



## Research Paper

## U.S. farmers' sense of place and its relation to conservation behavior

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## HIGHLIGHTS

- We examine the role of sense of place (SOP) in farmers' conservation behavior.
- Some components of SOP had significant effects on specific conservation behaviors.
- The overall construct of SOP did not predict conservation practice adoption.
- Refinement of the SOP scale in relation to conservation practices is needed.

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## ABSTRACT

State and federal governments collectively spend billions of dollars on conservation programs designed to address nonpoint source pollution from working agricultural landscapes. Previous research has attempted to identify why farmers adopt conservation practices and enroll in conservation programs, but more work is needed to better understand management decisions in specific geo-spatial contexts. Sense of place provides one theoretical approach to accomplish this objective. This study uses mail survey methodology to test a sense of place scale in an American Midwestern agricultural landscape. Factor and principal component analysis suggests sense of place functions as a one-dimensional construct in this setting. However, two subcomponents identified in other studies (place attachment and place identity) have significant effects on specific conservation behaviors where the overall construct of sense of place does not. Insights are gained into the applicability of sense of place theory to a working landscape, as well as the factors contributing to agricultural conservation behavior.

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## 1. Introduction

Nonpoint source pollution is widely identified as the greatest threat to water quality in the United States (EPA, n.d.). Much of this pollution comes from working agricultural landscapes, where rain and floodwaters regularly wash valuable topsoil and nutrient inputs into rivers and creeks. Though the federal government spends billions of dollars every year to address this problem through Farm Bill conservation programs (Tegtmeir & Duffy, 2004), we have yet to see the landscape-level changes to management practices that are needed to effectively tackle this issue. A significant body of research has attempted to identify explanatory factors for adoption of conservation practices and program enrollment among agricultural producers and landowners

(Baumgart-Getz, Prokopy, & Floress, 2012; Prokopy, Klotthor-Weinkauff, & Baumgart-Getz, 2008), but more work is needed to better understand land management decisions. Accounting for agricultural producers' sense of place, or the attachment and meanings they associate with the land they manage, provide one theoretical approach to accomplish this objective.

Previous natural resources-based research on place meanings and sense of place has explored a diverse array of topics. Recent scholarship has examined lakeshore owners' attitudes toward their properties (Jorgensen & Stedman, 2001), sense of place at the rural-urban interface (Soini, Vaarala, & Pouta, 2012), environmental concerns in a high-natural-amenity watershed (Brehm, Eisenhauer, & Stedman, 2013), natural attachment and migration intentions in rural places (Ulrich-Schad, Henly, & Safford, 2013), and the influence on recreation specialization (Bricker & Kerstetter, 2000), among other applications. Other work has been theory- or concept-driven, investigating the generalizability of measurement techniques (Williams & Vaske, 2003), the applicability at different spatial scales (Hidalgo & Hernandez, 2001), and the effect

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of approaches utilizing different research paradigms (Williams & Patterson, 2007).

To date, a good portion of the body of research on sense of place in natural resource literature has focused on public lands and recreational users. A comparatively understudied area of investigation is sense of place as experienced by operators of agricultural land, namely farmers and ranchers. Agricultural producers are the dominant land managers in many parts of the United States, making efforts to improve water quality and retain biodiversity dependent upon understanding their relation to the places where they live and work. Extending concepts and methodologies developed for other arenas may provide a lens through which individual farmers' management decisions can be understood, while also helping to incorporate these individual perspectives into landscape-level management goals. This study represents a preliminary investigation into sense of place in a rural, agriculture-dominated landscape, focusing on farmers as the dominant land users and land managers.

## 2. Background

Sense of place describes the mental, emotional, and functional bonds that an individual or group develops toward a specific location. Often these sentiments lead people to acquire a sense of belonging, or attachment with associated meanings, to a particular place (Tuan, 1974; Williams & Carr, 1993). While there has been disagreement over construct development and semantics (Brehm, Eisenhauer, & Krannich, 2006; Flaherty & Brown, 2010; Hidalgo & Hernandez, 2001; Trentelman, 2009; Ulrich-Schad, Henly, & Safford, 2013), a rich body of research has been built around sense of place and associated ideas. For instance, researchers have used place attachment, community attachment, place identity, place dependence, sense of place, place meaning, and other related terms interchangeably or to encapsulate one another to understand many types of place-based issues.

