DESCRIBING COASTAL PRAIRIE PLACE ATTACHMENTS FOR IMPROVED

CONSERVATION MESSAGING

A Thesis

by

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ABSTRACT

The decision to conserve natural resources is largely based on individual beliefs and values. Therefore, the field of communications can assist conservationists in the development of meaningful messaging to better engage audiences in supporting conservation efforts. Recent studies have pointed to the emotional bond between person and place as an effective way to frame conservation messages. This basic qualitative study explored the use of messaging efforts meant to embody a tripartite framework of place attachment. A total of 31 individuals were segmented into two audiences based on their perceived value toward the coastal prairie. Then, each individual participated in a semi-structured interview in which they were asked to describe their feelings of attachment toward the prairie.

The results from this study showed the audiences described attachment to the coastal prairie was multidimensional rather than a consistent pattern of physical, social, or experience based connections. However, the research identified unique themes of place attachment which can aid in the development of coastal prairie conservation messaging. Furthermore, degrees of attachment to the coastal prairie that varied between the audiences suggested that place attachment evolves through a process. Therefore, coastal prairie conservation organizations who wish to embody messages who invoke feelings of place attachment should do so through a multidimensional approach. These organizations should also consider how their targeted audience values the prairie, was well as their varying degree of attachment to the prairie.

DEDICATION

This study is dedicated in loving memory of my grandfather G.A. "Smiley" Jennings.

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dear to my heart. The coastal prairie has shaped who I was, who I am, and who I will always be. Additionally, I would like to acknowledge those who have shaped my upbringing and outlook on this constantly changing land.

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Contributors

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NOMENCLATURE

CPP   Coastal Prairie Partnership

Houston MSA   Houston Metropolitan Statistical Area

Coastal Prairie   A grassland ecosystem along the western gulf coast of the U.S.

Conservation   The protection of natural resources or living things

Communications   The process of sending and receiving messages or information

Messages   The medium in which communication is delivered or received

Place Attachment   The emotional bond between a person and a place

Use value   Value derived from the direct or indirect use of an ecosystem

Non-use value   Value derived from the intangible use of an ecosystem

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CHAPTER I

INTRODUCTION AND STATEMENT OF THE PROBLEM

The Coastal Prairie: A Landscape Lost

The coastal prairie once encompassed 3.4 million ha along the northwestern plain of the Gulf of Mexico; however it has since been considered one of the most endangered ecosystems in North America (Grace, Allain, & Allen, 2000). Grace (1998) described the historic coastal prairie ecosystem as an area which stretched 500 miles from Louisiana to south Texas and was dominated by grass and forbs prior to the settlement of Europeans. The author further described the species diversity which once existed in the region and cites agricultural practices as being the leading demise to these historical habitats (Grace, 1998). Diamond and Smeins (1985) included urbanization along with agriculture as culprits of the demise of native prairie. Attention has been called to remaining portions of the coastal prairie in "that less than 1% of the grassland remains in a relatively pristine condition" (Smeins, Diamond, & Hanselka, 1992, p. 270). Figure 1 shows the range of the historic coastal prairie ecosystem of Texas and Louisiana.
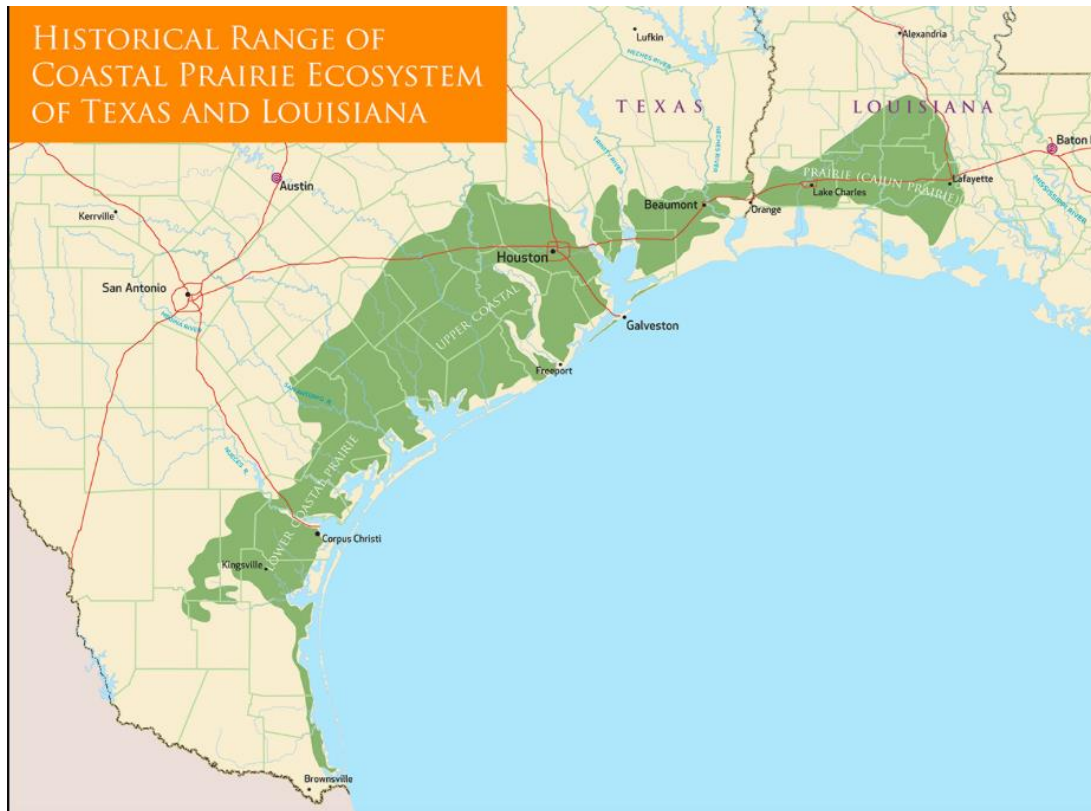
Figure 1. A map depicting the historic range of the coastal prairie ecosystem. Reprinted with permission from the Katy Prairie Conservancy. (n.d.). Prairie 101: Teaching Houston's Coastal Prairie. Retrieved from http://www.katyprairie.org/prairies/

Coupland (1992) explained how various regions use a variety of names such as pampas, plains, and prairies to describe grasslands. Robertson, Anderson, and Schwartz (1997) described grasslands as "biological communities in which the landscape is dominated by herbaceous vegetation, especially grasses: they contain few trees or shrubs" (p.55). Based on available literature, the authors estimated 16-40% of the world's surface is, or once was grasslands. While referring to estimates of others, the authors also showed 20% of the North American continent is composed of grasslands

with prairies being the most common type of grassland on the continent (Robertson et al., 1997).

To better understand the value of prairies, it is necessary to be informed on their role in ecology and society. The prairie biome was described as "complex ecosystems in which plants, browsing and burrowing mammals, insects and other organisms, fire, and climate interact" (Robertson et al., 1997, p. 56). The authors also explained the role of climate, burning, grazing, browsing, disturbance, and drought in shaping prairie ecology. Similar to the fate of the coastal prairie, loss of the U.S. midwestern prairies began as Europeans started settling in the area. The Nature Conservancy estimates which put the loss of prairies into perspective. "99% of the tallgrass prairie east and north of the Missouri River has been destroyed and only about 15% remains to the west and south of the river" (Robertson et al., 1997, p. 63).

According to the U.S. Fish and Wildlife Service (n.d.) the historic coastal prairie was comprised of mostly grasses with patches of wildflowers dispersed throughout the landscape. A constant cycle of drought, fire, and plant competition from species which were adapted to these processes allowed the prairie to be dominated by grass and prevented woody species from becoming established. Over 1000 plant species have been identified on the coastal prairie. Prairie plants provided food and habitat to animals small and large. Many prairie plants provided readily available nectar to insects, while larger species used the insects as a food source (U.S. Fish and Wildlife Service, n.d.).

The U.S. Fish and Wildlife Service (n.d.) further described how the coastal prairie was home to the now endangered Attwater's prairie chicken, as well as provided

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wintering habitat to the presently endangered whooping crane. Native Americans also inhabited the coastal prairie and used native plants for food, spice, dyes, textiles, and medicine. However, the historic coastal prairie ecosystem has largely been lost due to the influence of humans. The conversion of prairie lands to agriculture has been the greatest factor to its decline. Specifically, the fragmentation of large land tracts often leads to overgrazing, exotic plant encroachment, a lack of fire, and the alteration of the hydrologic features of the prairie. Additionally, urbanization and suburban development are direct causes of coastal prairie loss (U.S. Fish and Wildlife Service, n.d.).

Sampson and Knopf (1994) suggested the significance of prairie land ecosystems to the world has been largely ignored as they are essential to environmental health and an important economic element for mankind. Specifically, the authors described how prairie conservation is essential to ensuring grass supplies for agricultural use, preventing species extinction, and for providing storage of atmospheric carbon in a world impacted by global warming (Sampson & Knopf, 1994). Samson and Knopf (1996) suggested prairie conservation should be the highest natural resource and agricultural priority in North America. Although prairie conservation is needed throughout the U.S., efforts to conserve the coastal prairie face unique challenges.

Coastal Prairie Conservation

Ricketts et al. (1999) identified issues specific to conservation of the coastal prairie. "Restoration potential is high for many sites; however, a lack of concern for by the general public (and therefore, minimal financial and legislative support) for tallgrass prairie conservation is a significant problem" (Ricketts et al., 1999, p. 309). Spreading

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awareness of the need for prairie conservation will be necessary as a large shift in the ownership and management of privately owned lands will occur (Brunson & Huntsinger, 2008). Additionally, Samson, Knopf, and Ostlie (2004) point to partnerships amongst private landowners, government, and non-governmental groups as being essential to the conservation of native ecosystems.

