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Elena Rene Thomas

*University of Montana, Missoula*

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THE EFFECT OF PLACE ATTACHMENT AND LEISURE IDENTITY ON STEWARDSHIP  
PARTICIPATION IN THE RATTLESNAKE NATIONAL RECREATION AREA AND  
WILDERNESS

By

ELENA RENE THOMAS

B.A., University of Florida, Gainesville, FL

Thesis

presented in partial fulfillment of the requirements  
for the degree of

Master of Science  
in Parks, Tourism, and Recreation Management

The University of Montana  
Missoula, MT

May 2023

Approved by:

Scott Whittenburg, Dean of The Graduate School  
Graduate School

Dr. William L. Rice, Chair  
Department of Society and Conservation

Dr. Jennifer M. Thomsen  
Department of Society and Conservation

Dr. Christopher A. Armatas  
United States Forest Service, Aldo Leopold Wilderness Research Institute

## The Effect of Place Attachment and Leisure Identity on Stewardship Participation in the Rattlesnake National Recreation Area and Wilderness

Chairperson: Dr. William L. Rice

As outdoor recreation participation increases in the U.S., and many communities in the American West are experiencing rising amenity migration, park and protected area managers face significant challenges to balance both providing for visitors' desired experiences and protecting the natural resources on which these experiences depend. Confronted with declining management capacity, agencies are increasingly looking to engage both newer and established recreationists in stewardship behaviors to help maintain these areas and improve human-environment relationships. One barrier to community involvement in stewardship efforts is the need to better understand the connection between recreationists' antecedent conditions and their motivations to steward. Past research has examined the place attachment of visitors, or the relationships they have with a particular natural area, as well as the concept of leisure identity salience, which explains how participation in leisure activities functions as a self-affirmation process. However, little is known about how leisure identity salience relates to stewardship. This study addresses this research gap by examining these concepts in a wildland recreation setting within a growing, amenity migrant-attractant community in the western U.S., to answer the following research question: To what degree do the place attachment and leisure identity salience of visitors relate to local environmental stewardship behavioral intentions among visitors? Data were collected from an on-site visitor survey in the Rattlesnake National Recreation Area and Wilderness in Missoula, MT (USA), and structural equation modeling was used to test the hypothesized relationship between variables. Results found that one dimension of place attachment, identification with place, was predictive of willingness to engage in place-specific proactive stewardship behaviors. One's leisure identity was found to predict willingness to engage in Leave-No-Trace behaviors. In addition, a suggestive predictive relationship was revealed between recreationists' leisure identity and place-specific proactive stewardship behaviors. It is clear that the meaning visitors generate from 1) a recreation place and 2) the leisure activities they participate in while in this place have a powerful influence on behavior. Managers should target identity when designing messaging strategies to encourage stewardship behaviors and employ creative partnerships with recreation organizations to better engage the local community in collaborative land management.

## ACKNOWLEDGEMENTS

This thesis would not have been possible without the support and encouragement of many people in my life.

First and foremost, I want to extend a special thank you to my advisor, Will Rice. I would simply not be in the place I am today in my academic and professional career without your mentorship. You have set a tireless example of dedication, hard work, and humility, and it has been an honor to serve as one of your first graduate students. Thank you for always believing in me and for your friendship over the last two years.

Thank you to my committee members, Jenn Thomsen and Chris Armatas, for the guidance and inspiration you have given me throughout this experience. It has been a pleasure working with you on a number of projects including this thesis work, and your direction has made me a better researcher and student.

Thank you to my amazing Warm Lab crew, Peter, Sophie, and Kelsey, for all the laughs and camaraderie we've shared. I am eternally grateful for your support and for your help conducting surveys in the RNRAW. I am also indebted to Grace Walhaus, Zach Hummel, members of the Fall 2022 PTRM Capstone course (Thomas French, Ralph Spinelli, Zooey Fintz, Jonathan DeMatos, Haley Powers, and Alec Shingleton), as well as Graham Johnson and Hannah Hornyak from the City of Missoula for their help with data collection.

Thank you, Mom, Dad, and Kelly, for the foundation you laid for me to stand on, and the constant love and encouragement you've shown me ever since.

Last but not least, thank you to my partner, Jacob, for weathering every high and low that is graduate school by my side. You have propped me up in so many ways on this whole journey, and I am so grateful to go through life with someone like you. Thank you for your unwavering confidence in me, for loving me, keeping me sane, and reminding me that so many fun and adventurous times are ahead.

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## **Chapter 1: Introduction**

Outdoor recreation participation in the United States has risen substantially over the last decade. In 2020, driven in large part by the COVID-19 pandemic, 7.1 million more Americans participated in at least one outdoor activity compared to the previous year (Outdoor Foundation 2021). In 2019, the outdoor recreation industry contributed 459.8 billion dollars to the U.S. economy, representing 2.1% of the GDP, and employed 5.2 million people (State Outdoor Business Alliance Network, 2021). For many western states, such as Montana, outdoor recreation is integral to the tourism economy; in 2021, Montana's outdoor recreation economy grew by 30% and Montana state parks reported more than 3.4 million visitors (Weddell, 2022). Additionally, the phenomenon of amenity migration, or the movement of people to largely rural areas for environmental or lifestyle reasons, is highly prevalent in the American West and has substantially shaped recreation demand in many communities such as Missoula, MT (USA) (Ghose, 2004; Hjerpe et al., 2022). Residents are often drawn to these rural communities for the access provided to parks and protected areas, natural amenities such as climate and topography, and outdoor recreation opportunities; research has shown that Wilderness areas, in particular, are significant drivers of amenity migration (Kruger et al., 2010; McGranahan, 1999; Smith, 2018). Economic changes (e.g., rising home prices) caused by amenity migration and its social implications (e.g., the consolidation of political power by affluent newcomers and value conflicts between new and long-term residents) often create challenges for sustainable community planning (Hjerpe et al., 2022). In addition, while amenity migrants tend to be supportive of conservation policies, the environmental consequences of amenity infrastructure development and movement into previously rural, undeveloped areas often create concern for local communities (Rudzitis, 1999).

When faced with this increased recreational demand, park and protected area managers in the Western U.S. can experience significant challenges in balancing both providing for visitors' desired experiences and protecting the natural resources on which these experiences depend (Timmons, 2018). If recreation areas are not properly managed, heavy increased visitation can result in a number of impacts to the biophysical environment and the visitor experience, including biodiversity loss, changes in wildlife behavior patterns, depreciative behavior, and recreation conflicts (Winter et al., 2019). Federal, state, and local land management agencies tasked to manage these impacts often deal with generally declining management capacity (e.g., budgetary constraints, staff shortages, and lack of technical capital); thus, managers are increasingly looking to engage recreationists in stewardship activities to help maintain these areas, improve human-environment relationships and increase stewardship capacity (GAO, 2013; McCool & Kline, 2020; Pitas et al., 2022; Wolf et al., 2013). Viewing recreationists as potential stewards rather than threats to the land, and providing opportunities for recreationists to engage in collaborative planning processes and conservation initiatives is essential to successful management of protected areas facing an influx of users and evolving visitor demographics (Weaver & Lawton, 2017).

Despite a recognized need to engage recreationists in stewardship, agency-led partnerships focused on engendering public support and participation in conservation initiatives have resulted in differing levels of success and sustainability, and often encounter barriers such as difficulty recruiting volunteers and retaining them (Miller et al., 2012; Schild, 2019). One significant barrier to community involvement in both direct and indirect conservation efforts is the need to better understand the connection between recreationists' antecedent conditions—or people's characteristics prior to their recreation experience that may influence that experience or

their motivations—and their involvement in stewardship behaviors (Miller et al., 2020). Past research has focused on the antecedents of place attachment among visitors, or the relationships they have with a particular natural area, and to a lesser extent, the concept of leisure identity salience, which explains how participation in leisure activities functions as a self-affirmation process (Haggard & Williams, 1992; Williams et al., 1992). However, little is known about how leisure identity salience relates to stewardship (Landon et al., 2018; Larson et al., 2018). This current study attempts to bridge this research gap by examining how the recreationist antecedent conditions of place attachment and leisure identity relate to willingness to engage in local stewardship activities in a wildland recreation setting within a growing, amenity migrant-attractant community in the western U.S., and how to harness these antecedent conditions to facilitate engagement in stewardship behavior that is both effective and adaptive.

My thesis research was conducted in the Rattlesnake National Recreation Area and Wilderness (RNRAW) in Missoula, MT (USA) and applied a quantitative analysis to answer the following research question: To what degree do the place attachment and leisure identity salience of visitors relate to local environmental stewardship behavioral intentions among visitors? As the demographics of Missoula change and more visitors are drawn to the RNRAW for a variety of desired experiences, research is needed to shed light on how to engage both newer and established recreationists in stewardship and minimize impacts of increased visitation (Missoula Parks and Recreation, 2019). For enhanced local engagement and collaboration, managers must strive to understand what is compelling visitors to recreate in the RNRAW and the meaning visitors generate from 1) the place and 2) the leisure activities they participate in while in this place. In a community shaped by a recent surge of amenity migrants drawn to the recreational opportunities in the area, it is possible that recreation is a common value that could be leveraged



to enhance civic engagement in local stewardship of Missoula's public lands. In fact, stewardship itself could be promoted as a recreation opportunity in the RNRAW, thereby increasing the available benefits the recreation area provides to the Missoula community (Miller et al., 2020).

## Chapter 2: Literature Review

The following section seeks to situate my thesis work within the body of literature on place attachment theory, leisure identity salience of recreationists, and local environmental stewardship, and will explore the management implications proposed in previous studies.

### *Place Attachment*

The relationship between people and place has been widely studied throughout multiple disciplines including geography, economics, sociology, environmental psychology, and outdoor recreation, beginning with the work of phenomenological researchers such as Yi-Fu Tuan (1975) and Edward Relph (1976) (Lewicka, 2011; Patterson & Williams, 2005; Trentelman, 2009). Research has explored place attachment across diverse geospatial settings, scales, and types of communities such as declining suburban neighborhoods (Brown et al., 2003), immigrant communities (Derrien & Stokowoski, 2014), and people living in war zones (Billig, 2006). While conceptions of place attachment vary, it is often defined as a cognitive, functional, and affective bond with a particular place (Giuliani, 2003; Halpenny, 2010; Jorgensen & Stedman, 2001; Low & Altman, 1992). There is evidence of a relationship between qualities of an individual's experience in a place and their level of place attachment (e.g., Williams et al., 1992). Mitchell et al. (1993) reported that increased use frequency results in increased attachment to the environment among forest visitors. Additionally, within rural community settings, McCool and Martin (1994) found a correlation between length of residency in an area and attachment.

