

Local Government Perspectives on the Integration of Natural Resource Information in Land Use Planning & Zoning: A Michigan Case Study

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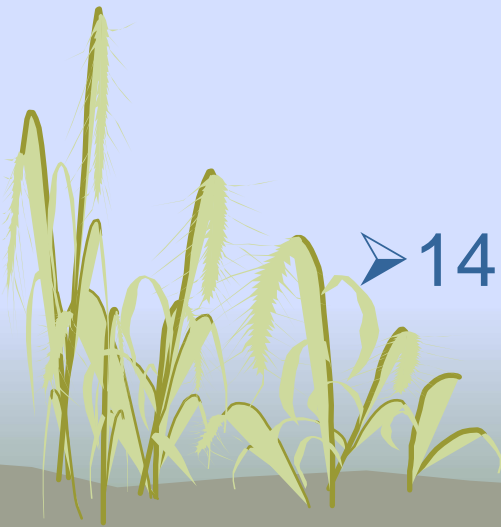
Purpose

Determine the extent of local government's use, interest, challenges and need for natural resource information in land use planning.



Planning & Zoning

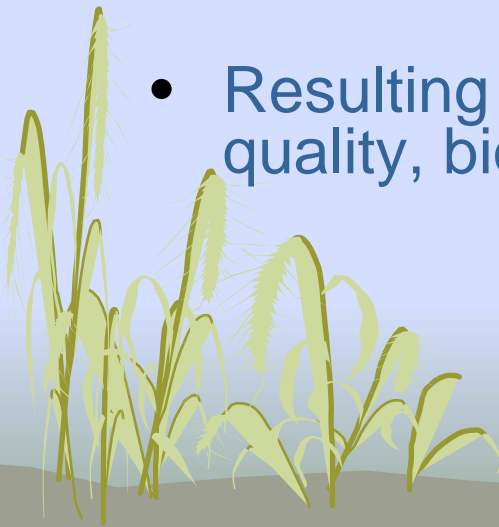
- Majority of land use decisions in U.S. made at the smallest unit of government
- In Michigan:
 - 1,858 local units of government authorized to plan and zone
 - 83 counties
 - 1,242 townships
 - 259 villages
 - 274 cities
 - 14 regional planning commissions



Land Use

- Significant movement of people from urban to rural landscapes¹
- Primary variables influencing the increase in “developed land” - population density and per capita income²
- In Michigan from 1980 - 1995³
 - 25% increase in developed land
 - 3% increase in population growth
 - 8:1 ratio unsustainable
- Resulting loss of agriculture, forests, wetlands, water quality, biodiversity, wildlife habitat, etc.¹

1. Michigan Trend Future Working Papers (1995)
2. Alig and Healy (1987); Alig et al. (2004)
3. Michigan Land Resource Project (2001)

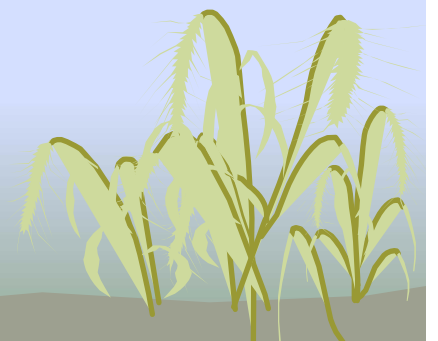
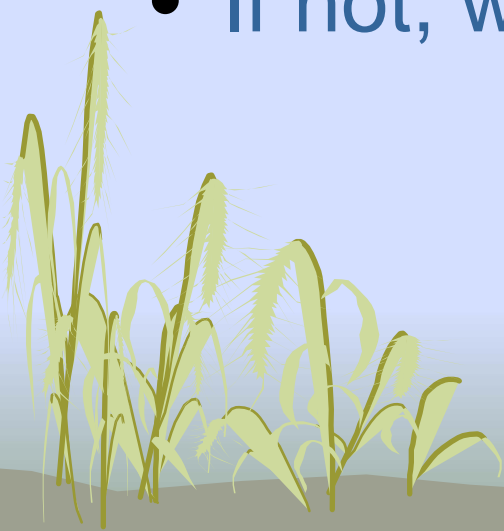


Natural Resource Information

- Shown to contribute to better land use planning⁴
- Necessary to defend local decisions
- Influences the type, extent, and arrangement of land use
- Majority of large data sets distributed by federal and state agencies

Problem

- Unknown whether natural resource information is making it into the planning and zoning process
- If so, to what extent?
- If not, why?

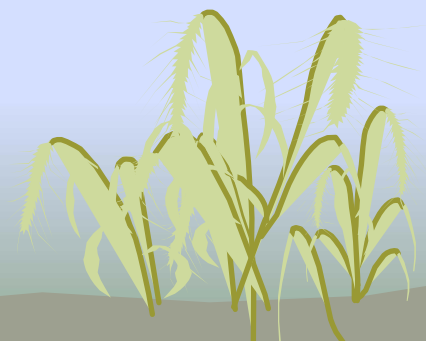
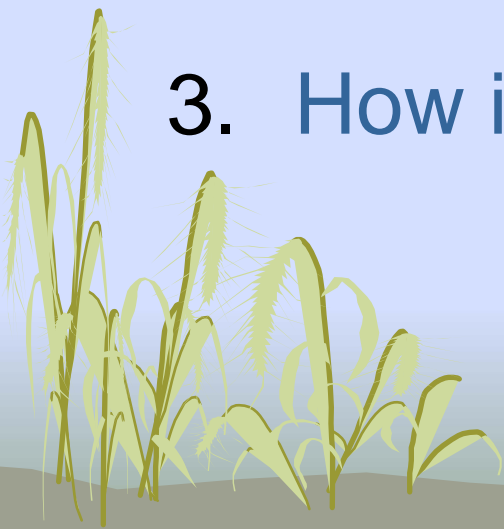


Assumptions & Limitations

- Municipalities omitted from study
 - Only 6% of land area in MI⁵
- Clerk received the survey since Planning Commission members and Planners are not comprehensively tracked

Research Questions

1. What types of natural resource information (NRI) are local governments using?
2. How is NRI being incorporated into planning and zoning activities?
3. How important is NRI?