A unique feature of the coastal prairie is the presence of a large urban region referred to as the Houston- The Woodlands- Sugar Land Metropolitan Statistical Area (Houston MSA). The Texas Health and Human Services (2014) defines a metropolitan area according to the Office of Management and Budget. According to the definition, a metropolitan area is a central urban location at the center of other urban areas. Additionally, the center area must have a population of 50,000 while the combined population must exceed 100,000. In 2012, the Houston MSA included the nine Texas counties of Austin, Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller. The combined total population of the Houston MSA was 6,219,419 in 2012 (Texas Health and Human Services, 2014). The presence of this large population in the coastal prairie region threatens to convert remnant prairies into urban development. Figure 2 is a map of the historic coastal prairie ecosystem in the Houston MSA.
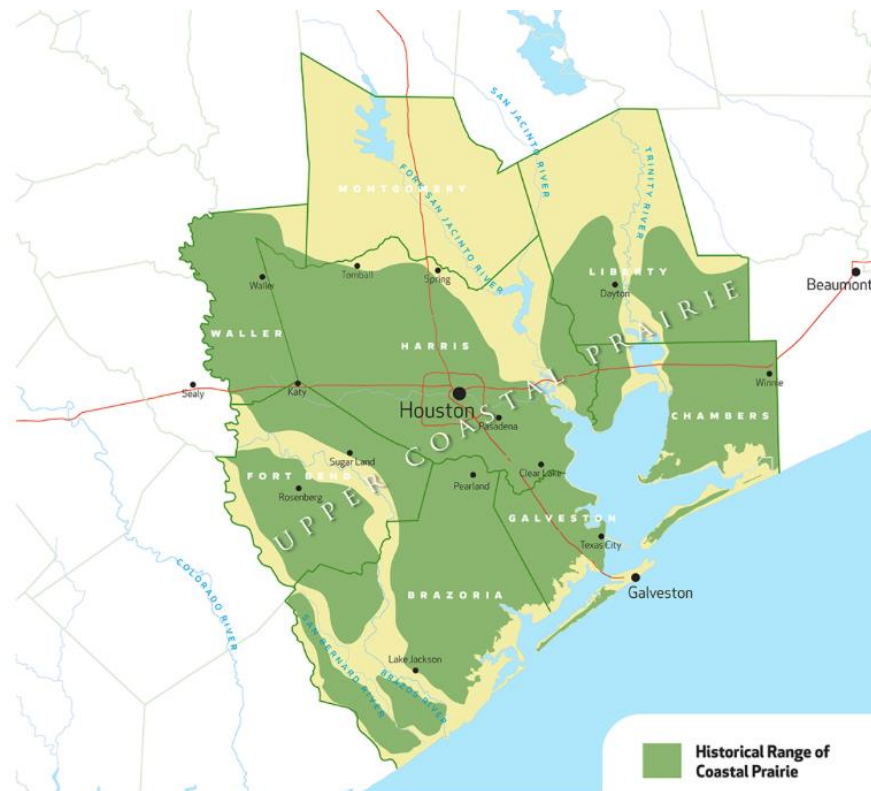
Figure 2. A map depicting the historic range of the coastal prairie ecosystem in the Houston MSA. Reprinted with permission from the Katy Prairie Conservancy. (n.d.). Prairie 101: Teaching Houston's Coastal Prairie. Retrieved from http://www.katyprairie.org/prairies/

In 2009, a group of concerned citizens became aware of the planned sale and development of a pristine remnant coastal prairie called the Saums Road Prairie in the Houston MSA. These citizens organized a grassroots effort made up of volunteers to save many of the diverse plant species found on the Saums Road Prairie. After this event, the volunteers and members of the conservation community who helped in the effort realized the need to create an organization to unite individuals and groups involved in coastal prairie conservation. Thus, focus groups from within the

conservation community who held a stake in the plight of the coastal prairie were organized at an event called the State of the Prairie. As a result, the CPP was born (J. Gonzalez, personal communication, February 1, 2017).

Headquartered in Houston, the CPP is a nonprofit partnership made up of private landowners, government, and non-governmental groups that have come together to conserve the coastal prairie. The CPP hopes to assist in the building of a more connected and equipped prairie community by acting as a convener, adviser, teacher, cheerleader, and networker in the conservation and restoration of coastal prairies (Coastal Prairie Partnership, n.d.).

Social Science in Conservation

Human dimensions and decisions are the foundation for all environmental policy; therefore, social science and social scientists should be the center of conservation efforts ("Conservation and the Social Sciences", 2003). Fox et al. (2006) showed that conservationists are aware of the need for social science to progress their work and also explain the many barriers which prevent collaboration of natural scientists and social scientists in academia. Jacobson and McDuff (1998) called for conservationists to be better prepared to handle the social side of conservation issues which often arise due to the many stakeholders within a conservation effort.

Changing attitudes and behaviors on the topic of coastal prairie conservation calls for accurate and informative communication between all parties involved. Leopold (1949) identified a void in conservation communication. "Despite nearly a century of propaganda, conservation still proceeds at a snail's pace; progress still consists largely of

letterhead pieties and convention oratory" (Leopold, 1949, p. 207). Van Heezik, Dickinson, and Freeman (2012) suggested that increasing knowledge and influencing values through communication could result in a better understanding of wildlife and an expanded use of native plants by urban gardeners. Anderson-Wilk (2009) suggested, "At the core of the conservation movement has been a communication movement. This is primarily because conservation requires change, and change requires communication" (p. 129A).

As noted by the previous literature, a specific goal of all conservation efforts should be to understand message development and implementation. The ultimate goal of the Coastal Prairie Partnership (CPP) is to unite the many organizations which are a part of the coastal prairie conservation community (Coastal Prairie Partnership, n.d.). Yet CPP members understand the need for improved messages which help to progress their mission as well as to connect to others who are not traditionally a part of the conservation community (J. Gonzalez, personal communication, May 9, 2017). In order to accomplish this task, communication research toward the development of messages related to the topic of coastal prairie conservation is needed by the CPP.

On August 26, 2017, Hurricane Harvey made landfall as a category four hurricane on the South Texas coast between the communities of Port Aransas and Port O'Connor ("A timeline of Harvey," 2017). Although Harvey initially made landfall in South Texas, its movement stalled for several days across Louisiana and the greater Houston area (Chokshi & Astor, 2017). The authors described how the storm's impact resulted in catastrophic flooding with as much as 50 inches of rain falling in some

regions. Harvey caused death, destruction, and displacement, yet after the winds died down and the waters receded, views pertaining to Houston's rapid growth began to emerge (Chokshi & Astor, 2017).

The city of Houston has had a history of continuous floods since its settlement on the banks of a bayou in the 1830s (Fernandez & Fausett, 2017). Since then, the author's described Houston's rapid growth to become the nation's fourth largest city. Houston's rapid economic growth combined with its attempt to provide affordable housing eventually led it to sprawl further into the flat coastal plains which surround the city (Fernandez & Fausett, 2017).

Fernandez and Fausett (2017) reported much of this development has occurred northwest of the city on a stretch of Texas coastal prairie known as the Katy Prairie. This area's native vegetation historically allowed rainwater to soak into the ground or slowly drain into the regions creeks and bayous. However, the authors cite local voices in questioning if human progress has pushed nature too far: "Many experts and residents say that the developers' encroachment into the wetlands and prairies that used to serve Houston as natural sponges has inevitably exacerbated the misery that the city is suffering today" (Fernandez & Fausett, 2017, para. 6).

Regardless of the approach Houston utilizes to address future flooding events, it appears the community's view on the use and development of the coastal prairie surrounding the city is being reconsidered. Due to the many underlying factors which may influence an individual's view on the value of the coastal prairie, an investigation into individual reasoning toward coastal prairie conservation is timely and significant to

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serve citizens of the State of Texas and in other similar ecosystems which may be under threat of decline.

Statement of the Problem

Coastal prairies provide natural functions such as flood control and wildlife habitat. Yet, this ecosystem also provides services to humans which vary with each individual's perceived value toward the prairie. Williams and Diebel (1996) showed that an individual may value a prairie's beauty and biodiversity, but also its ability to create an economic impact. "Development of the prairie means losing some or all of those services and benefits derived from its natural state and gaining those benefits extracted from the prairie in a modified state, such as agriculture" (p. 19). Therefore, the value an individual associates with a natural resource such as a native prairie is highly subjective.

However, communication can influence the way in which an individual interprets nature. Cox (2013) described how an individual's beliefs, attitudes, and behaviors are influenced by human models such as language, pictures, and thought. The author showed human communication is a symbolic action as it uses language and symbols to bring causes to the attention of others. He went on to describe the role of communications in harboring conversations on the subject of shared environmental concern. The author combined these factors to arrive at a framework for the role communication can play in progressing environmental causes (Cox, 2013). This evidence supports the development of influential coastal prairie conservation messages capable of reaching a diverse audience.

Although the media has been relied upon by conservationists to provide general public information on various conservation issues, media reports are insufficient in linking information from conservation scientists to the non-scientist public (Nadkarni, 2004). Therefore, Nadkarni (2004) recommended strategies for conservationists to become better at communicating with these audiences by combining conservation with activities and interest of the general public. Bickford, Posa, Qie, Campos-Arceiz, and Kudavidanage (2012) called upon conservation scientists to consider ways in which social networks, cultural values, and belief systems affect the public's understanding of scientific information. St. Clair (2003) gave examples of how social practices such as engagement with local values and communities should be used to increase environmental literacy.

Cantrill (1998) proved that natural resource advocates should uncover an individual's 'sense of place' in connecting them to a larger environment. He noted that communications aimed at ecosystem management should correctly identify all that encompasses a sense of place for target audiences. The author then suggested advocates for ecosystem management emphasize to their audience the social or natural benefits gained from sound environmental policies (Cantrill, 1998).

Beckley, Steedman, Wallace, and Ambard (2007) also investigated sense of place by asking residents to capture the features which connected them to their community through photographs. The researchers then interviewed the residents about their photographs and the results suggested attachments were spread between sociocultural

and biophysical dimensions, yet many accounts of attachments included both (Becky et al., 2007).

Social research has been conducted to investigate an individual's sense of place in order to conserve ecosystems and determine reasons for attachment to place. While sense of place is defined as "a multidimensional concept and embodies emotions, beliefs, and behavioral actions specific to particular geographic settings" (Simms, 2017, p. 412), place attachment is defined as "the emotional bonds between people and a particular place or environment" (Seamon, 2014, p. 11). These two concepts are very similar, yet each is considered a unique theory in the investigation of the human-place connection. However, existing research methods toward the investigation of sense of place can serve as a solid foundation for investigation into place attachment.

Ultimately, coastal prairies play an important role in social and ecological structures. Communicators need greater understanding of how to communicate the value and role of coastal prairies, potentially through exploring place attachment. This need is articulated in the 2016-2020 national research agenda of the American Association for Agricultural Education (Roberts, Harder, & Brashears, 2016). Research Priority One in the national research agenda is "Public and Policy Maker Understanding of Agriculture and Natural Resources" (p. 13) and in this priority, research question one is "What methods, models, and programs are effective for informing public opinions about agricultural and natural resources issues?" (p.15). Therefore, this research investigated the social side of natural resource conservation and how describing an individual's

attachment to place could lead to an improved communication model to better educate

the public about coastal prairie conservation.