Scannell and Gifford's (2010) tripartite framework has been used across various disciplines to organize place attachment theory and outlines three distinct dimensions: person, process, and place (PPP). 'Person' describes the actors and relevant cultural dimensions involved in the attachment process, whether it is on an individual or group level. 'Process' refers to the

psychological development of attachment, consisting of affective, cognitive, and behavioral components. These components include emotional investments made with a place, memories, knowledge and belief systems that create place meaning, and proximity-maintaining behavior. Lastly, 'place' refers to the unique qualities of the location itself that foster attachment, involving both its physical and social characteristics. While this framework attempts to incorporate the complexity of ways that place attachment has been defined, within the environmental psychology and outdoor recreation realm, researchers have utilized a slightly more focused approach. In their foundational study, Williams and Roggenbuck (1989) outlined two components of place attachment that have since been consistently used to measure the concept: place dependence and place identity (Halpenny, 2010; Moore & Graefe, 1994; Williams & Vaske, 2003).

#### *Dimensions of Place Attachment*

Place dependence, one of the two core dimensions of place attachment, refers to a functional attachment related to a place's potential to satisfy an individual's needs and goals (Stokols & Shumaker, 1981). This is usually combined with an assessment of how the place compares to other alternatives that offer similar opportunities. In a recreational setting, locations that provide better opportunities to perform activities, like hiking, biking, or hunting, may increase a sense of attachment (Williams & Roggenbuck, 1989). This form of attachment may also increase based on proximity, or if a certain place is close enough to allow for frequent visitation (Williams & Vaske, 2003). Place dependence has been shown to be higher among beginner recreationists with lower skill levels (Bricker & Kersetter, 2000) and is associated with an increased tolerance of crowding and environmental conditions (Kyle et al., 2004).

Prochansky (1978) defines the second component of place attachment, place identity, as the relation of an individual's self-identity with the physical environment "by means of a complex pattern of conscious and unconscious ideas, beliefs, preferences, feelings, values, goals, and behavioural tendencies and skills relevant to this environment" (p. 155). It can further be defined as an affective attachment one has with a particular place that serves as a "repository for emotions and relationships that give meaning and purpose to life" (Williams & Vaske, 2003, p. 831). Researchers have also discussed place identity as an abstract, symbolic attachment to the natural world that can develop without physically experiencing a setting; for example, the way U.S. national parks symbolize heritage for many Americans (Prochansky, 1978; Williams et al., 1992). More time spent in a place due to place dependence may lead to a stronger sense of place identity (Moore & Graefe, 1994).

Some researchers have identified additional dimensions of place attachment. In some instances, place affect—or the emotional connection to a certain place—and the self-actualization components of place identity have been parsed apart and measured separately (Halpenny, 2010; Jorgensen & Stedman, 2001; Ramkissoon et al., 2013). Others have examined the influence of social relationships and shared experiences on place attachment, and have validated social bonding as a third dimension (Kyle et al., 2005; Ramkissoon et al., 2013; Scannell & Gifford, 2010). Despite this, Williams and Roggenbuck's (1989) two-dimensional model of place attachment remains the most commonly used and validated measure across the broader leisure discipline. Measurement items for place dependence and place identity were included in several previous studies in the RNRAW (Watson et al., 1991; Williams et al., 1992); this current research utilizes a similar two-dimensional scale in order to perform a longitudinal trends

analysis in a subsequent project. (Note: This trends analysis will be undertaken as a separate study, and is outside the scope of this thesis).

### *Place attachment and Pro-environmental behavior*

A considerable amount of research has documented the link between place attachment and pro-environmental attitudes and behaviors (Ramkissoon et al., 2013; Stedman, 2002; Uzzell et al., 2002). Focusing on attitudes, Walker and Ryan (2008) found that the place attachment of rural residents in Maine was strongly correlated to their willingness to support land protection strategies and conservation planning. Both Vaske and Kobrin (2001) and Halpenny (2010) examined the effect of place dependence and place identity on general pro-environmental behavioral intentions, referring to behaviors not performed at a particular place such as talking with others about environmental issues or recycling at home. Finally, Walker and Chapman (2003) utilized Williams and Roggenbuck's (1989) two-dimensional scale to show that place-specific pro-environmental behaviors of visitors to a Canadian park, such as picking up others' litter or volunteering there, was highly influenced by place attachment.

### *Management Implications*

In the recreation literature, researchers have conferred that understanding how place attachment influences visitors' motivations is beneficial to managers seeking to improve the visitor experience (Budruk & Stanis, 2013; Ednie et al., 2010). Ramkissoon et al. (2013) explain how place attachment can influence both visitor satisfaction and pro-environmental behavior in the park context, and suggest managers harness behavioral spill-over effects—the effects of a behavioral intervention on subsequent behaviors not directly targeted by it—by encouraging low-effort pro-environmental behaviors, such as not feeding animals, that may lead to higher effort behaviors, such as volunteering (Truelove et al., 2014). Lastly, Halpenny (2010) discussed how

understanding the impact of direct park experiences in shaping place identity, and therefore pro-environmental behavior, compared to non-visitors, will better inform park and protected area managers in developing environmental education programs and social marketing campaigns.

### ***Leisure Identity Salience***

#### *Identity Theory*

Social identity theory research seeks to understand the role of humans' self-concept in determining behavior (Burke & Stets, 2009; Burke & Tully, 1977; Cast, 2003). According to this approach, identities can be multifold and are ordered in the self-concept according to a hierarchy of salience (Stryker 1987). The higher the salience of an identity is to an individual, the more motivation they will have to perform actions that reflect that identity (Santee & Jackson, 1979; Stryker & Serpe, 1982). For example, Callero (1985) found that the salience of the "blood-donor role identity" predicted the frequency with which individuals donated blood. Additionally, a study by Stets and Biga (2003) showed that people with a salient "environmental identity" were more likely to engage in environmentally responsible behaviors. Identity salience is embedded in social structure and is largely determined by one's social commitment, or the degree to which relationships with others are determined by assuming a certain social identity or role (Stryker, 1987).

#### *Identity Theory in the Leisure Realm*

Leisure, defined as a relatively self-determined non-work activity exemplified by qualities of perceived freedom, may be particularly suitable to the expression and development of selfhood and identity (Kelly, 1983; Shamir, 1992). Leisure identity is defined by Haggard and Williams (1992) as a tool people use to "construct situations that provide us with information that we are who we believe ourselves to be, and provide others with information that will allow

them to understand us more accurately” (p. 3). The authors contextualize this definition through an example of a runner:

One wears running shoes to symbolize that one identifies with running or runners; but there is a richer meaning to this identification than merely being a runner. Being a runner implies certain identity images, for instance that one is physically fit, self-disciplined, and motivated. These identity images that are affirmed through participation in or identification with a leisure activity may be termed ‘leisure identity images.’ (p. 3)

Leisure identity can play a critical role in the “self-affirmation” process, or the way in which individuals strive to affirm cognitive self-images consistent with their ideal self (Schlenker, 1984). Furthering the concept of leisure identity to a measurable construct, Shamir (1988; 1992) introduces the concept of leisure identity salience as “the importance of a leisure identity for self-definition relative to other identities” (Shamir, 1992, p. 304). In this way, leisure identity salience can be viewed as the degree to which one’s identity is linked to, or driven by, their leisure activities. Qualitative research has indicated that a leisure identity becomes salient when it expresses and affirms an individual’s talents and capabilities, endows them with social recognition, and affirms their central values (Shamir, 1990). The more salient an individual’s identity is, the more influence it has on their perceptions of the world and their notions of appropriate modes of conduct (Landon et al., 2018). Additionally, research has shown that those with high leisure identity salience often feel a greater obligation to act in a manner to sustain the resource upon which their self-expression depends; thus, it is possible that identities tied to outdoor recreation are associated with heightened concern for the environmental setting (Burke, 1991).

In the literature, leisure identity has been discussed within the context of serious leisure, ego-involvement, specialization, and commitment research (Baldwin & Norris, 1999; Gibson et al., 2002; Selin & Howard, 1988; Shamir, 1992). Serious leisure is a term that refers to a personal approach to leisure that contrasts from casual, fleeting participation in an activity; one of its distinguishing qualities among others is the strong identification with a certain pursuit (Stebbins, 1982). Three quantitative studies by Shamir (1992) conducted with college students and serious leisure participants showed that the salience of a leisure identity was strongly associated with time investment, perceived social commitment, and the amount of effort and skill required.

Outside of the serious leisure realm, few studies have examined the concept of leisure identity salience and its central role in motivating behavior. Some research has explored this centrality in relation to other influential variables (Jun et al., 2015; Laverie & Arnett, 2000). For example, Jun and Kyle's (2012) study investigated the interplay of gender identity and leisure identity salience in predicting recreational golf participation. Similarly, Lee et al. (2016) examined the influence of variables such as enduring involvement and social norms on leisure identity salience to explain its close link to the loyalty of film festival attendees. Haggard and Williams (1992) observed that the need to express one's true (or ideal) self predicted participation in a leisure activity. Participants in their study reported participating in activities, like backpacking, volleyball, or kayaking, that reflected certain character traits they wanted to convey. For instance, backpacking was perceived to convey the self-images of "adventurous", "fun", and "likes scenic beauty". Participants who viewed themselves as having this set of self-images were more inclined to engage in the activity of backpacking to affirm their leisure identity. Lastly, Schneider and Winter (1998) utilized interviews and a survey to ascertain the



influence of leisure identity salience on the management preferences of visitors to a southwestern U.S. recreation area, showing that visitors with higher leisure identity salience favored education and site modification over user separation to manage multiple use conflicts.

