Death by powerpoint

Michigan Natural Features Inventory and Natural Heritage Data

Ed Schools
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MNFI Conservation & GIS Information Section

Michigan Natural Features Inventory

MICHIGAN STATE UNIVERSITY EXTENSION

Program of MSU Extension Service

~23 FTE, ~$2,000,000 salary budget

Completely self funded through grants, contracts, or fee for services

½ director's salary is the only university support

MNFI Integrated Capabilities

From field surveys to applied research

On staff expertise with Michigan rare biota

Botanists, ecologists, zoologists

Terrestrial and aquatic

Conservation planning capabilities

Statewide to local

GIS analysis and modeling capabilities

Michigan's Natural Heritage Program

Inventory and track Michigan's rarest biota

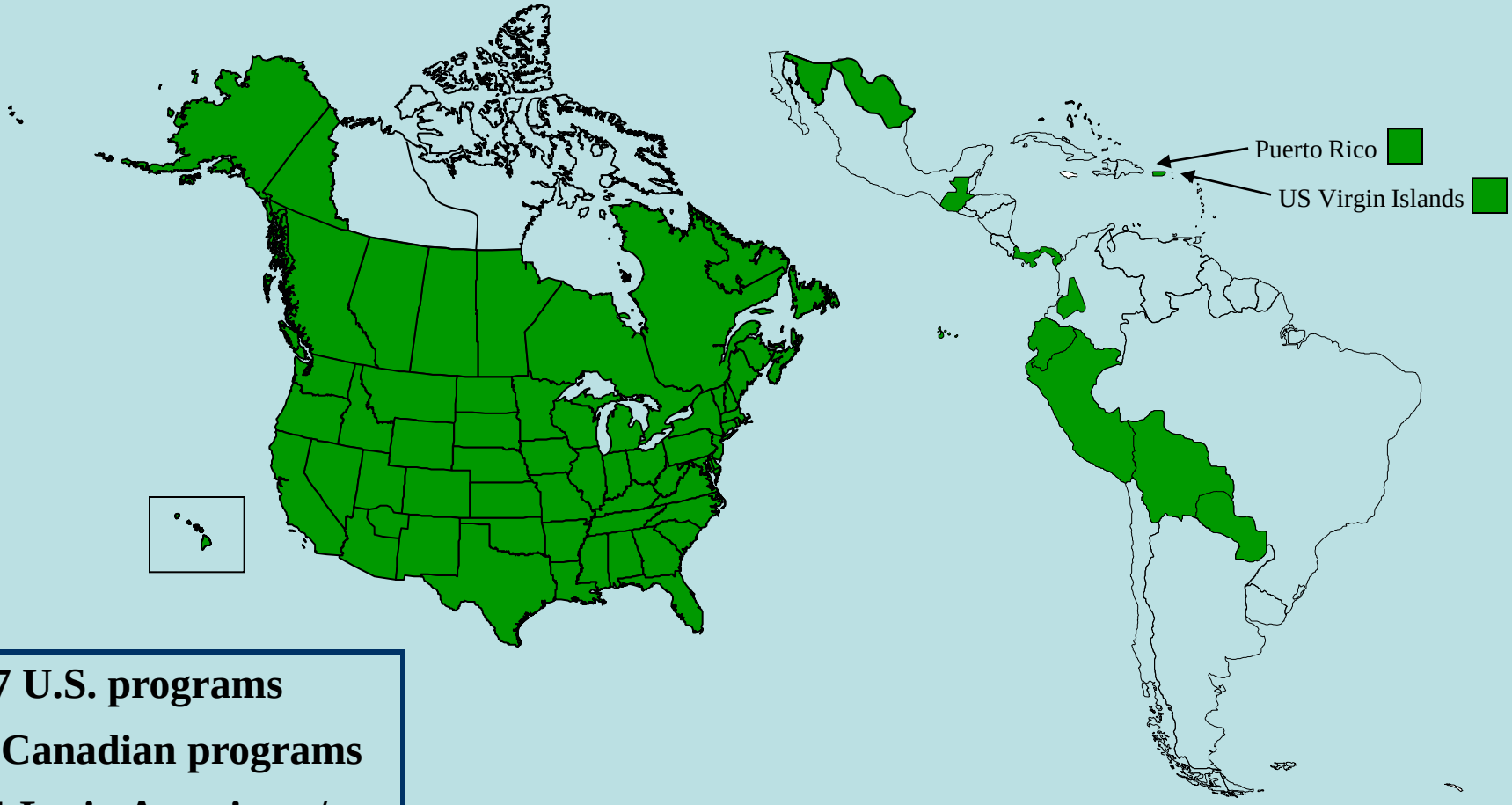
Elements of biodiversity

420 plant species

306 animal species

76 natural community types

NatureServe's Member Programs: the Network in 2003



57 U.S. programs

8 Canadian programs

11 Latin American / Caribbean programs

NatureServe

Maintains data standards and element global ranks (G ranks)

Maintains the data platform (Biotics)

Work with multi-jurisdictional partners and datasets

Provide Natural Heritage and other training

Partner programs

Yearly data exchange

Local science expertise

Maintain Sub-national ranks (S ranks)

Communicate with NatureServe and network programs

Natural Heritage Database

Track elements → Map element occurrences (EO)

Geographic space known to contain the element

Sometimes this is very precisely defined

Sometimes this is only generally defined

Data Sources

Secondary sources

Museum collections

Herbariums

Published reports

Outside contributors

Data Sources

MNFI surveys

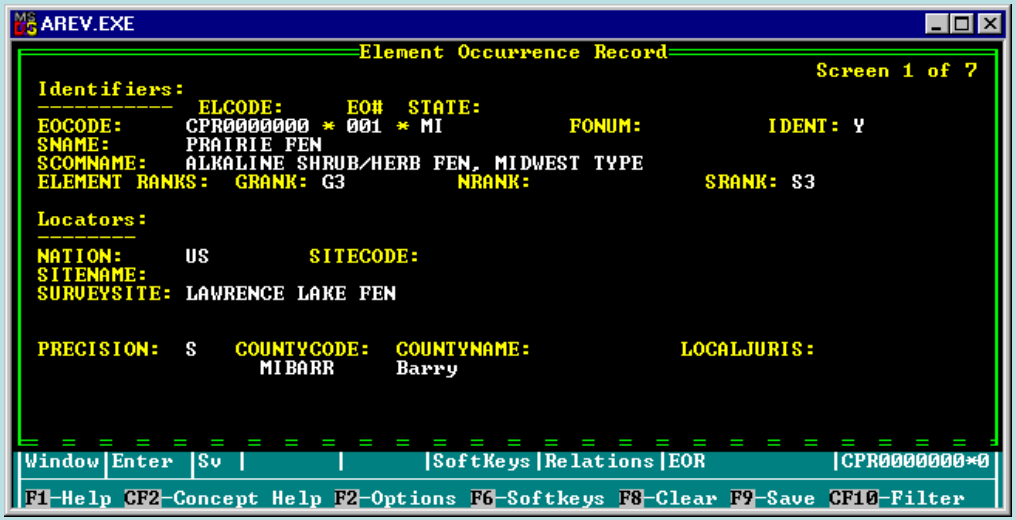
The big caveat!!!!!!!!