CHAPTER II

LITERATURE REVIEW

Contextual Application of Communication

The field of communication is not clearly defined; nor does complete consensus

exist as to its institutional home, method, or matter (Kellner, 1995). Craig (1999)

described a conventional definition of communication as "a process of sending and

receiving messages or transferring information from one mind to another" (p. 125).

Hawes (1973) defined communication as a "patterned space-time behavior with a

symbolic referent" (p. 21). Miller (2005) noted an abundance of differing definitions and

descriptions of communication; however she pointed to the converging

conceptualizations which lay the theoretical framework of the field.

The dominant outlooks all consider communication to be a process, to be

symbolic, as well as transactional (Miller, 2005). Craig (1999) noted history and culture

played a role in the development of communication theory; thus practical applications

are derived from the field of communications. His support of the relevance of

communication towards other fields such as physiology, sociology, and economics was

clearly stated: "communication itself is the primary, constitutive social process that

explains all these other factors" (Craig, 1999, p.126).

Constructed Messages: A Result of Beliefs and Goals

While existing literature only provides loose frameworks towards the definition

of communication, the importance of messages within the field of communication

cannot be denied. "Early definitions of communication typically emphasized the

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encoding process, and areas of research within the discipline such as persuasion and interpersonal communication have continued to stress the importance of message choice and message behavior in the study of communication" (Miller, 2005, p. 104). Wilson, Greene, and Dillard (2000) believed communication is an assemblage of messages which require knowledge of a subject, are utilized towards goal accomplishment, allow for modification of behavior, are constructed with consideration to time, and result unconsciously.

On the individual level, different beliefs and reasoning are utilized in the construct of messages (O'Keefe, 1988). This was demonstrated by O'Keefe (1988) when she identified differing message design logics and goal setting between men and women. The achievement of specific goals as a basis for the construct of messages was also identified by Berger (2000), yet he believed goals were identified in social situations and messages are sent in order to meet these goals. Dillard, Segrin, and Harden (1989) founded a multiple goals view of messaging in which primary and secondary goals exist. Primary goals are the intentions of the message, while secondary goals shape and reinforce the primary goals (Dillard et al., 1989).

Received Messages: Theoretical Underpinnings of Change, Behaviors, and Attitudes

Along with an understanding of the beliefs and goals which are used to construct messages, it is useful to acknowledge the theoretical frameworks which explain the behavior and attitude change which result from received messages. In an investigation towards the consequences of constructing messages against personal opinions, Festinger

and Carlsmith's (1959) experiment demonstrated that an individual will change their opinion if they have an incentive to do so. The findings of their experiment supported the persuasion theory of cognitive dissonance which explains how the expression of a behavior can lead to a change in opinion (Festinger & Carlsmith, 1959).

Theories have also been developed to explain how behaviors can change as a result of attitude or social environments. The theory of reasoned action explained the influence of attitudes and subjective norms on the behavior intention and behavioral action (Madden, Ellen, & Ajzen, 1992). Yet in a comparison of the theory of reasoned action and the theory of planned behavior, Madden et al. (1992) showed that perceived behavioral control is also a factor in behavior intentions and behavior action.

The social judgement theory does not focus on behavior change as a result of attitude; instead it compares individual cognitive judgement with existing attitudes and outlooks (Miller, 2005). According to the theory, messages an individual agrees with fall into the latitude of acceptance and go through a process called assimilation; messages which are not agreed upon fall into latitude of rejection through a process called contrast. Furthermore, messages which individuals are indifferent to lie in the latitude of noncommitment. The author then explained how social judgement theory can aid in the prediction of attitudes through both assimilation and rejection "if a message received is within an individual's latitude of rejection, there will be little or no attitude change…," however she showed a change of attitude could result "when the message received is in an individual's latitude of noncommitment or at the edges of the latitude of acceptance…" (Miller, 2005, p. 128).

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Message Processing: The Elaboration Likelihood Model

When influenced by messages, Cacioppo and Petty (1984) viewed the individual as "neither invariantly cognitive nor universally mindless…" (p. 673). In turn, they developed the elaboration likelihood model which divided internal processes of persuasion into central routes and peripheral routes. The authors explained when elaboration likelihood is high, the central route of persuasion, which contains logical content central to the issue is the most effective message for persuasion. When the elaboration likelihood is low, persuasion of a message depends more on the external features of the message. The authors emphasize the way an individual will process a message will ultimately depend on their prior knowledge (Cacioppo & Petty 1984).

In a summary of the elaboration likelihood model, Klockner (2015) further explained how in order to create persuasion; a receiver must be motivated and capable of processing the message. When the receiver is not motivated or capable of processing a message, then the peripheral route is utilized; however the peripheral route does not create the lasting change in persuasion the central route of persuasion accomplishes (Klockner, 2015).

Opinions on the Natural World: Environmental Communication

Klockner (2015) applied the elaboration likelihood model to environmental communication. He specifically advised guidelines to utilize the central and peripheral routes in communication attempts. In further support of the elaboration likelihood model, the author stated "we need to be aware of people's opinion regarding their prior knowledge and attitudes" (Klockner, 2015, p. 60). However, existing environmental

opinions are considered very contingent which highlights the need for clarification of existing opinions towards the natural world (Cox, 2013).

Cox (2013) mentioned the diversity of opinions active in the environmental communication field. "Environmental communication describes the many ways in and the forums in which citizens, corporations, public officials, journalist, and environmental groups raise concerns and attempt to influence the important decisions that affect our planet" (Cox, 2013, p.11). The author also described how views in the U.S. have evolved through the course of the country's history. The four views on the U.S. society's exploitation of nature can be divided among ideologies of conservation of natural resources, the harm of pollution to public health, community–based environmental justice, and the rise of sustainability and climate justice (Cox, 2013). For the purposes of this study, views associated with the natural resource conservation aspect of society's interaction with the environment will be the focus.

Conservation is Dependent on Values

The meaning of conservation is as diverse as the fields it comprises; yet its importance is paramount because future generations will judge our use of natural resources (Hambler & Canney, 2013). From the author's viewpoint, conservation is best described as protection of all species and habitats from the irreversible harm caused within one human generation for the benefit of future generations. Hambler and Canney (2013) also listed the main themes in conservation to include "the protection of spiritual and aesthetic features, preservation of fish and game, maintenance of forest resources, protection of soils and water supplies, animal welfare and, more recently, concerns for

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genetic resources, the atmosphere and numerous other ecosystem and evolutionary processes" (p. 2).

According to Hambler and Canney (2013) the reasons an individual may value a conservation effort ranges from ethics to economics. Yet, the values an individual places on conservation range from 'utilitarian' or 'use' values and 'non-utilitarian' or 'non-use' values (Hambler & Canney, 2013). Laurila-Pant, Lehikoinen, Uusitalo, and Venesjärvi (2015) explained the use value being composed of direct, indirect, and option values. Examples of direct value include timber and food production, while indirect value includes ecological functions and services. As the name suggests, option values include the option to utilize an ecosystem in the future. The authors also elaborated on non-use values to encompass bequest value which includes the preservation of ecosystems for future generations; non-use value also includes passive value which takes into consideration individuals who do not use an ecosystem but do not want to see it lost. All of these values combined comprise a model known as total economic value as demonstrated by Laurila-Pant et al. (2015). Figure 3 is a visual representation of the total economic value model by by Laurila-Pant et al. (2015).
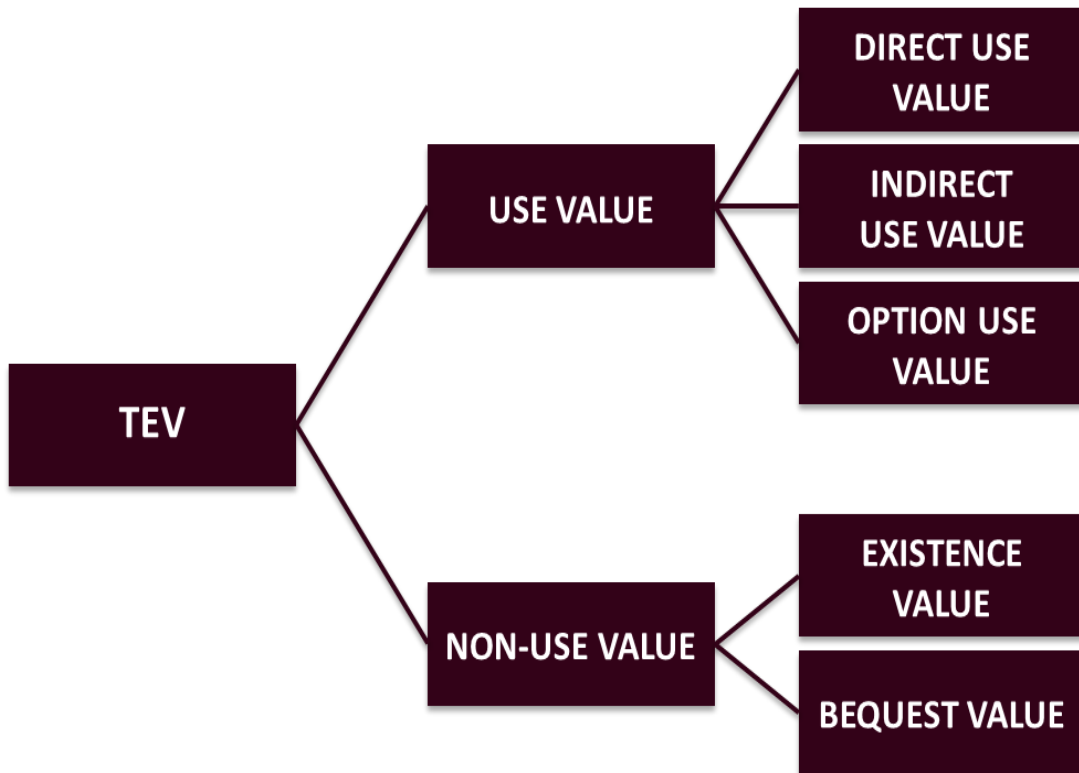
Figure 3. A visual representation of total economic value model. Adapted from "How to value biodiversity in environmental management?" by M. Laurila-Pant, A. Lehikoinen, L. Uusitalo, and R. Venesjärvi 2015. *Ecological Indicators*, 55, p.3.