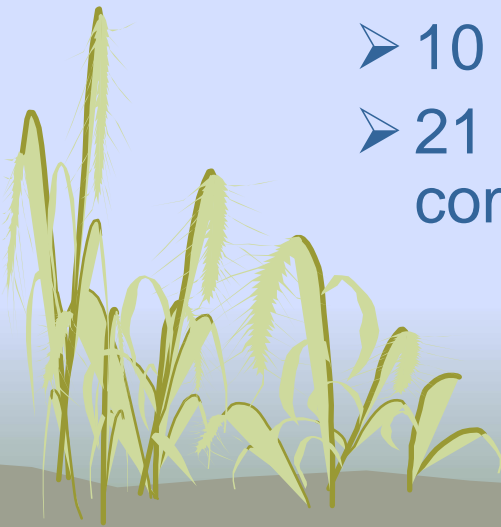
Research Questions

4. What are the challenges and needs of local governments when it comes to NRI?
5. Does the use of NRI depend on the adoption of a Master Plan or Zoning Ordinance?
6. Does use of NRI depend on per capita income and population density?



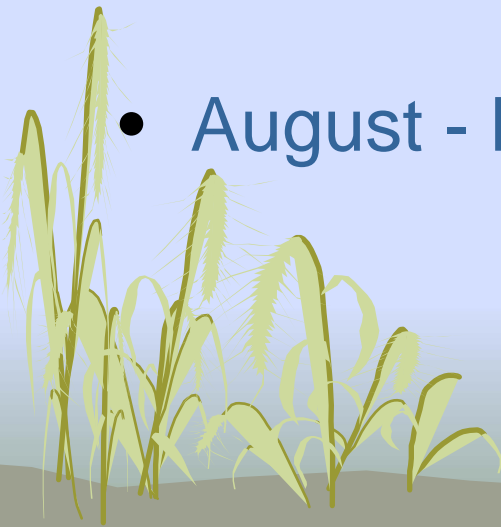
Methods

- Mixed method approach
- Survey
 - All townships (1,242), counties (83) and regional planning commissions (14)
 - N = 1,339
- Interviews (n=30)
 - 10 in UP, 10 in NLP, 10 in SLP
 - 21 townships, 6 counties, 3 regional planning commissions



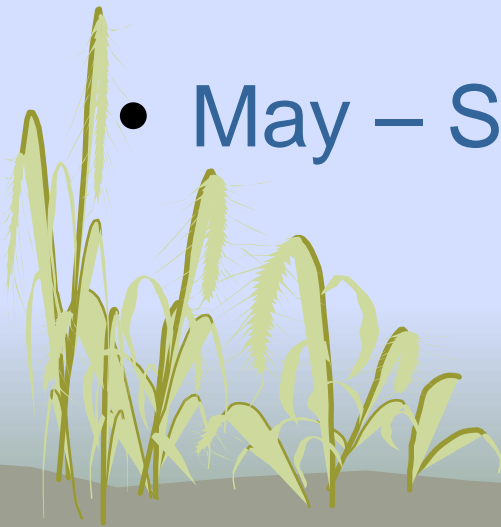
Surveys

- Followed Dillman's Tailored Design Method (2000)
- Contacted up to 5 times
 - 1st survey
 - Postcard reminder/thank you
 - 2nd survey
 - 3rd survey
 - Short non-response survey
- August - November 2005



Interviews

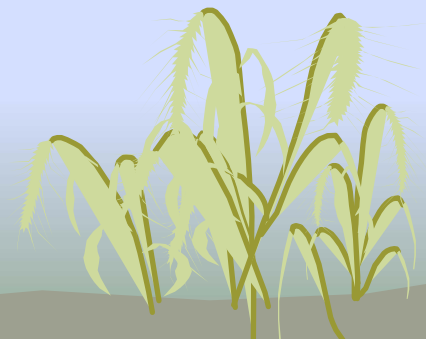
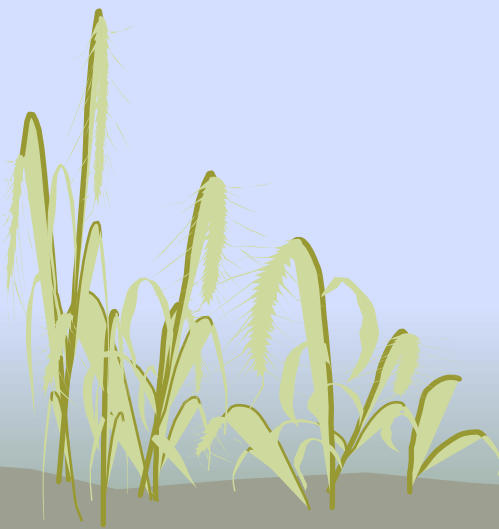
- Purposeful sample of 30 from those that answered “yes” to interview in survey
- In position for at least 2 years
- Position requires making planning or zoning decisions / recommendations
- May – September 2006