To my knowledge, only one study to date has examined the link between leisure identity salience and stewardship behavior. Landon et al. (2018) explored the role of the leisure identity of Texas anglers in shaping normative beliefs and stewardship behavior, including private-sphere, public-sphere, and social stewardship activities. The study found that identity was directly predictive of public sphere and social stewardship behavior – such as actions seeking changes to governance or community support for conservation – and indirectly related to private-sphere stewardship – or private actions seeking to minimize one’s impacts on nature.

#### *Management Implications*

Although the breadth of research on leisure identity salience is limited, numerous researchers have discussed its usefulness in future research, recreation management, and policy recommendations. Jun and Kyle (2012) discuss how a better understanding of gender roles’ influence on leisure identity and how it shapes leisure participation could lead to more informed policy development, to “de-gender” leisure activities and increase the range of leisure opportunities available. Both Lavarie and Arnett (2000) and Lee et al. (2016) uphold leisure identity salience measurement as an effective way to understand participants’ motivations and better target them, through interventions such as utilizing special promotional materials for participants with a higher leisure identity, to ensure continued involvement and loyalty. Finally, Schneider and Winter (1998) suggest that measurement of leisure identity salience is a uniquely parsimonious tool to examine visitor preferences of management techniques by incorporating implicit meaning measures, therefore increasing managers’ understanding of visitor needs. Due

to the power of leisure identity salience measures in explaining leisure behavior and its understudied nature, it is clear that the concept represents an exciting avenue of future research of recreationist antecedent conditions. Further, leisure identity salience's ability to dictate behavior shows promise for influencing stewardship behaviors—if harnessed by managers (e.g., through leisure activity-focused messaging, programming, or other means).

### *Stewardship*

A considerable amount of research across disciplines has focused on human-environment relationships and documenting factors that minimize ecological harm and foster conservation behaviors (Ehrlich & Kennedy, 2005; Stern, 2000). In the parks and protected area context, recreation, when combined with ineffective management, is often viewed as negatively impacting ecosystems (Monz et al., 2021). These detrimental impacts from recreation activities such as hiking and camping are commonly studied in the field of recreation ecology, and research has examined reduced vegetation cover and changes in species composition, air and water pollution, noise, and wildlife disturbances (Cole & Monz, 2002; Gutzwiller et al. 2017; Monz et al. 2013). Ecological responses to these impacts depend on the ecosystem and species affected, but are often influenced by type of recreation use, use level and concentration, and visitor behavior (Monz et al., 2021). Therefore, recreationist participation in actions that help maintain, protect, and manage impact to a certain recreation area – or local environmental stewardship – can be a powerful way to support management capacity in limiting resource disturbance, while also fostering connections to place and improving the visitor experience (Miller et al., 2020).

### *Local Environmental Stewardship*

Bennett et al. (2018) defines local environmental stewardship as:

The actions taken by individuals, groups, or networks of actors, with various motivations and levels of capacity, to protect, care for or responsibly use the [local] environment in pursuit of environmental and/or social outcomes in diverse social-ecological contexts. (p. 599)

Local stewardship has been studied in numerous contexts including, but not limited to, forests (Kilgore et al., 2008), rural agricultural landscapes (Raymond et al., 2015), fisheries (Medeiros et al., 2014), and urban environments (Romolini et al., 2016). Most of these studies have focused on detailing the creation of community initiatives, stewardship actions that have occurred, and on factors that support or undermine stewardship such as motivations, capacity, institutions, and networks (Bennett et al., 2018).

Bennett et al. (2018) provides a conceptual framework of stewardship in which action hinges on the elements of actors, their intrinsic and extrinsic motivations, and capacity to engage in stewardship; these elements are influenced by the social-ecological context of an area and produce both ecological and social stewardship outcomes (See Figure 1). Local stewardship can involve both individual and collective actors, as well as networks of multi-stakeholder partnerships incorporating public agencies, NGOs, funding bodies, and local communities (Bennett et al., 2018).

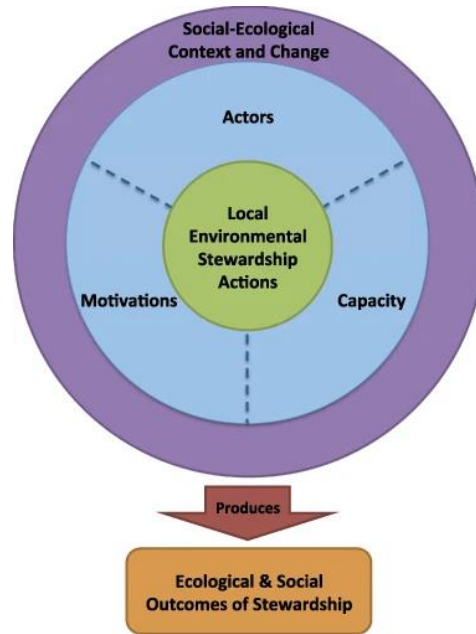


Figure 1. Bennett et al.'s (2018) local environmental stewardship framework.

The capacity of actors to engage in stewardship actions is reliant on both local community assets and broader governance structures that provide the resources and incentives that enable participation (Bennett et al., 2018). Community assets support the ability of communities to take stewardship actions and include connections to place, infrastructure, financing, knowledge, skills, and leadership factors (Allison & Ellis, 2001; Bennett et al., 2018; Scoones, 1998). The inclusion of the community and various stakeholders in planning processes, knowledge-production, and cooperative management can build trust and increase the effectiveness of stewardship actions (Miller et al., 2020). However, the capacity of actors to engage in stewardship behaviors is not enough to compel them to action; individuals and communities must be motivated to steward resources (Bennett et al., 2018). These motivations can be both intrinsic or extrinsic to an individual or group. Intrinsic motivations include underlying ethics, morals, beliefs, values, and a need for self-actualization and self-determination (Bennett et al., 2018). Research has shown that local stewards and volunteers are often motivated

by a desire to belong to or maintain an affiliation with a certain social group (Asah et al., 2012; Silva & Mosimane, 2014).

This study proposes that the concept of local environmental stewardship is comprised of two integral components further discussed below: place-specific pro-environmental behavior and Leave-No-Trace (LNT) behavior (see Figure 2).

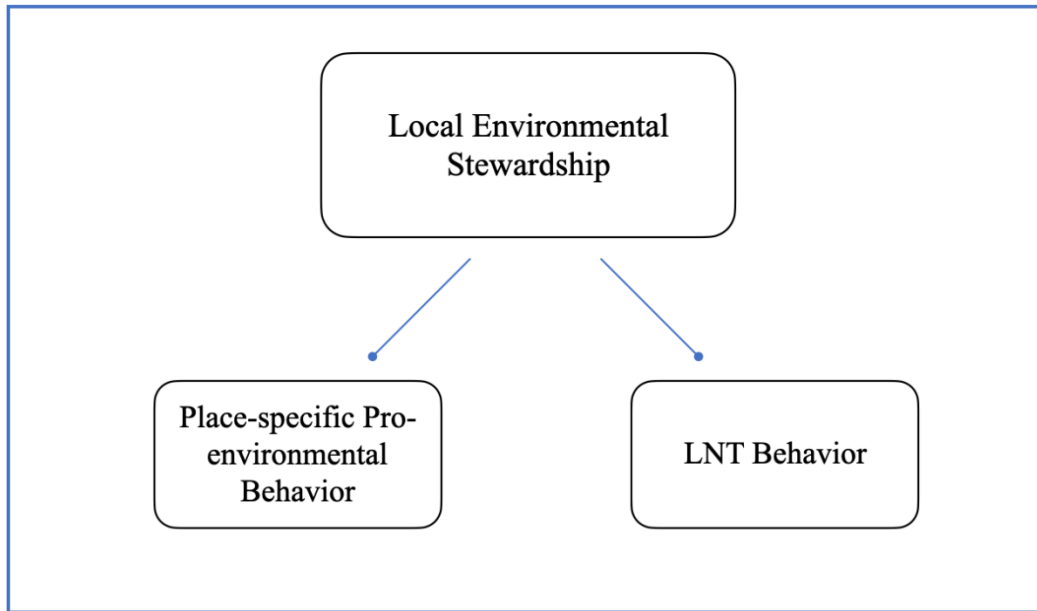


Figure 2. Two components of local environmental stewardship.

#### *Pro-environmental Behavior*

Pro-environmental behavior can be generally defined as a range of human behaviors that benefit the natural environment, enhance environmental quality, or encourage the sustainable use of natural resources (Larson et al., 2015; Stern, 2000). These behaviors are operationalized differently among researchers and are often referred to using a variety of different terms, including “environmentally responsible behaviors”, “conservation behaviors”, and, more recently, “environmental stewardship” (Bennett et al., 2018; Gosling & Williams, 2010; Thøgersen, 2006). Pro-environmental behavior can vary in types of impact (e.g., direct vs.

indirect) (Stern, 2000), effort level (e.g., high vs. low) (Ramkissoon et al., 2013), and scope of influence (e.g., local vs. global) (Halpenny, 2010). For example, these behaviors can range from low-effort individual tasks that can take place at home such as carpooling or purchasing energy-efficient products, to high-effort, direct activities such as volunteering for a stream revitalization project in the local community (Larson et al., 2015).

Many studies have focused on private sphere pro-environmental behavior that occurs across contexts and is often associated with environmentalism, such as recycling, water-conservation, and environmentally-conscious transportation (Corral-Verdugo et al., 2008; Kaiser et al, 2005; Oreg & Katz-Gerro, 2006). Other studies have conceptualized pro-environmental behaviors as those focused on civic engagement, often involving a political activism component; these actions include education, signing petitions, letter-writing, or donating to environmental causes (Cottrell, 2003; Stern, 2000). Finally, a limited but growing number of studies have focused on place-based conservation efforts maintain or improve the ecological features of a certain landscape, such as planting trees or enhancing wildlife habitat of a natural area (Huddart-Kennedy et al., 2009; Larson et al., 2015; van Riper & Kyle, 2014). When pro-environmental behavior is confined to a specific region, recreational area, or park, these behaviors are referred to as place-specific pro-environmental behaviors (Halpenny, 2010).

