Michigan Natural Features in Danger due to Land Conversion

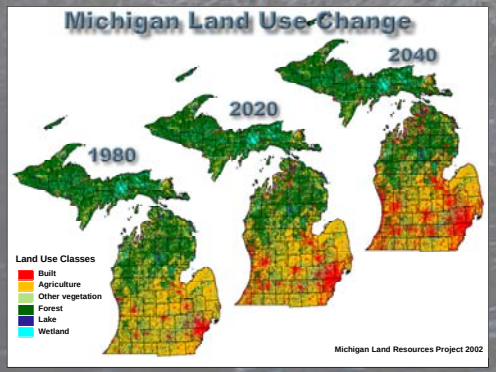
PMT Project Description

Land use issues are at once pervasive and somewhat inaccessible, they encompasses planning, zoning, smart growth, agricultural preservation, and urban sprawl however, land use decisions from the state to local level have impacts outside the traditional sphere of land use policy. Urban revitalization, quality of life, community health, economic development or recovery, demographics, and the fiscal sustainability of local government are all areas directly related to land use decisions. In short land use policy is pervasive, it has far flung and often unanticipated consequences.

Many decision makers and planners across the state are currently compelled to make land use decisions without current land use and land cover information much less good future land use forecasts. As a result, too many critical land use decisions that have irreversible impacts on our quality of life, economic health, public health, and natural environment are made without this critical spatial information and without an understanding of the full extent of the future impacts of these land use decisions.

Further obfuscation of the issues comes from the fact that land use research in Michigan is bifurcated. A good deal of research has been done at the local level assessing local issues, and a good body of work exists at the statewide scale but the connections between the two scales are tenuous at best. There exists a need for entity that can, through good science and policy analysis, connect the two scales for the present and also forecast future economic, social, environmental, and infrastructure needs.

Translating Land Use Modeling into Things that Matter to People



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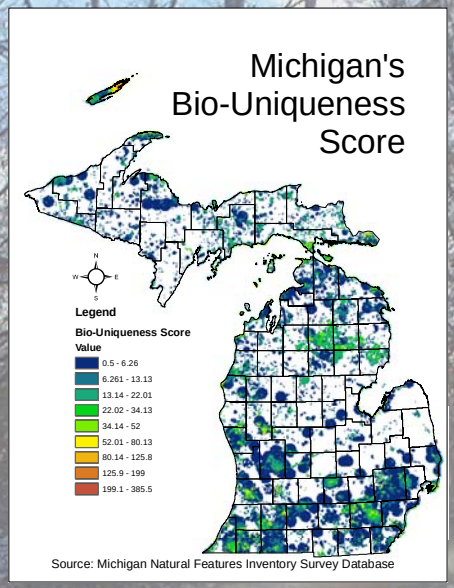
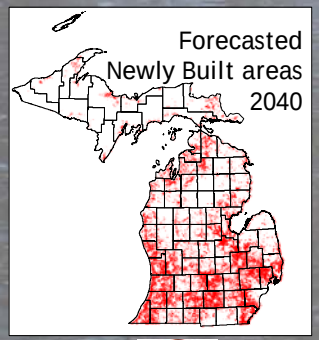


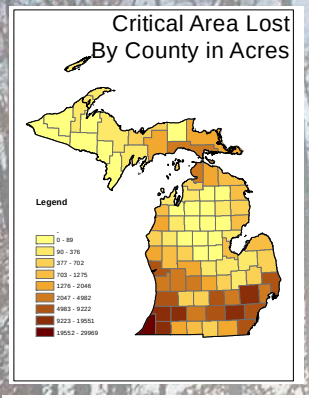
Source: Michigan Natural Features Inventory Survey Database

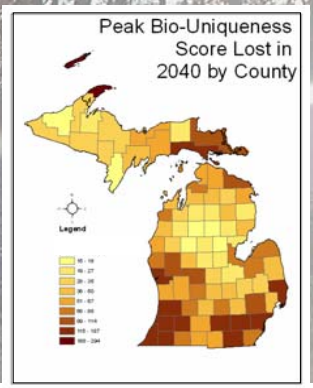
The Michigan Natural Features Inventory (MNFI) mission is "To actively contribute to decisions that impact the conservation of biological and ecological diversity by collecting, analyzing, and communicating information about rare and declining plants and animals, and the array of natural communities 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:

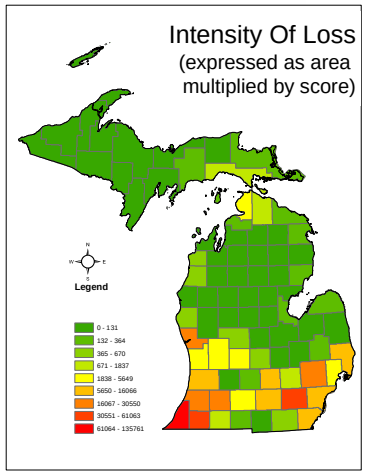
Reveal population trends and ecological requirements
Determine the rangewide significance of individual occurrences
Set conservation priorities and assign "rarity" ranks
Identify data gaps and research needs
Guide land use and management activities
Access change over time and at different spatial scales

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) 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.

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?

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