Natural Resource Information

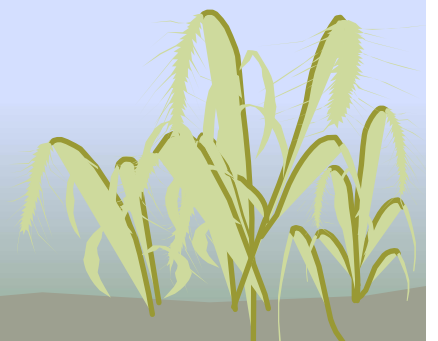
➤ 15 categories

1. Agricultural
2. Wetland vegetation
3. Upland vegetation
4. Invasive plant
5. Wildlife
6. Invasive animal
7. Endangered and threatened species
8. Geology
9. Surface water
10. Ground water
11. Soils
12. Land cover / land use
13. Topographic
14. Comprehensive green space
15. Other

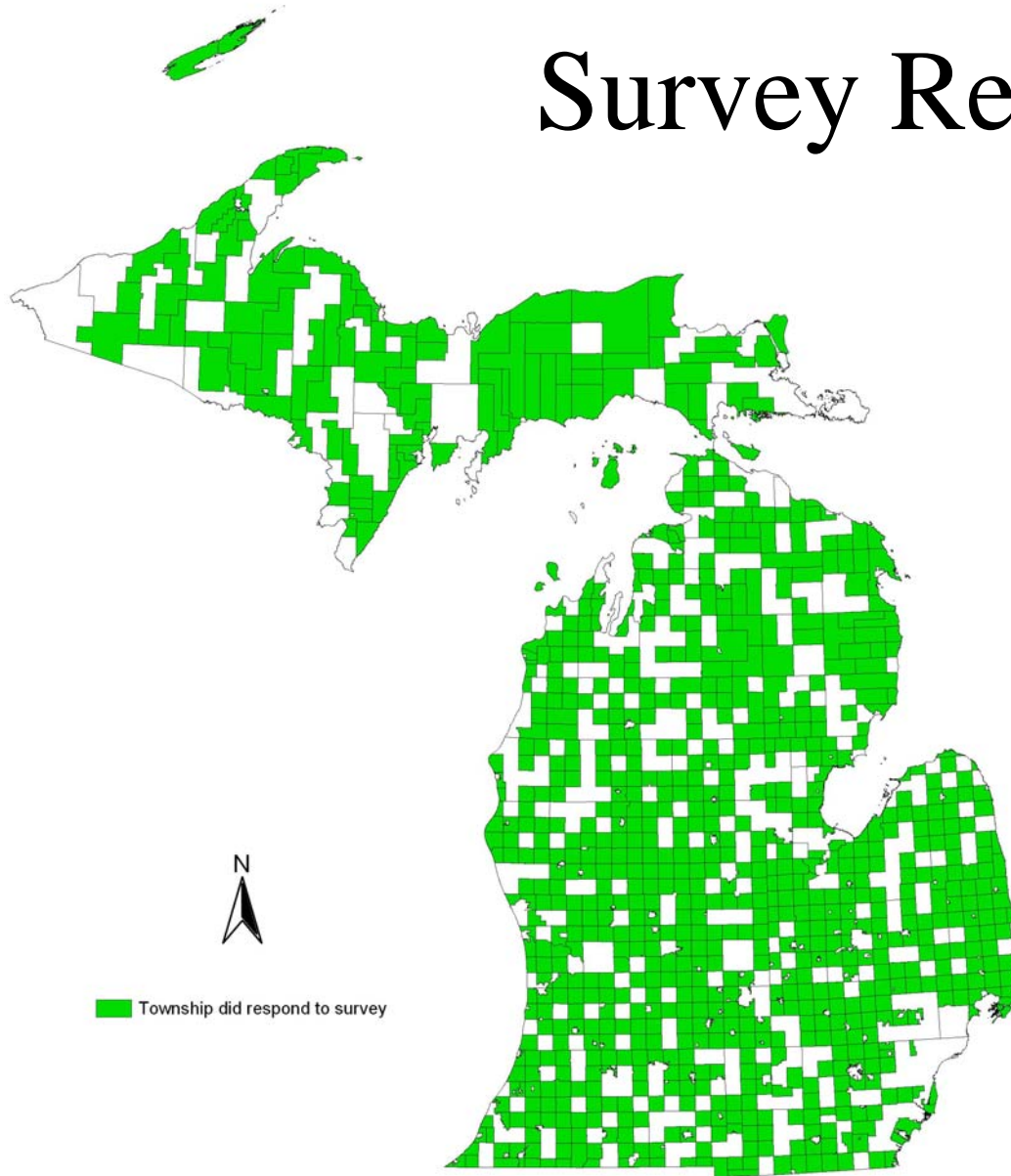


Results

- 70% survey response rate (940 surveys)
 - 70% of townships (865)
 - 72% of counties (60)
 - 93% of regional planning commissions (13)
- 283 (35%) survey respondents said “yes” to interview

