Working With People: Applying Social Science Research in Conservation and Outreach Efforts

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Social Science, Sociology, and Environmental Issues

Simply providing information rarely results in behavior change – Why?

- Achieving goals involves many issues with human dimensions
- Addressing environmental issues effectively involves interdisciplinary efforts

"Conservation and the Social Sciences: Lessons from the Field" 2005 Society for Conservation Biology Annual Meeting Brasilia, Brazil; 2005

Symposium description

"Though the conservation community largely focuses upon the biological aspects of biodiversity loss and conservation, we often the biology 'right' but fail to achieve our conservation objectives. This disconnect between biological knowledge and conservation success has let to a growing sense among scientists and practitioners that social factors are often the primary determinants of conservation success or failure. Despite the significance of social phenomena to conservation outcomes, much of the conservation community lacks familiarity with the social science knowledge and tools that can be used to solve conservation problems."

Social Science, Sociology, and Environmental Issues

Simply providing information rarely results in behavior change – Why?

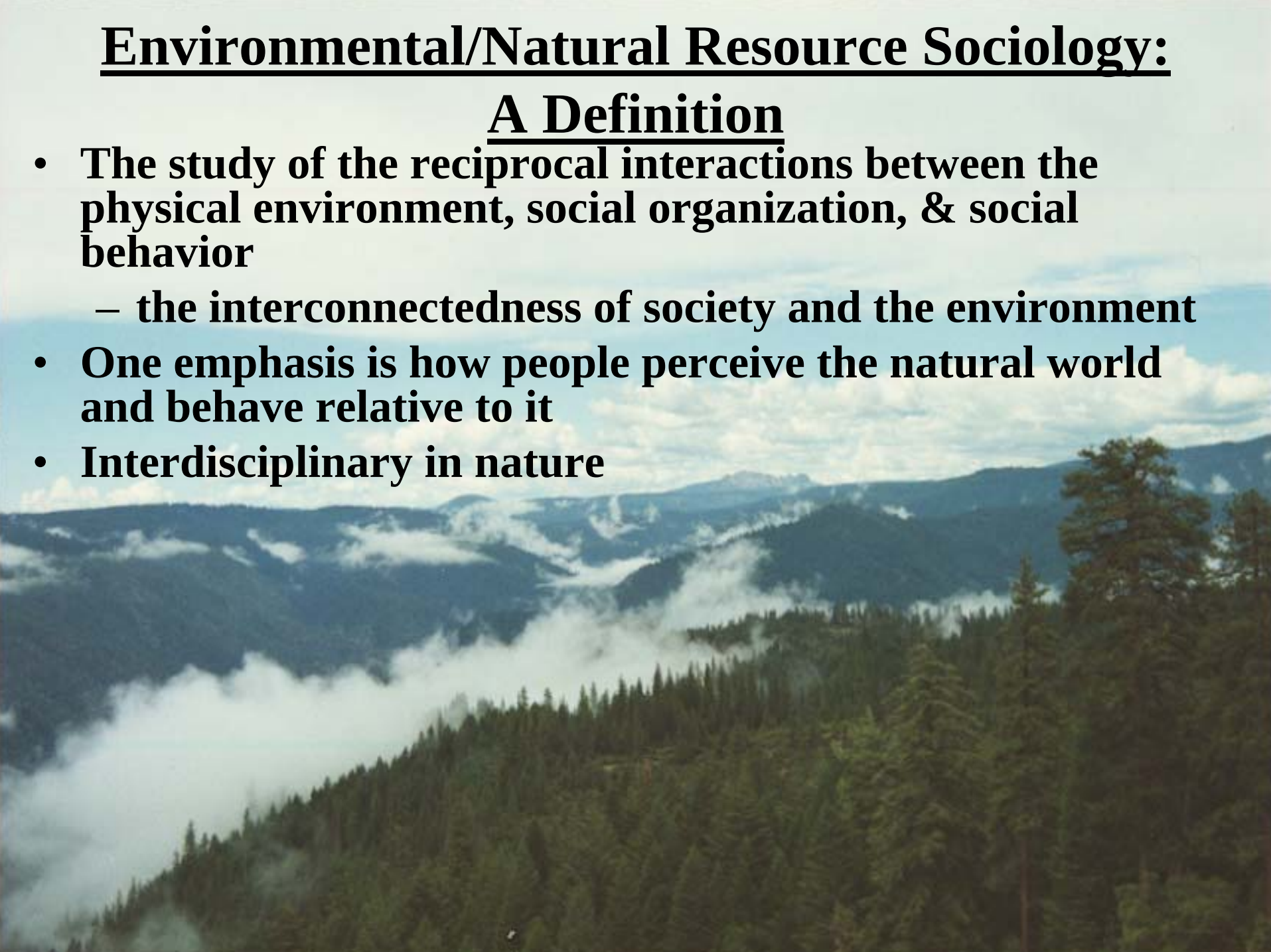
- Achieving goals involves many issues with human dimensions
- Addressing environmental issues effectively involves interdisciplinary efforts
- Social sciences can contribute useful knowledge and research methods to stimulate behavior change
  - Systematic research

