

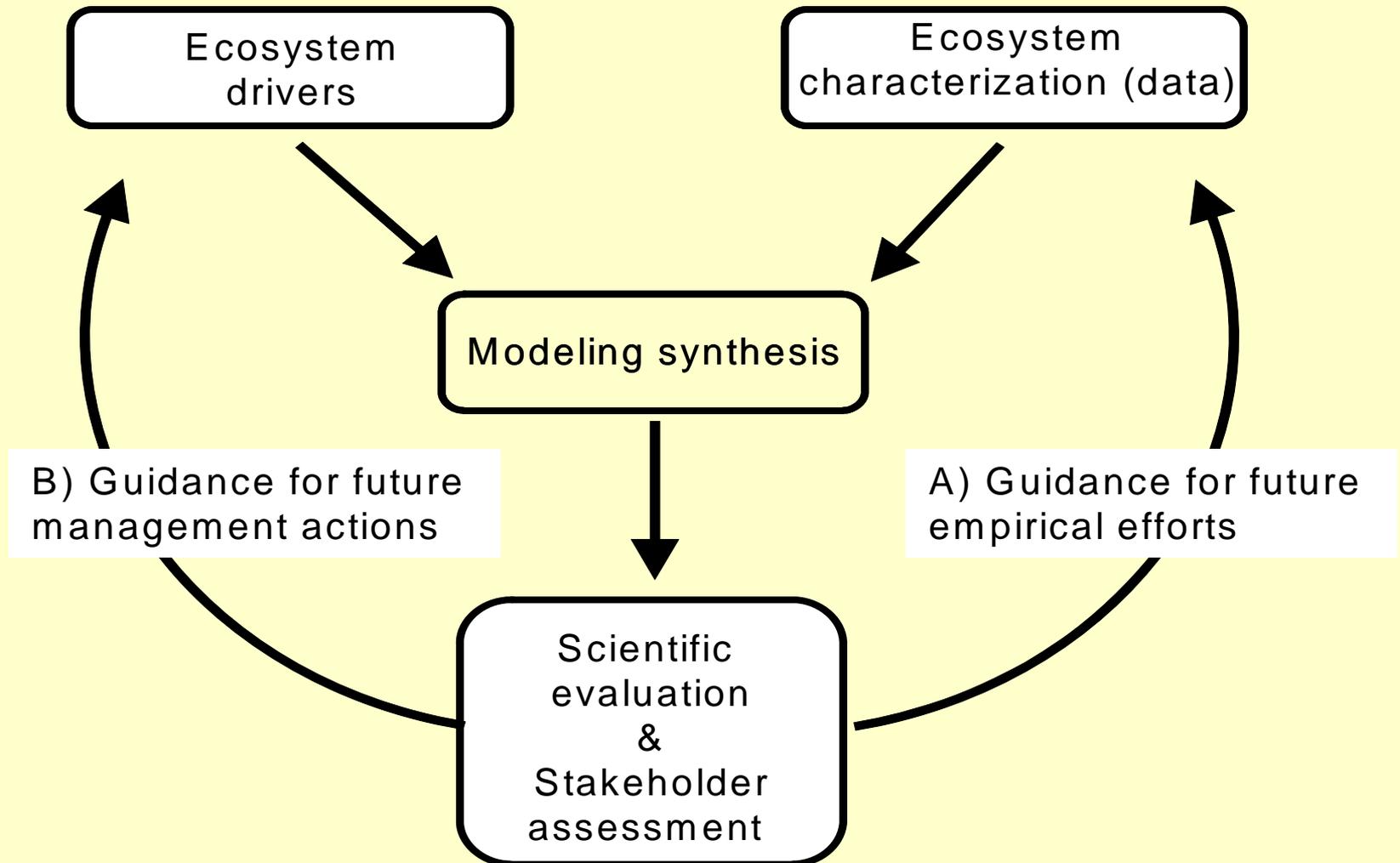
Human Dimensions

6' x 1.5' x 1.5'