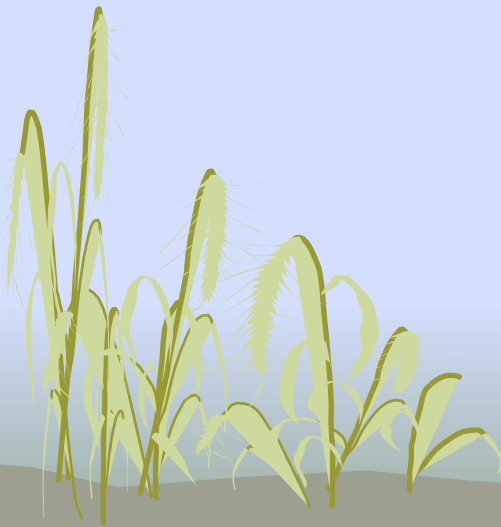


Survey Response

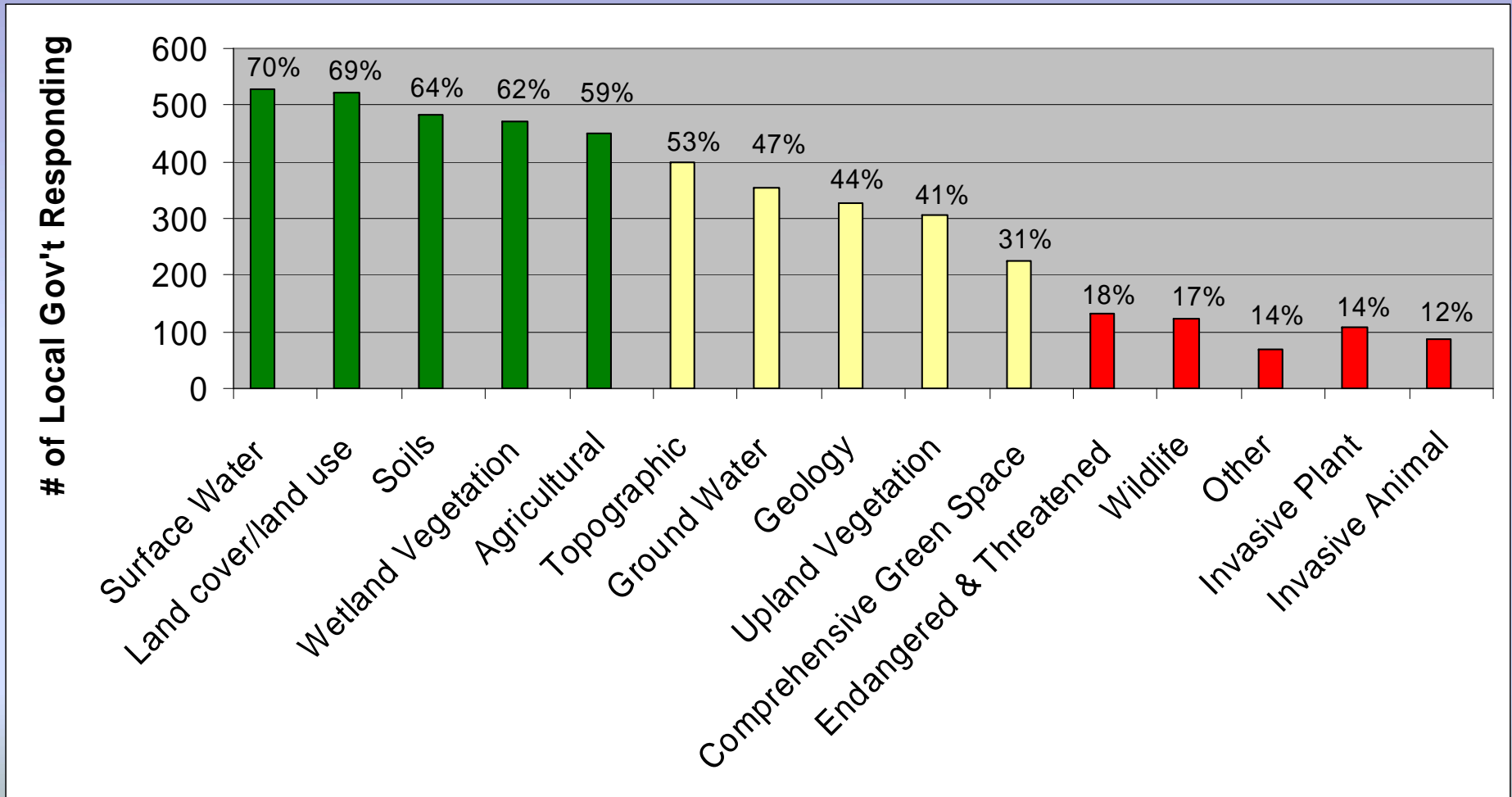


Master Plan & Zoning Results

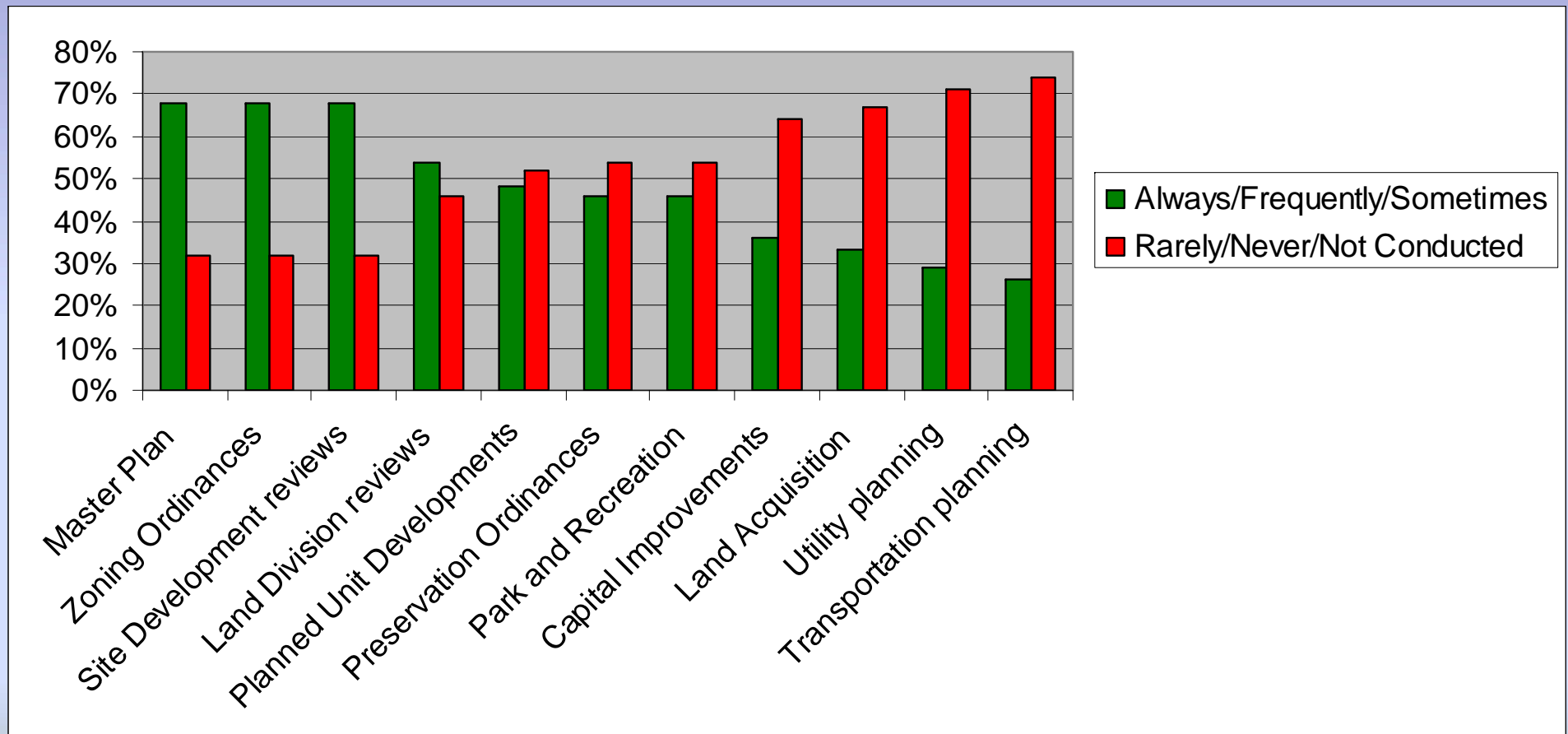
	Townships	Counties
Natural resource survey		
Yes - Master Plan	72% (607)	76% (58)