Absence of evidence should not be construed as evidence of absence

No statewide systematic survey for rare species

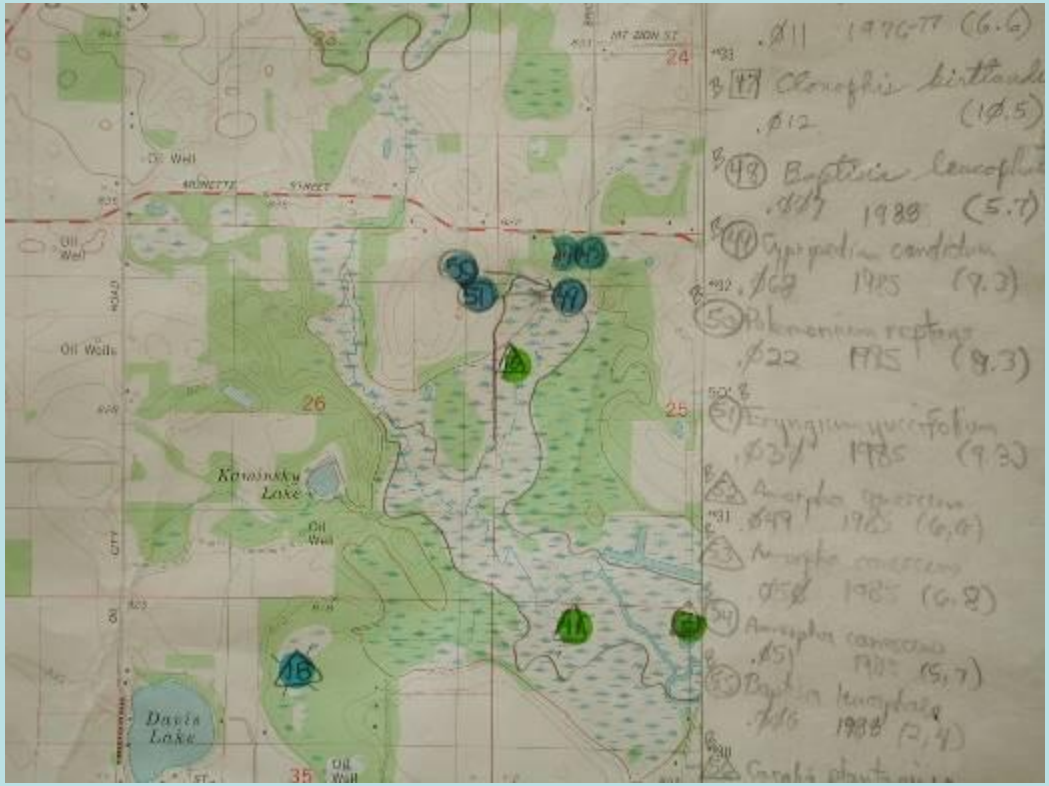
Database

Building database since 1980



Data Mapping

Occurrence mapped as a Lat/Long point with a mapping precision



Second

Minute

General

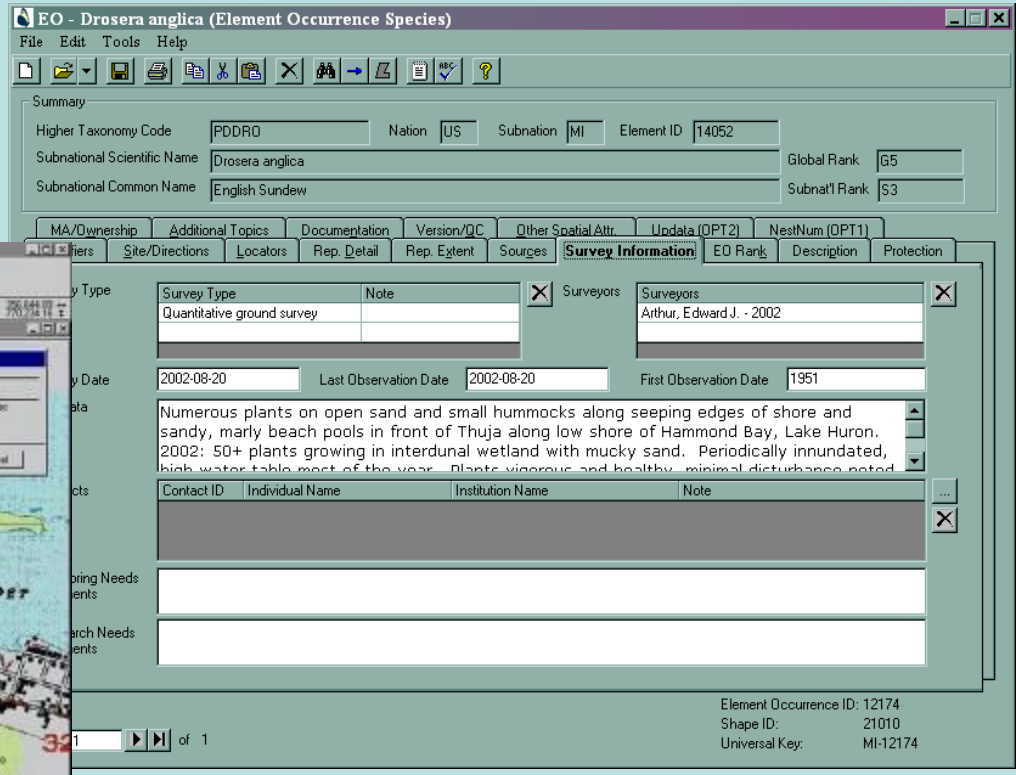
GIS Unplugged

Biotics 4

Oracle database > 700 linked tables

Not a simple presence/absence database

Spatial front end – it all starts with mapping a space



Data Sensitivity

Species Sensitivity - T & E species are close to the edge