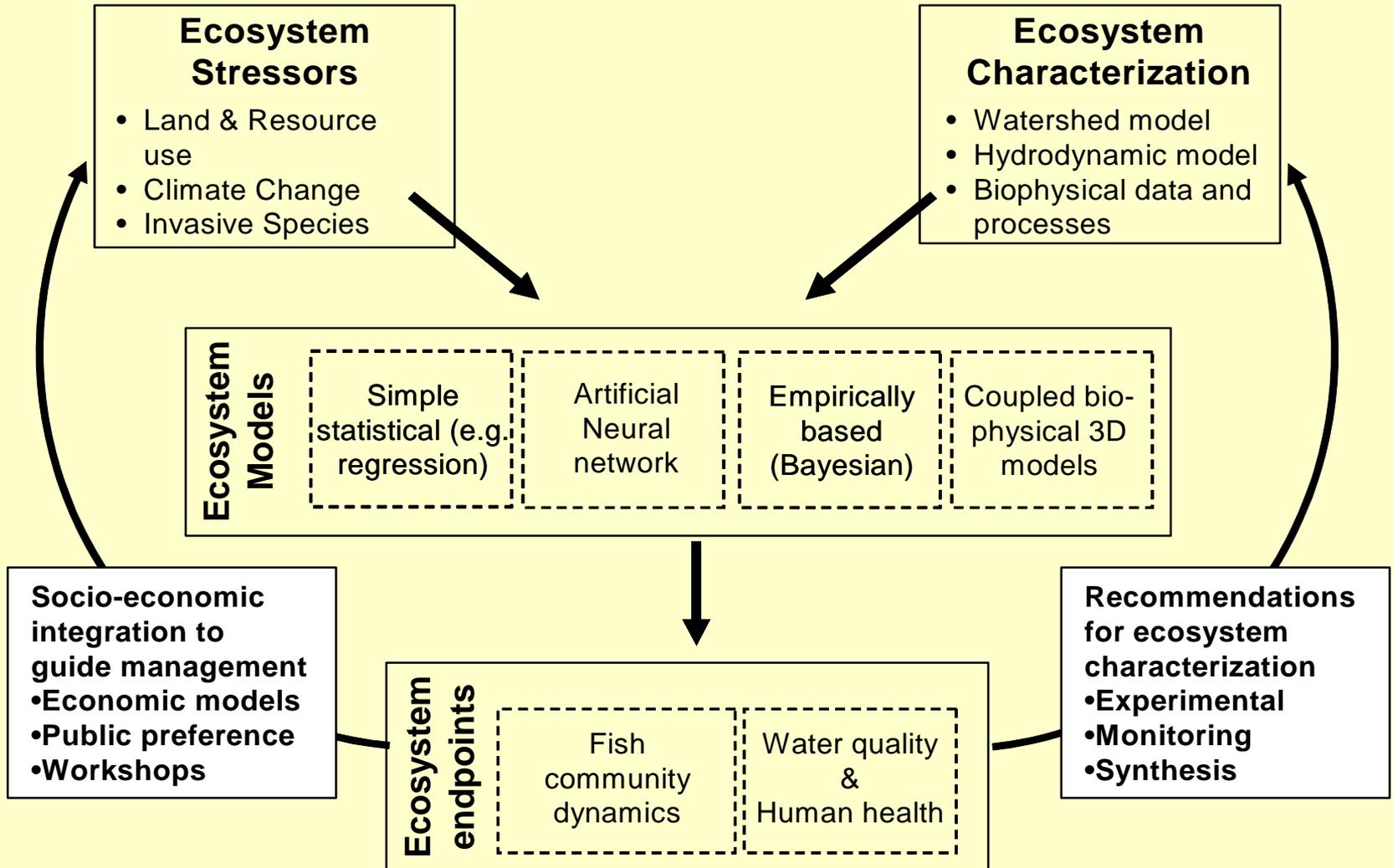
Economics

Frank Lupi & Michael Kaplowitz
MSU

Ecosystem Services: People



More models



Two Modeling Components

1. Recreational uses

- Beach use
- Fishing

2. Land owners

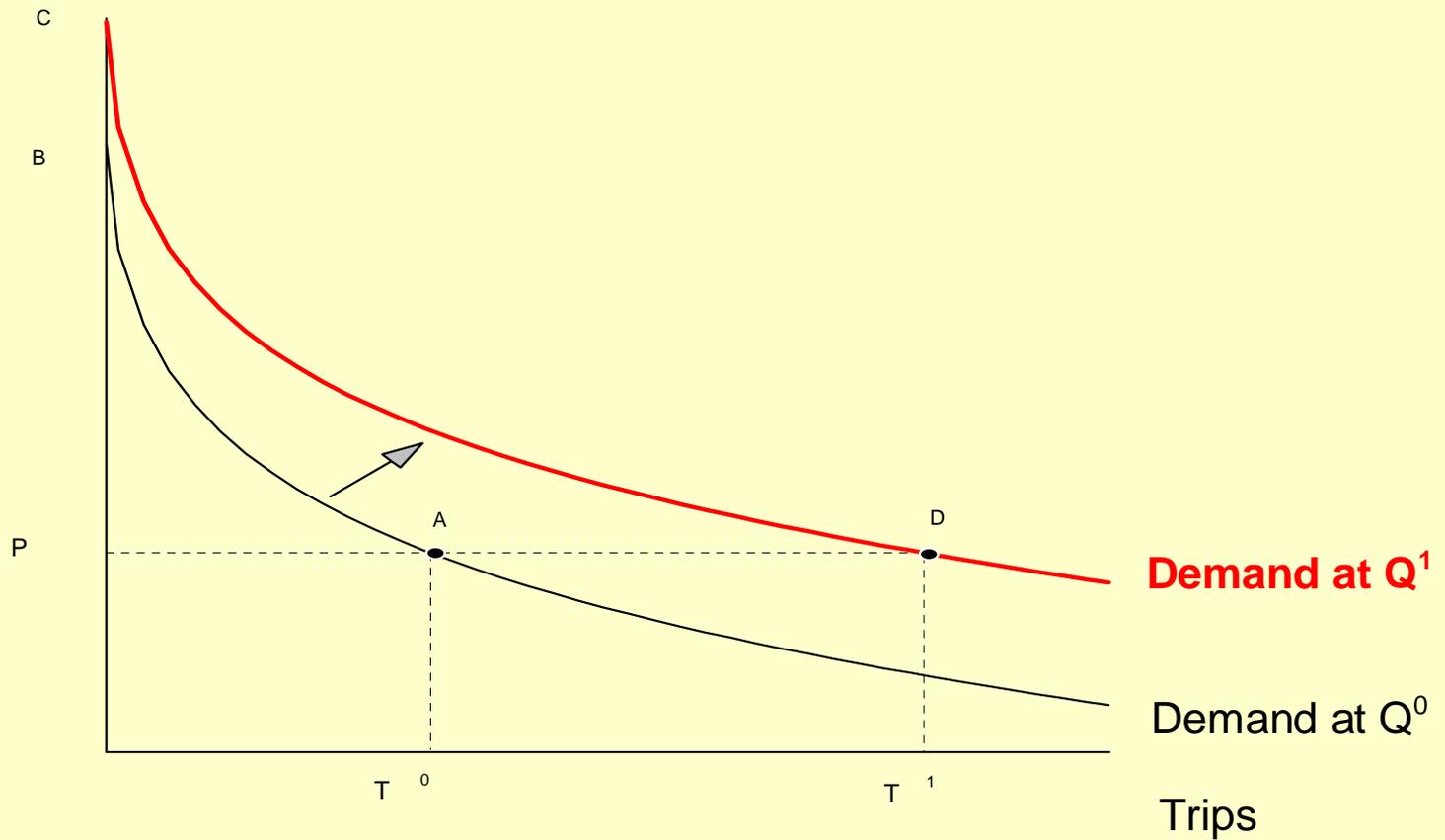
- Preferences & attitudes toward management alternatives
- Quantitative models of willingness to change/adopt various land management options

Recreation

- Usage = $F(\text{costs}, \text{environmental quality})$
- Behavioral Model
 - How uses change when EQ changes
 - Can use for economic valuation

