

The Role of Sense of Place in Collaborative Planning

Aaron W. Thompson

University of Wisconsin-Stevens Point
aaron.thompson@uwsp.edu

Linda S. Prokopy

Purdue University
lprokopy@purdue.edu

Abstract: This paper focuses on understanding the collaborative process as a critical aspect of building community capacity to respond to change and uncertainty in the landscape. Can focusing on place-based relationship building enhance a community's ability to make difficult land use decisions? Collaborative initiatives to preserve farmland and open space have emerged as a process that supports local involvement and ownership of community decisions; however, the variable success of these initiatives highlights the need to evaluate what factors influence individual support for collaboration. This study uses a case study to examine the role of sense of place, as well as other attitudinal and demographic factors, in determining support for collaborative efforts to preserve farmland. Drawing on analysis of responses to a survey of residents in Harrison County, Indiana from a period when the community faced intense growth pressures that threaten unique natural resources and farmland. The findings demonstrate that an individual's sense of place and environmental attitudes positively influence support for key steps in the collaborative process, including the acceptance of strategies to address farmland loss.

Keywords: Collaborative planning, farmland preservation, sense of place, environmental attitudes

Aaron W. Thompson, Ph.D., is an Assistant Professor at the University of Wisconsin-Stevens Point and a land use specialist with UW-Extension. As a landscape planner Dr. Thompson's work focuses on using applied social-ecological research to achieve better decision making at the interface of land use planning and natural resource management. His work supports collaborative, stakeholder-driven planning initiatives by focusing on building community capacity to respond to sustainable development and resource management challenges.

Linda Prokopy is a Professor of Natural Resources Social Science in the Department of Forestry and Natural Resources at Purdue. Her research, teaching and extension work focus primarily focuses on how best to motivate farmers, stakeholders, and citizens of all kinds to participate in more environmentally friendly behaviors and practices.

Introduction

Offering a unique vantage point on how citizens decide on a common vision for the future; the rapid loss of farmland at a local level brings into focus the struggle communities can face to balance environmental, economic, and social priorities. In some cases the speed of farmland conversion to urban development means that if a community doesn't have a knowledgeable and engaged coalition of citizens already in place, it may simply be unable to respond due to a lack of capacity for farmland preservation planning efforts. The transformation of the landscape that often results in sprawling and poorly planned development patterns also has cascading effects on other community systems, such as the loss of agricultural infrastructure (suppliers, land availability, and skilled labor) that can quickly spiral into permanent changes to a community's social and economic identity. In addition, losing farmland threatens critical ecological services as agriculture can buffer sensitive areas from more intensive land development and is an important part of a community's overall green infrastructure. This threat was a reality facing Harrison County, Indiana a decade ago as citizens watched the frontline of urban sprawl progress from the other ring counties around Louisville, Kentucky into their own backyard.

As Harrison County citizens would discover it's not that communities are without tools to respond to this threat as local zoning, public infrastructure investments, tax incentives, and agricultural easement programs offer a few of the many ways communities have successfully met this challenge (Olson & Lyson, 1999); rather it's that all of these tools require development of technical skills and social support necessary to take informed action. Consistent with the principles of education for sustainable development outlined by the UNESCO Education for Sustainability Report (2002) there exists a need to reorient education efforts to support the skills necessary for people to engage in collaboration. Further, education for sustainable development reinforces the need for collaborative planning with calls for going beyond instruction in technical skills (such as specifics of a land-use regulation scheme) to efforts that provide people with the motivation, justification, and social support to implement their visions for the community's future. This leads to an emphasis on developing adaptable, local grassroots initiatives with the capacity to respond to a wide array of sustainability challenges (Seyfang and Smith, 2007). As suggested by resilience thinking approaches community capacity can be seen as the ability of a group of citizens (and their leaders) to coordinate a response to a collective problem (Berkes & Ross, 2013; Davenport & Seekamp, 2013; Walker & Salt, 2006).

Planners use community engagement activities to work directly with citizens to identify and prioritize the common interest over special interests within the community (Clark, 2002). Education for sustainable development and collaborative planning approaches both seek to expand this process to empower citizens to take responsibility for addressing conflicting interests among impacted entities by bringing together representatives of diverse interest groups (Margerum, 2008; Koontz, 2005; Rosenberger, 1998; UNESCO, 2002). The process does not utilize citizens in a review capacity, but focuses on addressing issues through collective input (Innes & Booher, 2004; Koontz, 2005). Not all collaborative initiatives are the same and it is important to note that collaboration alone is not the solution to farmland loss. Rather, collaboration is a process that emphasizes local participation and ownership of decisions to address this challenge (Gray, 1989). As a result collaborative efforts will inevitably experience varying degrees of success, which raises the questions of why do these local, collaborative initiatives succeed or fail?

Sense of Place and Collaborative Planning

Interest in understanding how the attitudes and priorities of stakeholders influence success of collaborative planning developed operationally (largely in response to project specific needs); however, calls for strategic education initiatives for building community capacity compel investigators to apply social science research to inform these actions (Bright & Manfredi, 1995). Recent interest in place as a unifying, or motivating, factor in collaborative planning borrows from research within the sociology and psychology fields linking individual attitudes to behavioral action. The connection between attitudes and behavioral action is not straightforward, as the Theory of Planned Behavior suggests that both subjective norms and perceived behavioral controls also exert influence on individual decisions (Ajzen, 1991). However, studies show that personal importance of the natural resource issue is a strong indicator for behavioral prediction (Bright & Manfredi, 1995). Understanding the importance of place constructs for community planning requires defining the natural resource issue of personal importance to individuals involved in community based environmental initiatives. Davenport and Anderson (2005) outlined principles of human-to-environment relationships that suggest that the physical characteristics of a place compose the setting through which individuals interpret activities and events in their lives, that people associate and construct meanings in their lives from places, form strong emotional bonds through place meanings that have implications on attitudes and behaviors, and that decision making processes (such as a collaborative planning process) are the arena where place meanings are challenged, maintained, and negotiated.