Potential for accidental or deliberate harm

Private Property

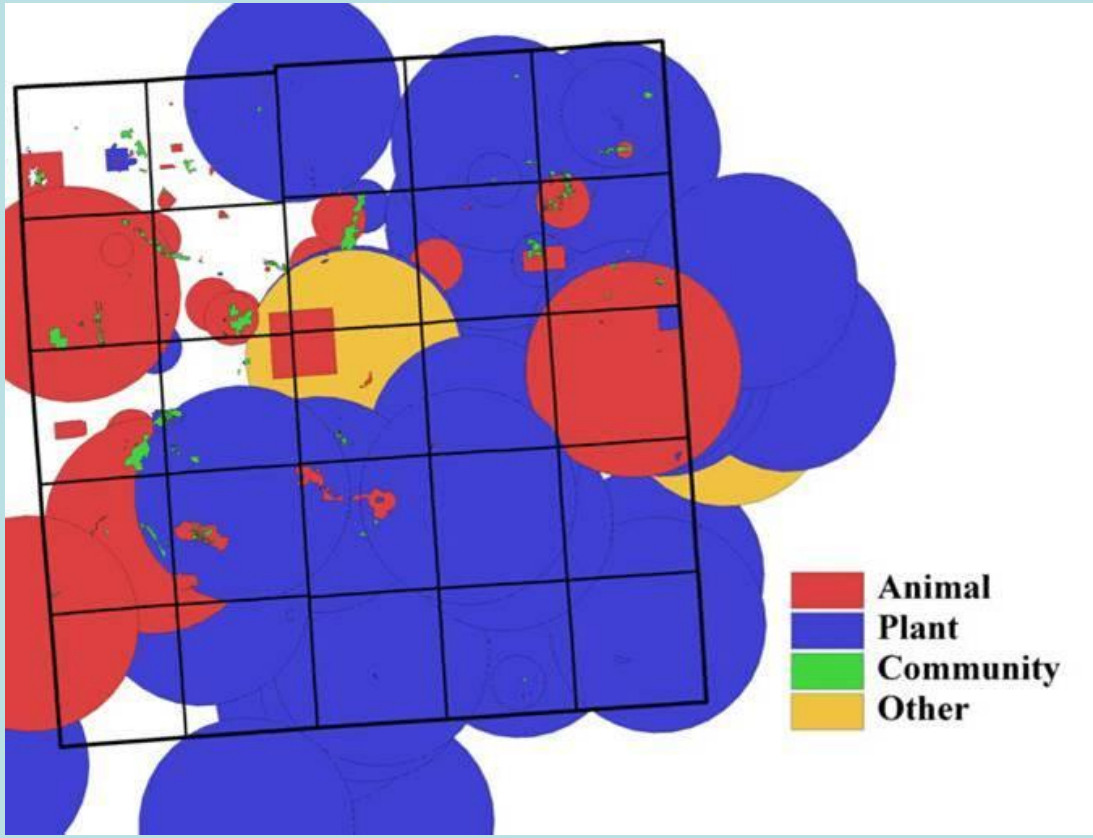
Data Sensitivity

Data interpretation

Database designed by heritage scientists for heritage scientists

These are biological data – not property lines

Old records still important



Oakland County EOs

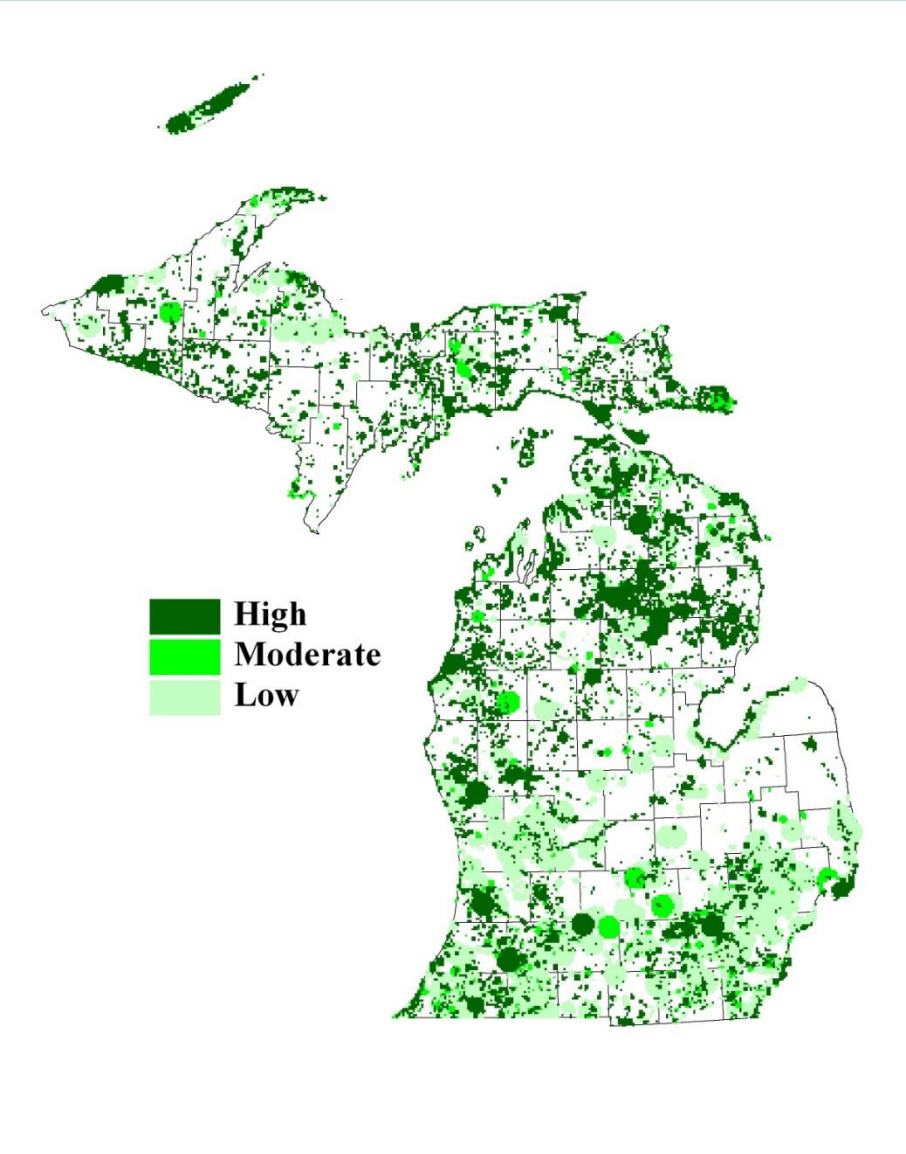
Database is constantly changing

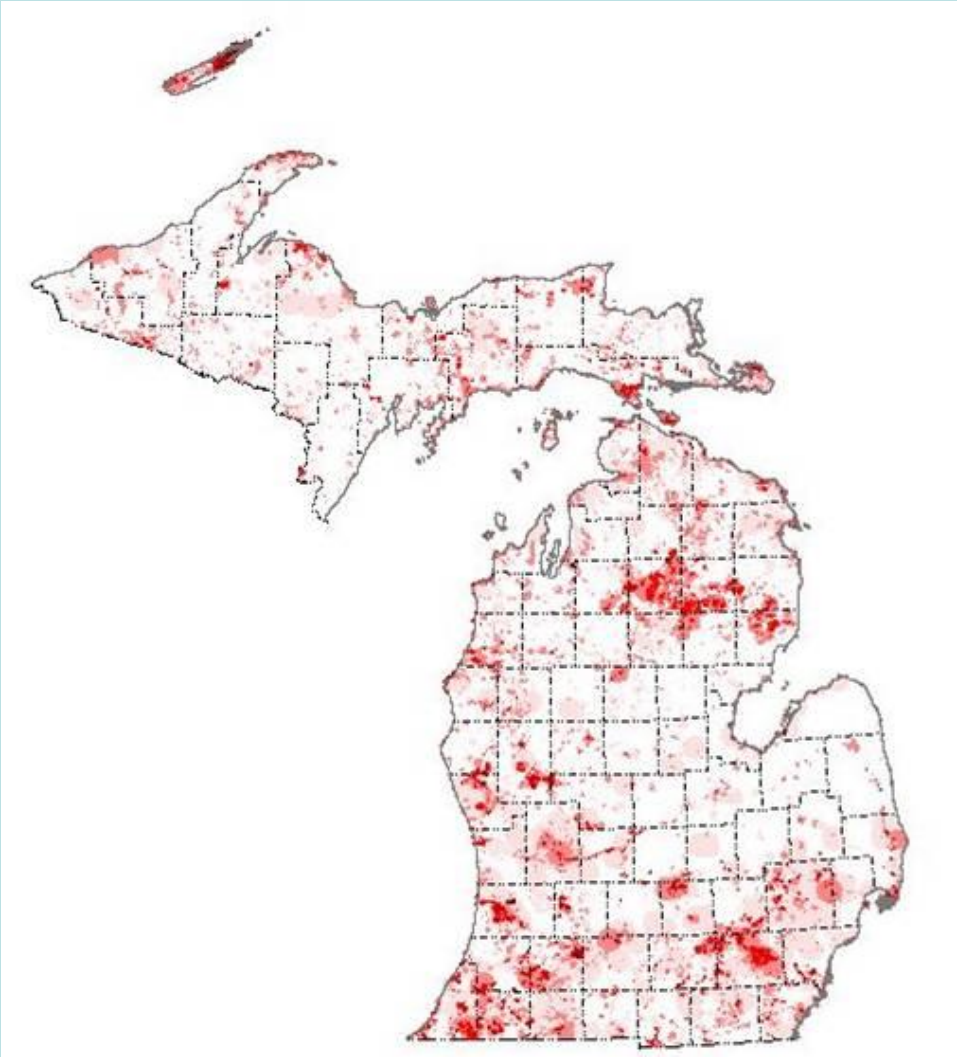
Balancing Act

Supplying useful information for conservation

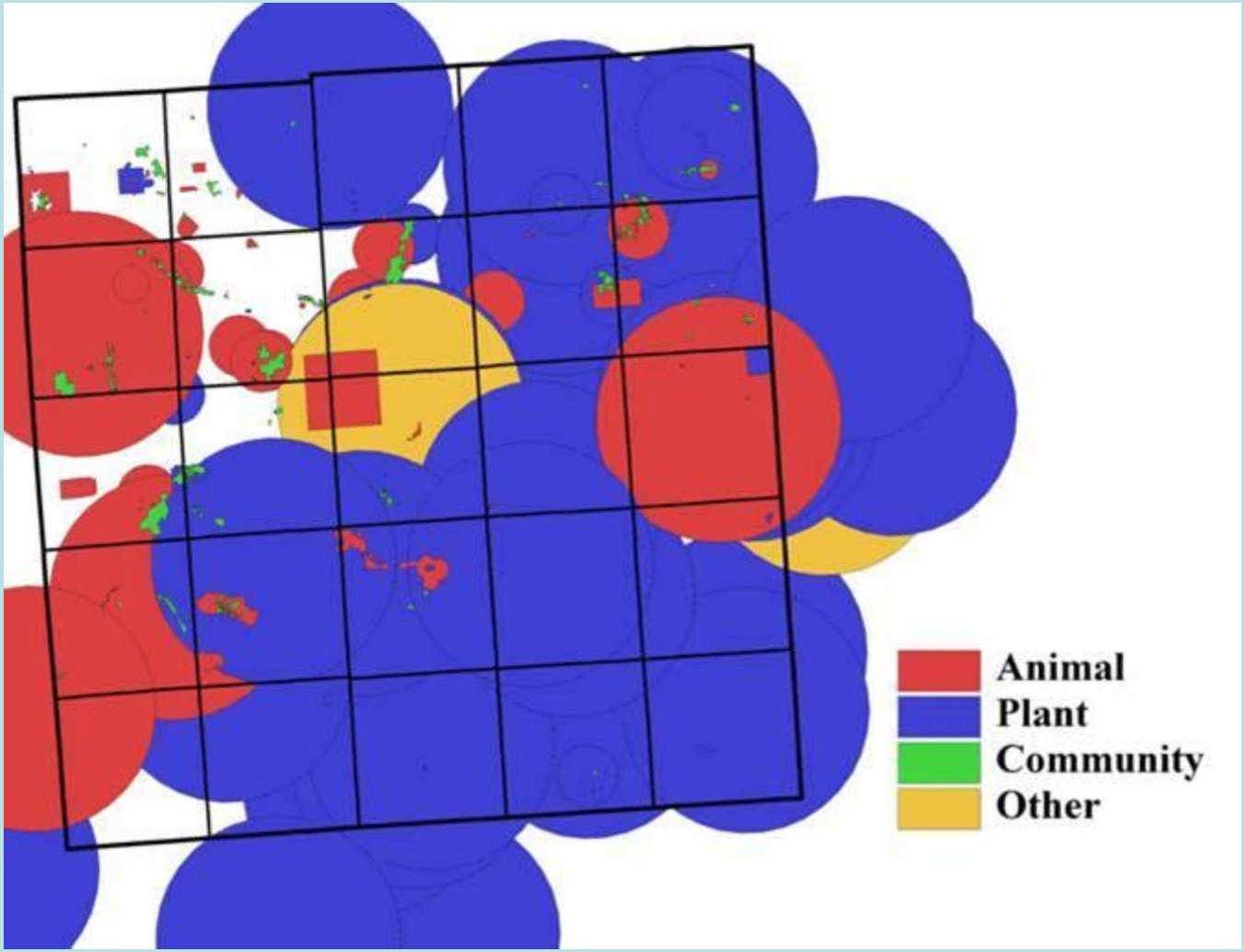
Without compromising sensitivity of the data