In their search for an economic method to value prairie lands, Williams and Diebel (1996) listed use and non-use values associated with prairies. The authors demonstrated that a prairie can be persevered in a way which provides for both use and non-use values. Yet, they demonstrated the establishment of economic value towards a prairie was primarily a question of prairie conservation attitude:

The importance of the economic value of the prairie stems from the basic question of whether remaining prairie lands should be preserved and

prevented from being converted into nonprairie use. As one approaches

this question the issue of the cost and benefits of protecting the prairie and,

therefore, its value cannot be avoided (Williams & Diebel, 1996, pp. 33-

34).

This categorization of prairie values into use and non-use groups allows the

segmentation of two separate prairie audiences. Through the identification of unique

prairie audiences, it is possible to describe the most appropriate prairie conservation

message based on individual values. Figure 4 list prairie use and non-use values set forth

by Williams and Diebel (1996).

Use Value of the Prairie	Non-use Value of the Prairie
Grazing Livestock	Existence and option
Harvesting native or cultivated plants	Aesthetics
Hunting Wildlife	Cultural-historical and sociological significance
Recreational Activities such as hiking, bird watching, and Photography	Ecological or biological mechanisms
Educational Activities	Biological Diversity
Erosion control and water quality enhancement due to the benefits of the prairie grasses and native plants provide in their natural state	
Research Activities	

Figure 4. A list of use and non-use values associated with the prairie. Adapted from
"The economic value of the prairie," by J. R. Williams, and P.L. Diebel, 1996. In. F. B.,
Samson & F. L., Knopf (Eds.) *Prairie conservation: Preserving North America's most
endangered ecosystem.* p. 26.

The importance of audience segmentation was shown by Warner, Chaudhary, Rumble, Lamm, and Momol (2017). In their study on water conservation, the authors noted audiences should be segmented based on their likelihood of adopting a behavior. Additionally, audience segmentation identifies subgroups within a population and creates techniques which would be appealing to them (Warner et al, 2017). Based on the identification of natural resource use and non-use groups of Laurila-Pant et al. (2015) as well as the assignment of specific prairie values by Williams and Diebel (1996), the CPP's target audience can be segmented into coastal prairie use and non-use audiences.

Theoretical Framework: The Tripartite Model of Place Attachment

In order to investigate how research into communication messages with and among use and non-use audiences could benefit coastal prairie conservation, an appropriate theoretical framework is necessary. Ideally, this framework would draw upon an individual's associated attachment towards the coastal prairie in order to investigate their personal connection toward it.

Place was defined phenomenologically as "any environment locus in and through which individual or group actions, experiences, intentions, and meanings are drawn together spatially" (Seamon, 2014, p. 11). The author went on to describe place as anything from a feature in a room or an entire region. However, Seamon (2014) further described place as existing beyond the physical environment in the form of an "indivisible, normally unnoticed phenomenon" (p. 11), composed of complex experiences and meanings. Therefore, a place can embody both physical and experience based qualities which contribute to unique individual perception and meaning.

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Lewicka (2014) gave evidence which suggests a majority of people desire to be attached to place. The author cited high levels of place attachment as a direct correlation to social capital, as well as life satisfaction, and overall adjustment. Moreover, attachment to place does not mean an individual will spend their entire life in the same place, instead place attachment can be built or transferred to another place they are less familiar with (Lewicka, 2014).

In another study, Lewicka (2011) determined place attachment was not easily predicted by factors such as socio-demographics, community ties, or physical features. Furthermore, the author could not point to a singular correlating cause or consequence of place attachment (Lewicka, 2011). Seamon (2014) described place attachment as not static, but consisting of a series of six processes. These processes range from "place interaction" in which an individual simply interacts with place through their everyday life, all the way to "place intensification" in which efforts are made to enhance a place. These processes can further range in intensity from strong place attachment to an overall lack of attachment to place (Seamon, 2014).

Scannell and Gifford (2013) described place attachment as the way in which emotional and cognitive bonds are formed with a particular place. The authors investigated the use of place attachment in determining message effectiveness toward engaging audiences in Canada. Scannell and Gifford (2010) structured a three-dimensional framework of place attachment based on definitions found in existing literature. Scannell and Gifford's (2010) multidimensional model divides place attachment into dimensions of person, psychological process, and place. Figure 5 is a

visual representation of the tripartite framework adapted from Scannell and Gifford (2010).
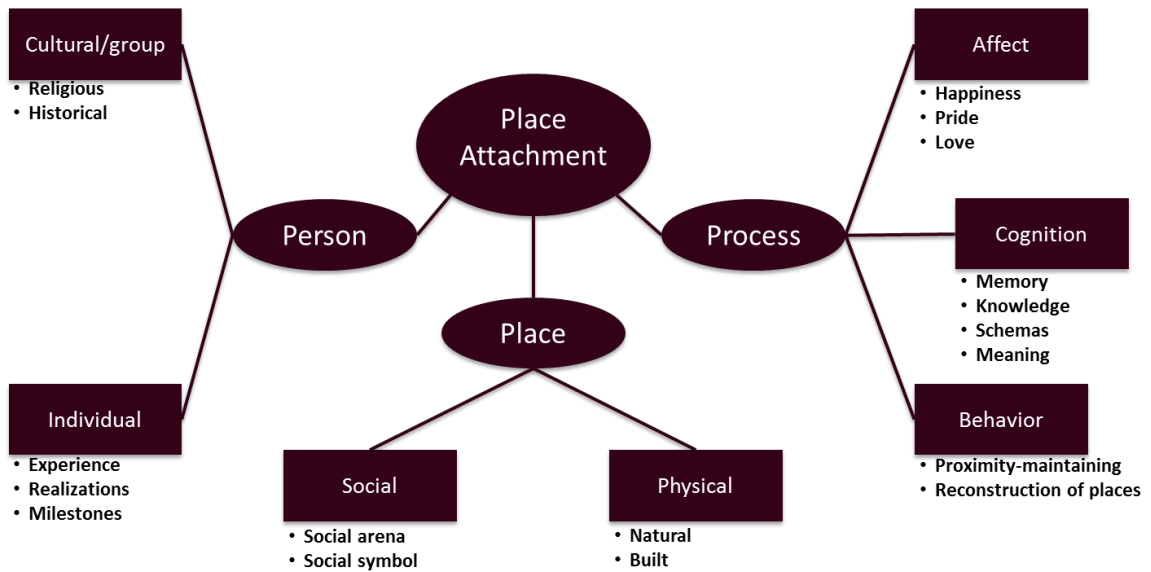
Figure 5. A visual representation of the tripartite model of place attachment. Adapted from "Defining place attachment: A tripartite organizing framework," by L. Scannell, and R. Gifford, 2010, *Journal of Environmental Psychology*, *30*(1) p. 2.

Scannell and Gifford (2010) called for their place attachment frame work to be applied to "semi-structured interviews for qualitative studies, and assist in conflict resolution for successful land-use management" (p. 1). Therefore this study was designed with such a frame in mind.

CHAPTER III

METHODS

Purpose Statement

The CPP was established to unite and educate both private and government land managers on the topic of coastal prairie conservation. However, the CPP has a need to connect audiences who are not directly involved in coastal prairie conservation. Due to the diversity of the CPP's target audience, it is important to identify an effective communication message that can be utilized to further the CPP's mission.

Therefore, the purpose of this study was to describe the place attachment dimensions which connect prairie use and non-use audiences to the coastal prairie. These descriptions will aid in the messaging efforts of the CPP, therefore it is useful to compare the messages preferred by the CPP's coastal prairie use and non-use audiences.

Research Questions and Objectives

The objective of the study was to distinguish prairie use audience messaging preferences from the preferences of their prairie non-use counterparts. The research questions for the study were:

RQ1: What dimensions of place attachment do CPP audiences most associate with in their connection to the coastal prairie?

Objective 1: Describe prairie use audiences' preferred place attachments toward the coastal prairie.

Objective 2: Describe prairie non-use audiences' preferred place attachments toward the coastal prairie.

RQ2: How did the audiences' perceive the test messages?

Objective 1: Describe prairie use and non-use audiences' perception of the test messages.

Objective 2: Compare prairie use and non-use audiences' existing awareness and attitude toward the coastal prairie.

Results from the data collected by the study indicate how the CPP can effectively message their mission of coastal prairie conservation.

Design

This study utilized a basic qualitative research paradigm. Since social aspects were the main topic being explored in this study, the research relied on semi-structured interviews to comprise the main data collection tool.

Corbin and Strauss (2015) listed reasons researchers choose qualitative methods. The authors' list included the exploration of how meanings are formed and transformed, the exploration of inner experiences, and taking a holistic approach to a phenomena. As previously stated, the purpose of this study was to describe the place attachment dimensions which connect individuals to the coastal prairie in order to aid the messaging efforts of the CPP. Since collecting data related to the description of place attachment dimensions largely involved investigation of experiences and meanings associated with a phenomenon, the use of qualitative research methods was largely justified.

The design for this research was a basic qualitative study as described by Merriam and Tisdell (2016). The authors showed the versatility of basic qualitative studies and cite the questions asked, observations made, and documents reviewed

depend on the theoretical framework identified for the study. Analysis of the data involves recognizing patterns which become findings. Yet, interpretation of the data will be based on the researcher's investigation of the understanding the research participants have toward the investigated phenomenon. The authors go on to note basic qualitative studies are not declared a certain type of study such as phenomenological or grounded theory. Instead, they described the purpose of basic qualitative studies to "understand how people make sense of their lives and their experiences" (Merriam & Tisdell, 2016, p. 24).

Fraenkel et al. (2015) defined a population as a large group which one hopes to apply all of the results of a study. The authors also described how although researchers would like to conduct research on entire populations, this is difficult to do because most populations are large, scattered, and difficult to contact. Since an entire population is not usually accessible by researchers, populations which can realistically be attained for the study are known as accessible populations (Fraenkel et al., 2015).

In this study, the target population was considered all the individuals who reside in the region from South Texas to western Louisiana in the historic range of the coastal prairie. Conducting a study in a region this large and diverse would be very difficult, but an accessible population was identified in the region of the Houston MSA. This is the area where much debate about coastal prairie conservation is held, it is also the region focused on the most by the CPP.