What is Social Science?

- Social science is a broad category of disciplines
  - Anthropology
  - Economics
  - Human Geography
  - Political Science
  - Psychology
  - Sociology
- Today's focus: Environmental / natural resource sociology

Environmental/Natural Resource Sociology: A Definition

- The study of the reciprocal interactions between the physical environment, social organization, & social behavior
  - the interconnectedness of society and the environment
- One emphasis is how people perceive the natural world and behave relative to it
- Interdisciplinary in nature



Environmental Sociology: Basic Assumptions

- Most environmental problems and/or conservation issues are heavily influenced by the organization and operation of society
- Societies are embedded in the natural resource systems in which they operate
- Some of most difficult challenges in dealing with environmental issues are ones associated with social behaviors
  - institutional arrangements, cultural assumptions
- Social research methods are diverse, and offer various strengths and weaknesses

How Environmental/Natural Resource Sociology Contributes: Examples from the Field

- Wildlife management and policies
- Land use / sense of place / place identity
- Community level dynamics
  - Community Forestry and Participatory Action Research
- Looking within: science and interdisciplinary work
- Collaboration and consensus models
- Public input processes
- Communication design and delivery
  - Often intended to stimulate behavioral change
  - Elements of “Community Based Social Marketing” (McKenzie-Mohr)

Changing Homeowner's Lawn Care Behavior to Reduce Nutrient Runoff: Applied Social Science in an Interdisciplinary Project

Funded by USDA Cooperative State Research, Education, and Extension Service

Dr. Brian W. Eisenhauer, Plymouth State University

Project Team Members:

Julia Peterson, University of New Hampshire Cooperative Extension

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Dr. Jurij Homziak, University of Vermont Extension and Sea Grant

Dr. Marion Gold, University of Rhode Island Cooperative Extension

Karen Filchak, University of Connecticut Cooperative Extension

Laura Wilson, University of Maine Cooperative Extension

Brian Gagnon and other students, Plymouth State University

Urbanization, Land Use, and Turf

- New England continues to experience loss of forest and farmland as lands are converted to residential development
  - Particularly critical in NH
  - Exurbanization contributes to the issues
- Lawn care issues are significant in these land use changes
  - Residential runoff is a significant source of nitrogen and phosphorous
  - Negatively impact water quality

Turf and the American Landscape

- There are an estimated 25-40 million acres of turf in the US (twice the acreage of cotton)
- 58 million home lawns, 16,000+ golf courses, 700,000+ athletic fields
- The amount of turf in the US is growing
  - Between 1987 and 1997 lawn colonized over 382,850 acres per year
- Americans spend an estimated $40 billion on lawn care annually (more than the GDP of Vietnam) (2006)

American Green: The Obsessive Quest for the Perfect Lawn
Ted Steinberg, 2006

The Challenge: Addressing Issues Related to Over-Fertilization

- Over-fertilization poses significant regulatory challenges
  - Top-down approaches are difficult to employ in issues of this magnitude where many actors are involved
  - Enforcement of regulations is a significant challenge
- To achieve results this projects works with interdisciplinary research to develop “ground-up” solutions through education and outreach
  - Information itself is **not enough**
  - Research will inform content and delivery of messages
- An interdisciplinary approach and team was developed