The principles of human-to-environment relationships emphasize the importance of place as a location that acquires special meaning through individual, group, or cultural processes (Kaltenborn & Bjerke, 2002). This relationship is furthered by the theoretical construct of sense of place which explores the meanings, values, and beliefs that individuals or groups utilize to develop attitudes about a particular location (Davenport & Anderson, 2005; Hidalgo & Hernandez, 2001; Nanzer, 2004; Williams & Stewart, 1998). Sense of place is a theoretical construct that has been characterized by numerous studies and the popularity of the concept illustrates the perceived importance of human-to-environment relationships for natural resource management and land use planning (Hidalgo & Hernandez, 2001; Jorgenson & Stedman, 2001; Kyle et al, 2004; Lewicka, 2005; Manzo, 2005; Nanzer, 2004; Williams & Stewart, 1998). While agreement is not universal studies have proposed that sense of place is an overarching concept composed of place attachment, place identity, and place dependence constructs (Jorgenson & Stedman, 2001; Nanzer, 2004). Place attachment represents the emotional bond that is established between individuals or groups and a specific location, shaped by shared values and beliefs that develop through interaction with the physical environment (Brehm et al, 2004; Hidalgo & Hernandez, 2001; Nanzer, 2004). Place identity focuses on the impact of the collective experiences and memories that individuals associate with a location on the development of self-identity (Davenport & Anderson, 2005; Nanzer, 2004; Williams & Stewart, 1998). Place dependence focuses on the potential ability of the physical environment of a particular location to facilitate individual goal attainment (Davenport & Anderson, 2005; Nanzer, 2004; Williams & Stewart, 1998). The survey instrument developed for this study recognizes these sub-dimensions; however, each is treated as a part of an aggregate measure of sense of place.

Case Study: Participation in Farmland Preservation Efforts

As a growing field of research, the exploration of factors that influence the success of collaborative planning initiatives in land use planning has significant potential for improving the ability of rural communities to respond to new threats, such as using farmland preservation planning to counter the effects of urban sprawl and the resulting conversion of open space to developed uses. This study seeks to inform sustainability education efforts by evaluating a conceptual model of collaborative planning, one that emphasizes acceptance of outcomes as a function of capacity to respond at a community scale, and exploring the influence of sense of place on farmland preservation efforts.

The conversion of working lands to urban development in rural America threatens the ability of farmland to sustain a diversified rural economy, provide plentiful open space, and protect environmental services provided by the rural landscape (Furusest, 1987; Mariola, 2005; Nickerson & Hellerstein, 2003). While many communities have attempted to address the loss of farmland to urban development through various comprehensive planning and zoning strategies, it has become obvious that this is a complex issue that defies easy answers. The farmland preservation debate engages a diverse collection of interests, including: farming, environmental, community, anti-growth, development, business, and governmental interests (Daniels & Bowers, 1997, Furusest, 1987; Heimlich, 2001; Mariola, 2005; Nickerson & Hellerstein, 2003). Identifying solutions that address these different perspectives is difficult, as traditional decision making processes often polarize the views of involved parties and result in deadlock (Gray, 1989).

Model of Collaboration

The ultimate goal of the collaborative process is to identify and implement solutions to the problem that is being addressed. The conceptual model of collaboration used in this study, adapted from Gray (1989), emphasizes the importance of the three formative steps in determining the acceptance of outcomes of the collaborative process. Evaluating the success of collaborative initiatives has typically focused on asking participants to describe key characteristics of the process (Conley & Moote, 2003; Gray, 1989; Schuett et al., 2001). From these evaluations a set of key determinants of success have been described that compose the formative stages of a collaborative process, including: civic engagement, development of a common definition of the problem, and capacity to collaborate (Gray, 1989; Hibbard & Lurie, 2000; Schuett et al., 2001). A more detailed description of each step is provided below:

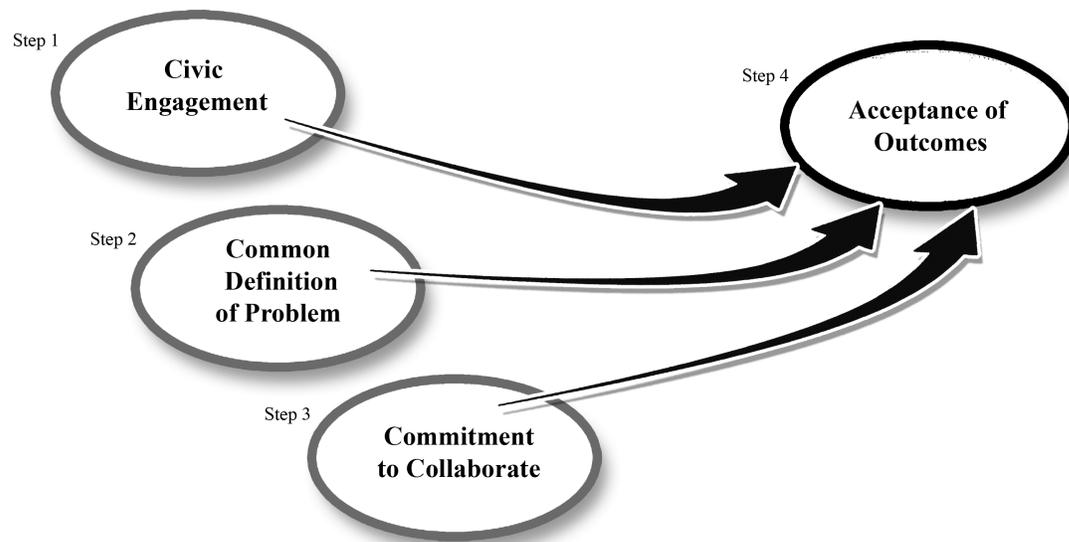
- **Step 1:** Civic engagement, conceptualized here as the willingness of stakeholders to take action to address an issue, is a critical first step in the formation of a collaborative initiative. Stakeholders become involved through a process of individual problem setting, where individuals recognize that an issue exists and determine that action must be taken (Gray, 1989).
- **Step 2:** The development of a common definition of the problem involves establishing consensus among stakeholders on what issues exist as a result of the perceived common problem. Schuett et al. (2000) describes this step by stating that a collaborative initiative must have a specific purpose or goal early in the formative stage in order to be successful. This process can be described as the development of a shared vision, or broad set of goals, that facilitates developing solutions that are mutually beneficial to all parties (Gray, 1989; Wondelleck & Yaffee, 2000).