Bio-rarity/Likelihood model on MNFI website

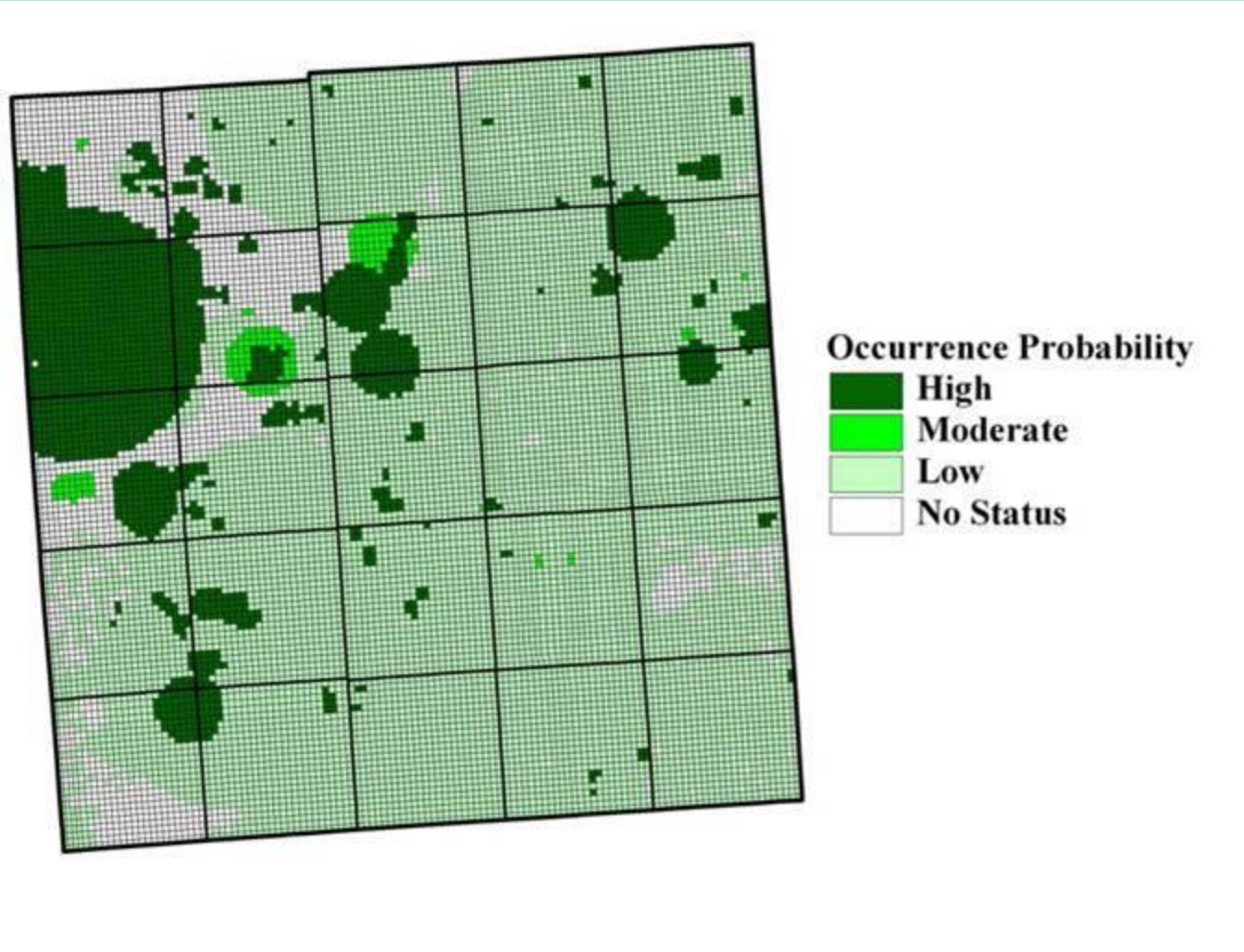




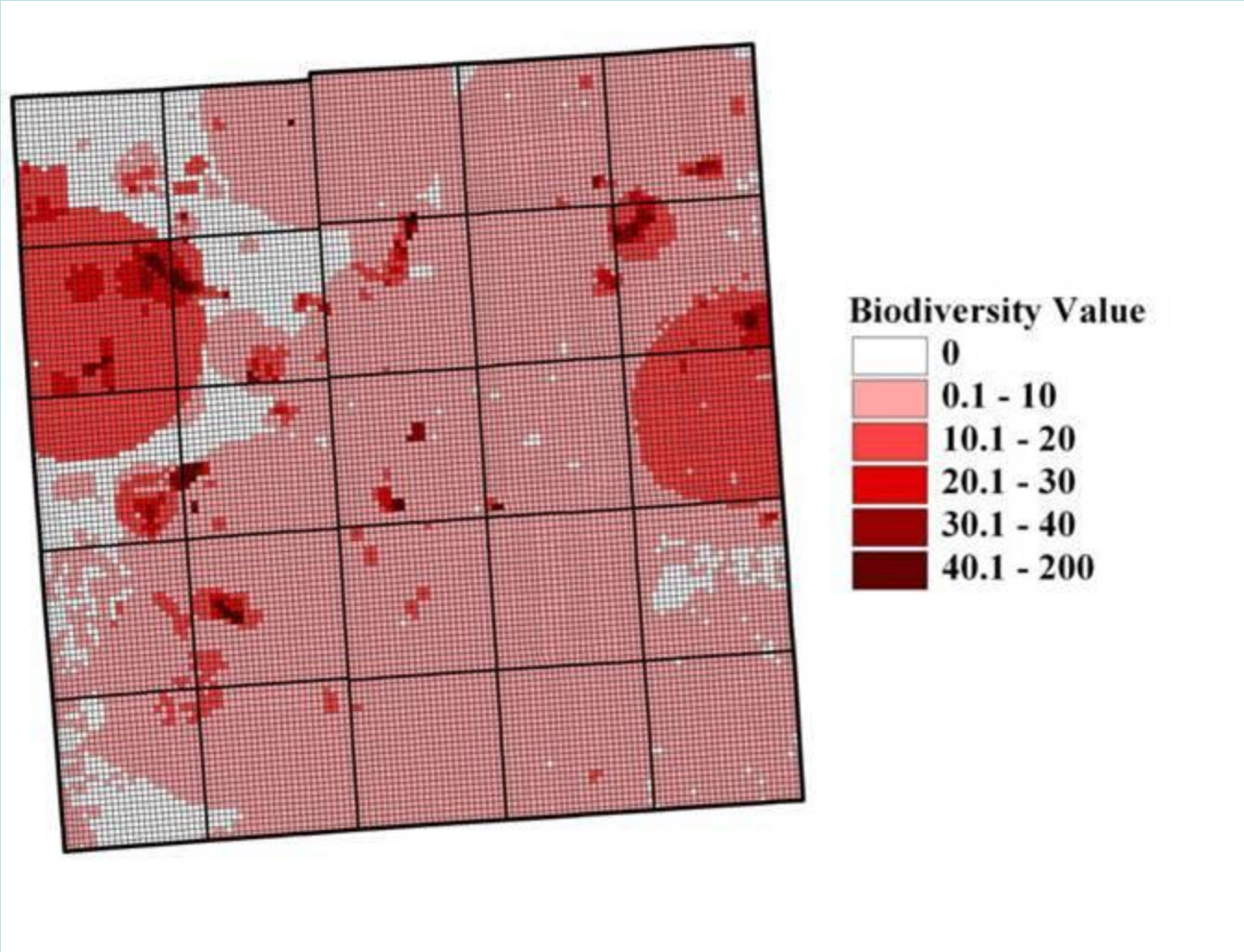
Oakland County Element Occurrences



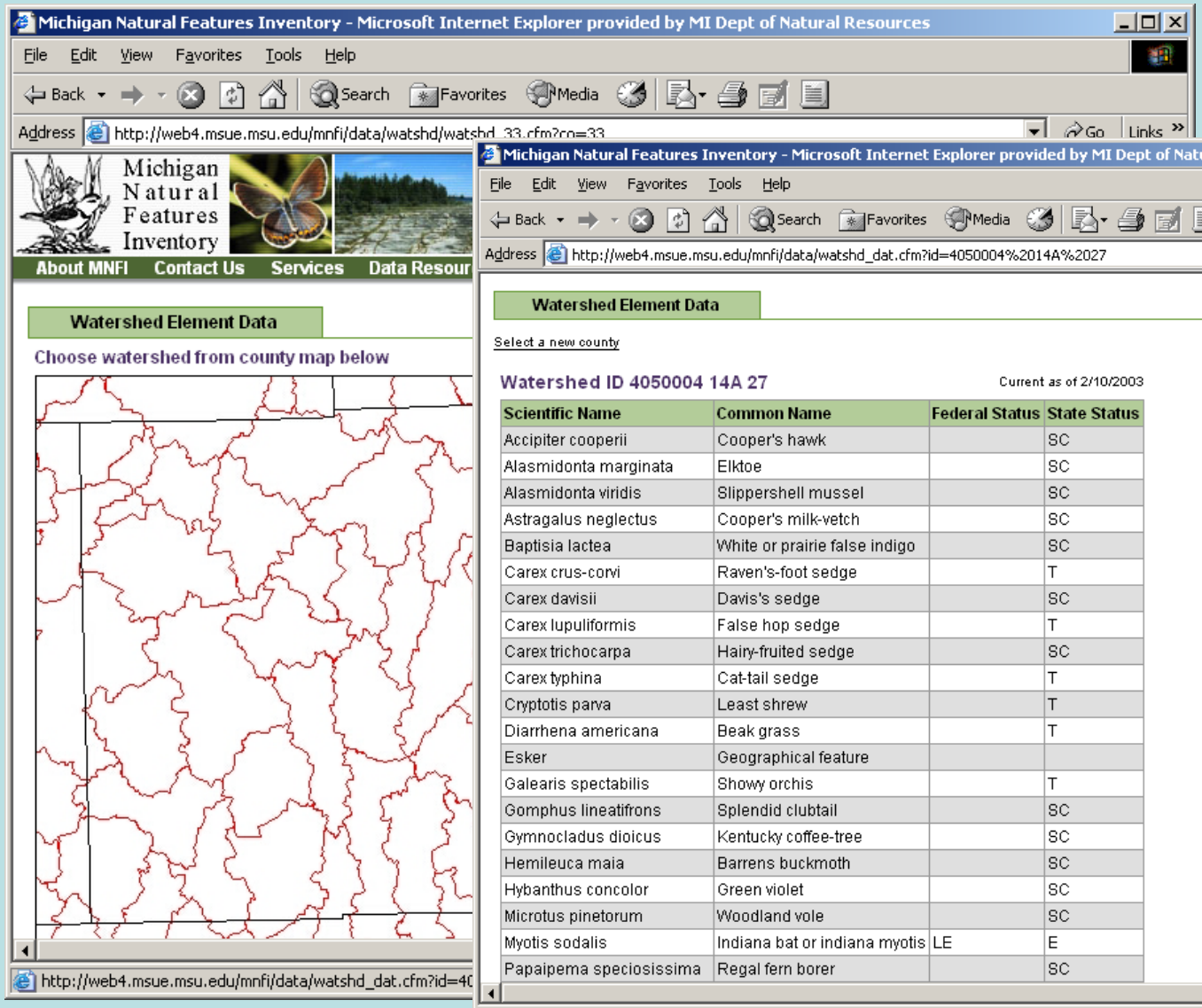
Oakland County Likelihood



Oakland County Biorarity



Watershed element tables



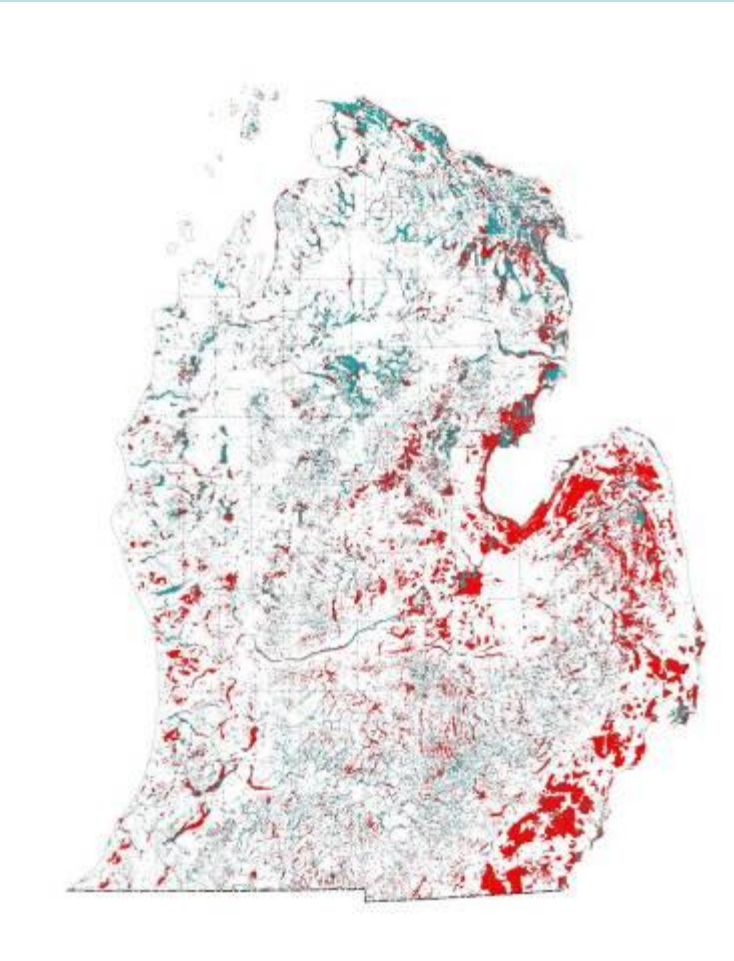
Scientific Name	Common Name	Federal Status	State Status
Accipiter cooperii	Cooper's hawk		SC
Alasmidonta marginata	Elktoe		SC
Alasmidonta viridis	Slippershell mussel		SC
Astragalus neglectus	Cooper's milk-vetch		SC
Baptisia lactea	White or prairie false indigo		SC
Carex crus-corvi	Raven's-foot sedge		T
Carex davisii	Davis's sedge		SC
Carex lupuliformis	False hop sedge		T
Carex trichocarpa	Hairy-fruited sedge		SC
Carex typhina	Cat-tail sedge		T
Cryptotis parva	Least shrew		T
Diarrhena americana	Beak grass		T
Esker	Geographical feature		
Galearis spectabilis	Showy orchis		T
Gomphus lineatifrons	Splendid clubtail		SC
Gymnocladus dioicus	Kentucky coffee-tree		SC
Hemileuca maia	Barrens buckmoth		SC
Hybanthus concolor	Green violet		SC
Microtus pinetorum	Woodland vole		SC
Myotis sodalis	Indiana bat or indiana myotis	LE	E
Papaipema speciosissima	Regal fern borer		SC