The Role of Social Science: Project Goals

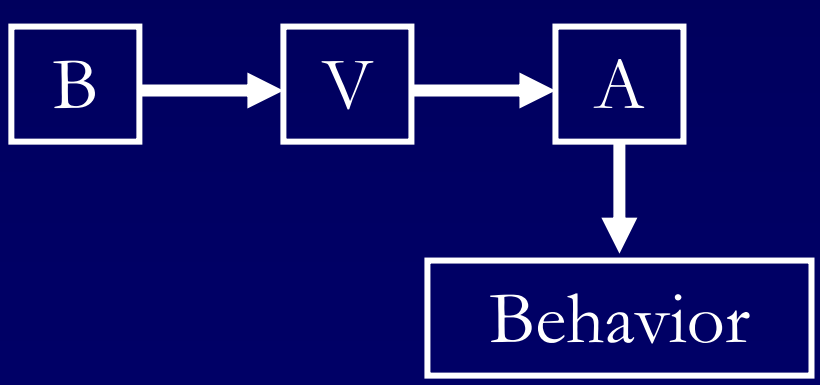
- Explore primary drivers of do-it-yourselfers' (DIYs) lawn care choices and practices, especially with regard to fertilizer application.
- Investigate perceived barriers and benefits to adoption of more water quality-friendly nutrient application practices.
- Examine relative measures of trust and frequency of contact for various sources of yard care information by neighborhood residents.
- Determine effectiveness of trained opinion-leaders (such as Master Gardeners, local garden center staff, alpha neighbors, Extension staff, etc) to influence residential nutrient management behavior.

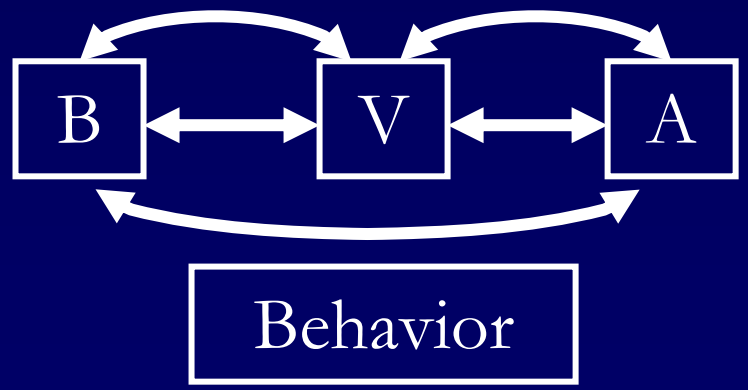
Developing Communications: The Utility of Social Science Research

- Key assumptions
  - Social reality is process, so there is a continual need for data
  - Let the audience tell the “experts”
- Methods
- Theory
- Application

Values, Attitudes, and Beliefs

- Beliefs - Specific statements people hold to be true
- Values – Cultural ideas defining ethics, right and wrong, and desirability serving as broad guidelines for social living (example: beauty)
- Attitudes – a relatively enduring organization of beliefs around an object or situation predisposing one to respond in some preferential manner