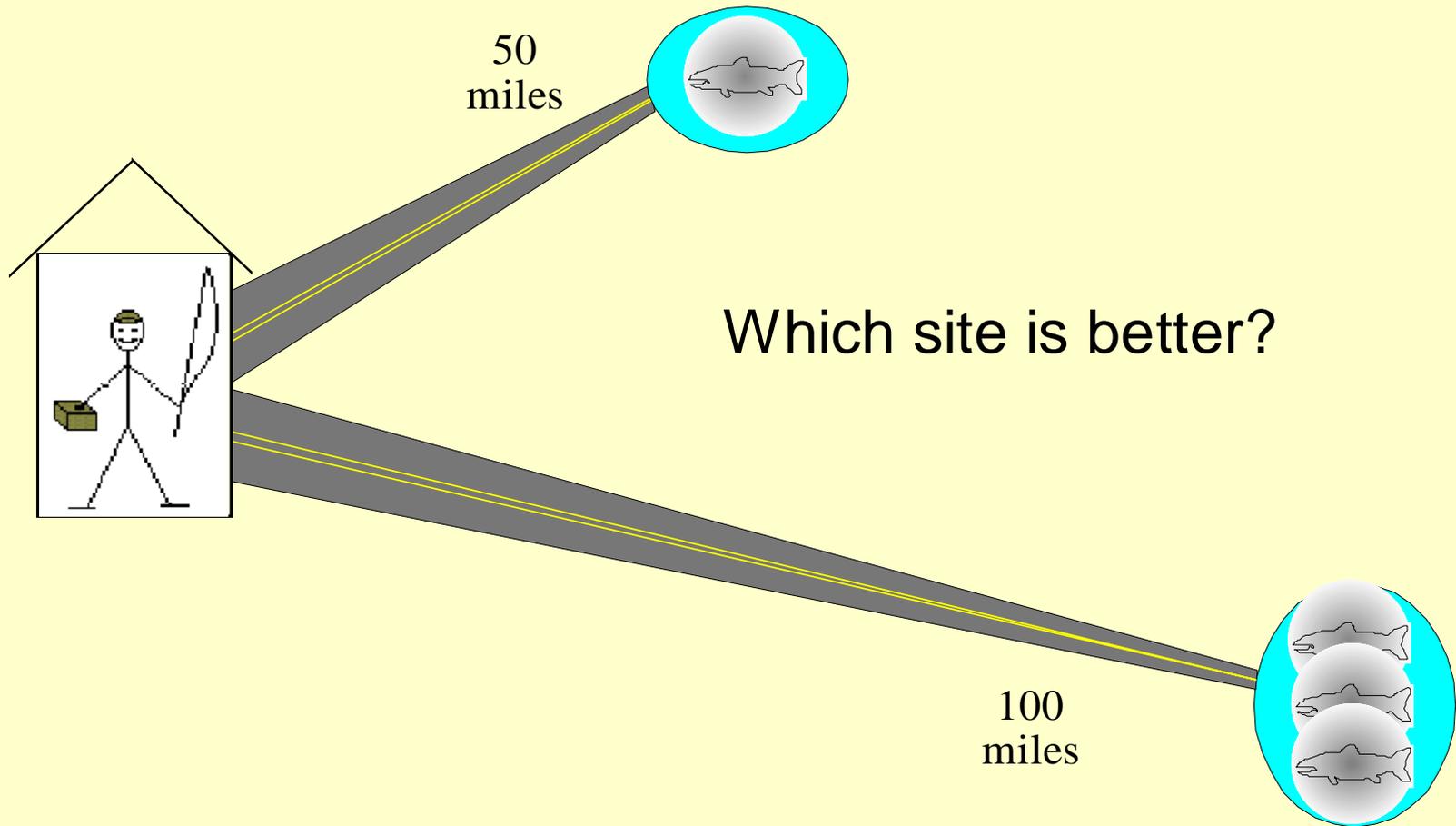
Mmm, Demand Curves...

Price
(travel
cost)