Questionnaires administered to measure pro-environmental behavior have been conceived of by researchers in various ways and no standardized measurement scale, or set of answer options, exists (Halpenny, 2010). Although place-based stewardship items have largely been absent in existing scales, several studies focused on specific parks and protected area contexts have adapted specific pro-environmental behavior items to measure local environmental stewardship (Halpenny, 2010; van Riper & Kyle, 2014; Walker & Chapman, 2003). Importantly,

as these scale items based in the pro-environmental behavior literature were being developed, an overlapping process for improving the measurement of Leave-No-Trace behaviors—another component of protected area stewardship—was underway.

### *Leave-No-Trace Behavior (LNT)*

LNT as a park and protected area visitor education program originated in the 1960s with U.S. Forest Service (USFS) messaging which urged forest visitors to reduce littering—largely in response to increasing use of recreation areas (Marion & Reid, 2001; Vagias et al., 2014). Efforts by land management agencies and other groups to educate recreationists on how to minimize their impact on the land began to grow more common, but guidelines were unorganized and inconsistent (Cole, 2018). In the 1980s, the USFS and the National Outdoor Leadership School collaborated to develop the LNT program in an effort to institutionalize and systematize low impact messaging; its seven central tenants to promote sustainable recreation behavior include: 1) plan ahead and prepare; 2) travel and camp on durable surfaces; 3) dispose of waste properly; 4) minimize campfire impacts; 5) leave what you find; 6) be considerate of other visitors; and, 7) respect wildlife (Blye & Halpenny, 2020). By 1993, three other federal land management agencies, including the National Park Service, Bureau of Land Management, and the U.S. Fish and Wildlife Service, adopted LNT as their primary minimum-impact educational program (Marion & Reid, 2001). The following year, a non-profit organization (the Leave No Trace Center for Outdoor Ethics) headquartered in Boulder, CO was created to further develop LNT training and resources for educators, and engage in partnerships with a diverse range of groups including outdoor industry corporations and youth serving organizations (Cole, 2018).

Today, LNT concepts are among the most frequently used methods by managers to encourage the responsible use of parks and protected areas and are often used in visitor education

programs and marketing materials (Lawhon et al., 2013; Marion & Reid, 2001; Vagias & Powell, 2010). LNT research has largely been conducted in the recreation ecology field and has focused on mitigation of recreational impacts, although recently, more studies have explored the psychological and social factors influencing implementation of LNT behaviors (Lawhon et al., 2013; Leung & Marion, 2000). Marion and Reid (2001) conducted a review of LNT research in recreation settings, finding that most studies showed that educational interventions promoting low-impact behaviors were generally effective in increasing visitor knowledge and influencing behavior, and that consistency and repetition of LNT messaging was important. Additionally, in their analysis of visitor surveys conducted in eight U.S. wilderness areas, Christensen and Cole (2000) found that some user groups were less likely than others to practice low impact behaviors, concluding that messaging should target these groups to effectively address their specific resource and behavioral concerns. As LNT principles are designed to teach recreationists to reduce their impact and recreate sustainably, LNT behavior is considered a form of pro-environmental behavior and – when applied in specific park and protected area contexts – another component of local environmental stewardship (Blye & Halpenny, 2020).

### *Management Implications*

Increasing human density poses a variety of threats to social-ecological systems such as parks and protected areas; participation in stewardship activities helps to sustainably mitigate those impacts while providing health well-being benefits and community building opportunities (Wolf et al, 2013). Efforts to introduce policies, programs, or marketing efforts that encourage stewardship activities within a community can improve their efficacy through interventions that leverage parts of a framework introduced by Bennett et al. (2018), which includes introducing new actors or networks, providing incentives and targeting motivations, promoting certain



actions, or augmenting capacity (Kowalski & Jenkins, 2015; McKenzie-Mohr et al., 2011). Further, park and protected area visitor participation in LNT practices can greatly reduce recreation-related impacts. Research has shown that a better understanding of the recreationist antecedent conditions that influence LNT behavior can help managers target certain groups, and that focusing education efforts on how effectively LNT behaviors minimize impacts is an effectual way for managers to encourage participation (Lawhon et al, 2013; van Riper et al., 2020).

### ***Hypothesized Model***

Related to the concepts described in detail above, I propose the following hypothesized model (see Figure 3). I hypothesize that the more attached visitors are to the RNRAW and the more salient a RNRAW recreationist's leisure identity is within their self-concept, the more willing they will be to engage in local environmental stewardship, both place-specific pro-environmental behavior and Leave-No-Trace (LNT) behavior. In this model, place attachment is conceptualized as consisting of two distinct dimensions: place identity and place dependence. Leisure identity salience is conceptualized as being comprised of both leisure identity salience, as well as the additional corollary of social commitment. All relationships are hypothesized to be direct and positive predictive paths.

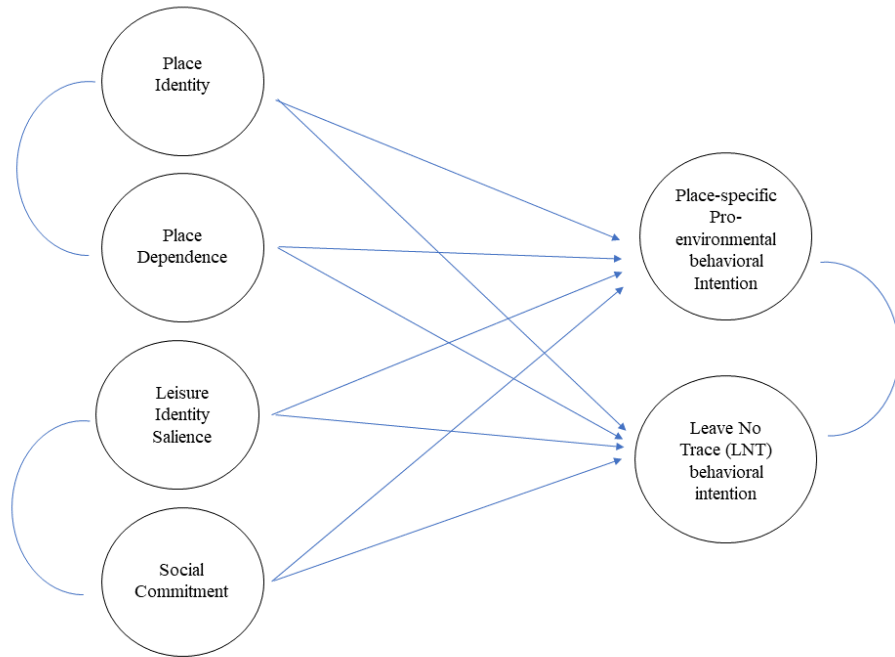


Figure 3. Hypothesized structural model of the relationships between the two dimensions of place attachment (place identity, place dependence), leisure identity salience (leisure identity salience and social commitment), and the two distinct components of local environmental stewardship behavioral intention.

### **Chapter 3: Methods**

To answer my previously defined research question, I conducted a quantitative study utilizing an on-site visitor survey. The survey instrument was approved by the University of Montana's Institutional Review Board on May 30, 2022. This study was part of a larger project conducted by the University of Montana in partnership with the Missoula Ranger District of the Lolo National Forest and the City of Missoula. The portion of the questionnaire specific to my thesis research draws upon previously established measures of place attachment, leisure identity salience, and stewardship.

This research was guided, in part, by Fishbein and Azjen's (1975) Theory of Reasoned Action (TRA). This theory hypothesizes that the best predictor of behavior is the intention to perform the behavior; behavioral intention is believed to be influenced by both an individual's attitudes and subjective norms. This study measures one aspect of the TRA framework, that visitors' connection to the RNRWA as a place and the recreational activities they participate in while they're there (i.e., place attachment and leisure identity salience) influences their attitudes towards stewardship, and therefore will partially predict visitors' intention to perform stewardship behaviors in the area (see Figure 3 for hypothesized model). Although researchers have questioned the effectiveness of measuring behavioral intention to predict behavior and have explored structural influences that can encourage or inhibit behavior, studies frequently focus on behavioral intention for its relative ease of measurement and ability to partially explain behavior (Gkargkavouzi et al., 2019; Yuriev et al., 2020). It is not the intention of this research to test the strengths and limitations of this theory as a whole, rather to use the TRA model as a frame to measure the relationship between the theories of place attachment, leisure identity salience, and local environmental stewardship behavioral intention by testing a hypothesized structural model.

## *Study Area*

This research was conducted in the Rattlesnake National Recreation Area and Wilderness (RNRAW) (see Figure 5 for map). The RNRAW was established in 1980 and is managed by the Missoula Ranger District of the Lolo National Forest. It is located about 4 miles northwest of Missoula, MT (USA). The Rattlesnake Wilderness lies within the northern portion of the National Recreation Area, and the area as a whole is bounded by the South Fork Jocko Primitive Area to the north and other National Forest System, Bureau of Land Management, private, and state lands to the east and west. The RNRAW spans 60,081 acres in total and ranges in elevation from 4,200 feet at the southern boundary to 8,620 feet at McLeod Peak. The area is characterized by scenic alpine lakes, diverse wildlife, and Rattlesnake Creek—a municipal watershed for the City of Missoula. Over 73 miles of trails are open to a variety of recreational uses, including hiking, fishing, hunting, biking, trail running, horseback riding, and cross-country skiing (USDA Forest Service, n.d.). Today, most use is concentrated within three miles of the main trailhead in what is known as the “South Zone” (USDA Forest Service, n.d.). The RNRAW has long been important to residents; the area is the ancestral homelands of the Confederated Salish and Kootenai Tribes of the Flathead Nation (CKST) and its close proximity to Missoula makes it a beloved recreation locale for the local community.

In recent years, Missoula’s population has grown rapidly and has resulted in increased use of the city’s surrounding public lands including the RNRAW (Missoula Parks and Recreation, 2019). The recreation area is facing a number of management challenges including increased recreation density, parking scarcity, and impacts to visitors’ recreation experiences. A high level of public engagement and stewardship within the Missoula community will be needed to balance restoration projects, fisheries management, recreation, and public safety concerns. The

Northern Region of the U.S. Forest Service, which manages 25 million acres of public lands across 5 states and administers 12 National Forests, including the Lolo National Forest, is headquartered in Missoula, MT and has identified recreation partnerships as a high priority in popular front country locations such as the RNRAW related to “emerging needs...due to increased visitation and use,” in order to meet the “goals and desires for shared stewardship” in the region (M. Simpson, personal communication, April 17, 2023).