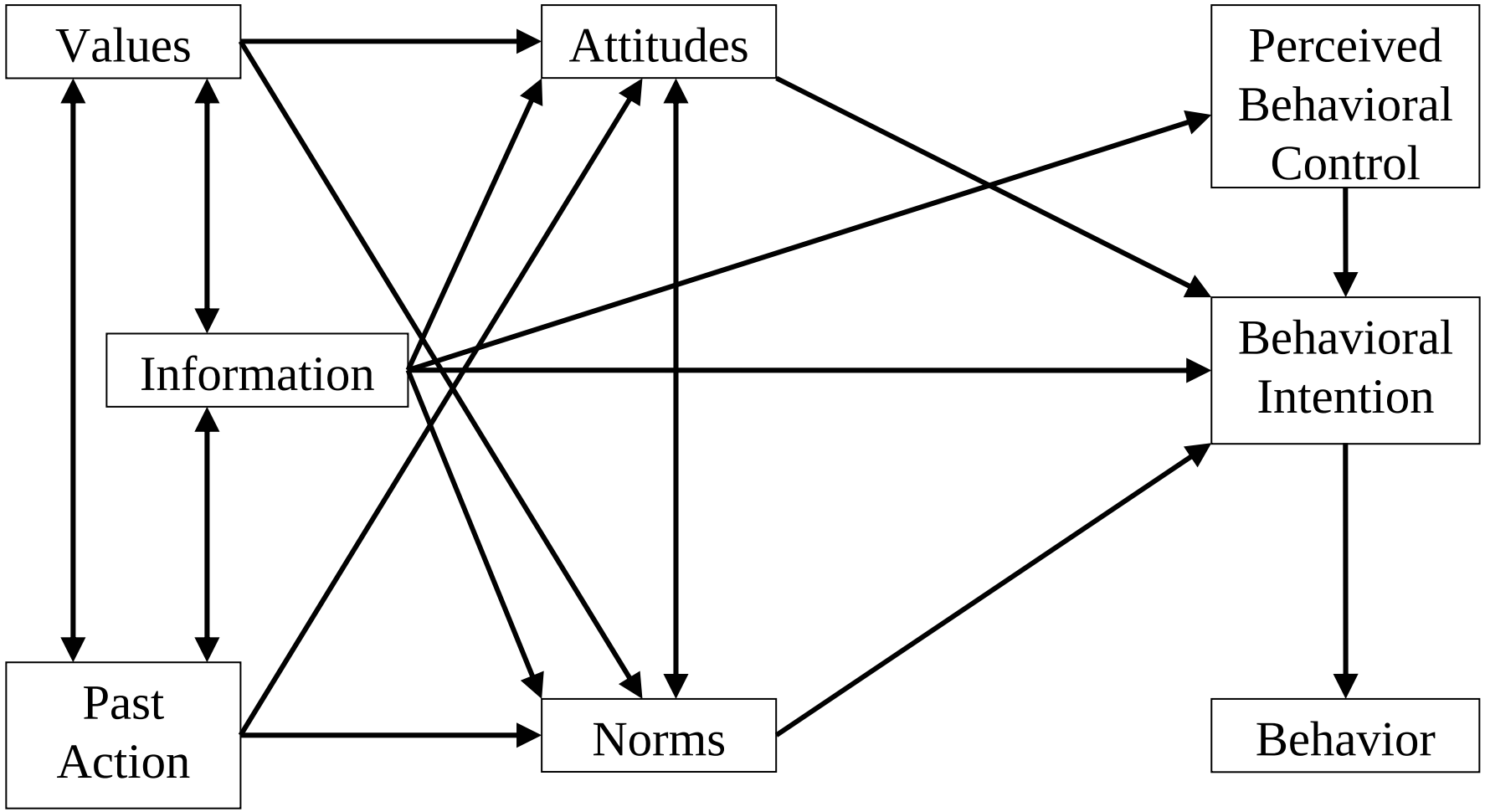
Developing the Message: The Utility of Social Science Research

- Key assumptions
  - Social reality is process, so there is a continual need for data
  - Let the audience tell the “experts”
- Theory – An example of application
- Methods
  - Use complimentary social research methods
    - Qualitative and quantitative
  - Use research on research methods
- Application
  - Evaluation and redesign are key for effectiveness

Applying Specific Theory: The Theory of Planned Behavior (TPB)

- Within theoretical assumptions a specific theory is needed to best analyze phenomena (Use diverse fields)
- Example: Modified *Theory of Planned Behavior*
  - Theoretical roots in *Theory of Reasoned Action* (Azjen & Fishbein 1975)
  - Meta-analysis of research applying TPB to environmentally responsible behavior indicates strong empirical support for the theory (Trumbo and O'Keefe 2005; Sutton 1998)
  - Applied in development of environmental communications
    - Water conservation, NPS burn policies, agricultural conservation

Augmented TPB Theoretical Model of Hypothesized Relationships Influencing Lawn Care Behavior