Landscape modeling

Changes 1800 - Present

Unchanged vegetation

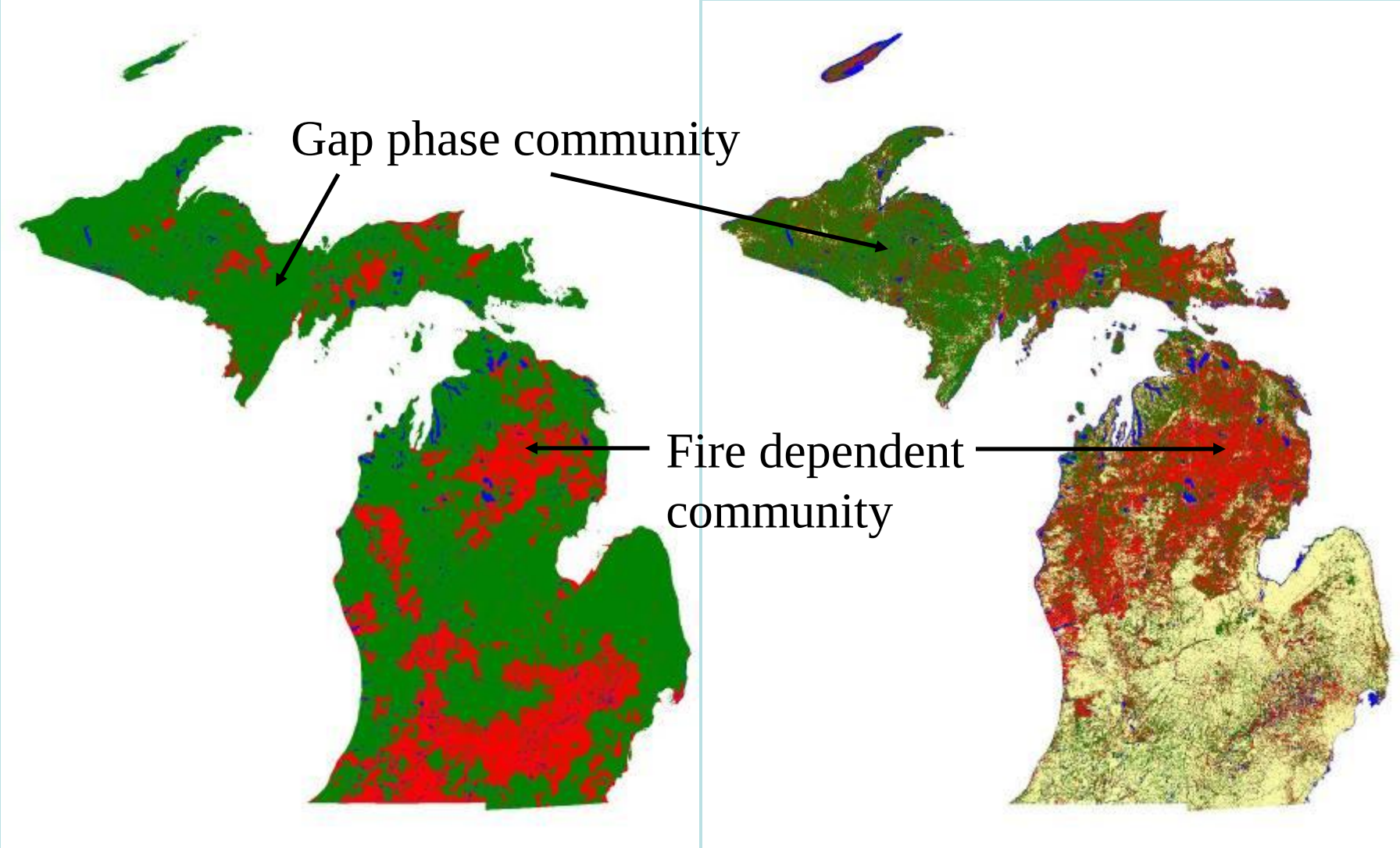
Wetland changes



Changes in natural disturbance patterns

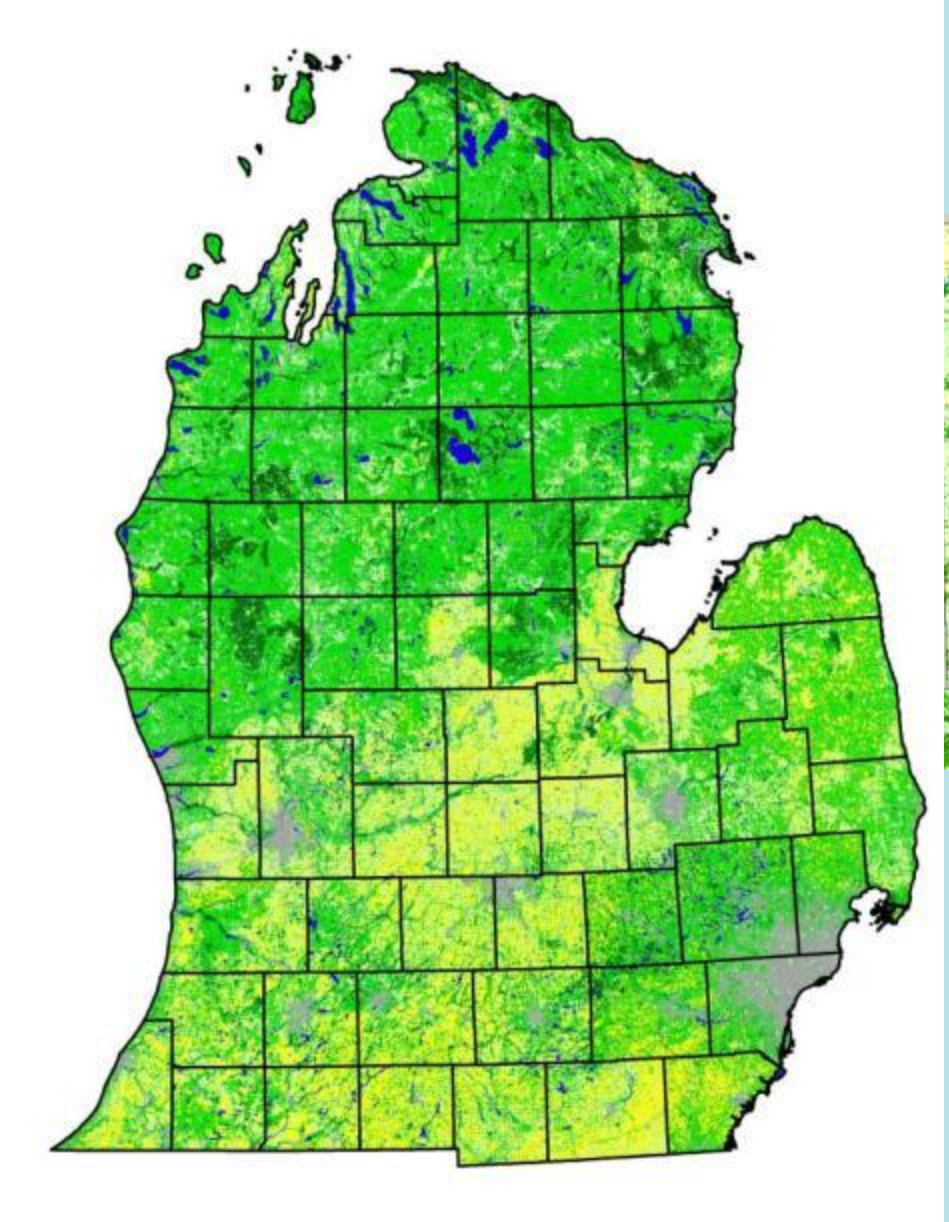
Circa 1800

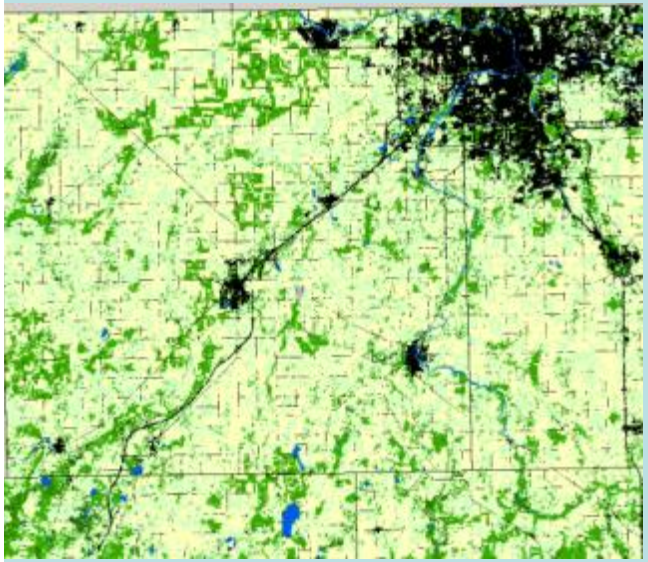
Circa 2000



Landscape modeling

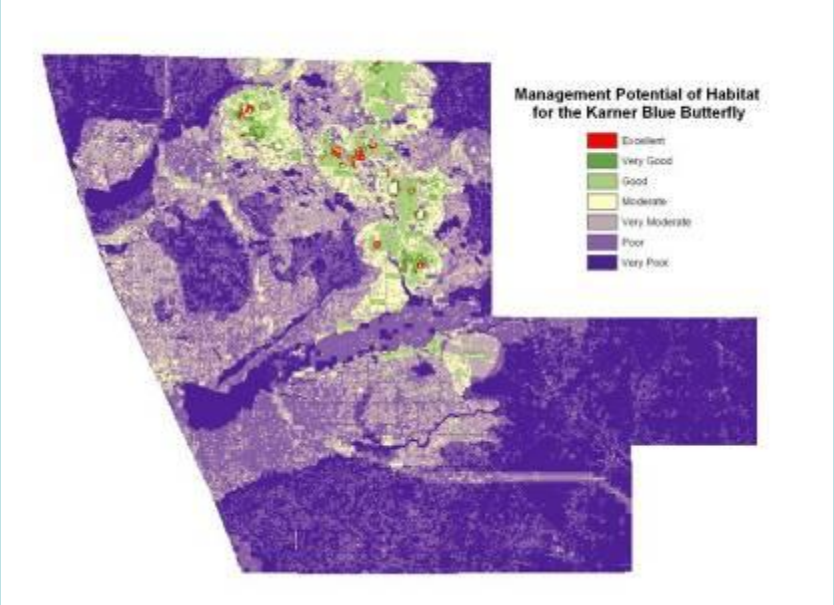
2.5 million habitat patches scored for five ecological criteria