### ***Conceptualization and measurement***

All measurement scales used in this study were tested and validated in previous research and all scale items were modified to fit the current study’s objectives, population, and setting (see Appendix 1 for survey instrument). To measure place attachment, a five-point Likert scale (1= Strongly Disagree, 5= Strongly Agree) was used from Williams and Roggenbuck’s (1989) study which confirmed two distinct latent variables of place dependence and place identity, a two-dimensional model that has been validated in numerous subsequent studies (e.g., Bricker and Kerstetter, 2000; Kyle et al., 2004; Vaske and Kobrin, 2001). The leisure identity salience scale includes seven leisure identity measures using a seven-point Likert response scale (1= Strongly Disagree, 7= Strongly Agree) drawn from Shamir’s (1992) study. Additionally, as social commitment is an integral aspect of the development of self-identity (Styker, 1987), four social commitment measurement items also used in Shamir’s (1992) study were implemented. Finally, to measure local environmental stewardship, respondents were asked to indicate how likely or unlikely they would be in the future to engage in a number of place-specific pro-environmental and LNT behaviors using a 5-point Likert scale (1= Not at all likely, 5= Extremely likely). These measures combined 8 items focusing on place-specific pro-environmental behavioral intentions derived from Halpenny (2010), as well as 4 out of 8 items

most applicable to my conception of local environmental stewardship from Backman et al.'s (2018) study that measured behavioral intentions concerning LNT principles.

### ***Data Collection***

Data was obtained through an on-site survey of visitors ending their trips in the RNRAW. The survey was administered at three primary trailheads: the Main Rattlesnake Trailhead, the Rattlesnake Equestrian Trailhead, and the Sawmill Gulch Trailhead (see Figure 5), utilizing a multi-stage design. The sampling locations were selected in collaboration with City of Missoula and U.S. Forest Service personnel based on relative visitor traffic, access to varying portions of the RNRAW, and previously conducted research (Watson et al., 1991; Williams et al., 1992). Sampling was randomly stratified by location, day of the week, and time of day, and occurred throughout the week, including weekends, from May 13th to November 4th, 2022; surveys were administered in approximately 8-hour time-blocks, two days a week. A stratified-cluster sampling method was used to account for differences in the density of use among sites (e.g., the difference between weekday and weekend use), in an effort to conduct a representative survey at each access point (Vaske, 2008).

Survey responses were collected through the use of Qualtrics on tablets, or a paper copy of the questionnaire, if requested. Three surveys were completed through a Qualtrics link sent via email, for visitors who could not complete the survey at the trailhead due to significant time constraints. Researchers utilized a random number generator and systematically intercepted visitors at the trailhead survey locations who were exiting the recreation area by approaching every *n*th person or group as they passed by to politely ask for their participation. For groups, one person over the age of 18 was asked to take the survey. If multiple people were willing, then

the person with the nearest birthday was selected to complete the survey. If that person did not want to respond to the survey, another member of the group could volunteer if they desired.

Out of 459 visitor groups that were intercepted, 309 visitors completed the survey, for a response rate of 67%. After cleaning the data and removing straight-line responses, the final sample size was 297. To assess non-response bias, the recreational activity that refusing visitors participated in was recorded. I used the following as the non-response bias question: “Please indicate your primary activity during this visit to the recreation area.” Results indicate that a non-response bias exists surrounding primary activity ( $\chi^2 = 30.553$ ,  $p < .001$ ), with bicyclists being more likely to decline the survey. However, the effect size of this bias is minimal ( $\Phi = .199$ )—and given the sample size of 297—, thus, this does not represent a meaningful issue towards the quality of the data (Vaske, 2008).

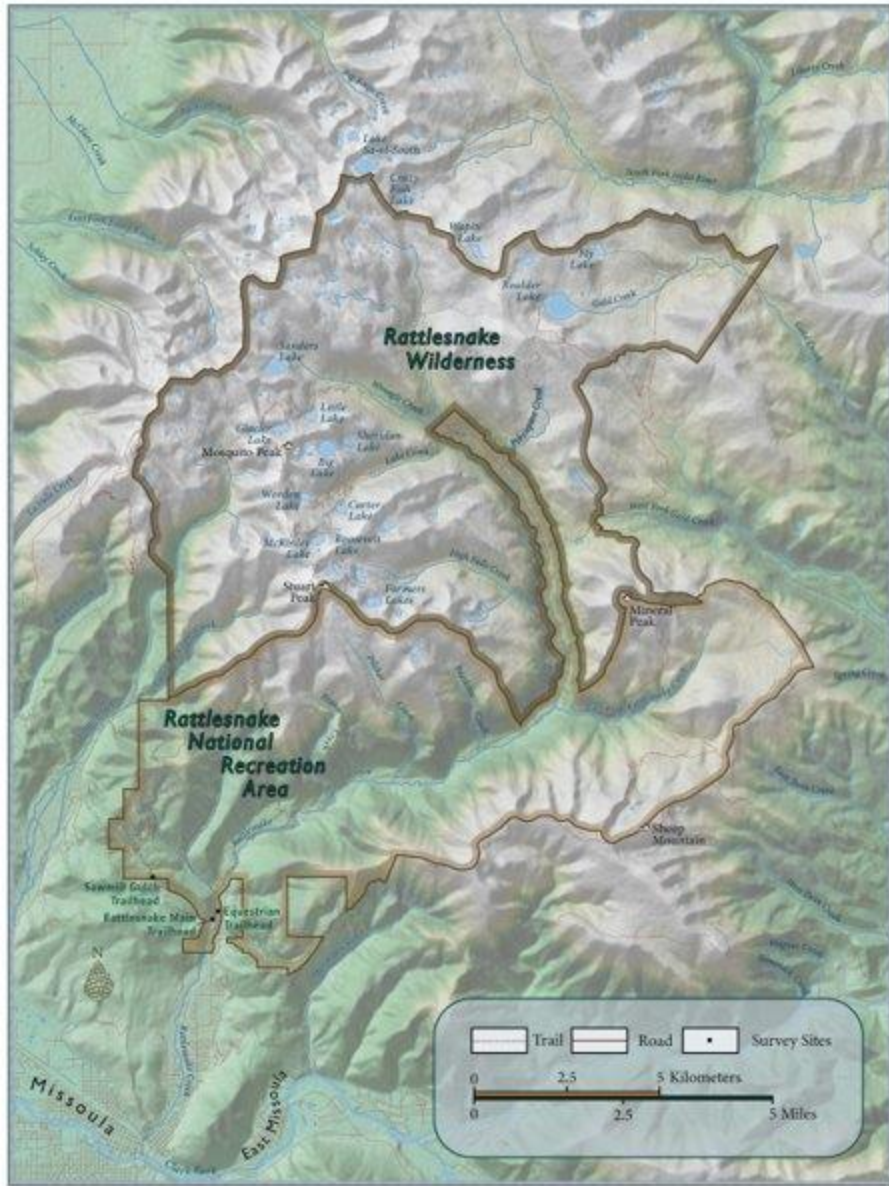


Figure 5. Map of the RNRAW and Survey Locations. Created by Alec Shingleton.

### *Data Analysis*

To address my primary research question, responses to the measurement items were analyzed with descriptive statistics and structural equation modeling (SEM), using the software programs SPSS Version 28 and JASP Version 0.16.4. SEM is widely used within the leisure and



outdoor recreation fields (Nunkoo & Ramkissoon, 2012) and has an advantage over other survey analysis methods because of its ability to concurrently analyze the interrelationships among variables and test a hypothesized relationship among constructs (Ramkissoon et al., 2013; Weston & Gore, 2006). In the process of data cleaning, any missing data were tested for patterns utilizing the Little's MCAR test in SPSS. Results indicated that there was no more than 3% missing data for each of the variables and no discernable patterns were detected; thus, the data was determined to be MCAR (missing completely at random). For both the measurement and structural model, pairwise deletion was used to estimate the missing values. Pairwise deletion is known to produce consistent and unbiased parameter estimates when the data is MCAR (Allison, 2003).

Andersen and Gerbing's (1989) two-step approach was used to determine the adequacy of the measurement model and then analyze the structural model. First, confirmatory factor analysis (CFA) was used to test an a priori specified structure of the relationship among observed and latent variables to assess the validity of domain measurement, or whether the observed variables (i.e., measurement items) have adequately measured the unobserved or latent variable they were allocated to (Hayes & Coutts, 2020). Because of the categorical nature of the data (all observed variables were measured using an ordinal Likert scale), the CFA was conducted using an Unweighted Least Squares (ULS) estimator (Rhemtulla et al., 2012; Xia & Yang, 2019). ULS is considered a better alternative to the commonly used maximum likelihood (ML) estimator for ordinal data (e.g., Likert scale-derived data) and produces better results in smaller samples (e.g., N=200) compared to other limited information methods (Savalei & Rhemtulla, 2013). To correct for a loss of model efficiency, robust standard error estimates and the Satorra and Bentler (1994) mean adjusted test statistic were also applied (Finney & DiStefano, 2006; Rhemtulla et al., 2012;

Shi et al., 2018). Factor loadings for each measurement item  $> 0.5$  were considered acceptable (Hair et al., 2010). Additionally, a number of fit statistics were used to indicate goodness of fit and the following thresholds were used: Root-mean-square-error (RMSEA)  $\leq 0.10$  (Kline, 2016), root-mean-square residual (SRMR)  $\leq 0.08$  (Kline, 2016), and comparative fit index (CFI)  $\geq 0.90$  (Hu & Bentler, 1998). Cronbach's alpha was then used to measure the internal reliability of each domain scale, or the ability of the measurement items to measure each latent variable consistently; values of  $\geq .65$  were considered acceptable (Cicchetti, 1994).

Next, a larger structural equation model (SEM) was constructed to explore the relationships between the latent variables (see Figure 1 for the hypothesized model). The initial structural model consisted of four exogenous, or independent, variables (Place Identity, Place Dependence, Leisure Identity Salience, and Social Commitment) and two endogenous, or dependent, variables (Place-specific Pro-environmental Behavioral Intention and LNT Behavioral Intention). The SEM used the ULS estimator along with robust standard error estimates and a scaled Satorra–Bentler chi-square statistic model test due to the categorical nature of the dependent variables (Liu & Sriutaisuk, 2021). Before running the initial SEM, covariances were specified between each latent variable and predictive paths were specified between the exogenous and endogenous variables (Dunlop & Romer, 2010). Like the CFA, fit indices and factor loadings are reported and the same thresholds apply. Finally, standardized path coefficients are reported with their statistical significance using bias-corrected 95% confidence intervals.