Yes - Zoning Ordinance	76% (649)	37% (59)
IPPSR survey		
Yes - Master Plan	67% (756)	73% (83)
Yes - Zoning Ordinance	71% (809)	29% (83)



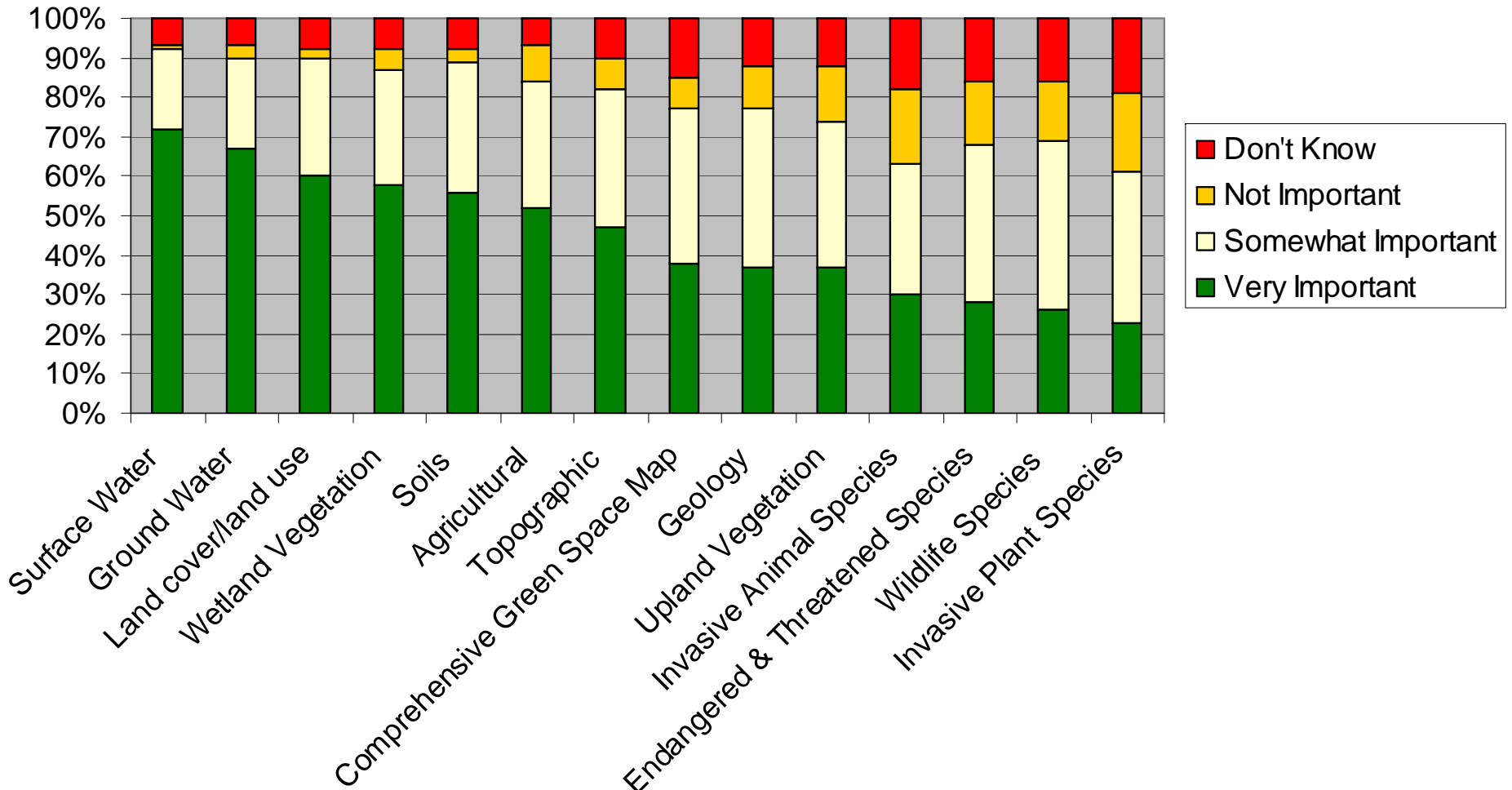
1) What types of NRI are local governments using?