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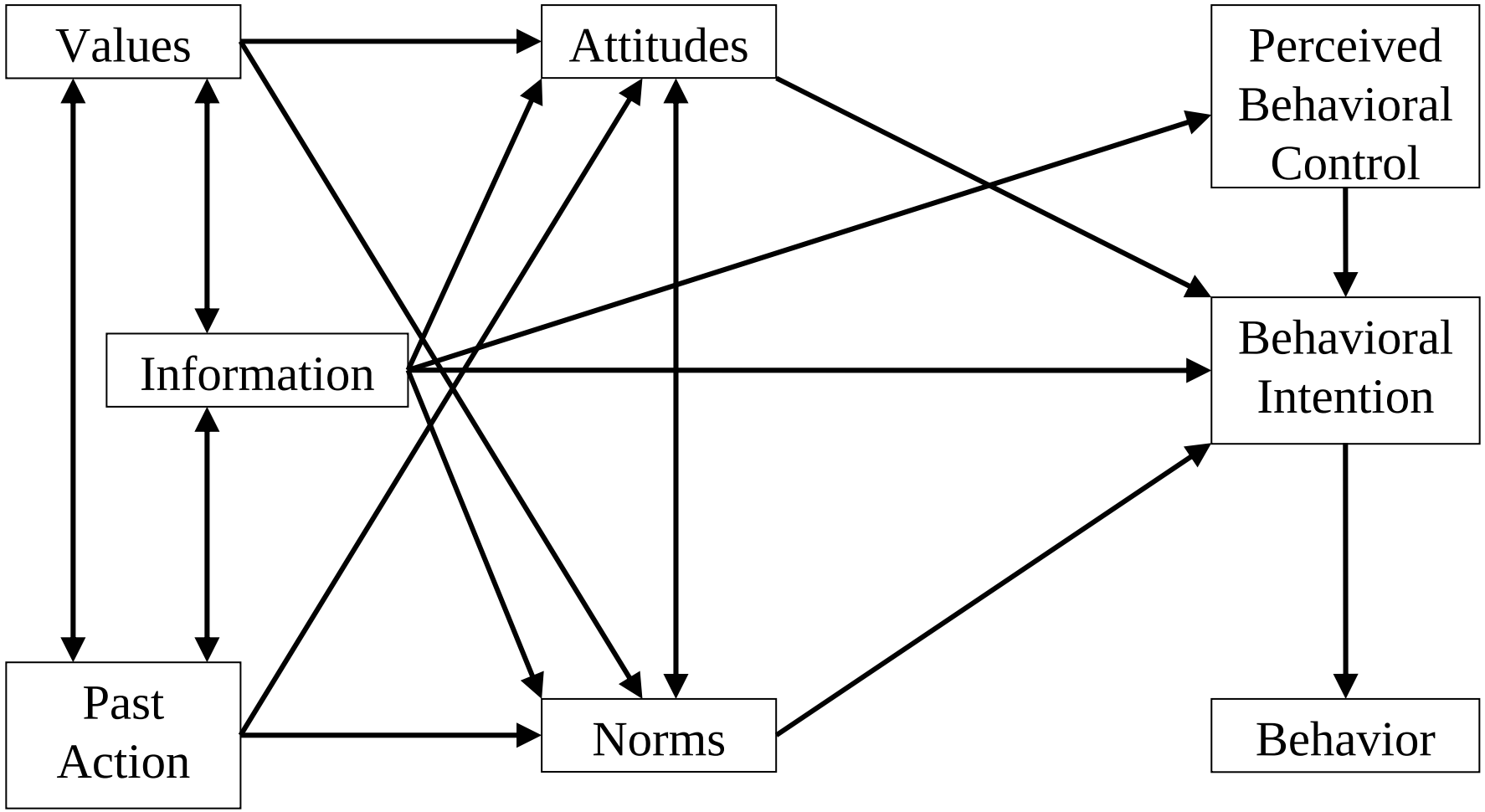
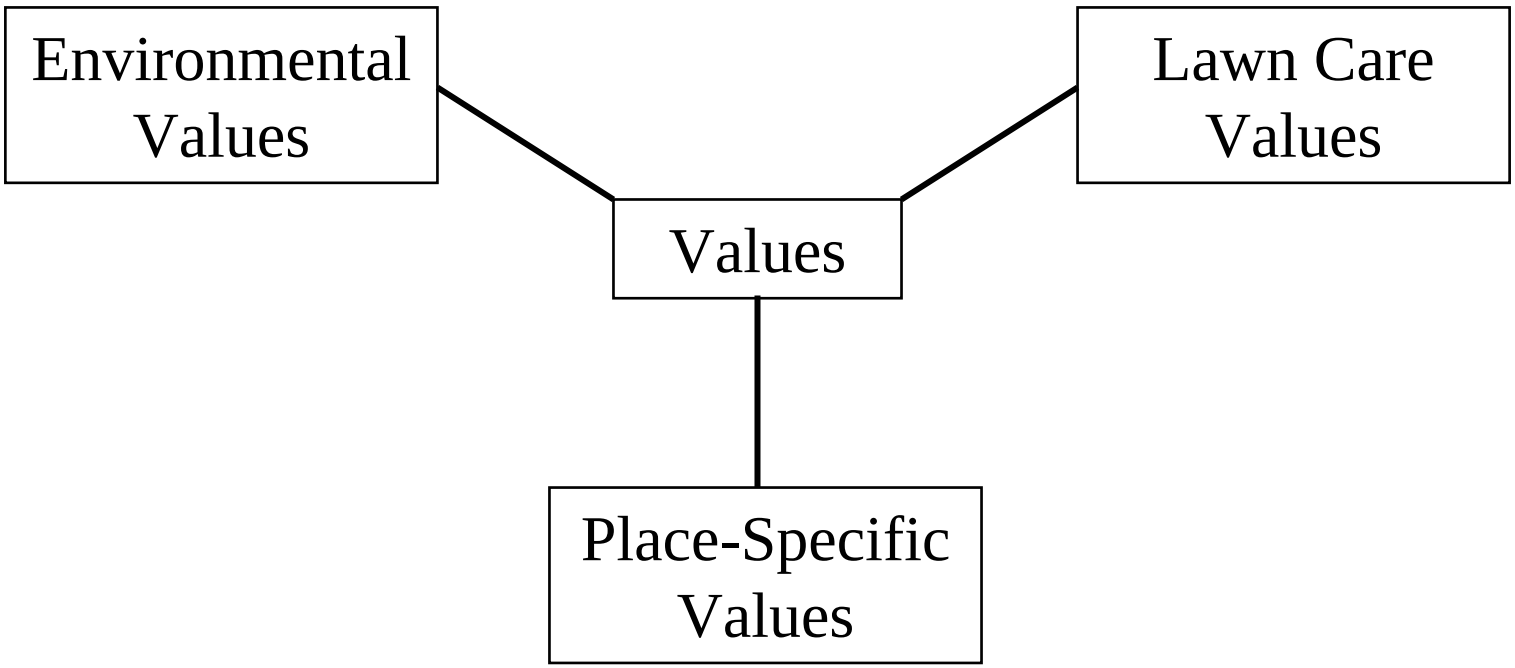