According to Fraenkel et al. (2015) samples are small groups of populations researchers use in a study; sampling is the process used to select these individuals.

Lincoln and Guba (1985) described purposive sampling as a characteristic of naturalistic inquiry. Patton (1990) described the selection of information rich cases for in depth understanding as providing the logic behind purposive sampling. This study used purposive sampling to identify information rich individuals who would be able to contribute to the research questions and objectives.

Patton (1990) described multiple types of purposive sampling and the importance of selecting the type appropriate for the research purpose. He suggested the use of theory based sampling as a type of purposive sampling to investigate incidents of important theoretical constructs. Therefore, the sample becomes a representation of the phenomenon in focus. "Instances of such interaction must be defined based on theoretical premises in order to study examples that represent the phenomenon of interest" (Patton, 1990, p. 177).

However, Patton (1990) indicated in order to sample phenomena in social science, it is necessary to define the theoretical construct. Therefore, theory based sampling was utilized in this study with criteria defined by total economic value as described by Laurila-Pant et al. (2015) and prairie use and non-use groupings of Williams and Diebel (1996). The sample was then made up of individuals who were members of organizations which publicly expressed valuing the coastal prairie for either use or non-use reasons. However, only individuals who resided in the Houston MSA made up the purposive sample. This requirement is consistent with the previously established accessible population.

The CPP's Audiences

Patton's recommendation of theory based sampling was used to identify distinct audiences (based on Williams and Diebel's (1996) use and non-use criteria) and identify individual participants that meet the theoretical construct of those audiences. Two representatives from the CPP assisted the researcher in locating individuals which met the specified criteria of coastal prairie use and non-use and would be willing to participate in the study. However, one of the participating organizations was identified and approached solely by the researcher. After analysis of the proposed organizations and identification of the most appropriate, the researcher interviewed 31 participants from four organizations which were selected purposefully for the study. Two of the organizations were identified as being made up of a coastal prairie use audience, while the other two were identified as being made up of a coastal prairie non-use audience.

The Use Audience

A total of 17 coastal prairie use audience members were interviewed. This audience was made up of interview participants who valued coastal prairie due to reasons consistent with use values established by Williams and Diebel (1996). Two organizations which met these criteria were the Katy Prairie Conservancy and the Texas A&M Texas Community Watershed Partners. A majority of the interviews were conducted at these organizations headquarters in Houston, Texas. Yet, a portion of the Katy Prairie Conservancy interviews were conducted at the Katy Prairie Conservancy field office near Waller, Texas.

The Katy Prairie Conservancy supports the grazing of livestock and the harvesting of native and cultivated plants on their properties. Extending recreational activities such as bird watching to the public are ways Katy Prairie Conservancy uses the prairie. The organization also uses the prairie to support opportunities for conservation based educational activities (Katy Prairie Conservancy, n.d.).

The Texas Community Watershed Partners also valued the coastal prairie for use reasons. Yet, these uses were more limited than those of the Katy Prairie Conservancy as they do not own or manage large acreage of coastal prairie. Instead, their uses of the prairie support educational and research activities which are primarily based on the water control and water quality enhancements the coastal prairie offers in its natural state. This organization also assists in restoration of urban prairie wetlands (Texas Community Watershed Partners, n.d.).

The individual interview participants were composed of a mixture of staff and volunteers from both organizations. The individual participants from Katy Prairie Conservancy were identified with the help of several staff members who helped the researcher in the coordination of the interviews. The individual participants from Texas Community Watershed Partners were identified with the assistance of a staff member as well.

Notable demographic data from the use audience included 76.4 % of them classified themselves as white, 70.5% had earned a graduate degree, and 70.5% resided in Harris County. The complete demographic data collected from the use audience is listed in Table 1.

Table 1. Use audience demographics

Demographic characteristic	*n*	Percent
Gender		
Male	7	41.10%
Female	10	58.80%
Age		
18-25	1	5.80%
26-35	4	23.50%
36-45	2	11.70%
46-55	3	17.60%
56-65	4	23.50%
66-75	2	11.70%
Over 76	1	5.80%
Race		
White	13	76.40%
Hispanic	1	5.80%
White & Hispanic	1	5.80%
Asian American	1	5.80%
Other	1	5.80%
Highest Level of Education		
High School Diploma	1	5.80%
Associate's Degree	1	5.80%
Bachelor's Degree	3	17.60%
Graduate Degree	12	70.50%
Annual Income		
Less than $30,000	1	5.80%
$30,000-$49,999	3	17.60%
$50,000-$99,000	8	47%
$100,000 or Greater	4	23.50%
Not Reported	1	5.80%
Primary County of Residence		
Brazoria	1	5.80%
Galveston	1	5.80%
Waller	1	5.80%
Harris	12	70.50%
Harris and Other	1	5.80%
Other	1	5.80%

Table 1. Continued

Demographic characteristic	*n*	Percent
Length of Residence		
Less than 1 year	1	5.80%
1-5 years	3	17.60%
6-10 years	2	11.70%
16-20 years	1	5.80%
Over 21 years	10	58.80%

The Non-Use Audience

A total of 14 non-use audience members were interviewed for the study. The non-use audience was made up of interview participants from the University of St. Thomas and Rice University which are both located in Houston, Texas. The interviews took place on the campuses of both of these institutions.

It was determined that these two organizations valued coastal prairies due to reasons consistent with non-use values established by Williams and Diebel (1996). This value was expressed by the fact both of the institutions support students and staff in the establishment and maintenance of small scale urban prairies known as "pocket prairies" (C. Johnson, personal communication, January 15, 2018).

It should be noted Williams and Diebel (1996) list "educational activities" as a value consistent with prairie use groups. Although these two organizations value the coastal prairie for educational activities, the educational activities are largely geared to non-use values as set forth by Williams and Diebel (1996). These uses include existence and option, aesthetics, cultural-historical and sociological significance, ecological or biological mechanisms, and biological diversity (Williams & Diebel, 1996).

The participants were composed of a mixture of staff, professors, and students from both universities. The participants from the University of St. Thomas were identified with the help of the staff at the university's Science, Technology, Engineering, and Math (STEM) Center. The participants from Rice University were enrolled in a conservation class which focused on the establishment of an urban prairie on campus. These individual participants were identified with the assistance of the course's instructor.

Notable demographic data from the non-use audience included 85.7 % of them were female, 64.2% of them were between the ages of 18 and 25, 50% of them classified themselves as white, 64.2.5% were currently enrolled in college, 57.1% indicate their income was less than $30,000, 92.8% resided in Harris County, and 50% had resided in the area between 1 and 5 years. The complete demographic data collected from the use audience is listed in Table 2.

Table 2. Non-use audience demographics

Demographic character	*n*	Percent
Gender		
Male	2	14.20%
Female	12	85.70%
Age		
18-25	9	64.20%
26-35	2	14.20%
36-45	1	7.10%
46-55	1	7.10%
56-65	1	7.10%
Race		
White	7	50%
Hispanic	2	14.20%
Asian American	5	35.70%
Highest Level of Education		
Currently Enrolled in College	9	64.20%
Graduate Degree	5	35.70%
Annual Income		
Less than $30,000	8	57.10%
$50,000-$99,000	5	35.70%
$100,000 or Greater	1	7.10%
Primary County of Residence		
Fort Bend	1	7.10%
Harris	13	92.80%
Length of Residence		
1-5 years	7	50%
6-10 years	1	7.10%
16-20 years	4	28.50%
Over 21 years	2	14.20%

Data Collection

It was important to collect accurate data from the sample in order to describe the

place attachment dimensions expressed by the CPP's diverse audience. This data would

be later used to help describe the CPP's audience coastal prairie place attachments.

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Fraenkel et al. (2015) described how semi-structured interviews can be used to compare and contrast data later. The authors show how semi-structured interviews are typically a series of questions used to elicit certain answers from the interviewees (Fraenkel et al., 2015). Onwuegbuzie, Leech, and Collins (2010) suggested open-ended questions, questions that provoke feelings, and questions that involve recollection be asked to the research subjects. Therefore, a standard set of open-ended questions to be asked to the CPP's use and non-use audiences was developed and they were asked to elaborate on each one. Moreover, semi-structured interviews were appropriate in this study as they provided a method for describing the CPP's audience place attachment dimensions.

Bryman (2012) described how a semi-structured interview maintains flexibility by having a series of questions but able to vary the question order, additionally the interviewer can further question the interviewee toward what are seen as replies with significance. Questions not included in the interview guide may be asked as the interviewee's descriptions continue, but for the most part questions with similar wording will be asked throughout the sequence of interviews. This process allows the interviews to maintain flexibility as the interviewee "frames and understands issues and events— that is, what the interviewee views as important in explaining and understanding events, patterns, and forms of behaviour" (Bryman, 2012, p. 471).

Beckley et al. (2007) described how the feelings which influence place attachment are largely unconscious. Due to this factor, the authors warn against simply asking people why they are attached to a place. This question will not likely portray the diversity or reasons an individual becomes attached to a place. Therefore, the authors

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recommend the development of a tool for investigating place attachment. The authors used resident-employed photography and follow up interviews to record resident's place attachment (Beckley et al., 2007).

For this study, the researcher developed test messages to accurately capture respondents' attachment to the coastal prairie. Scannell and Gifford (2013) constructed a one page information poster which included text and photographs to measure responses to messages relating to climate change. The authors constructed one climate change message with a local context and another with a global context. Then, the messages were presented to separate groups to determine which climate change message would be more engaging (Scannell & Gifford , 2013).

Messages featuring text and images similar to the method used by Scannell and Gifford (2013) were constructed on three separate test messages, one for each of the three dimensions of place attachment (person, place, process). A majority of the text provided background of the historic coastal prairie through a description of its native species, ecology, as well as facts about the role fire once played in maintaining the ecology of the coastal prairie. However, photographs and subtext varied among the messages to highlight the separate dimensions of place attachment theory (person, place, process). The images within the text were meant to assist the interviewees in their place attachment descriptions similar to the method used by Beckley et al. (2007)

In order to ensure the content-related evidence of validity, a representative from the CPP was asked to review each of the place attachment messages to ensure they provided accurate information about the coastal prairie. The construct-related evidence

of validity occurred by assuring each dimension of place attachment (person, place, process) was accurately expressed in the message. This was done by constructing each place attachment dimension message based on the definition and model provided by Scannell and Gifford (2010). The test messages used in this study are represented in Appendixes A, B, and C.