2) How is NRI being incorporated into planning and zoning activities?

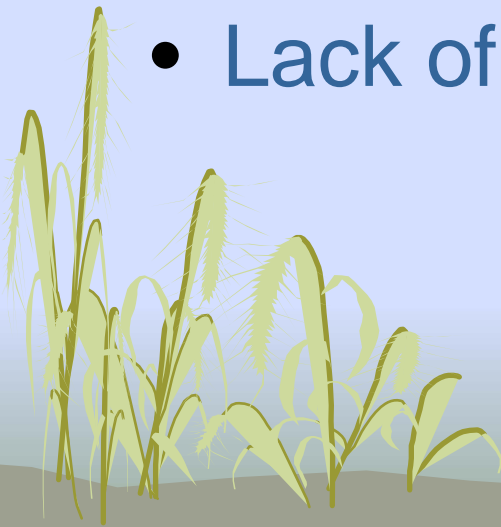


3) How important is NRI?

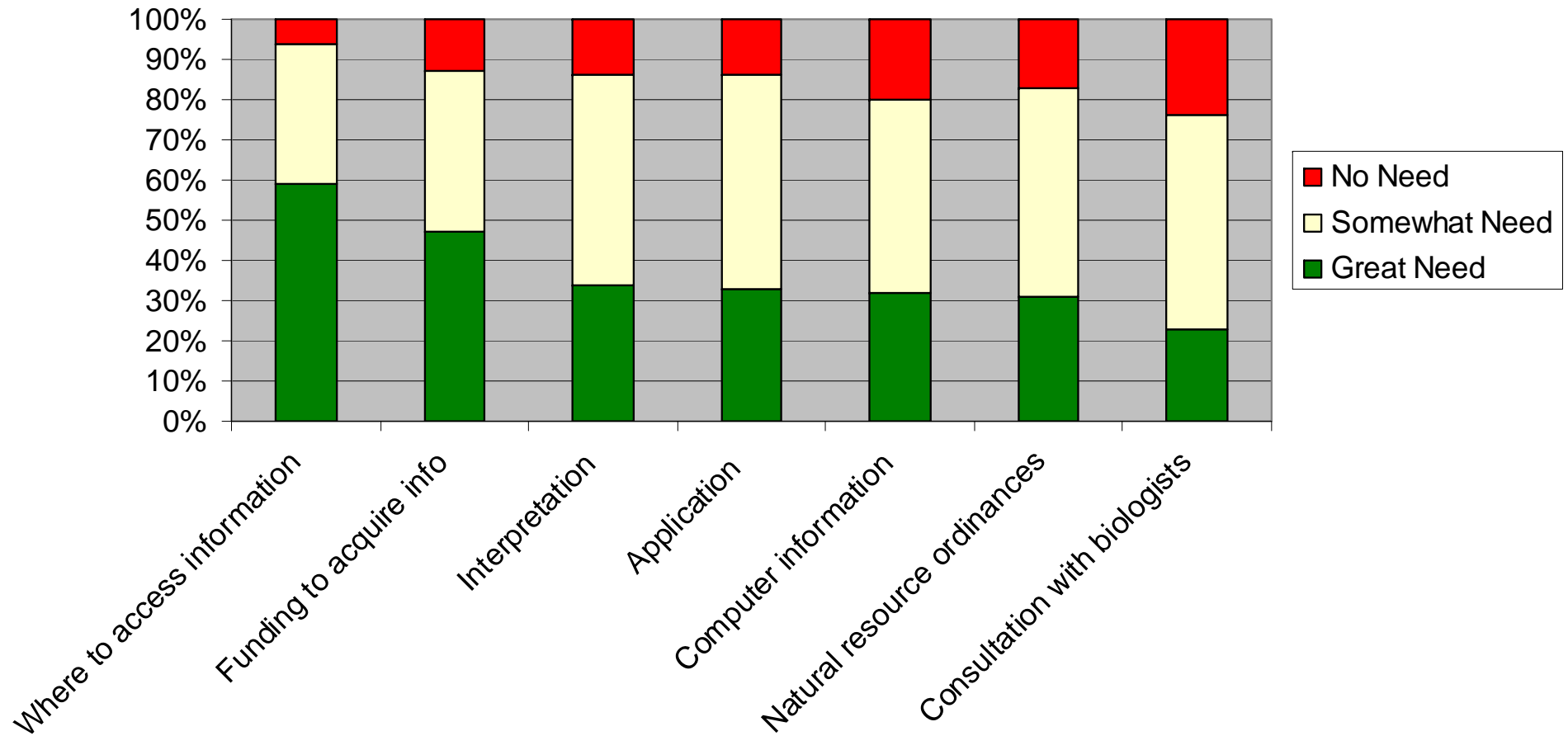


4a) What are the challenges to integrating NRI?

- Information lacks accuracy and detail (6)
- Interpretation and application (3)
- Lack of digital format (3)
- Unenforceable (3)
- Time/money (3)
- Lack of local support (2)



4b) What are the needs of local governments when it comes to NRI?



5a) Is the use of NRI dependent on the adoption of a Master Plan?