- **Step 3:** The commitment to collaborate or the willingness of stakeholders to work together in order to arrive at a common solution represents the foundation for collective capacity of participants, which includes trust, social capital, leadership, shared vision, resource management, broad representation, and the ability to establish partnerships (Lochner, 1999; Purdue, 2001). This step is essential because the ability of individuals participating in a collaborative process to collectively explore a problem, share information, and determine mutually beneficial agreements is based on the strength of the relationships and willingness to work as a team (Gray, 1989; Schuett et al., 2001).

These elements can be viewed as essential steps in the collaborative process as each impacts the acceptance of outcomes of the process, as diagrammed in Figure 1.

Figure 1. Conceptual model of collaboration emphasizing the relationship between the formative steps of the collaborative process and the acceptance of outcomes.

Conceptual Model of Collaboration



Adapted from Gray (1989)

A number of intervening steps are acknowledged to exist in between the formative steps and the acceptance of outcomes and have been documented in the literature. These intervening steps are predominantly a function of the decision making process, or direction setting phase, used to arrive at an agreement or outcome (Gray, 1989).

Methodology

The collaborative process has been well documented in environmental management as a solution to complex inter-jurisdictional issues, but only a limited amount of evidence exists about its application in farmland preservation planning. This research project explores several independent variables including sense of place, environmental attitudes, and socio-demographic characteristics that have been identified in the literature as indicators of support for the steps of the collaborative model. The research was coordinated with the Harrison County Farm, Forest, and Open Space Task Force; however, evaluation of the collaborative process was conducted by surveying a random sample of community residents. The approach of surveying the general public in Harrison County, versus an examination of individuals involved in the collaborative initiative, allows for developing an understanding of the role of public support in the development of the collaborative process.

Harrison County Farm Forest and Open Space Task Force

Like many rural communities, Harrison County has a strong tradition of agricultural activity that has shaped the community, landscape, people, and economy. A collaborative initiative to address farmland loss in the county emerged from a group of concerned citizens and was formally recognized in 2004, when the county government sponsored the creation of the Farm, Forest, and Open Space Task Force (FFOSTF). A major highway connects most of Harrison County directly to nearby Louisville, Kentucky (the region's urban center) making the area desirable for suburban development. From 1990 to 2000, the population of Harrison County increased 14.8 % to approximately 35,000 residents (US Census, 2006). This rate of population growth was far greater than the state of Indiana as a whole (HNTB, 2009). The county has a diversified land base that includes a significant portion of prime farmland, privately owned forestland, and a large state forest (FFOSTF, 2004). However, the county has seen significant development pressure on these lands and has lost 9,514 acres of farmland to urban development from 1992 to 2002 (Thompson & Prokopy, 2009).

The FFOSTF brought together representatives from various stakeholder interest groups from within the county, including: citizen appointees, farmers, development and real estate professionals, an environmental organization representative, and government officials to develop strategies to protect priority farmland, forestland, and open space in Harrison County (FFOSTF, 2004). After two years of intensive exploration of the problem and search for solutions the recommendations of the FFOSTF were approved by county commissioners, creating two ordinances that allow for the county to purchase or receive donations of development rights from individual landowners. The success of the FFOSTF is unique in Indiana as Harrison County is the first county to develop a purchase of development rights (PDR) program. The approval of these programs in 2006 provided the initial step that led to the formal creation of the Harrison County Conservation Committee to replace the FFOSTF (Corley, 2008). In 2008 the first 89 acres, known locally as the Pfrimmer Farm, were enrolled in the conservation easement program. Additionally, the FFOSTF efforts and the vision for Harrison County initiated by this successful collaboration was adopted in 2009 as part of the comprehensive plan, including four of the eight goals for their shared future: “(1) Promoting responsible development practices by encouraging residential development in areas adjacent to existing development with adequate infrastructure, (2) Preserve the small town charm and rural character of Harrison County, (3) Preserve and protect the natural resources of Harrison County for the use and enjoyment of future generations,

and (4) Promote collaboration and public consensus with respect to the planning and development of Harrison County” (HNTB, 2009).

Survey methodology

The study utilized a phone survey that was conducted during the summer of 2006 to collect data on Harrison County residents’ attitudes regarding the collaborative initiative and their efforts to protect farmland and open space. The sample was purchased from a commercial supplier and pre-screened to ensure that phone numbers selected were from Harrison County residences. Random digit dial methodology was used to select Harrison County residents who were 18 years of age or older. The final sample size is 586 completed and 75 partial interview responses. The participation rate for the survey was approximately 60 percent, based upon the sum of completed and partial interviews divided by the sum of the completed interviews, partial interviews, and hard refusals.

Study design

The survey and associated analysis design were developed to address two research objectives related to the model of collaboration, including:

- **Research Objective 1:** Determine if support for the formative steps in the collaborative process influence the acceptability of outcomes.
- **Research Objective 2:** Determine what factors influence an individual’s support for the steps in the collaborative model.

This design emphasized the development of attitudinal scales as the primary tool used to measure the variables of interest for each objective. Groups of items designed to measure the same construct are analyzed using factor analysis to identify scale composition and ensure uni-dimensionality. Reliability analysis is conducted for each scale to determine the Cronbach’s Alpha, with the lower boundary being .60 for initial testing of new scales (DeVellis, 2003). A summated rating scale score is then calculated by adding together the individual scores of each scale item (Spector, 1992).