## Chapter 4: Results

### *Sample Characteristics*

The group size of the sample of visitors to the RNRAW ranged from 1 to 8 individuals; the average was 1.78. The most frequent primary activity of visitors, on the day they were surveyed, was hiking on trails (43%), followed by bicycling (30.1%) and dog walking (11.5%). The activities that visitors stated they most often participated in while in the area were also hiking on trails (39.8%), followed by bicycling (28.7%) and jogging/running (9.7%). The number of times per year visitors in the sample recreated in the area ranged from 0 to 350; visitors on average visited the RNRAW 43.23 times per year. Out of this sample of visitors, 1.8% were backcountry visitors that had spent at least one night camping in the area. 99.3% of visitors primarily resided in the U.S.; 71% were local residents of Missoula, MT and 37% of those residents lived in Northside neighborhoods proximate to the RNRAW (U.S. zip code 59802). 93.9 % of the visitors in the sample reported being White, and the average age was 44 years old (ages ranged from 19 to 85 years of age).

### *Measurement Model*

The CFA confirmed that the measurement items for all latent variables were sufficient (see Table 1). The model was supported by the relevant fit statistics and each indicator had significant loadings on their respective latent variable; all factor loadings were greater than 0.50 (Hair et al., 2010). In addition, reliability analysis of each factor yielded acceptable Cronbach's alphas greater than 0.65 (Cicchetti, 1994). The fit statistics and means of the measurement items and latent variables are reported in Table 1. The latent variables of Leisure Identity Salience, LNT, and Place Identity had the highest overall means of 5.729 (based on a scale of 1-7), 4.075 (based on a scale of 1-5), and 3.767 (based on a scale of 1-5), respectively. Lastly, the

standardized covariances between latent variables are reported in Table 2. All standardized covariances are < 0.90, suggesting that the discriminant validity between the variables is sufficient (Kline, 2016).

**Table 1. Reliability and descriptive statistics of latent variables**

<b>Scale Items</b>	<b>λ (Standardized)</b>	<b>Mean (St. Dev.)</b>	<b>Cronbach's Alpha (α)</b>
<b>Place Dependence</b>		<b>3.426(0.716)</b>	<b>0.821</b>
I wouldn't substitute any other area for doing the type of things I did here.	0.759	3.589(1.098)	
I enjoy doing the type of things I did here in this area more than in any other area.	0.723	3.505(0.930)	
This area is the best place for what I like to do.	0.767	3.608(0.829)	
No other place can compare to this area.	0.703	3.089(1.020)	
I get more satisfaction out of visiting this place than from visiting any other recreation place.	0.750	3.377(0.932)	
The time I spent here could have just as easily been spent somewhere else.*	0.576	3.337(1.081)	
<b>Place Identity</b>		<b>3.7671(0.886)</b>	<b>0.836</b>
I feel like this place is a part of me.	0.834	3.684(1.035)	
I identify strongly with this place.	0.854	3.699(0.998)	
I feel no commitment to this place.*	0.783	4.055(1.057)	
One of the major reasons I now live where I do is that this place is nearby.	0.706	3.643(1.216)	
1=Strongly Disagree; 2=Somewhat disagree; 3=Neither Agree nor Disagree; 4=Somewhat agree; 5=Strongly Agree			
<b>Leisure Identity Saliency</b>		<b>5.7293(0.935)</b>	<b>0.837</b>
This activity describes me.	0.683	5.591(1.224)	
This activity is important for my self-definition.	0.824	5.522(1.368)	
This activity does not allow me to express myself.*	0.643	5.777(1.316)	
This activity contributes to my self-esteem.	0.740	5.945(1.196)	
This activity enables me to realize my aspirations.	0.758	5.534(1.278)	
I have strong feelings about this activity.	0.903	5.979(1.120)	
<b>Social Commitment</b>		<b>5.521(1.141)</b>	<b>0.783</b>

Many people think of me in terms of doing this activity.	0.924	5.227(1.487)	
Other people think that this activity is important to me.	0.986	5.808(1.256)	
Many of the people I know are not aware that I do this activity.*	0.618	5.392(1.541)	
No one would be surprised if I stopped doing this activity.*	0.950	5.699(1.544)	
1=Strongly Disagree; 2=Moderately Disagree; 3=Slightly Disagree; 4=Neutral; 5=Slightly Agree; 6=Moderately Agree; 7=Strongly Agree			
<b>Place-specific Pro-environmental behavior</b>		<b>3.6361(0.836)</b>	<b>0.842</b>
Volunteer to stop visiting a favorite spot in this area if it needs to recover from environmental damage	0.527	3.877(1.124)	
Sign petitions in support of this area	0.797	4.219(1.009)	
Pick up litter in this area left by other visitors	0.642	4.267(0.922)	
Participate in a public meeting about managing this area	0.838	2.873(1.355)	
Write letters in support of this area	0.833	3.104(1.353)	
Volunteer time to projects that help this area	0.764	3.175(1.215)	
Encourage others to reduce their waste and pick up their litter when they are at this area	0.591	3.931(1.117)	
<b>LNT</b>		<b>4.075(0.757)</b>	<b>0.671</b>
Stay on designated or established trails	0.720	4.289(0.863)	
Walk single file in the middle of the trail, even when wet or muddy	0.655	3.669(1.191)	
Never remove objects from the area, not even a small item like a rock, plant, stick, or feather	0.520	3.726(1.303)	
Never approach, feed, or follow wildlife	0.811	4.620(0.827)	
1=Not at all likely; 2=Somewhat likely; 3=Moderately likely; 4=Very likely; 5=Extremely likely			
*These items are reverse-coded. All indicator loadings are significant at a bias-corrected 95% confidence interval. Fit Statistics: $X^2 = 724.376$ ; RMSEA = 0.050; SRMR = 0.063; CFI = 0.979. Compost means and Cronbach alphas of each latent variable are in <b>bold</b> .			

**Table 2. Covariances between latent variables**

<b>Variables</b>	<b>Standardized Covariance</b>
Place Identity-Place Dependence	0.605
Place Identity- Leisure Identity Salience	0.534
Place Identity- Social Commitment	0.442
Place Identity- Place-based stewardship	0.620

Place Identity-LNT	0.275
Place dependence- Leisure Identity Salience	0.240
Place dependence- Social Commitment	0.117
Place dependence- Place-based stewardship	0.402
Place dependence- LNT	0.163
Leisure Identity Salience- Social Commitment	0.819
Leisure Identity Salience- Place-based stewardship	0.440
Leisure Identity Salience- LNT	0.294
Social Commitment- Place-based stewardship	0.311
Social Commitment- LNT	0.224
Place Stewardship- LNT	0.527

### ***Structural Model***

Following the initial SEM, and following guidance from Grace (2006), the model was adjusted. As stated by Grace (2006):

Unlike usual null hypothesis testing procedures, though, these [non-significant] paths are not always removed from the model simply because we fail to reject the null hypothesis. Rather, the decision to remove a path is based on the consequences for overall model fit, the individual p-values, and our substantive knowledge (p. 29).

The initial SEM showed low estimates and high p-values (>0.4) for paths stemming from Social Commitment. Using the criteria provided by Grace (2006), paths from Social Commitment were thus removed in trialing a second SEM to assess impacts on model fit. This second iteration of the SEM showed little difference in model fit once paths associated with Social Commitment were removed (Table 3) thus “confirming that these relationships did not represent characteristics of the data” (Grace, 2006, p. 29). Social Commitment, being a relatively understudied corollary of leisure identity salience (Shamir, 1992), was thus removed and the second model was adopted as the final SEM.

**Table 3: Model Fit comparisons between first and second (final) models**

	First Model (with Social Commitment paths)	Second (Final) Model (without Social Commitment paths)
CFI	0.996	0.993
SRMR	0.056	0.057
RMSEA	0.017	0.023

The final structural model demonstrated strong fit indices: Scaled  $X^2$  (Satorra-Bentler)=621.582; CFI= 0.993; RMSEA=0.023; SRMR= 0.057 (see Figure 6). At a 95% confidence interval, the latent variable of Place Identity was a significant, positive predictor of Place-specific Pro-environmental behavioral intentions and Leisure Identity Salience significantly predicted LNT behavioral intentions. Additionally, at a 90% confidence interval, Leisure Identity Salience was also a significant predictor of Place-specific Pro-environmental behavioral intentions. In this model, the included exogenous variables (Place Identity, Place Dependence, Leisure Identity Salience) explained 38.9% of the variance in Place-specific Pro-environmental behavioral intentions, and 10.4% of the variance in LNT behavioral intentions.

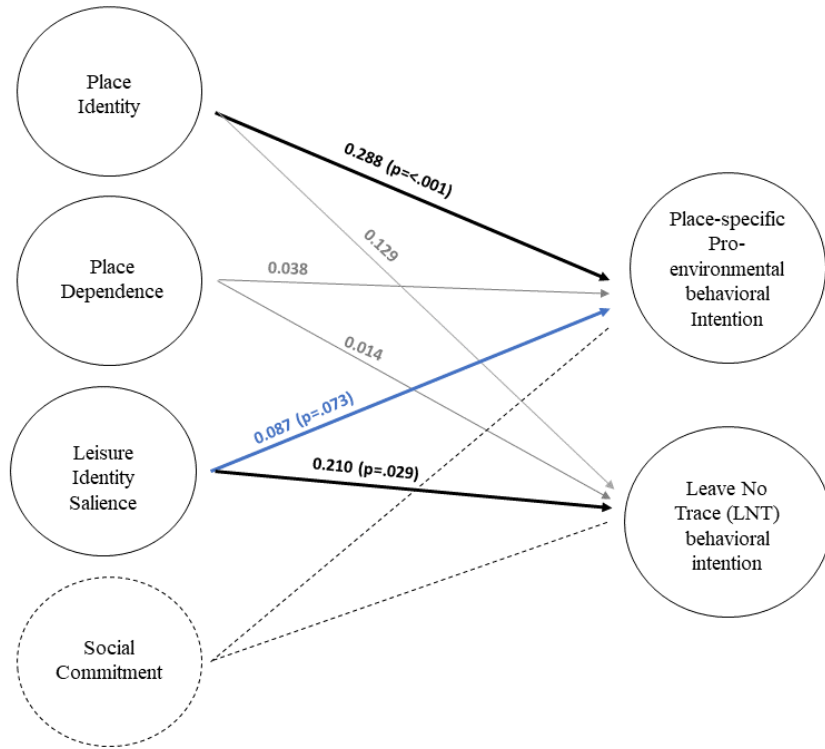


Figure 6. Standardized betas and p-values are presented in the final SEM model. Note: significant predictive paths at a 95 % confidence interval are in **bold**; predictive paths at a 90% confidence interval are in **blue**. Model fit statistics: Scaled  $X^2$  (Satorra-Bentler): 621.582, df= 314, p-value=<0.001; CFI= 0.993; RMSEA=0.023; SRMR= 0.057.