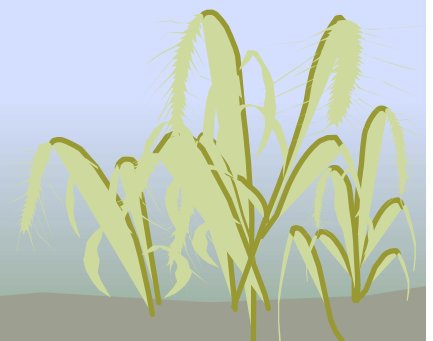
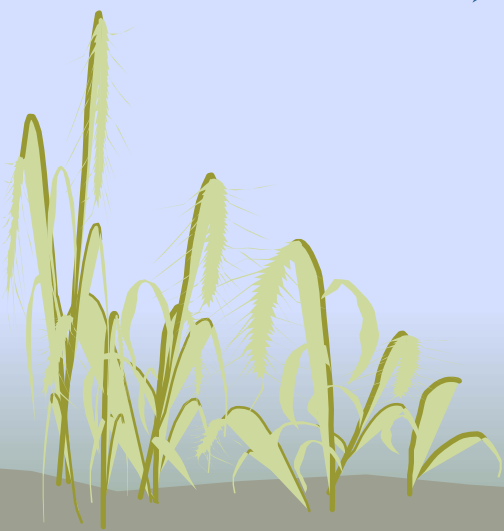
- Counties

- Use of NRI appears to be independent of adoption of a Master Plan⁶

- Townships

- Use of NRI was dependent on the adoption of a Master Plan⁶

6. p (or alpha) = .05



5b) Is the use of NRI dependent on the adoption of a Zoning Ordinance?

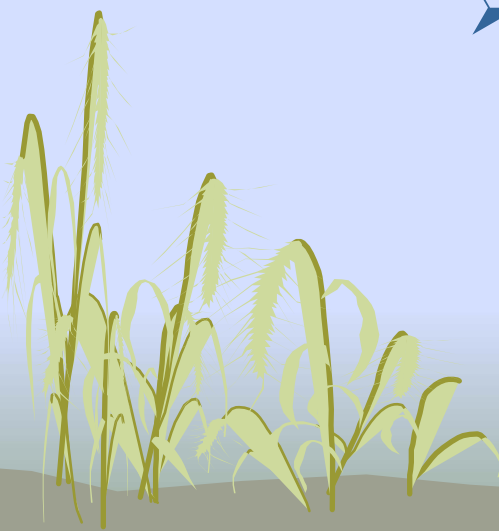
- Counties

- Use of NRI was dependent on the adoption of a Zoning Ordinance⁷

- Townships

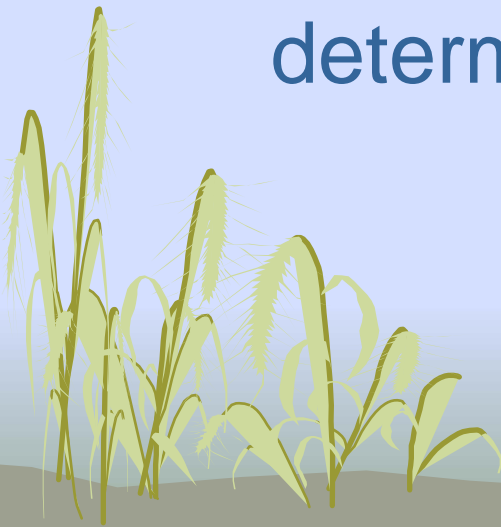
- Use of NRI was dependent on the adoption of a Zoning Ordinance⁷

7. p (or alpha) = .05



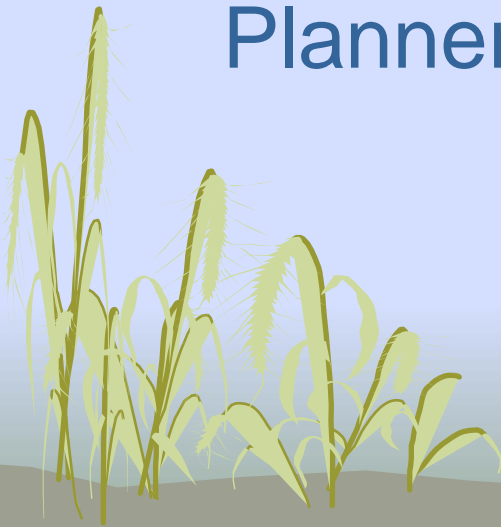
6) Does townships use of NRI depend on per capita income and population density?

- The use of NRI was dependent on per capita income and population density
- Population density may be stronger determining factor than affluence.



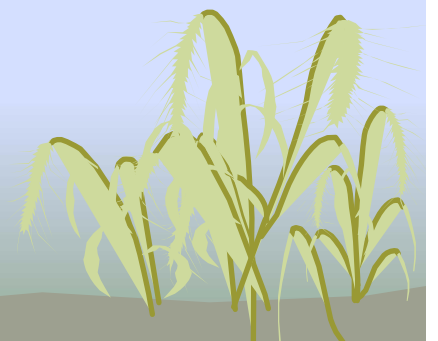
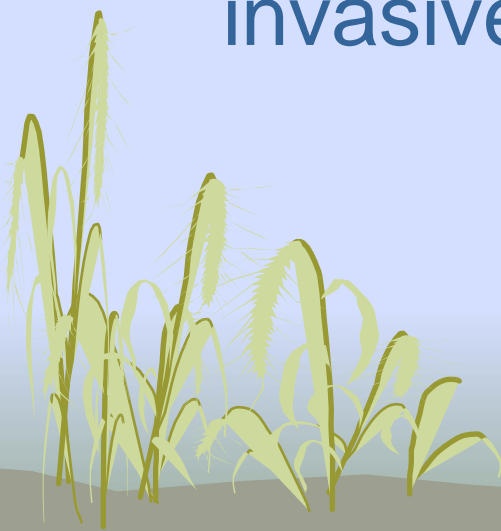
Demographic Characteristics