The ultimate data collection tool used was a semi-structured interview protocol that included a test-message elicitation exercise. The interview protocol was designed with the following tenets in mind. Bradburn, Sudman, and Wansink (2004) described how respondents to open-ended questions in their own words while the interviewer recorded their answers verbatim. The authors also described how this format allows respondents to express opinions and allows for rich material which can be quoted. This tool is essential when starting to explore a new area or opinions (Bradburn et al., 2004). An interview protocol was developed prior to the interview process. The interview protocol consisted of the development of a set of guidelines that were adhered to during the interview phase of this study

Cantrill (1998) noted the need for ecosystem and natural resource managers to take into account the perceptions of individuals living in the areas they manage. Therefore, he collected interview and survey data relating to an individual's sense of place. The author also developed an interview protocol and developed a set of questions which were used in the study (Cantrill, 1998). Although Cantrill (1998) investigated sense of place in his study, many of the questions he asked are relevant to describing place attachment dimensions. Therefore, the questions asked in this study were adapted

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from those developed by Cantrill (1998). Questions relating to participant value and attitude toward the coastal prairie were also asked. These questions were meant to understand additional place attachments.

During data collection, each individual was asked two questions to gauge their initial attachment to the coastal prairie. Then, they were presented with all three of the place attachment messages (person, place, process). After allowing them to review the messages, they were asked to select the message which they most "attached" with. After they selected the message, the open-ended interview session began in order to determine which place attachment dimension of the message the individual connected with the most. The interview protocol used for the study is represented in Appendix D.

The researcher applied for IRB approval through Texas A&M University Division of Research, however the study was determined to be "Not Human Research Determination," therefore no further action was required by the Texas A&M IRB. Therefore, the researcher started to identify potential samples by contacting a representative from the CPP and use their input to construct a list of organizations which could be considered either use or non-use groups. After assuring the organizations recommended by the CPP expressed values consistent with coastal prairie use and non-use criteria established by Williams and Diebel (1996), contact was made with the organizations and permission was asked to conduct interviews with their members

Organizations were contacted to get permission to make a site visit to interview members of the identified use and non-use groups. Next, the primary researcher traveled

to the organization's headquarters in order to conduct the interview portion of the study. Then, the semi-structured interviews were conducted and the data was collected

Dearnley (2005) described the environment in which semi-structured interviews should be held. The author describes the ideal setting as private, informal, and uncluttered. Furthermore, participants must feel comfortable and relaxed enough to provide the researcher with clear data. Another consideration is researcher dress; too formal of attire may restrict participant and researcher interaction. The researcher should also have the foresight to ensure a power source and any necessary equipment is available to ensure a successful interview (Dearnley, 2005).

Each interview was conducted individually between the primary researcher and the participant in a private room provided by the organization. In a few instances, other participants would leave or enter the room but close contact was not made during the interview process to influence the current interview. The primary researcher maintained a professional approach and friendly demeanor to allow for each participant to feel relaxed and comfortable.

Field notes were taken during the interview process to capture the participants answers and insights to the questions asked. Phillippi and Lauderdale (2018) detailed the many advantages of field notes to the qualitative researcher. According to the authors, these advantages include such assisting in constructing descriptions, encouraging the reflection of researcher bias, assisting in data trustworthiness, as well as data analysis (Phillippi & Lauderdale, 2018).

Along with recording hand written field notes, the researcher used iPads[©]

supplied by the Agricultural Leadership, Education, and Communications Department at

Texas A&M University to record the interviews. These iPads[©] allowed for the data to be

recorded in a convenient and organized manner. As mentioned by Tessier (2012) digital

recordings are easy to backup and store, and they also allow for the researcher to easily

search through the interview recordings.

Direct word-for-word transcription of the participant interviews was not

performed as the direct transcription is costly in terms of resources and has a high

potential for error (Halcomb & Davidson, 2006) Instead, the researcher analyzed the

field notes and interview recordings to form a final set of interview notes which were

compiled on Microsoft Word[©]. Halcomb and Davidson (2006) recommend this method

as an alternative to direct transcription. Then, the data was coded and analyzed using

methods and procedures outlined below.

Data Analysis

Corbin and Strauss (2015) described the process of data analysis as turning raw

data into concepts. Merriam and Tisdell (2016) further described qualitative analysis as

inductive and comparative and support the use of the constant comparative method of

data analysis. The constant comparative method to analyze qualitative data was also

recommended by Lincoln and Guba (1985) in respect to naturalistic inquiry.

Unitizing was described by Lincoln and Guba (1985) as the construction of units

which will eventually form categories. The authors also set two criteria for the

construction of units. First, each unit must contribute to the study. Second, each unit

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must be the smallest bit of information that can stand alone without other information

beyond an overall familiarity of the study (Lincoln & Guba, 1985). In this study, the

final set of interview notes was analyzed and then unique units were identified. This

process required the primary researcher to carefully analyze the data and to be alert to

segments which would become unitized. After examining the final interview notes, the

primary researcher identified the unique segments of data which were unitized and

assigned a unique number which could be used for identification. Through this

unitization process, 301 unique units of data were identified throughout the 31 individual

interviews.

The unique identifying number assigned to each unit was composed of three

parts. The first number before the hyphen indicated the session number for each of the

four sessions (S1-, S2-, S3-, S4-). The two digits immediately after the hyphen was a

randomly generated two digit number used to represent the individual participant

number for each of the 31 participants. The third digit after the hyphen represented the

question number the response was given toward. Any digits after the third digit were

simply put in place to make each individual unit unique. For instance, a unit coded as

S1-38301 would indicate the unit was derived from session one, the participant assigned

the number 38, and was given in response to question number three. Appendix E shows

the coded bibliographies for both audiences.

Bryman (2012) described how coding is widely used in qualitative data analysis.

The author offered further steps which included using coding to include investigations

toward aligning items into categories, determining what the data represents, and the

topic the data represents. The author also offered steps for guiding coding to include coding data as soon as possible, reading through field notes, and the consideration of theories in the analysis of data (Bryman, 2012). The author's recommendations were used in this study for the coding of data derived from the semi-structured interviews

A process explained by Merriam and Tisdell (2016) as open coding was used in analyzing the units. As described by the authors, this process involved the primary researcher noting anything about the units which aligned with the research questions. Then, these open codes were analyzed further until unique categories emerged in a process the authors described as axial coding (Merriam & Tisdell, 2016). These categories eventually formed emergent themes which were used to determine the preferred place attachment dimensions expressed by the CPP use and non-use audience. These findings were used to answer research question one. Ultimately, a comparison of the use versus the non-use groups' test message perception was made in order to answer research question two.

Trustworthiness

Lincoln and Guba (1985) developed the framework of naturalistic inquiry for use in behavioral research. In regard to sound naturalistic inquiry methods, the authors suggested ways in which to establish trustworthiness in data collection. By establishing credibility as criteria for the data, trustworthiness validates the use of the naturalistic framework. The authors established a set of activities which increase the probability of allowing the researcher to arrive at credible findings. These activities included prolonged engagement, observation, and triangulation (Lincoln & Guba, 1985).

Engagement with the study population gradually occurred as the primary researcher became acquainted with the prairie use and non-use organizations prior to conducting the interviews. Upon engaging with the selected interviewees who made up these organizations, the primary researcher maintained neutrality toward individually expressed beliefs and values. This ensured the interviewees maintain a professional opinion of the primary researcher as well as add to the development of trust in the data collection process. Observation techniques complemented the methods used for participant engagement. Specifically, observation consisted of noting the selection of the message the interviewee felt most attached. Unique observations which appeared unimportant initially were also noted as they may have proved to provide valuable data upon analysis.

Triangulation which involves the use of multiple sources and methods was also mentioned by Lincoln and Guba (1985) as a process to increase the credibility of qualitative data. In this study, data was collected by both interview and observational methods to contribute to the multiple methods triangulation requires. Lincoln and Guba went on to offer guidelines toward engaging in these methods while making sure to "guard against overrrapport (going native) and premature closure, and take care that modes of triangulation inconsistent with naturalistic axioms are not employed" (p. 307). To prevent this, the primary researcher attempted to not express personal bias toward the topic being investigated through participation in a weekly peer debriefing session. The method of peer debriefing was mentioned by Lincoln and Guba as a way to ensure credibility.

Lincoln and Guba (1985) suggested qualitative studies can become transferable through thick and rich description. Meaningful quotes are presented in the results section and add to the overall transferability of the study. Lincoln and Guba described the use of an audit trail to assist in assuring dependability and confirmability. Thus, an audit trail with the coded participant identification, date, and location of each interview has been included in the coded bibliography in Appendix E. Recording the interviews also improved confirmability as the audio recordings were used to contribute to the audit trail. Lincoln and Guba suggested reflexive journaling to further ensure trustworthiness; therefore the primary researcher maintained a reflexive journal throughout the study. The reflexive journal included dates, times, and locations of the interviews as well as the primary researcher's reflections on the development and progress of the study.

CHAPTER IV

FINDINGS AND RESULTS

RQ1: What Dimensions of Place Attachment do CPP Audiences Most Associate With in Their Connection to the Coastal Prairie?

The purpose of this study was to describe the place attachment dimensions which connect prairie use and non-use audiences to the coastal prairie. In order to do this, a basic qualitative study was conducted which used semi-structured interviews to collect data. Findings from this study are presented as emergent themes which arose toward answering the research questions and objectives.

Research Objective 1: Describe Prairie Use Audiences' Preferred Place Attachments Toward the Coastal Prairie.

Analysis of the data collected from the use audience yielded four emergent themes: 1) Awoken Attachment; 2) Extending Use and Awareness; 3) The Vast and Peaceful Prairie; and 4) Change and Interconnectedness. Awoken attachment was characterized as relating an idea that attachment to the coastal prairie was not inherent, but a direct response to a specific moment. These feelings of attachment could usually be traced back to a realization of the prairie's value which seemed to have been "awoken." The use audience went on to describe features of the coastal prairie which contributed toward their attachment. These descriptions included the extension of the use and awareness about the prairie, its vast and peaceful features, as well as the impact

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change and interconnectedness have on the landscape. These themes are listed in Table

3.