## Chapter 5. Discussion and Conclusions

The purpose of this study is to examine the relationship between visitors' place attachment and leisure identity salience and the propensity to engage in local stewardship of the RNRAW. As the RNRAW is a local recreation area to Missoula residents—many of whom reside in the neighborhoods proximate to its main trailhead locations—this research is in direct response to Halpenny (2010) and Riley's (1992) calls to study attachment to more “everyday places,” versus nationally recognizable areas such as U.S. national parks.

### *Place Identity and Place-specific Pro-environmental Behavior*

This study demonstrated the high predictive power of one dimension of place attachment, place identity, toward willingness to engage in place-specific pro-environmental behaviors, such as signing petitions in support of the area or volunteering for on-site conservation projects. From these results, it is apparent that—in the context at hand—the more that recreationists identify and build emotional connections with the physical environments they recreate in, the more they are inclined to engage in behaviors that protect, maintain, advocate for, or improve those areas. This confirms the findings of previous studies that found a positive relationship between recreationists' place identity and place-protective behaviors (Halpenny, 2010; Stedman, 2002; Vaske & Kobrin, 2001; Walker & Chapman, 2003).

In contrast, place dependence had no significant relationship to either place-specific pro-environmental behavioral intention or LNT behavioral intention, a finding consistent with several other studies that reported this dimension of place attachment having a weak-to-negative influence on environmental behavior (Kyle et al., 2003; Ramkissoon et al., 2013). This could be attributed to the aspect of place dependence as a functional attachment related to a recreation area's unique ability to fulfill a recreationist's desired goals (Stokols & Shumaker, 1981). Highly

place dependent recreationists in the RNRAW may be more satisfied with the unique opportunities that the area provides them and less concerned with the environmental conditions they encounter, and therefore may be less inclined to engage in behaviors to maintain or improve those conditions. This is in line with Kyle et al. (2004)'s study that showed that Appalachian Trail hikers who were more place dependent were less critical of environmental conditions on the trail than those who possessed high place identity.

Importantly, there is evidence that increased use of an area due to place dependence may increase the place identity of visitors (Moore & Graefe, 1994). Thus, it is possible that place dependence may have an indirect influence on stewardship behavior. Studies conducted by Halpenny (2010) and Vaske and Kobrin (2001) tested several structural models that included place identity as a moderator between place dependence and pro-environmental behavior, however, testing a similar relationship was outside the scope of this study and its hypothesized model. Future research should seek to further explore this mediating relationship and assess the interrelationship between place dependence and place identity, as well as other possible dimensions of place attachment (e.g., social bonding; see Kyle et al., 2005).

### *Management Implications*

In the face of rising outdoor recreation participation, my results show that visitors to a recreation area with high place identity can be utilized as stewards in maintaining its social-ecological conditions, for example, through support of efforts to limit or stop use of a place to let it recover from biophysical impacts (Miller et al., 2020). Additionally, place-identifying visitors acting as environmental stewards can significantly enhance the management capacity in an area through behaviors such as encouraging others to pick up their litter or participating in a trail work day to rehabilitate social trails. It is important to note that the place-specific pro-

environmental behaviors referenced in this study require significantly more engagement and effort from visitors than participation in LNT behaviors, as well as willingness to participate in them outside the confines of one's recreation experience. Managers could leverage this enhanced support by creating and enhancing partnerships with local community members, such as creating a volunteer trail ambassador program that targets place-identified residents for recruitment (Seekamp & Cervený, 2010). Utilizing recreationists with high place identity in this sort of capacity could be particularly useful when dealing with complicated management issues that require more direct intervention and public engagement to solve.

To reinforce and further harness the place protective behavior of place identified recreationists, it is important that managers continue to provide for positive visitor experiences in the future. Brooks et al.'s (2006) qualitative study of place attached visitors to Rocky Mountain National Park describes a dynamic relationship that visitors had with place, where place identity is highly related to ongoing, multidimensional visitor experiences, influenced by time and experience accrued and the social and physical interactions in and with the setting. While the place identity of visitors to the RNRAW in my sample was generally high, new visitors to the RNRAW or visitors to other park and protected areas may not be as emotionally connected or as physically dependent. Managers seeking to harness visitor stewardship of these places should consider ways to enhance visitors' place identity, such as promoting environmental education and designing opportunities for interactivity (Alexandris et al., 2006). Some research has shown that place identified recreationists are more sensitive to management interventions and proposed projects in the area (such as the building of facilities over improving environmental education or resource protection measures) (Bricker & Kerstetter, 2000; Kyle et al., 2003); therefore,

managers should seek to draw public input in making management decisions and involve place identified individuals as much as possible in planning processes.

### ***Leisure Identity Salience and LNT***

This research considerably extends the leisure identity salience literature and our knowledge of the concept's power to influence behavior by demonstrating a link between leisure identity and LNT behavior. The leisure identity salience of visitors to the RNAW was found to positively predict LNT behavioral intention. This could be attributed to the effectiveness and consistency of LNT messaging as a cross-boundary environmental education strategy that spans numerous land management agencies, and its popularity as a practical, relatively low-effort, and generally uncontroversial environmental ethic (Marion & Reid, 2001; Turner 2002). It is possible that those with high identity salience are more inclined to recreate in a variety of parks and protected areas and may have been exposed to LNT principles on varying scales and from different messaging mediums; thus, these recreationists may be more prepositioned to engage in LNT behavior (Taff et al., 2014).

Additionally, the LNT's programmatic ties with the outdoor recreation industry since its inception (industry representatives such as the Outdoor Recreation Coalition of America and the Sporting Goods Manufacturing Association helped form and fund the creation of the Leave No Trace Center for Outdoor Ethics) has aided in consistently marketing the program's principles as the "mantra for environmentally-conscious outdoor recreation" (Turner, 2002, p. 478). Today, the LNT Center's corporate partners include prominent outdoor recreation companies such as The North Face, Subaru of America, L.L. Bean, Recreation Equipment Incorporated (R.E.I), and popular magazines such as *Outside*; these partnerships make national LNT service projects possible while also allowing these companies to use the LNT logo and educational messaging –

often printed on the inside of backpacking packs and alongside map legends—to portray themselves as a “green” company (Simon & Alagona, 2013). The purchasing and use of recreational clothing and equipment from companies that use LNT messaging to market their products can be considered a form of eco-conspicuous consumption, tied to the desire of recreationists with high leisure identity salience to project a ‘responsible recreationist’ identity along with the identity of their chosen recreational activity (Haggard & Williams, 1992; Ramchandani & Coste-Maniere, 2018). To put it differently, engaging in LNT behaviors may be another way that recreationists with high leisure identity salience affirm and reflect their ideal self-image as a recreationist (Roggenbuck, 2000).

Interestingly, while the likelihood of engaging in LNT behaviors in the future was generally high across the entire sample of RNRAW visitors ( $\bar{x}=4.08/5$ ), the place identity of visitors was not found to predict LNT behavioral intention. This may be because highly place identified visitors possess a deeper relationship with place and see it as an integral part of their selfhood, therefore they could be more concerned with the social and biophysical impacts of others rather than recognizing or managing their own impact on the land (Kyle et al., 2004). Also, it is possible that the place identity of recreationists is associated with a sense of ownership over place (Lyu et al., 2023); research on the individual psychological ownership of nature has shown that while feelings of ownership often relate to positive pro-environmental behaviors, they can also result in more dominionistic beliefs towards nature—whereby individuals feel they can treat the environment in any manner they please because of a sense of “nature is mine” (Wang et al., 2023). As stated by Madurapperuma et al. (2019), “It could be predicted that new social trails would be created by locals that have a higher level of ownership for the area, and are more likely to ‘explore’ in off-trail areas” (p. 18). Lastly, the lack of a significantly predictive

relationship between place identity and LNT behavioral intention could also be attributed to the effects of negative environmental behavioral spillover, whereby an individual's adoption of a positive pro-environmental behavior leads to decreased willingness to perform subsequent pro-environmental behaviors (Truelove et al., 2014). This is often due to a moral licensing effect or contribution ethic, where individuals may feel more justified not engaging in a pro-environmental behavior if they feel they have already done their part to protect or care for the environment (Thøgersen & Crompton, 2009). If place identifying visitors are more willing to engage or are already engaged in higher effort, more proactive stewardship behaviors, they may be less willing to participate in behaviors that may seem less potent and require less effort to perform—such as LNT behaviors.