Model 1: Testing the model of collaboration

The first research objective, determining whether support for the formative steps in the collaborative process influence the acceptability of outcomes, was tested using multiple linear regression. The dependent variable being tested is acceptance of collaborative outcomes (see Table 1). The items reflect strategies that the FFOTF considered for protecting farmland and open space in Harrison County. A higher composite score represents an increased likelihood of acceptance of the proposed outcomes.

The three independent variables represent the formative steps in the collaborative process. Civic engagement is the process by which individuals develop a sense of shared responsibility and are drawn into public participation initiatives to address community issues (Gray, 1989). A higher index score represents an increased likelihood of civic engagement to preserve farmland and open space. The common definition of the problem scale measures attitudes related to the impact of urban sprawl on Harrison County. Since the FFOTF was charged with protecting farmland and open space from urban development in Harrison County, the assessment of resident attitudes toward urban sprawl assists in understanding how residents

perceive this issue. A higher composite score indicates an increased recognition that urban sprawl is negatively affecting Harrison County. Commitment to collaborate is measured by focusing on individual perceptions of community competence or the ability of the community to solve a collective problem (Lochner et al., 1999). A higher composite score represents that the individual believes that the community is capable of addressing collective problems.

Table 1. Scales Measuring Steps in the Model of Collaboration

Civic Engagement¹

Scale reliability (Cronbach's alpha): .828

- 1) Attend a public meeting focusing on the future of the county.
- 2) Participate in an informal meeting of community members that discusses the future of my community.
- 3) Join an organization that works to preserve the character of the community.
- 4) Recruit friends to participate in an activity that benefits the community.

Common Definition of the Problem²

Scale reliability (Cronbach's alpha): .673

- 5) Humans have the right to modify the natural environment to suit their needs.*
- 6) Developers have an obligation to build new housing subdivisions because of the demand for housing outside of Louisville.*
- 7) Property owners have the right to convert farmland and other open space to new development in Harrison County.*
- 8) Urban growth and development should be directed in ways that preserve open space.
- 9) The main focus of the county planning department should be to preserve natural resource industries, like farming and forest products.
- 10) If conversion of farmland and open space to new development continues, Harrison County will soon become a place that current residents will no longer wish to call home.
- 11) The so-called urban sprawl problem facing Harrison County has been greatly exaggerated.*
- 12) Conservation of open spaces is one of the most important issues facing Harrison County.

Commitment to Collaborate²

Scale reliability (Cronbach's alpha): .816

- 13) In general, I trust people in my community.
- 14) I trust the community leaders of Harrison County.
- 15) I feel that I am an important part of my community.
- 16) If a problem arises, I am willing to work together with other community members to solve it.
- 17) My neighbors and I want the same things from my community.
- 18) I can depend on my friends and neighbors to help if I have a problem.
- 19) People in my community feel that what happens in our community can affect them.
- 20) If a problem arises, people in my community work together to reach a solution.
- 21) People in my community work together to solve differences about community issues.
- 22) Local officials in my community represent the resident's views.

Acceptance of Outcomes¹

Scale reliability (Cronbach's alpha): .710

- 23) Support a program that protects farmland in Harrison County that uses some county funds.
 - 24) Support a program that protects farmland, forests, and open space in Harrison County that does not use county funds.
 - 25) Personally contribute money toward a program that protects farmland, forests, and open space in Harrison County.
 - 26) Support changes in Harrison County's policies that impose strict limitations on development that threatens open space.
 - 27) Support limiting new development to areas currently served by existing sewer and water service.
-
-

¹Measured using a 5 point response scale from very unlikely (-2) to very likely (+2). ²Measured using a 5 point response scale from strongly disagree (-2) to strongly agree (+2).* Item reverse coded for analysis.

Models 2a – 2d: Support for the model of collaboration

The second research objective, determining what factors influence an individual’s support for the steps in the collaborative model, builds upon the analysis of the collaborative model. This objective is tested using four multiple linear regression models that individually assess the relationship between steps in the collaborative model (civic engagement, common definition of the problem, commitment to collaborate, and acceptance of outcomes) and independent variables, discussed below, that have been identified in the literature as indicators of support for the model of collaboration.

Sense of place

Examining the implication of place on land use planning requires understanding the relationship between individuals and their environment. The perceived threat to self, others, or the environment resulting from the rapid urbanization of rural landscapes can be viewed as a major disturbance that threatens an individual’s relationship with that place. This type of disturbance, or turbulence, has been identified by Gray (1989) as an incentive to mobilize community resources to respond in a collaborative manner to a common threat. As a result, understanding the relationship between individuals and their environment, or the meanings that individuals associate with a particular place is important for understanding support for the collaborative process.

In this study, twelve items were constructed to measure sense of place (organized by place attachment, place identity, and place dependence constructs) as shown in Table 2. Utilizing other studies that focused on sense of place, the three subscales were standardized based upon four common themes, which include: relationship with the physical environment, social networks, residential preference, and attitude specificity to a particular place (Hidalgo & Hernandez, 2001; Jorgenson & Stedman, 2001; Kyle et al., 2004; Lewicka, 2005; Manzo, 2005; Nanzer, 2004; Williams & Stewart, 1998).

Table 2. Sense of Place Scale

Scale reliability (Cronbach’s alpha): .867

Place Attachment

- 1) The forest, farmland and other open spaces of Harrison County are important to me.
- 2) I identify with the lifestyles and values of the people who live in Harrison County.
- 3) I would like to continue living in Harrison County for a long time.
- 4) As far as I am concerned there are better places to live than Harrison County. *

Place Identity

- 5) Living in Harrison County is a part of who I am.
- 6) I sometimes feel like I do not belong in Harrison County.*
- 7) It is important to me to continue living in a place like Harrison County.
- 8) I have a positive emotional attachment to Harrison County.

