process is taking a closer look at Michigan's future with the goal of articulating the economic, ecological and social problems related to land use in more accessible terms, with less jargon, and fewer abstract concepts. The future of land use in Michigan is the key to the state's future economic health, quality of life, and ecological sus-

"The 37 million acres that are Michigan is all the Michigan we will ever have…"

- Michigan Governor William Milliken



"•Built area increases along transportation corridors will reduce the aesthetic appeal and draw of Michigan's destination resorts and recreation areas. Small changes can have big impacts."

—Michigan Land Resource Project

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Michigan State University Land Policy Program
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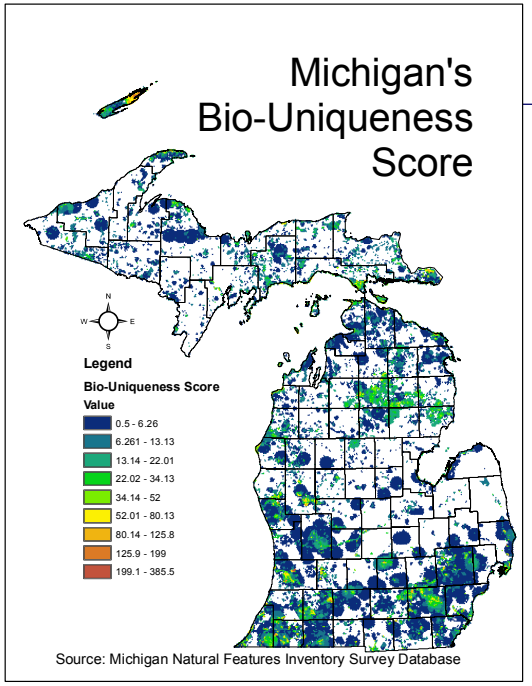

Source: Michigan Natural Features Inventory Survey Database

Picture Michigan Tomorrow Examines the Effects of Land Conversion on Michigan's Natural Features

tainability.

The Michigan Natural Features Inventory (MNFI) mission is "To actively contribute to decisions that impact the conservation of biological and ecological diversity by collecting, analyzing, and communicating information about rare and declining plants and animals, and the array of natural communities and ecosystems native to Michigan." Teams of scientists with expertise in botany, zoology, aquatic ecology, and ecology collect information about Michigan's native plants, animals, aquatic animals and natural ecosystems. MNFI has conducted surveys by foot, kayak, canoe, and air, from interior forests and grasslands, Great Lakes shores to remote islands in search of information about Michigan's special plants, animals and plant communities. Information is also gathered by studying museum and herbaria records, communicating with other scientists in the Great Lakes area, and reading published works. All this information on Michigan's Natural Resource base is used to:

- Reveal population trends and ecological requirements
- Determine the rangewide significance of individual occurrences
- Set conservation priorities and assign "rarity" ranks
- Identify data gaps and research needs
- Guide land use and management activities
- Access change over time and at different spatial scales

The Michigan Natural Features Inventory has developed a bio-uniqueness score that quantifies the intersection between unique habitats, high quality ecosystems, and irreplaceable natural features. This score is them mapped over the entire state to indicate where our treasures lie.

Picture Michigan Tomorrow and MNFI have begun a cooperative effort to assess and quantify, in a way we all understand, the effects of land use change on the future of our natural resource base. By intersecting the two research programs (land use projections and natural features mapping)

"Quantified by either intensity of loss of by total area lost this portion of the state will show a marked decline in quality of life due to the loss of irreplaceable species, outdoor recreation, wetland function, and aesthetic quality."

Picture Michigan Tomorrow Examines the Effects of Land Conversion on Michigan's Natural Features

we were able to take examine at the high quality natural resources we stand to lose if the projections of land consumption occur. This analysis was done along both ecological boundaries (watersheds) and political boundaries (counties), and was quantified by both area and value of the features in jeopardy. Both analyses show an alarming trend. The southern portion of the state is in danger of losing not only its agricultural viability, but its natural heritage as well. Quantified by either the intensity of loss or by total area lost, this portion of the state will show a marked decline in quality of life due to the loss of irreplaceable species, outdoor recreation, wetland function, and aesthetic quality.

When this approach is taken a step further by multiplying the total area lost by the average bio-uniqueness score a pattern of counties in Southern Michigan is apparent. These counties are potentially the prime targets for policy reform aimed at protecting the precious natural resource base. These same general areas are critical for the protection of Michigan's agricultural economy.

While illuminating the plight of our natural features is a worthwhile exercise it is important to note that both data sets in this analysis need follow up work to get to deliver more in depth, accuracy, and completeness. The Land Resource Project projections need to be updated in smaller time steps and with greater predictive capacity. This will be done sing a model that takes into account more variables and allows local decision makers to visualize the future impact of planning; these are both goals of Picture Michigan Tomorrow. The work developing the expertise is in process, and as resources become available the land projections will be improved upon. The Michigan Natural Features Inventory also needs to expand its database, to give a truly statewide inventory of our natural resource base. This is currently limited by incomplete datasets (blank spots in the figures do not denote no value, but no data), and a lack of resources to complete a statewide biological survey.