### *Management Implications*

While many recreationists with high leisure identity salience may have been previously exposed to the seven LNT principles and willing to adhere to them, park and protected area managers may seek to encourage more relevant LNT behaviors related to their site-specific management concerns around recreation, such as picking up and removing dog waste, keeping dogs on leash in certain zones, or carrying bear spray (Lawhon et al., 2017). To do this, managers could leverage the willingness of those with high leisure salience to engage in LNT behaviors through the use of normative messaging and signage targeted to specific leisure identities. Research on norm adherence has shown that when one's social identity is salient, they “will adhere to the norms of that social identity to the extent that they consider the social identity to be personally important to them” (Goldstein et al., 2018, pg. 475); therefore, recreationists with high leisure identity salience may be more apt to perform specific stewardship behavior when messaging connects the desired behavior to their social leisure identity (Landon et al.,

2018; Stryker, 1987). In this way, a message intended to persuade visitors to stay on trail might read: “The mountain biking community stays on trail: No matter what.” Such a message might be paired with logos from a local mountain biking organization or LNT. Utilizing signage in this way is a relatively low cost, indirect management strategy that has proven to be effective in discouraging careless or uninformed recreation behavior (Park et al., 2008). Finally, to mimic the consistency and receptiveness of LNT education that has proven to be so effective (e.g., Marion & Reid, 2001), managers should attempt to work across boundaries with other federal, state, and local agencies, as well as partnership groups, to streamline messaging and make management strategies more cohesive and collaborative. As the capacity of public agencies is often limited, collaborating with outside organizations on social media messaging campaigns to encourage site-specific LNT behaviors, in order to reach a wider network of recreationists, could be a particularly effective strategy (Landon et al., 2018).

### ***Leisure Identity Salience and Place-specific Pro-environmental Behavior***

The suggestive finding of the prediction of place-specific pro-environmental behavior by leisure identity salience is an exciting outcome of my research. When combined with its prediction of LNT behavioral intention, leisure identity salience of visitors has a predictive influence on multiple forms of local stewardship behavior. This has promising implications when the leisure identity salience of visitors to a recreation area is particularly high, or higher than that of visitors’ place identity—as is the case with RNRAW visitors in this study. However, the lack of a statistically significant ( $p \leq 0.05$ ) predictive relationship may suggest that while visitors with high leisure identity salience might be predisposed to take part in more proactive stewardship behaviors—such as volunteering or participating in a public meeting about managing the area—other factors may be hindering their capacity to engage in them, such as lack of social capital,

level of empowerment, or structural hurdles in place (Bennett et al., 2018). If willingness to engage in place-specific pro-environmental behaviors is positively predicted by the place identity of visitors, as is shown in this study, it is possible that one way to encourage those with high leisure identity salience to engage in place-specific pro-environmental behaviors is by increasing their attachment to place.

### *Management Implications*

Research on the concept of enduring involvement has shown that those with high leisure identity, or those who actively participate in a certain recreational activity as a central part of their lives, often join recreation clubs or organizations as a way of building community with similarly valued individuals and to reflect identity group membership (Lu & Schuett, 2014). Managers wishing to encourage the stewardship behavior of leisure-identified recreationists, and extend their capacity, should seek to create or strengthen partnerships with local recreation groups, including non-profits focused on advocacy or affinity groups seeking to build skills and community (Seekamp & Cervený, 2010). Individuals with high leisure identity salience may be more attracted to these organizations or be a member already, and may then be activated to participate in stewardship through the social capital of the group (Paik & Navarre-Jackson, 2011). It is possible that through participation in trail cleanup days or other stewardship activities, visitors with high leisure identity may grow more connected and emotionally attached to the places in which they perform these activities, thus strengthening their willingness to continue to take care of them.

### *Theoretical Implications*

Within the realm of recreation and leisure research, the results of this study greatly increase our knowledge of how recreationist antecedent conditions, specifically leisure identity



salience and place attachment, influence local stewardship behavioral intention. This study further tested and validated the place attachment, leisure identity salience, and local environmental stewardship measurement scales used by previous researchers; the latter two scales had not been tested extensively and were not standardized (Backman et al., 2018; Halpenny, 2010; Shamir, 1992; Williams & Roggenbuck, 1989). The acceptable fit indices and discriminant validity of my combined measurement model provide further validation of the scale items selected and used in this study. Additionally, the concept of leisure identity salience has been significantly understudied within the park and protected area context and represents an exciting concept for future research (Jun & Kyle, 2012); its use within this study proves that it is a potentially powerful predictor of local stewardship behavior. Future research should attempt to further test and validate the scale items used in this study and seek to apply the leisure identity salience concept to explore other recreation research aims.

### ***Limitations and Future Research***

One potential limitation of this study is that future intention to perform both place-specific pro-environmental behavior and LNT behavior was measured over the actual behavior of respondents. Some studies have expressed doubts over measuring behavioral intention over behavior or using self-reported behavior when measuring environmental behavior (e.g., Corral Verdugo & Figueredo, 1999; Webb & Sheeran, 2006), and have noted a difference in the reported versus observed behavior of study respondents (Romo et al., 2019). It is also possible that study participants were more inclined to give socially desirable responses regarding their willingness to engage in stewardship behavior, although two studies conducted by Milfont (2009) showed that social desirability concerns did not have a strong effect on the way peoples respond to questions addressing environmental issues.

Next, future analysis could be conducted with these data to further explore leisure identity salience's role in predicting stewardship behavior by parsing apart the leisure identity salience of recreationists participating in varying types of activities and the relative influence of activity type on behavior. Additionally, the influence of other visitor antecedent conditions such as length of residency, proximity to the recreation area, or awareness of recreation impacts could be explored in relation to place attachment, leisure identity salience, and local stewardship (Landon et al., 2018). As my findings revealed an overall high level of place identity and leisure identity salience among visitors to the RNRAW, it is possible that the abundance of recreational opportunities that draws residents to live in the area, and other aspects of the local Missoula community such a relatively high level of civic engagement opportunities, may have resulted in a higher propensity to engage in place-protective behavior and stewardship activities among respondents in this study (Missoula Parks and Recreation, 2019). While the findings of this study are likely generalizable to other similar amenity migrant-attractant communities in the American West, future research efforts should seek to further measure the leisure identity concept and its role in predicting behavior in a diverse range of settings, including larger urban communities, to strengthen the validity of these results.

Another limitation of this study is that the scale items used to measure both place-specific pro-environmental behavioral intentions and LNT behavioral intentions are seated in a largely Western perspective of environmental ethics and the human-environment relationship, which views humans as separate from nature and their continued presence in natural areas detrimental to the ecological landscape (Serenari et al., 2013). This conception of stewardship fails to acknowledge other forms of environmentally responsible behavior, including more reciprocal and subsistence relationships with the land, as well as the role of indigenous knowledge in caring

for the environment (Larson et al., 2023). In order to recognize these varying cultural interpretations of stewardship and sufficiently represent the diversity of user groups in an area, future studies should attempt to utilize and validate a more inclusive stewardship scale.

Lastly, one assumption in using structural equation modeling (SEM) to conduct data analysis is that the relationships tested in the model are linear (Weston & Gore, 2006). In the case of this research, place attachment and leisure identity salience's influence on local environmental stewardship behavioral intention was tested and analyzed, and not the other way around. However, it is possible that participation in stewardship activities may increase the place identity of visitors by increasing time spent in an area and deepening their connection to place (Brooks et al., 2006). Additionally, broader conceptualizations of what constitutes recreation and the varying ways people use and connect with a place allow us to consider that local stewardship activities in themselves could be promoted and participated in as a recreational activity; thus, participation in stewardship may be related to the development of a salient leisure identity – that of a “responsible steward” (Blahna et al., 2020; Miller et al., 2020). Although it was outside of the scope of this study, future research could seek to explore the non-linear relationships between these variables.

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## Appendix 1: Survey Questions

Dimension		Survey Questions	Scale	Response Options	Citations
Place Attachment	Place Dependence	<p><b>Please indicate the extent to which each statement below describes your general feelings about this recreation area. (select one answer for each statement)</b></p> <p>I wouldn't substitute any other area for doing the type of things I did here.</p> <p>I enjoy doing the type of things I did here in this area more than in any other area.</p> <p>This area is the best place for what I like to do.</p> <p>The time I spent here could have just as easily been spent somewhere else.</p> <p>No other place can compare to this area.</p> <p>I get more satisfaction out of visiting this place than from visiting any other recreation place.</p>	1-5	Strongly Disagree to Strongly Agree	Williams and Roggenbuck (1989)
		Place Identity	<p>I feel like this place is a part of me.</p> <p>I identify strongly with this place.</p>	1-5	



		<p>I feel no commitment to this place.</p> <p>One of the major reasons I now live where I do is that this place is nearby.</p>			
<p>Leisure</p> <p>Identity</p> <p>Saliency</p>	<p>Identity</p> <p>Saliency</p>	<p><b>a. What recreational activity do you most often participate in the RNRAW and proximate Conservation lands?</b></p> <p>(asked prior in survey)</p> <p><b>b. For the identified activity, please indicate the extent to which each statement below describes your general feelings about this recreation area.</b></p> <p>This activity describes me.</p> <p>This activity is important for my self-definition.</p> <p>This activity does not allow me to express myself.</p> <p>This activity contributes to my self-esteem.</p> <p>This activity enables me to realize my aspirations.</p> <p>I have strong feelings about this activity.</p>	<p>1-7</p>	<p>Strongly Disagree to Strongly Agree</p>	<p>Shamir (1992)</p>
	<p>Social Commitment</p>	<p>Many people think of me in terms of doing this activity.</p> <p>Other people think that this activity is important to me.</p>			

		<p>Many of the people I know are not aware that I do this activity.</p> <p>No one would be surprised if I stopped doing this activity.</p>			
Stewardship	Place-specific Pro- environmental Behavioral Intention	<p><b>How likely or unlikely would you be to...</b></p>	1-5	Not at all likely- Extremely likely	Halpenny (2010)
		<p>Volunteer to stop visiting a favorite spot in the RNRAW if it needs to recover from environmental damage</p> <p>Sign petitions in support of the RNRAW and similar protected areas</p> <p>Pick up litter at the RNRAW or other nearby protected areas left by other visitors</p> <p>Participate in a public meeting about managing the RNRAW or nearby protected areas</p> <p>Write letters in support of the RNRAW and similar protected areas</p> <p>Volunteer my time to projects that help the RNRAW or similar protected areas</p>			

		Encourage others to reduce their waste and pick up their litter when they are at the RNRAW or nearby protected areas			
	LNT	<p>Stay on designated or established trails</p> <p>Walk single file in the middle of the trail, even when wet or muddy</p> <p>Never remove objects from the area, not even a small item like a rock, plant, stick, or feather</p> <p>Never approach, feed, or follow wildlife</p>	1-5	<p>Not at all likely- Extremely likely</p>	<p>Backman et al., 2018</p>