Place Dependence

- 9) Harrison County is a good place for doing the things I enjoy most
- 10) The people living in Harrison County negatively affect my ability to achieve my personal goals. *
- 11) Harrison County provides many opportunities to engage in my favorite activities.
- 12) The things I do in Harrison County I would enjoy just as much in another place. *

*Measured using a 5 point response scale from strongly disagree (-2) to strongly agree (+2). *Item reverse coded for analysis.*

Items were measured using a 5 point Likert type scale and negatively worded items were reverse coded for analysis. Initial reliability analysis indicated a lack of internal consistency within the sub-scale measures; this means that the data does not support three different measures of place-based relationships. The resulting scale was determined to be a uni-dimensional measure of sense of place with a Cronbach's alpha of .867. A higher composite score represents an increased sense of place, which can be interpreted as stronger endorsement of place attachment, place identity, and place dependence.

Environmental Attitudes

A major challenge for conservation psychology is developing an understanding of the link between attitudes and pro-environmental behavior (Clark et al., 2003). Efforts to interpret this relationship have explored aspects of values, worldview, attitudes, and beliefs related to the environment (Dunlap et al., 2000). The result of these efforts has been the development of a number of scales to measure individuals' attitudes toward the environment. The survey utilized the awareness of consequences scale (AC) developed by Stern and Dietz (1994) as a measure of pro-environmental attitudes. A higher environmental index score represents a higher endorsement of pro-environmental attitudes.

Socio-demographic Characteristics

Socio-demographic characteristics have been shown to correlate with support for farmland preservation efforts (Davenport & Anderson, 2005). As a result, several socio-demographic variables have been included as independent variables; including: age, education and political orientation. Age is included as a dummy variable, where a score of one is assigned to all individuals sixty years old or older and zero is assigned to all other age ranges. Education is also calculated as a dummy variable, where individuals who have received an Associates or higher degree are assigned a value of one. Political orientation is calculated using a five point interval range from very conservative to very liberal, with more liberal political orientations being coded as the higher value. Additionally, the model specifies an interaction effect between age and sense of place to determine if the relationship between sense of place and age has a combined effect on the model of collaboration.

Results

The survey results were analyzed using IBM SPSS Statistics; responses were coded so that positive responses (strongly agree or very likely) are high values and negative responses (strongly disagree or very unlikely) are low values. The constructed scales measuring variables in this study were found to have acceptable reliability, based upon Cronbach's alpha scores above .60, and provide an understanding of Harrison County residents' views toward the collaborative process used by the FFOTF. As shown in Table 3, the descriptive statistics indicate that the respondents, on average, reported positive support for each of the steps in the collaborative model. Additionally, we see that a broad range exists for the sense of place variable with the average respondent having a moderate, positive connection to this location (and the community and landscape that are part of this place).

Table 3. Descriptive Statistics

	# of items	N	Range	Minimum	Maximum	Mean	Std. Deviation
Civic Engagement	4	576	16.00	-8.00	8.00	2.36	3.22
Definition of Problem	8	504	28.00	-12.00	16.00	4.35	4.14
Commitment to Collaborate	8	550	32.00	-16.00	16.00	5.88	3.77
Acceptance of Outcomes	5	539	17.00	-7.00	10.00	3.76	3.03
Sense of Place	12	582	44.00	-20.00	24.00	9.94	6.68
Awareness of Consequences	7	534	19.00	-5.00	14.00	6.61	3.80
DV_Age (over 60)	n.a.	586	1.00	.00	1.00	.3874	.488
DV_Education (Associated degree or higher)	n.a.	582	1.00	.00	1.00	.301	.459
Political Orientation	1	556	6.00	1.00	7.00	3.2950	1.51

Valid N (listwise) = 403

Regression models

The following sections focus on the multiple regression models that were developed to test the research objectives of this study. Partial responses were addressed in the regression analysis by excluding variables pair wise, meaning that only the variables with missing data (not the entire case) are excluded. This approach is used to maximize the use of all available data within the data set. As a result, reported N values are based on the lowest number of available cases for any one relationship; actual N values vary and are generally higher than reported for the majority of the relationships tested within the model. Due to the exploratory nature of the research questions, results with a significance level of .1 or lower are accepted.

Model 1: Testing the model of collaboration

The results of the regression model for the first research objective, determining whether support for the formative steps in the collaborative process influence the acceptability of outcomes, are reported in Table 4. The overall model is shown to fit the data well, with an R^2 of .396, and the results indicate that all independent variables have a significant relationship with the acceptance of collaborative outcomes. Examination of the standardized coefficients assists in determining the relative strength of the independent variables on the dependent variable. The results of this analysis indicate that the commitment to collaborate, while significant, had a smaller effect on the acceptance of outcomes than civic engagement or a common definition of the problem.

Table 4. Model of Collaboration -- Acceptance of Outcomes (OLS Regression)

	B	Std. Error	Beta	t	Sig.
(Constant)	1.216	.234	--	5.19	.000***
Civic Engagement	.348	.035	.369	9.88	.000***
Common Definition of Problem	.316	.027	.431	11.83	.000***
Commitment to Collaborate	.059	.030	.074	2.01	.045***

$N=480$; Model Fit Summary: $R^2 = .396$; Adjusted $R^2 = .392$

*p value $\leq .10$, **p value $\leq .05$, ***p value $\leq .01$

Models 2a – 2d: Support for the model of collaboration

The results of the four regression models used to determine what factors influence an individual’s support for the steps in the collaborative model, are summarized in Table 5. Results are presented as standardized regression coefficients, as this assists in answering the research question and controls for the variation in each independent variable’s unit of measurement (Schroeder et al., 1986).