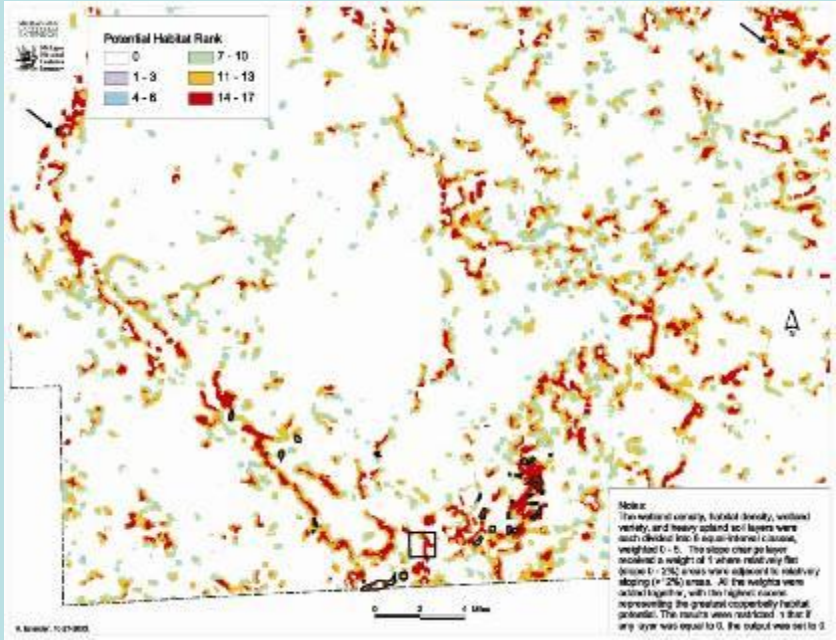


Habitat patch scores
0 - 20 range
- **0 - 7**
- **7 - 15**
- **15 - 20**

Species modeling



Karner blue butterfly

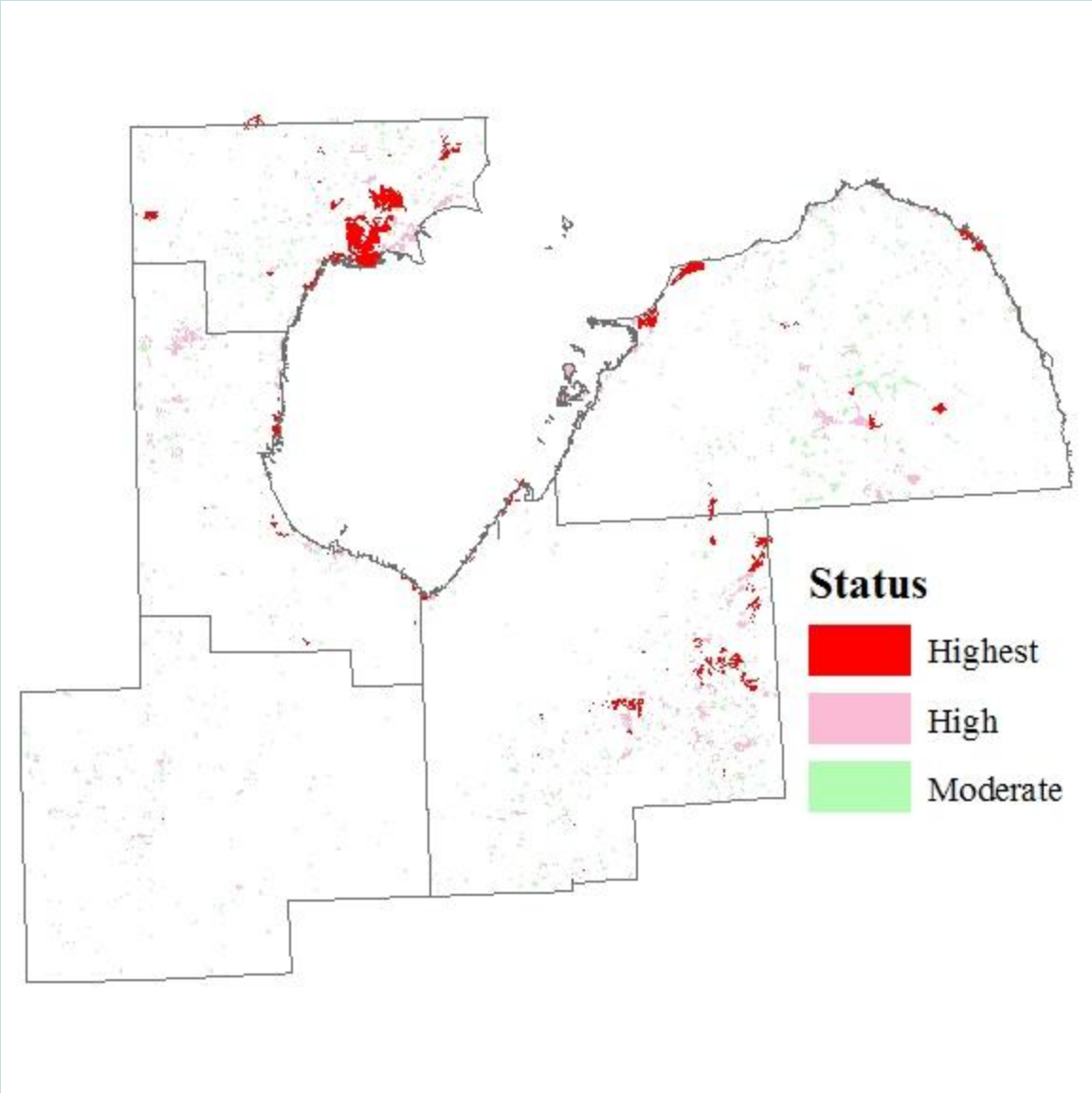


Copperbelly watersnake

Prioritizing Saginaw Bay Wetlands For Acquisition

Working with DEQ, DU, TNC, USFWS, and local conservancies to prioritize wetlands for acquisition

4751 potential sites to 86 highest priority sites



Larger landscape decisions

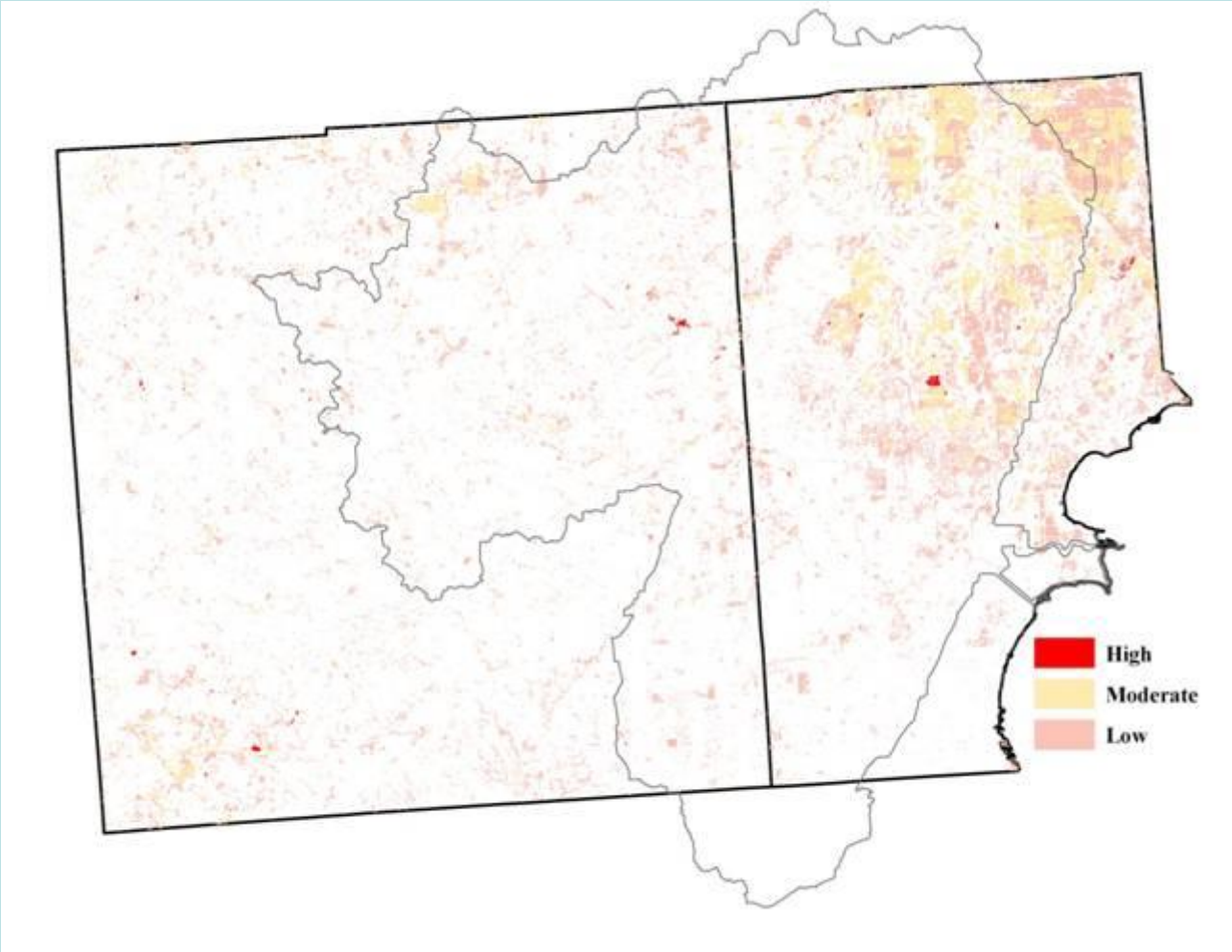
Clinton River AOC Wetland restoration prioritization