Detailed Value Factor in the Augmented TPB Theoretical Model of Hypothesized Relationships Influencing Lawn Care Behavior



Measuring Environmental Values

- Measuring environmental values is a long and well-researched topic
- Dunlap and Van Liere (1977): New Ecological Paradigm Scale
  - Uses an index of scaled questions to measure proenvironmental orientation
  - Scaled questions are statistically treated as an index to produce an overall environmental values measure
  - Revised repeatedly over time, used in many studies
  - Well supported in studies of behavioral intentions (Vining et. al. 1999; O'Connor et. al. 1999; Dunlap et. al. 2000)
  - Conceptualized as commitment to the *Dominant Social Paradigm* or to the *New Ecological Paradigm*

Questions on the NEP Index (using a Likert Scale)

- We are approaching the limit of the number of people the earth can support.
- Humans have the right to modify the natural environment to suit their needs.
- When humans interfere with nature it often produces disastrous consequences.
- Human ingenuity will insure that we do NOT make the earth unlivable.
- Humans are severely abusing the environment.
- The earth has plenty of natural resources if we just learn how to develop them.
- Plants and animals have as much right as humans to exist.
- The balance of nature is strong enough to cope with the impacts of modern industrial nations.
- Despite our special abilities humans are still subject to the laws of nature.
- The so-called "ecological crisis" facing humankind has been greatly exaggerated.
- The earth is like a spaceship with very limited room and resources.
- Humans were meant to rule over the rest of nature.
- The balance of nature is very delicate and easily upset.
- Humans will eventually learn enough about how nature works to be able to control it.
- If things continue on their present course, we will soon experience a major ecological catastrophe.