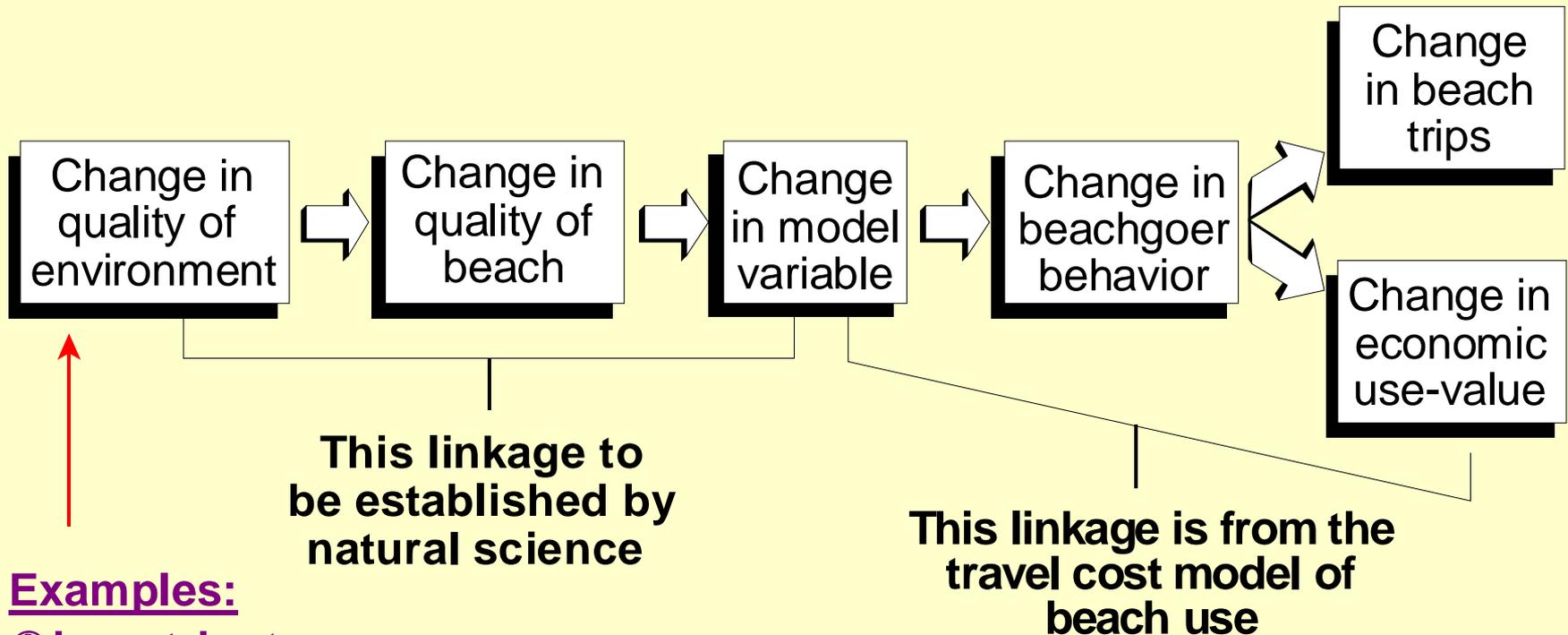


Example: Recreational Fishing Site Choice

Assume an economist goes fishing...



A Pathway for Valuing Environmental Changes



Examples:

- ① in nutrients
- ① in invasive species
- ① in vegetation
- ① in microbacteria

Recreational Uses/Behavioral Models (Research steps)

- Collect data with surveys of users
- Collect data on environmental quality
 - Needs spatial & temporal variation
- Econometric modeling
- Application

Beach uses

- **Pilot** survey completed
 - (funded by MSU Water & MSU ESPP)
- Collected data on Michigan GL beach use
 - Web survey, N=3,286
 - Beach visited the most in past year, N=2,566
 - Located 1,710 of these
 - Estimated simple demand models
 - Trips significantly & positively related to beach length and fewer beach closure days

Fishing uses

- Statewide survey underway on fishing sites visited by Michigan anglers
 - (funded by MDNR, Fisheries Div. & GLFT)
- Monthly survey waves collecting data on fishing sites & activities (N=9,500 so far)
 - Like beach use, these data allow us to estimate demand for fishing at Saginaw Bay
 - Fishing trips, value, and expenditures.

Land uses: Motivation

- Residential and agricultural landowners
- No centralized land management agency
 - Herding cats
 - What will/won't landowners do?
 - What management attributes affect this?
 - Do incentives work?

Land uses: Surveys/Models

- Attitudes toward various mgmt alternatives
- Preferences over various mgmt alternatives
- Willingness to change
 - $WTC = F(\text{mgmt attributes, costs, incentives})$
- Formal trade-off analyses
 - Gives quantitative model of **preferences & costs**

Land uses: Model Uncertainty

- This is a moving target; occurs next year
- But, depends entirely on how the project evolves:
 - AIF in actions

Human & Economic Models

- Link to all parts of the project
- Suitable for economic valuation (benefit cost analysis)
- Broadly based, so relevant to a much wider range of applications
- Leverage other funding sources