Table 3. Use audiences'preferred place attachments

Theme	Number of units
Awoken Attachment	15
• The awakening- These feelings of attachment could usually be traced back to an event or experience when attachment was "awoken."	
• Family, jobs, and airport- The lack of attachments to other factors beyond the coastal prairie are described.	
Extending Use and Awareness	49
• Extending use- Descriptions of attachment toward extending the use of the prairie by all socioeconomic groups, for conservation marketing, and to provide as a way to connect people to the prairie are included.	
• Extending awareness- Descriptions of attachments toward extending awareness of prairies through communication, education, hands on activities, to create a sense of urgency, to promote cooperation amongst agencies, by expressing interest in this study, and as a first step toward conserving other natural resources.	
The *Vast and Peaceful Prairie*	27
• Peaceful- Descriptions of attachments toward calmness, quietness, as well as the ability to hear nature in close proximity to a major urban area.	
• Vastness- Descriptions of attachments toward the general vastness, the horizon, differentiation from an urban environment or environment of former residence, enhanced appreciation of smaller prairie features, appreciation of historic (vast) prairies, as well as the availability of large restorable tracts of land.	
Change and Interconnectedness	52
• Change- Descriptions of attachments to the change in living things, change of season, land use, increased development, biodiversity, and ecosystem services	
• Interconnectedness- Descriptions of attachments to the interconnectedness between people and the prairie; as well as amongst features of the prairie such as its biodiversity, ecological services, contributions to culture and history.	
Total number of units	143

Awoken Attachment.

The Awakening.

The use audience cited instances in which their attachment to the coastal prairie was sparked. One participant described growing up near a remnant coastal prairie (S3-53276), while another participant described an impactful event of reading about the plight of the historic coastal prairie in an academic setting (S4-49272). In referencing a recent event which awoke their attachment to the coastal prairie, one participant described, "I don't think I really realized the coastal prairie in particular was something worth preserving, until, really, the last two years" (S3-33278).

In a description of residing on the coastal prairie, a participant acknowledged they didn't realize they lived in the coastal prairie until after an educational experience:

> I've been living here off and on since first grade. So, um, for most of that
>
> time, I didn't even know it was a coastal prairie. I didn't know about it
>
> until I took the Texas Master Naturalist class, about, just maybe under
>
> fifteen years ago. I'm, I always thought that this area was you know, trees,
>
> part of the piney woods, or something like that (S3-131171).

One participant described how they became aware of the coastal prairie after visiting a local festival in which the Katy Prairie Conservancy had a booth (S3-58380). This awoken attachment seems to have been further supported by a personal account of a flooding event near their home during Hurricane Harvey, "Then we experienced Harvey,

we didn't have water, but catty-cornered across the street there was seven houses that got just run through with water off the little creek behind them that dumped off into the bayou" (S3-58107). This recent personal incident seemed to have confirmed their attachment to the coastal prairie, although their outlook on the future of the coastal prairie was not optimistic:

> The loss of all this prairie is one of the factors that's contributes to that kind of a water problem. And, uh, as a result, we need to preserve what we've got, and would like to be able to restore some. But, that's not going to happen, we're going to lose more and more of them. There's no question (S3-583170).

The theme of awoken attachment was further supported by the use audiences' descriptions of instances when attachment to the coastal prairie was awoken. A participant described an acknowledged awareness of environmental stewardship as an adolescent which reached beyond the coastal prairie:

> When I was 14, I picked environmental science as my major, and I wanted to always make a difference, and I wanted to always help. And I've been, excited about different ecosystems throughout my path, um, in my career that has always been a primary, um, my house I try to make decisions that will benefit, and it's not limited to the prairie, it's just, it's to the environment as a whole. Um, knowing that ecosystems connect, knowing that actions have impact, where it may not be so obvious farther away

from where you are standing. Um, that's kind of a lifelong thing for me (S3-88495).

An instance of awoken attachment was described by a participant as occurring in early adulthood. In this instance, a separation from the coastal prairie sparked an attachment to return to the area:

Graduated U of H, left to New York for a while, and thought, uh, I'm done with Houston, then moved back after a while. And the place just kind of sunk deep in my bones and I think a part of it was the deeper you pull on that narrative thread of the prairie or our local bayous, or any these natural resources you see that it is connected to so many things that makes for a very rich place to live (S3-53494).

A deep insight into awoken attachment to the coastal prairie came from the same participant as they reflected upon their "rootedness" to the earth, the prairie, and their hometown:

The word I was stumbling for was rootedness. It makes me feel like I'm not floating out in space. Uh, a lot of people move, move to Houston and it's so big and overwhelming that they can't figure it out. But, these local ecosystems, and indigenous wildlife help me feel like I'm rooted on planet earth somewhere. Even though I'm a global citizen, I'm not floating above the planet. And I think that that's, people are really missing that. Um, I

think it's a quality of life issue to feel like you are home in your own city,

or town, or country, where ever you are (S3-535113).

Family, Jobs, and an Airport.

Along with awoken attachment descriptions relating to the coastal prairie, the use

audience described attachments to place which were not directly related to the prairie.

The attachments described included family commitments (S3-53406, S3-034171, S3-

134172), a spouse's job (S4-38404), and proximity to an airport (S3-58101). This lack of

attachment descriptions to commitments other than the coastal prairie further supports

the use group's awoken attachment toward the prairie.

Extending Use and Awareness.

One of the themes included the use audiences' attachment toward the actions of

extending use and awareness about the coastal prairie rather than an attachment to the

coastal prairie as a place.

Extending Use.

The use audience described extending public use of the coastal prairie as

contributing to their attachment toward the prairie (S4-00379, S3-43490, S3-73309, S3-

13274). One participant specifically described the extension of prairie use by all

socioeconomic groups as an attachment to the coastal prairie, "I like the fact that it

shows you that you don't have to be rich, you don't have to be working in the field, to

actually have an impact" (S3-43310). Another participant described extending public use

of the coastal prairie contributed to their attachment due to their own previous coastal prairie marketing efforts:

> One thing we always look for when we are doing sort of our marketing stuff is people on the prairie. So, because we want to focus on the fact that the prairie, is not some place that is there for no reason, um, it's a place where people should go and enjoy. So, I like this one because it makes me feel like it's a happy place that you could bring your family. And then the volunteer is also a good photo because it shows somebody who is out on the prairie and dedicated to it, and is using time, in order to help save it (S3-23311).

Other features the use audience described as contributing toward their attachment included extending use of the coastal prairie to the public which provided a "balance" (S3-88310, S4-49106) or "coexistence" (S4-38312, S3-343104) between the public and the prairie. One participant described the attachment they felt to the coastal prairie due to the message's ability to connect them to their personal use of the prairie, "It Illustrates the connection between those of us who live and work here and the prairie itself" (S3-12314).

The use group was not specific on the exact public use of the coastal prairie in their descriptions of the message features which contributed toward their attachment. The exact activity in which the coastal prairie was being used was not as important as the simple fact it was being used. As one participant described, the active use of a prairie

which brought about feelings of attachment, "I like the fact that people are working, or, sweeping for insects on the prairie. It's an activity" (S3-13313).

Extending Awareness.

Beyond extending use of the coastal prairie, the use audience also described attachments toward extending awareness about the prairie. In one instance, a participant described extending awareness of the coastal prairie as a feature of contributing toward their attachment to the prairie, "Also, I'm interested in communicating, um, um for communicating, you know events, and communicating just my love for the coastal prairie, and nature, and things like that" (S3-131163).

It was evident the use audience also described more feelings of attachment to extending awareness about the coastal prairie than specifically toward the prairie as a place. In fact, the question which seemed to plague the entire use audience was described by one participant, "What do we do to talk about the coastal prairie or our native prairie plants, without having other people's eyes glaze over?" (S3-13931). Yet, this overreaching uncertainty about how to best extend awareness of the coastal prairie contributed toward their attachment to the prairie.

The use audience described the public's lack of awareness about the coastal prairie. One participant described the lack of public awareness toward the prairie's role in the success of the region's economy, "In a lot of ways, Houston is, has, and always, well, always has been from the beginning an economy based on nature" (S3-53618). Therefore, the use audience described the "need to educate" (S4-49483), and the "need

to convey" (S4-49483) information about the coastal prairie. The importance of increasing public perception of the value of the coastal prairie was also mentioned by one participant. "It's more critical than ever, because there's more people, and it's convincing those people that this is a landscape that needs to be valued" (S3-63726).

Another participant described their residence on the coastal prairie as being in one of the newest master planned communities in Katy, Texas. However, extending awareness about the coastal prairie had contributed to their sense of attachment to the area, "We actually just started a gardening for wildlife group in our community trying to convince people that we have a, uh, real responsibility to try to make up for the fact that we have taken up space on the Katy Prairie" (S3-83164).

The use audience suggested the establishment of urban prairie gardens or "pocket prairies" as a way to possibly increase public awareness (S3-88933, S4-49932). Yet, the use audience also described attachments toward sharing their personal knowledge of the coastal prairie (S4-55519). One participant felt the public's interest in nature was becoming more common and described this as an opportunity to extend awareness, "People's consciousness about our particular natural area on the coast is being awakened and I'd love to see what's coming out of that" (S4-55481). Another participant described their approach to extending awareness of the coastal prairie, "What I'm trying to do is connect people emotionally with the prairie" (S3-53317). A participant also described an attachment toward the need for more awareness among coastal prairie residents to

appreciate the connection between humans, places of residents and the coastal ecosystems downstream from the prairie:

> People that are just not connected with nature, or animals, or plants, may think "Ah, who cares if we lose these 1000 plant species, who cares if whatever," but they need to know how it's going to affect their homestead, or their fishing trip next weekend (S4-888134).

The use audience also described creating awareness campaigns which would create a sense of urgency, "It creates a sense of urgency that makes you think what you are going to do about it?" (S3-23724). Other descriptions of awareness campaigns suggested by the use audience to create a sense of urgency included the recent flooding caused by Hurricane Harvey:

> Right now with all the attention on Hurricane Harvey we are certainly focused on its ability to slow down floodwaters. Um, from a professional standpoint, that's certainly an important part of what I'm trying to bring awareness to is just that that the general community understand the sort of benefits beyond birds, butterflies, and bees, um, that the coastal prairie can provide the community (S3-035121).

In one interview session, a participant described a proposed reservoir project as a threat to a portion of the coastal prairie their career was dependent on. In this instance the participant described the possibility of being forced to leave if the reservoir was

constructed, yet cited their attempts of extending awareness of the prairie as a way to prevent their loss of career and forced exit of the region.