Table 5. Determinants of Support for Steps in the Collaborative Model (standardized coefficients, t statistics in parentheses), Ordinary Least Squares Regression

Variable	Model 2a: Civic Engagement	Model 2b: Definition of Problem	Model 2c: Commitment to Collaborate	Model 2d: Acceptance of Outcomes
Sense of Place	.130 (2.58) ***	.071 (1.45)	.532 (12.05) **	.109 (2.23) **
Environmental Attitude (AC)	.197(4.70) ***	.458 (10.84) **	.042 (1.09)	.358 (8.46) ***
Age (Over 60)	-.282 (-3.26) ***	.064 (.769)	.082 (1.08)	-.152 (-1.81) *
Education (Post- High School)	.023 (.529)	.018 (.435)	-.012 (-.304)	.040 (.936)
Political Orientation (Liberal)	.057 (1.30)	-.055 (-1.29)	-.004 (.098)	.054 (1.26)
SOP X Age	.155 (2.27) **	-.132 (-1.48)	.040 (.496)	.304 (.761)
N	496	470	492	486
R ²	.116	.215	.331	.184
Adjusted R ²	.105	.205	.323	.174

*p value ≤ .10, **p value ≤ .05, ***p value ≤ .01

The model for civic engagement (2a), while resulting in a small R² of .116, identified four significant relationships. A higher score on the scales for sense of place and environmental attitudes, resulted in a higher likelihood of becoming engaged in efforts to protect farmland from urban sprawl. One surprising finding was the strength of the negative relationship (-.282) between age and civic engagement, which is typically considered a positive indicator of involvement in community activities. However, the interaction term between age and sense of place shows a positive relationship. This result indicates that individuals over sixty with a strong sense of place are more likely to engage in activities to protect farmland.

The model for common definition of the problem (2b) revealed only one significant relationship and resulted in an R² of .215. A higher score on the measure of environmental attitudes was identified as a strong predictor of the development of a common definition of the

problem. This result warrants further study, as there are many possible interpretations, but seems to indicate that respondents who are generally more concerned about the environment also believe that urban sprawl's impact on farmland and open space must be addressed.

The model for commitment to collaborate (2c) resulted in the strongest indication of model fit to the data with an R^2 of .331. As with the model for common definition of the problem, only one relationship emerged within this model as significant. The result suggests that sense of place is an important predictor for developing a commitment to collaborate.

The model for acceptance of outcomes (2d) resulted in an R^2 of .184 and revealed three significant relationships. Similar to the results of model 2a, the acceptance of outcomes was positively associated with sense of place and environmental attitudes while a negative relationship was associated with age. Environmental attitudes had the largest effect on the dependent variable with a Beta of .358, as compared to .109 for sense of place and -.152 for age.

Discussion

The results from the phone survey, combined with the passage of ordinances proposed by the FFOTF several months after the community survey, provide strong evidence that residents in Harrison County are willing to support community efforts to protect farmland from development. Model 1 indicates that public support for outcomes to address farmland loss is influenced by support for the formative steps in the model of collaboration. The strongest influence on support for collaborative outcomes identified in this study is the role of civic engagement and the development of a common definition of the problem. This result means that community leaders and planners considering a collaborative approach to address farmland loss need to determine the community's willingness to become involved and identify the different viewpoints toward the problem held by community members prior to initiating a collaborative decision making process. Emphasis on these steps early in the collaborative process could involve creating opportunities for the public to become involved, such as the creation of an informal discussion group, conducting a community survey, or holding a visioning session to assess different viewpoints with regard to farmland loss.

The second research objective emphasizes developing our understanding of collaborative planning by determining what factors influence support for the key steps in the collaborative process. The attitudinal variables explored in this study are intended to assist in developing an understanding of the social systems that influence support for the collaborative process. Sense of place and pro-environmental attitudes emerged as significant predictors of support for multiple steps in the collaborative process, including the acceptance of outcomes. These findings suggest that individuals with a stronger sense of place or environmental attitude are more likely to support efforts to preserve farmland. Additionally, the sense of place variable was identified as the only significant predictor of commitment to collaborate. This result means that individuals with a stronger sense of place are more willing to trust and work with other community members to identify solutions to a common problem.

While the positive environmental attitudes identified in Harrison County may be influenced by urban populations moving into adjacent rural areas because they value the environmental amenities, the development of sense of place is more difficult to define directly. Strong place-based relationships would be expected across a range of rural communities and are especially relevant for discussions about farmland preservation as Mullendore et al. (2015) suggest that farmers themselves generally possess higher levels of sense of place. A linkage between sense of place and support for collaborative farmland preservation initiatives may result

from the observable disturbance to the landscape resulting from urban sprawl. This disturbance pattern can be viewed as a direct threat to place-based relationships, making the protection of an individual's sense of place more salient to efforts to preserve the rural landscape. While only significant in Model 2a, the interaction effect between sense of place and age may also support this finding. Older individuals with a strong sense of place are more likely to become engaged in efforts to protect farmland, which is in sharp contrast to the negative relationship for older individuals in general. This indicates that positive emotional attachment among older individuals to a place leads to support for minimizing changes to the landscape. This is an especially important finding for this collaborative process as we see that on average survey respondents have lived in the community for 33.8 years (within a range from 1 to 93 years). Combined with positive average sense of place scores we see that Harrison County (that experienced success in their efforts to initiate farmland preservation) has a general public that on average has a strong sense of place and most respondents have lived in the community for a long time. While the average respondent has lived in this community for many years it is possible for people to simply not develop a strong bond with the place (Kudryvatsev et al., 2012a). Rather we also see in these results that amongst the population over 60 years old those with a stronger sense of place are more supportive of farmland preservation efforts than their peers. This group may also be a valuable resource for the development of environmental education programs that support the development of sense of place within a community, as an instructional approach that focuses on sharing their stories through direct participant interviews can have a positive impact on the development of sense of place in others (Kudryvatsev et al., 2012b).