- Majority of respondents were elected (68%)
- Number of years in position (mean = 10 years, mode = 1 year)
- Only 11% of respondents were certified Planners or had planning credentials



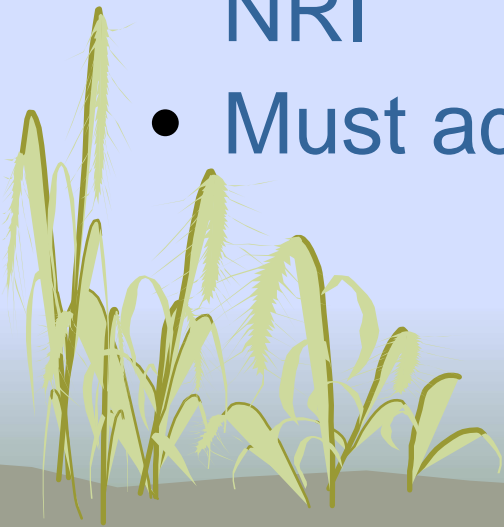
Conclusions

- Use of NRI and Importance similar
- Regulatory factors influence use of certain types of NRI
- 15-19% of local gov'ts “don't know” how important rare species, wildlife or invasive species information are



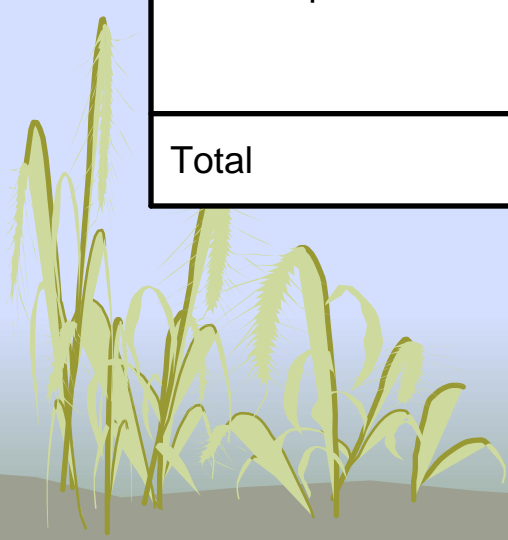
Conclusions

- Greatest need to know where to access NRI
- Because of dispersed network of info, overwhelming to many local officials
- Center for Geographic Information (DIT) is ideally suited to be clearinghouse of NRI
- Must advertise who is clearinghouse!



Format

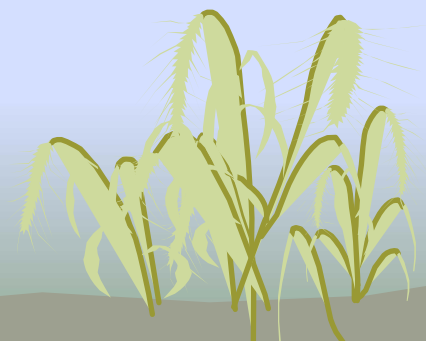
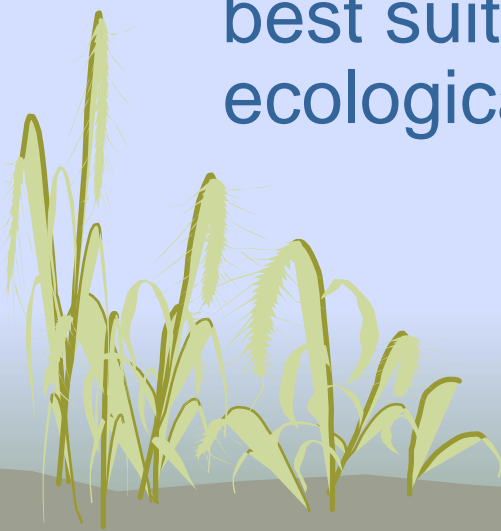
Level of Government	Format information preferred to be in				Total # of Respondents
	Hard copy format		Electronic format		
Regional Planning Commission	1	8%	11	92%	12
County	10	24%	32	76%	42
Township	464	63%	270	37%	734
Total	475		313		788



Conclusions

- Educational programs should focus on:
 - Where to access
 - How to interpret
 - How to apply
 - Value
- Those with natural resource background are best suited to educate and communicate the ecological value to land use decision makers⁸

8. Dale et al. (Ecological Applications, 2000)

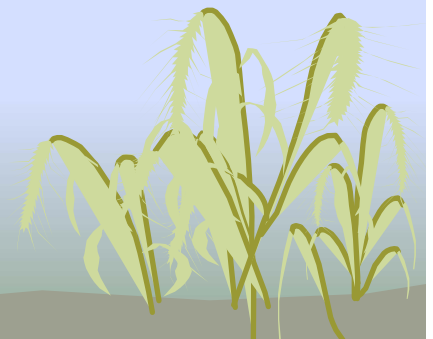


Conclusions

- The most significant growth management efforts in the U.S. have been implemented at the regional or statewide level⁹
- Regional approaches combined with state oversight are critical for success¹⁰
- MI should reinstate State Planning Commission

9. Richardson, Gough and Puentes (2003)

10. Bengston, Fletcher and Nelson (2004)



Acknowledgements

- Michigan Department of Natural Resources
 - Natural Heritage Program
 - Private Lands Program
- Michigan State University
 - Michigan Natural Features Inventory
 - Committee members
 - Land Policy Institute