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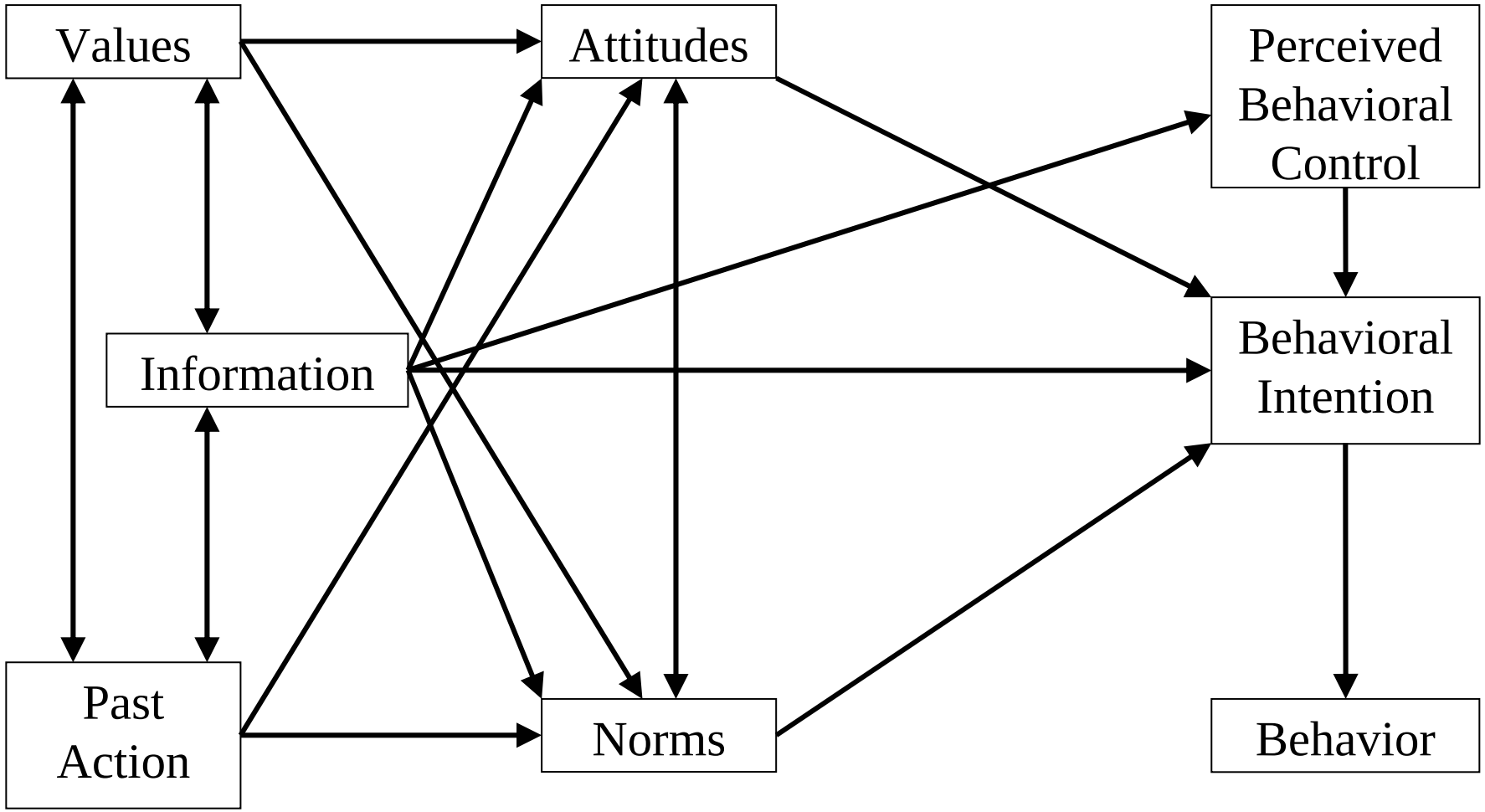

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Research Methods (1)

Methodological triangulation: Qualitative research informs quantitative

- Five communities (one is each state in the project) purposively selected for the study
- First stage: In-depth interviews with opinion leaders and experts in the field (n=60)
  - Open ended interview protocol, theoretically driven
  - Data analysis using content analysis techniques (Glaser and Strauss 1969, Miles and Huberman 1984, Berg 2006)
  - A significant research project on its own
  - Within the project findings inform subsequent stages of research, particularly survey development

Research Methods (2)

Methodological triangulation: Qualitative research informs quantitative

- Second stage: Scientific random sample self-administered mail survey of residents of the five communities (n=1500)
  - Survey administered using the principles of the Tailored Design Method (Dillman 2005)
    - Well researched, theoretically and empirically supported system for enhancing response rates and producing reliable and valid findings
    - Multiple contacts, carefully worded appeals, communications informed by social exchange theory
- An evaluation in year three identifies outcomes, informs program revisions

Survey Analysis

- Data is analyzed statistically using SPSS
- Structured as a form of confirmatory factor analysis through structural equation modeling organized by theoretical approach
  - Factor analyses and reliability analyses used to develop/analyze indices
  - Descriptive statistics
  - ANOVA and non-parametric tests
  - OLS regression models
  - Structural equation modeling

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Using the Information

- Statistical analyses will identify the relative strength of relationships between variables in the theoretical model
- Qualitative data analysis will provide information on perceived barriers to change, etc.
- In combination these findings will be applied to
  - identify the type of information
  - the form in which information delivery is most effective
  - the vectors of information delivery most likely to affect behavior
- Social science findings and the findings of the environmental research are then applied to develop the outreach/education programs extension delivers in the five communities