Conclusions

Approaching farmland preservation planning from a place based perspective focuses attention on the importance of a common element that bonds members of a community. The shared experience and impact that place has on individuals within the community could serve as a bridge between a topic most community members can relate to and more complicated issues associated with farmland preservation planning. Evaluation methods that extend beyond participants in the process, like the approach used in this study, recognize that community members participate at different levels of involvement. Strauss (2002) has described this differential engagement as expanding rings of involvement beginning with a core problem solving group, task force membership for addressing specific aspects of a problem, attendance at input and feedback meetings and being contacted through outreach efforts. So how do we enhance this connection based on a mutual, emotional attachment to place between producers and those looking to achieve sustainable development goals in order to facilitate more complex land use decision making at the community scale?

Environmental education can serve to foster the attachment to a place (sense of place) and to support the development positive ecological place meanings (Kudryvatsev et al., 2012a). Planners looking to enhance sense of place are more likely to see their efforts succeed when employing an educational strategy that creates opportunities for direct experience and instructional techniques that focus on social interaction among community members to explore place-based-relationships (Kudryvatsev et al., 2012b). In practice what this means for farmland preservation is that efforts must respond to the differential participation, acknowledging a need for more intensive sense of place learning activities to occur with the inner rings of a collaboration while creating opportunities for more hands-on, fun activities for the general public. The inner rings of a farmland preservation collaboration (core problem solving group or

task force membership) may benefit from encouraging members (or possible recruits) to participate in multiple field visits to experience farms and build relationships with the owners to understand the community values that are under threat. Guiding these stakeholders to document, visualize, and share these experiences is also a critical educational objective for these direct experiences (Rote et al., 2015). The sharing of stories about what place means to these landowners helps support the development of a narrative about the nature of the problem facing the community. This allows these stories to serve as a starting point for the discussion and negotiation necessary for a community to clearly identify a common definition of the problem they are trying to solve. Further efforts to guide the development of a sense of place for outer rings of a collaboration (or the general public) can combine a more instructional approach that relies on marketing the experience of place (creation of local documentaries about place-based-relationships under threat or public storytelling sessions where community members share their sense of place narratives) with accessible activities that generate direct experience (such as the use of citizen science to document environmental benefits of agriculture or service projects on local farmland). Some communities have even extended this invitation to the public by hosting community dinners at local farms, which can be accompanied with entertainment (field walks, wagon rides, and less formal experiences like campfires are options for introducing a non-agriculture audience to the land).

The models of collaboration tested here suggest that encouraging these place-based-relationships broadly within a community (extending outward to the general public at the outer rings of engagement in the collaboration) can encourage acceptance of outcomes that respond to the threat farmland conversion to urban development. While sense of place was found to influence several of the steps (both in the formative stages and ultimate acceptance of outcomes) in the collaborative models tested here; it's also worth noting that it stood alone as the sole positive predictor of survey respondents' commitment to collaborate. As a case study this result is worth exploring further to understand why efforts like the Harrison County Farm, Forest, and Open Space Task Force benefit from strong, positive place-based-relationships and how these relationships influence a community's willingness to engage in collective problem solving. As a practical lesson this case suggests the potential benefit of weaving place-based education together with teaching skills necessary for individuals to work collaboratively to solve local sustainability challenges. In this way we can integrate the environmental education for sustainable development goals of providing motivation for action and the social support necessary to achieve results.

Acknowledgements

The authors would like to thank the Harrison County commissioners and representatives of the Farm, Forest, and Open Space Task Force for their support and permission to conduct this study. In addition, funding from the Kinley Trust and Purdue University's Agriculture Research Program was essential for conducting the survey that supported the development of this work.

References

- Azjen, I. 1991. The Theory of Planned Behavior. *Organization behavior and human decision processes* 50(2): pp. 179-211.
- Berkes, F., Ross, D. 2013. Community resilience: Toward an integrated approach. *Society and Natural Resources* 26: 5-20.
- Brehm, J., Eisenhauer, B., Krannich, R. 2004. Dimensions of community attachment and their relationship to well-being in the amenity-rich rural west. *Rural Sociology* 69 (3): 405-429.
- Bright, A., Manfredi, M. 1995. The quality of attitudinal information regarding natural resource issues: The role of attitude-strength, importance, and information. *Society and Natural Resources* 8: 399-414.
- Clark, C., Kotchen, M., Moore, M. 2003. Internal and external influences on pro-environmental behavior: Participation in a green electricity program. *Journal of Environmental Psychology* 23: 237-246.
- Clark, Tim W. 2002. *The policy process: A practical guide for natural resource professionals.* Yale University Press: New Haven, Connecticut.
- Conley, A., Moote, M. 2003. Evaluating collaborative natural resource management. *Society and Natural Resources* 16: 371-386.
- Corley, L. 2008. 89-acre Harrison County farm becomes 1st in local conservation program. *Indiana Economic Digest*. Retrieved from <http://www.indianaeconomicdigest.net/>
- Daniels, T., Bowers, D. 1997. *Holding our ground: Protecting America's farms and farmland.* Washington D.C.: Island Press.
- Davenport, M., Anderson, D. 2005. Getting from sense of place to place-based management: An Interpretive Investigation of Place Meanings and Perceptions of Landscape Change. *Society and Natural Resources* 18: 625-641.
- Davenport, M.A., Seekamp, E. 2013. A multilevel model of community capacity for sustainable watershed management. *Society and Natural Resources* 26 (9): 1101-1111.
- DeVellis, Robert F. 2003. *Scale development: Theory and applications.* Thousand Oaks, CA: Sage Publications, Inc.
- Dunlap, R.E., Van Liere, K.D., Mertig, A.G., Jones, R.E. 2000. Measuring endorsement of the New Ecological Paradigm: A Revised NEP Scale. *Journal of Social Issues* 56 (3): 425-442.
- Farm, Forest, and Open Space Task Force. 2004. *Findings and recommendation for land conservation in Harrison County, Indiana for year 2004.* Harrison County, Indiana.