Started with over 14,000 potential sites

246 high priority sites within the county boundaries

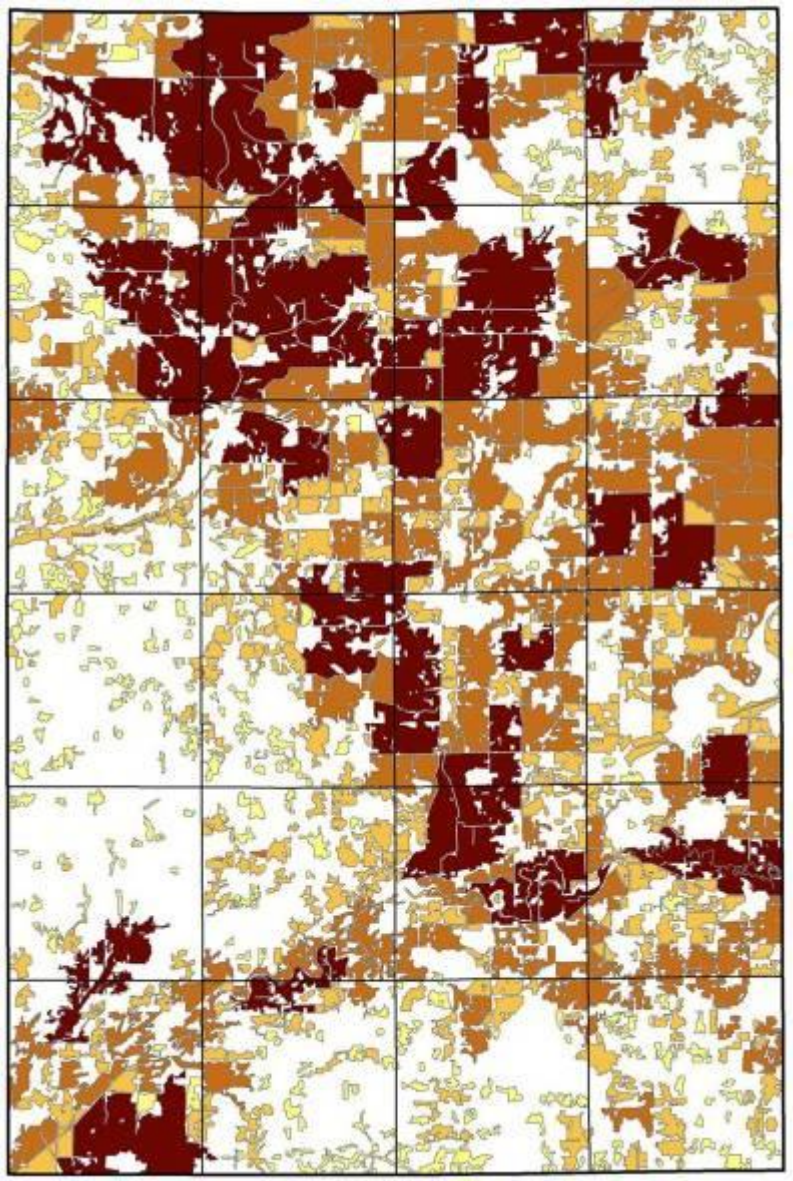
121 within just the AOC boundary

Desktop review got down to 6 sites



Regional, County, or Township land use planning efforts

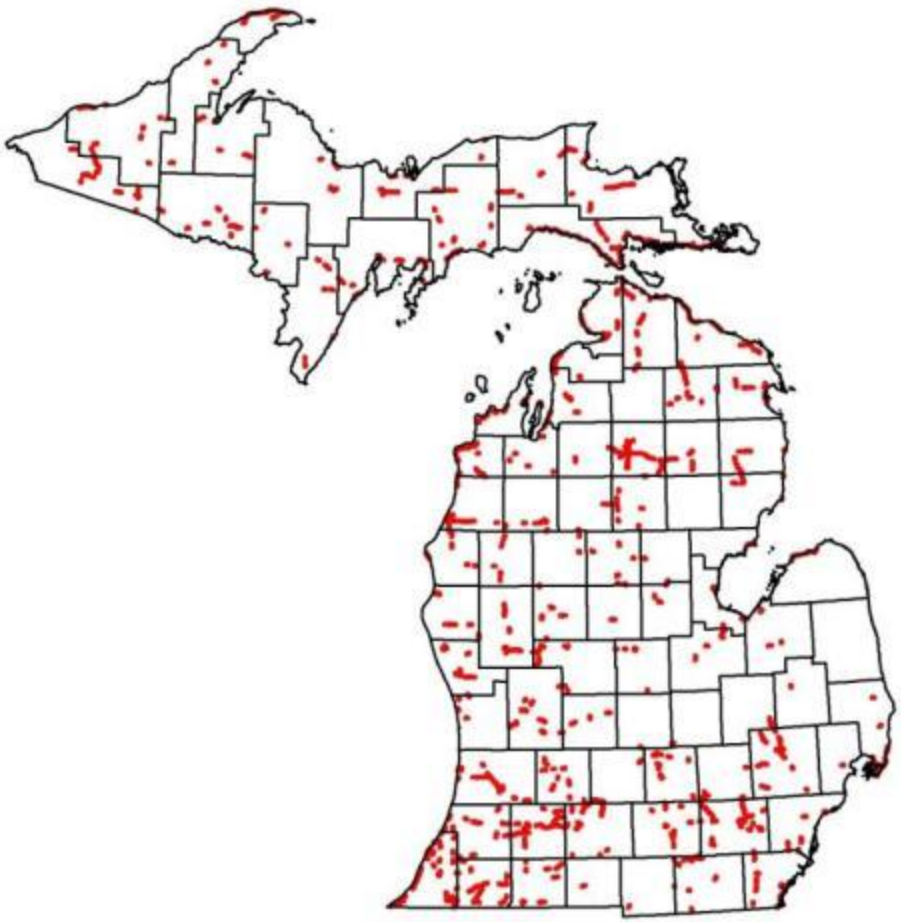
Newaygo County Potential Conservation Areas



Priority conservation areas

- Lower priority
- Highest priority

MDOT Managed Areas



Freeways to Fuels

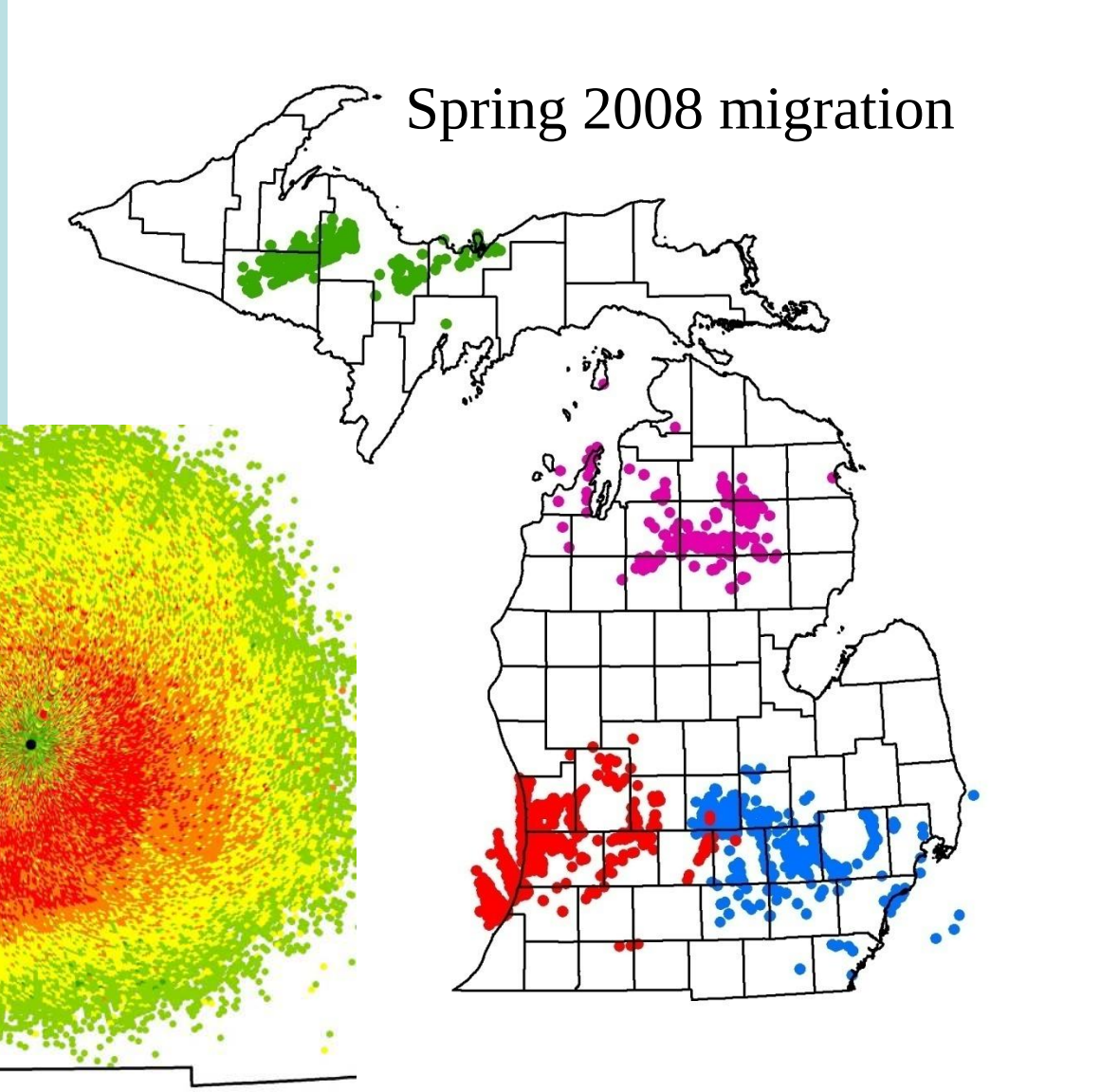
Highway centerlines

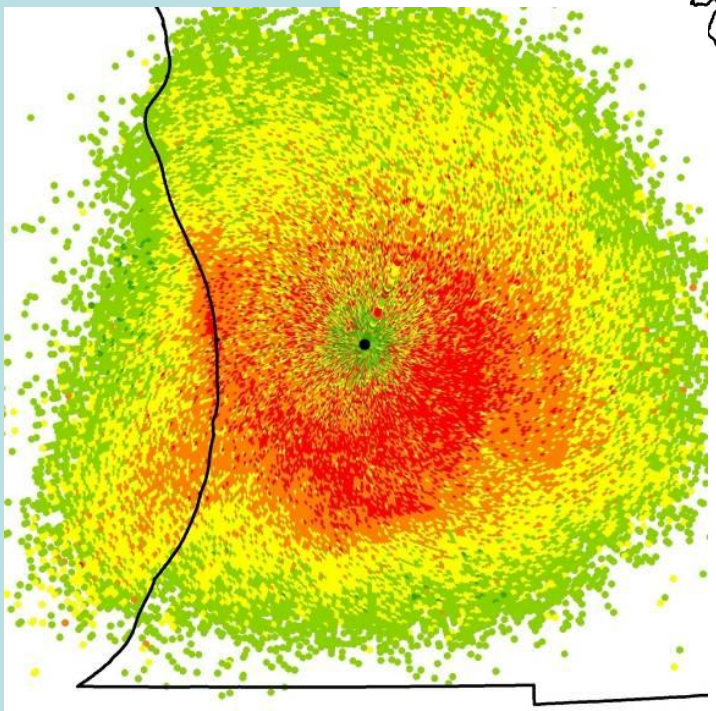
Adding lines

Converting to polygons

Buffering inward

Using NEXRAD weather radar to define bird migration hotspots





Reflectivity in db

- **-23.50 - -1.50**
- **-1.49 - 5.00**
- **5.01 - 9.50**
- **9.51 - 14.00**
- **14.01 - 33.50**

??????????????