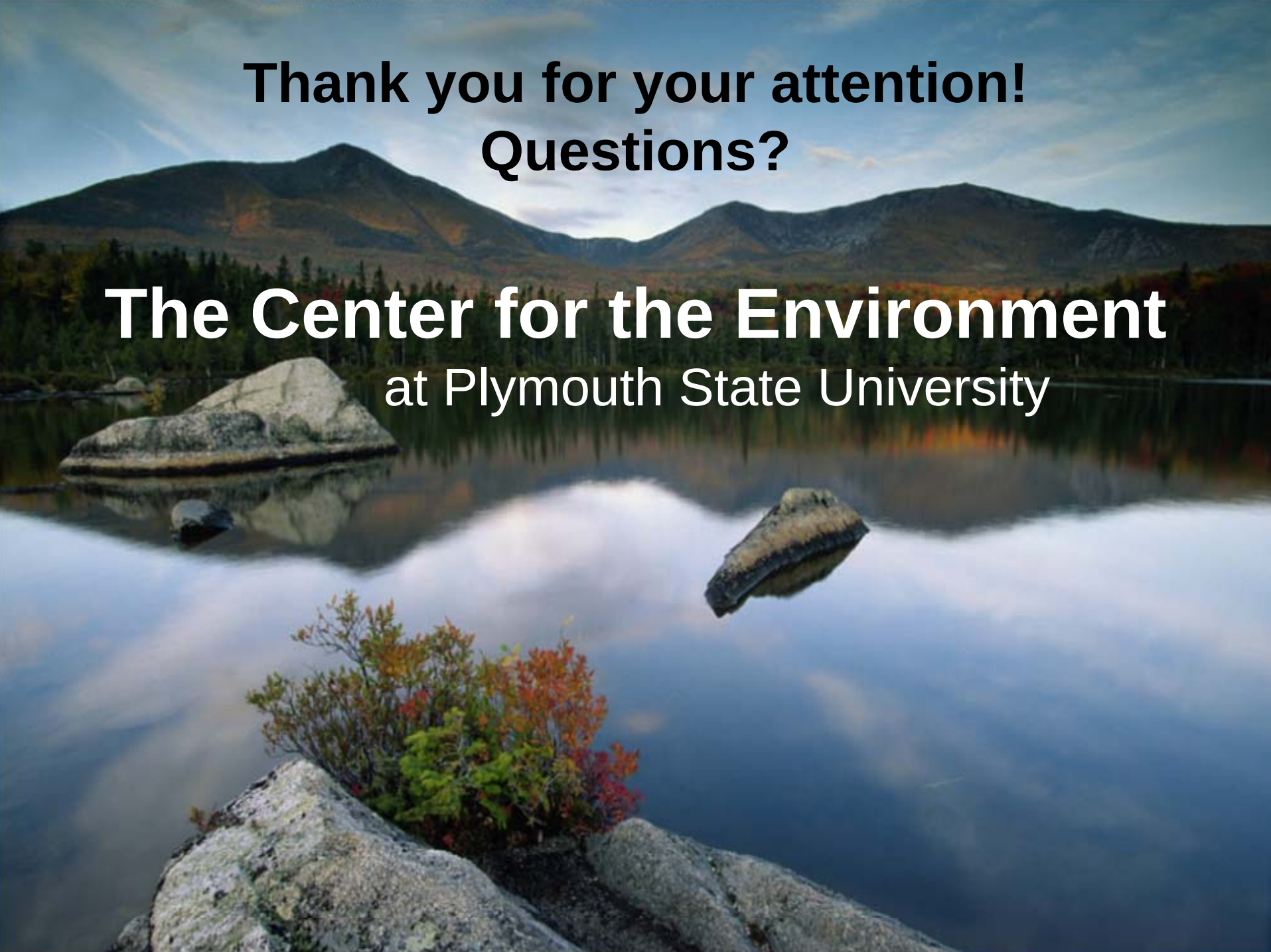
Applications / Outcomes

- At the conclusion of the research an effective outreach/education program has been ***empirically*** developed can be duplicated in other areas.
- The process itself is one that can also be applied to other issues of environmentally responsible behavior
- Contributes to the development of cumulative knowledge in multiple fields
- And perhaps most importantly…

Water Quality Is Improved!

Conclusions: Applying Social Science Research

- Social sciences con contribute meaningfully to many environmental biology driven efforts
- Fields are diverse and offer useful tools
  - Research methods
  - Theories (logic models)
  - Application and feedback loops (evaluation)
- In communications, building ground up by learning from “the audience” is essential
- Interdisciplinary work can be challenging, but enhances the likelihood of success


Thank you for your attention!
Questions?
The Center for the Environment
at Plymouth State University