- Furuseth, Owen J. 1987. Public attitudes toward local farmland protection programs. *Growth and Change*: 51-61.
- Gray, Barbara. 1989. *Collaborating: Finding common ground for multiparty problems*. Jossey-Bass Publishers, San Francisco, CA.
- HNTB Corporation. 2009. *Harrison County Indiana Comprehensive Plan*. Indianapolis, Indiana: Technical Report.
- Heimlich, Ralph. 2001. Farmland protection programs: How would we know they worked? *Strengthening the Research Agenda Conference; Proceedings from Baltimore, Maryland, 2001*: 59-78.
- Hibbard, M., Lurie, S. 2000. Saving land but losing ground: Challenges to community planning in the era of participation. *Journal of Planning Education and Research* 20 (2): 187-195.
- Hidalgo, C., Hernandez, B. 2001. Place attachment: Conceptual and empirical questions. *Journal of Environmental Psychology* 21: 273-281.
- Innes, J., Booher, D. 2004. Reframing public participation: strategies for the 21st century. *Planning Theory and Practice* 5 (4): 419 -436.
- Jorgensen, B., Stedman, R. 2001. Sense of place as an attitude: Lakeshore owners attitudes toward their properties. *Journal of Environmental Psychology* 21: 233-248.
- Kaltenborn, B., Bjerke, T. 2002. Association between landscape preferences and place attachment: A study in Roros, southern Norway. *Landscape Research* 27 (4): 381-396.
- Koontz, Tomas M. 2005. We finished the plan, so now what? Impacts of collaborative stakeholder participation on land use policy. *Policy Studies Journal* 33 (3): 459-481.
- Kudryavtsev, A., Krasny, M.E., Stedman, R.C. 2012a. The Impact of Environmental Education on Sense of Place Among Urban Youth. *Ecosphere* 3 (4): 1-15.
- Kudryavtsev, A., Stedman, R.C., Krasny, M.E. 2012b. Sense of Place in Environmental Education. *Environmental Education Research* 18 (2): 229-250.
- Kyle, G., Graefe, A. Manning, R., Bacon, J. 2004. Effects of place attachment on users perceptions of social and environmental conditions in a natural setting. *Journal of Environmental Psychology* 24: 213-224.
- Lewicka, Maria. 2005. *Ways to make people active: Role of place attachment, cultural capital and neighborhood ties*. Unpublished: Warsaw University.

- Lochner, K., Kawachi, I., Kennedy, B.P. 1999. Social capital: A guide to its measurement. *Health and Place* 5: 259-270.
- Manzo, Lynne C. 2005. For better or worse: Exploring multiple dimensions of place meaning. *Journal of Environmental Psychology* 25: 67 –86.
- Margerum, R. D. 2008. A typology of collaboration efforts in environmental management. *Environmental Management*, 41(4), 487-500.
- Mariola, M.J. 2005. Losing ground: Farmland preservation, economic utilitarianism, and the erosion of the agrarian ideal. *Agriculture and Human Values* 22: 209-223.
- Mullendore, N., Ulrich-Schad, J., Prokopy, L.S. 2015. U.S. farmers' sense of place and its relation to conservation behavior. *Landscape and Urban Planning* 1440: 67-75.
- Nanzer, Bruce. 2004. Measuring sense of place: A scale for Michigan. *Administrative Theory and Praxis* 26 (3): 362-382.
- Nickerson, C.J., Hellerstein, D. 2003. Protecting rural amenities through farmland preservation programs. *Agricultural and Resource Economics Review* 32 (1): 129-144.
- Olson, R.K., and Lyson, T.A. 1999. *Under the blade: The conversion of agricultural landscapes*. Boulder, CO: Westview Press.
- Purdue, Derrick. 2001. Neighborhood governance: Leadership, trust and social capital. *Urban Studies* 38 (12): 2211-2224.
- Rosenberger, Randall S. 1998. Public preferences regarding the goals of farmland preservation programs: Comment. *Land Economics* 74 (4): 557-565.
- Rote, Z.R., Schroeder, B., D'Augustine, T. 2015. Place-based Education Engagement from the Student Perspective: An Evaluation of Place-based Programs in Northeast Michigan from the Perspective of the Primary Stakeholders: the Students. Michigan Sea Grant (Publication No. MICHU-15-206). Ann Arbor, Michigan: Technical Report.
- Schroeder, L.D., Sjoquist, D.L., Stephan, P.E. 1986. *Understanding regression analysis: An introductory guide*. Newbury Park, CA: Sage Publications, Inc.
- Schuett, M.A., Selin, S.W., Carr, D.S. 2001. Making it work: Keys to successful collaboration in natural resource management. *Environmental Management* 27 (4): 587-593.
- Seyfang, G., Smith, A. 2007. Grassroots innovations for sustainable development: Towards a new research and policy agenda. *Environmental Politics* 16 (4): 584-603.
- Spector, Paul. 1992. *Summated rating scale construction: An introduction*. Newbury Park, CA: Sage Publications, Inc.

- Stern, T.C., Dietz, T. 1994. The value basis of environmental concern. *Journal of Social Issues* 50: 65-84.
- Strauss, David. 2002. How to make collaboration work: Powerful ways to build consensus, solve problems, and make decisions. San Francisco: Berrett-Koehler Publishers, Inc.
- Thompson, A.W., Prokopy, L.S. 2009. Tracking urban sprawl: Using spatial data to inform farmland preservation policy. *Land Use Policy* 26: 194-202.
- United Nations Educational, Scientific, and Cultural Organizations (UNESCO). 2002. Education for sustainability from Rio to Johannesburg: Lessons learnt from a decade of commitment. Paris, France: Technical Report.
- US Census Bureau. 2006. Population Finder. Accessed October 2006.
<http://factfinder.census.gov>
- Walker, B. and D. Salt. 2006. Resilience Thinking: Sustaining Ecosystems and People in a Changing World. Island Press: Washington, D.C.
- Williams, D., Stewart, S. 1998. Sense of place: An elusive concept that is finding a home in ecosystem management. *Journal of Forestry* 96 (5): 18-23.
- Wondelleck, J., Yaffee, S. 2000. Making collaboration work: Lessons from innovation in natural resource management. USA: Island Press.