Sense of place is sometimes described as a tripartite construct comprised of place attachment, place dependence, and place identity. Jorgensen and Stedman (2001) note that it is most useful to think of sense of place as an "attitude toward a spatial setting, especially since [place identity, place attachment, and place dependence] share strong similarities to the cognitive, affective, and conative components of attitude" (emphasis added). Place dependence describes a tangible reliance on an environment while place identity invokes more symbolic or spiritual meaning (Stokols, 1990; Williams & Vaske, 2003). In other words, place dependence describes a *functional* relationship between a group or individual and a place, while place identity describes a *mental* relationship, and place attachment describes a positive *emotional* bond that develops between an individual or group and their environment (Williams, Patterson, Roggenbuck, & Watson, 1992). We use the tripartite model because we think it best captures the multiple facets of sense of place, it aligns with existing work on this topic, and because we see it as useful for developing a better understanding of agricultural producers and their interests.

Natural resource managers are interested in the practical applications of sense of place theory, particularly how attitudes affect desired conservation activity. For instance, do agricultural producers' sense of place play a role in whether or not they adopt conservation practices? Most sense of place studies have focused on scenarios that are wholly different from agriculture (Brehm et al., 2006; Brehm, Eisenhauer, & Stedman, 2013; Halpenny, 2010; Jorgensen & Stedman, 2001; Kyle, Manning, & Bacon, 2004; Simoni & Floress, 2014; Ulrich-Schad, Henly, & Safford, 2013; Vorkinn & Riese, 2001; Walker & Chapman, 2003; White, Virden, & van Riper, 2008; Williams & Carr, 1993; Williams & Vaske, 2003). Though this research has contributed significantly to the conception of sense

of place, few have focused on the relationship between agricultural producers' sense of place and their conservation attitudes and behavior. Ngo and Brklacich (2013) did examine sense of place among "new" farmers in southern Ontario, Canada, however, their analysis sought to characterize their subjects' feelings about the land without linking sense of place to behavior.

Place dependence is one component of sense of place that needs re-conceptualization for application to working lands. Williams and Carr (1993) summarize place dependence as a condition wherein "the occupants of a setting perceive that it supports their behavioral goals better than any known alternatives." For recreationalists, this means that a park or other setting offers special or unique opportunities for leisure. However, the relationship between a hiker and the trail is inherently different from that of a producer and his field; in most cases, the latter depends on the land for his financial well-being while the former is using the resource for its spiritual, esthetic, or recreational qualities. Place dependence is thus distinct from place identity and place attachment in that the relationship can involve a negative association (Jorgensen & Stedman, 2001). Having to choose one option from several alternatives *does not* mean that the chosen option is in fact desirable—it may simply be the "best among poor alternatives." In this way, place dependence could constrain the attainment of a desired outcome. A farmer concerned about long-term soil loss, for example, may still choose management strategies that cause erosion if that is the only way he can make a short-term profit from the area in question. This hypothetical example of place dependence could be considered economic dependence, an idea explored by Cross, Keske, Lacy, Hoag, and Bastian (2011). Their factor analysis suggested that sense of place breaks down into three distinct categories: place identity, conservation ethic, and economic dependence. In the ranchlands context, economic dependence was a significant negative predictor of support for land trusts and conservation easement placement.

Vorkinn and Riese (2001) find that place attachment "implies that individuals with a strong attachment to an area probably will oppose environmental destruction" (p. 250) but that they may not be fully conscious of their place attachment until a major environmental disturbance. One might think that this crisis element of place attachment would transfer to water quality concerns in agricultural contexts. This transferability, however, would be limited if individuals fail to perceive the present conditions as a threat; producers may not observe the cumulative, downstream consequences of management decisions or they may disagree with the conclusions reached by water quality professionals. Additionally, producers might not feel attachment to the water resources on or near their property; a drainage ditch, for example may be seen as an extension of productive land and thus exempt from ecological concern.

Previous research suggests that sense of place theory offers a way to better understand the relationship between individuals and the places they inhabit, recreate, and manage, though more work is needed in an agricultural context. This research centers on the following question: how does sense of place affect agricultural producers' adoption of land conservation practices and enrollment in government-sponsored conservation programs? Subquestions include: for agricultural land managers, how are place attachment, place identity, and place dependence related to each other? Do they function independently or as a one-dimensional construct? Is sense of place correlated to program enrollment or best management practice (BMP) adoption? Is one component of sense of place (attachment, dependence, identity) more closely tied to environmentally responsible behavior than the others? Academic researchers will benefit from a clarified and expanded conception of sense of place that includes agricultural considerations. Land management professionals, on the other hand, will benefit from an increased understanding of their client

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