> Well, I'd like to stay in it, unless, uh, the third reservoir takes over, and the flooding issues, uh, which are obviously, um, must be dealt with, um, you know, sort of degrades what we are doing. My hope is that we will stay in it because we will be able to show that land conservation and land restoration is critical aspect of actually reducing flooding (S3-43491).

One participant described the potential extension of awareness through influencing younger generations:

> A little kid isn't necessarily going to, um, be a supporter right now. But, the fact that he is learning about the prairie, and that his family is involved in it, means that perhaps, he'll grow up to spread the word as well (S3-43316).

Use audience members also described extending awareness through their careers in coastal prairie conservation as an attachment to the prairie (S3-03277). Specific examples included, "I like the work that I'm doing as a storm water wetland biologist" (S4-55482). "There's no shortage of stuff to do in terms of coastal prairie management" (S3-73488). "If there's nobody championing for it, then, someone's just going to develop it. That's just the way it goes around here" (S3-23493).

Another feature the use audience described as contributing toward their feeling of attachment toward the coastal prairie was a combined effort by multiple agencies to extend awareness (S4-883100). This feature was described by one participant, "To see so many groups working together is always a plus, and it makes you feel more empowered to do something yourself. Or to share their message, create more of an impact" (S4-38723). Yet, the use audience agreed combined cooperation amongst the agencies would only result from more active awareness of the individual agency efforts amongst the group as a whole (S3-53937, S4-49315, S3-43935).

The use audience described the importance of understanding multiple audiences in extending awareness of the coastal prairie (S4-558173, S4-55934, S3-12827). One participant described their approach to shape their awareness efforts to make them appropriate for the specific audience, "You just have to see what they are interested in, and pick, cherry pick the parts that they are interested in, and, um, talk to them about that part" (S3-13930).

Additionally, the use audience described feelings of attachment toward extending awareness about the coastal prairie by voicing excitement and encouragement toward the research they were participating in (S3-12929, S4-49736, S4-88722). The use audiences' attachment toward extending awareness about the coastal prairie was summarized by one participant's reaction after the primary researcher inquired about a possible attitude change resulting from viewing the test messages, "No, but makes me feel good that you are doing the research on how people react to it" (S4-55720).

The use audiences' description of attachment toward extending awareness about the coastal prairie embodied a hopeful tone. "I just, you know, sincerely hope that enough people will continue to try to maintain the coastal prairie that this will happen" (S3-58828). "I also think that, um, that if we succeed, in saving prairies, all the groups that are working on this, that more and more people are going to be aware of, not just the, the beauty of the prairie, but the benefits that it provides" (S3-434171). One participant described their attachment toward increasing public awareness about the coastal prairie as a first step to saving other natural resources:

> If we can figure out how to sell this ecosystem, which is initially the
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> minds of people the least sexy, it makes everything else, you know, it
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> makes forest and these things that people value more even easier to save, I
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> think. If you can find a way to save the hardest one to save, then it might
>
> pay some dividends (S3-53725).

The Vast and Peaceful Prairie

The use audience described feeling attached to the prairie through extending use and awareness about the coastal prairie, however its vast and peaceful features were also described as reasons they felt attached them directly to the prairie.

The Peaceful Prairie.

Attachment descriptions relating to the coastal prairie's peaceful features included the terms "calm" (S4-381178), "quiet" (S3-342146, S3-435175), as well as a

combination of both "peaceful and quiet" (S3-232150, S4-885757). The use audience described the ability to hear wildlife and nature as reasons they felt attached to the coastal prairie (S3-832149, S4-882177). One participant described the ability to hear different wildlife species in close proximity to the major urban center of Houston as an attachment toward the coastal prairie, "The fact that, you know, the third or fourth largest city in the country is 20 miles away and you'd never know it out here" (S3-342147).

While the use audience usually described attachments toward the peaceful and vast features of the prairie separately, one participant described a combination of both of these features. "In terms of the quiet, I like it because you get a sense of the vastness of the prairie. The fact that you can see to the horizon, but that it's, it's, not, it's not, um, full of city sounds" (S3-432151). While the use audience described attachments toward the peaceful features of the coastal prairie, descriptions of its vastness were described more often.

The Vast Prairie.

The use audience described vastness as features which attached them to the coastal prairie (S4-002144, S4-882143, S4-552145, S3-235159, S3-435158, S3-125185, S4-885174). Other descriptions offered by the use audience included the prairie's vastness related to features of prairie's sky and horizon (S3-122148, S3-341142). One participant described an attachment to the beauty of the coastal prairie's vastness when driving through it from an urban setting, "Even though it's nothing, it's everything" (S3-

832176). Additionally, a participant described how development of the coastal prairie

has reduced the vast features of the prairie when compared to their childhood, "It's such

a difference from when I was a child, you know? Enduring that long car ride to get to the

zoo in Houston or whatever, across the coastal prairies and thinking there's not much

going on out there" (S4-554125).

Another participant described how their attachment to the prairie's vastness

allowed them to appreciate the smaller features of the prairie:

> When I think about the vastness of the prairie, I also realize that a lot of,
>
> what's, what's important about the prairie is not, the big things you see,
>
> but it's some of the small things like dragonflies, and butterflies, and
>
> insects. And that you've got to really look hard to appreciate all that there
>
> is on a prairie (S3-432175).

The use audience described the desire to view more historically accurate (vast)

features of the coastal prairie embodied in the test messages (S4-553153, S4-003152). In

fact, the test messages were criticized by the use audience for not including features of

the coastal prairie which included a sense of vastness (S3-333156, S3-833155). These

features of vastness the use audience described the test messages as lacking further

supports their attachment to a vast prairie.

Another participant further recommended the use of vastness in coastal prairie

conservation messages. This participant described an attachment toward Texas traditions

such as cowboys on open space, they specifically recommended this as a feature of a

message the public would find appealing. Furthermore, this participant also cited the need to increase awareness of large tracts of restorable coastal prairie near the city of Houston, "That's not all gone, that's actually right here in Houston. Right in this area there is restorable stuff. Absolutely." (S4-009160).

The vastness of the coastal prairie was a feature which one participant described as a place attachment, yet they acknowledged a transition period in moving from the east coast to the vastness of the coastal prairie. "I grew up on the east coast and you know there it's all about trees. So, this took a little of getting used to" (S3-123154).

Change and Interconnectedness

The use audience described extending use and awareness of the coastal prairie as well as its vast and peaceful features in their attachment to place. However, the coastal prairie use audience also described attachments to the prairie for its natural, cultural, and spiritual value. Although these attachments toward the coastal prairie appeared varied and unrelated, further analysis of the overreaching themes indicated the use audiences' expressed attachments were far more complex. In fact, their deep understanding and appreciation of the coastal prairie translated into attachments toward the effects of change and interconnectedness which occur on the prairie.

Change.

In reference to a deep understanding of coastal prairie landscape change, the use audience acknowledged they resided on the coastal prairie, although the landscape had

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been altered by development (S3-33169, S3-23168, S4-88197, S4-55162, S3-88160, S3-12163, S3-03170, S4-00161, S4-00484). One participant from the use audience described how they felt others perceived the landscape change from the historic coastal prairie until the present, "Sometimes it's confusing, um, because, um, I recognize that a lot of people don't know about the coastal prairie. I mean I'm looking out the building right now, it's neighborhoods with lots of trees. So, sometimes it can be disorienting" (S3-53166). Another participant agreed with this lack of awareness many have toward the coastal prairie's altered features, "It's not unusual that most people don't know, that this was part of the coastal prairie system, at all, because that's not what they see outside their window" (S3-42167).

The use audience was attached to the change which naturally occurs on the prairie such as through insect species (S3-835122), biodiversity as a whole (S3-585117, S4-885116), ecosystem services (S4-885179) as well as the change in season (S3-83298). One participant was attached to the prairie through features of change, even if it wasn't always natural or for the benefit of the prairie:

> Watching that change throughout the year, and over years, you know, sometimes it's not for the better. But you know depending on what your, you know, you're fighting, invasive species, this that and the other, more people coming out here, it's not always the change you're looking for. But, it's still, this is a special landscape and provides a special habitat for special things (S3-635124).

Another participant described attachment to the coastal prairie through land use change and its role in altering biodiversity of the region:

> Kind of, that whole timeline of land use change has played a huge role in,
> uh, that kind of biological diversity, and not, there's not many places I've
> been where that land use change has been both kind of beneficial and
> negative in a way (S3-735120).

Interconnectedness.

One participant described the coastal prairie as constantly changing and believed true appreciation could only come with being immersed in it, "It's a spectacular place, I think, um, but you kind of have to immerse yourself in it to get the true feeling of it" (S3-63196). This participant's personal interconnection to the prairie was supported by other descriptions which show the use audience's attachment was inspired by the interconnected features of the coastal prairie.

Another participant described their attachment to the ways in which the coastal prairie is interconnected with human life, "Knowing all the things they do for us" (S4-555111). In answering the researcher's proposed question regarding special attachments to the region due to lifelong residency, a participant described their deep attachment through interconnectedness with the coastal prairie:

> Yes, I think again it has a lot to do with my work and, um, knowing the
> plants like friends. And as I'm driving down the highway if I see certain

kinds of plants I know oh, that's uh, there's a prairie, a high quality

prairie, or I know there's a wetland in there because of what I can see

growing (S4-555108).

A participant described their enjoyment in connecting with other volunteers in

conserving the coastal prairie, this participant also described this social interconnection

as occurring through volunteering on the prairie, "I like it, and, I think it's something I

can do a small part in trying to help save" (S3-34485). Another participant reflected on

their personal interconnection to place and described their attachment to the prairie, "We

just have to save it" (S3-839131).

A participant further described their deep spiritual interconnection to the coastal

prairie conservation efforts (S3-125183). This participant further described their

interconnection to the prairie as an attachment just as strong their commitment to their

church:

Just as, um, I give, you know a portion of my earnings to the church as

part of my stewardship that, um, you know, this, this is just as integral too.

In fact, I'm more, I'm more connected because I'm actually giving my

time and working (S3-12486).

Other attachments to the prairie through the theme of interconnectedness was

described by the use audience in reference to biodiversity (S3-733102, S3-335109, S4-

495110) and humans' interaction with living things on the prairie (S3-348132). The use

audience described also described attachment through the interconnectedness of the

coastal prairie's complex ecological services (S3-88273, S4-002179, S4-885115, S3-035119). In one instance, a participant noted some these processes are not yet fully understood (S4-005112). Other use audience descriptions of attachment to place included a desire to help protect the interconnected resources and functions of the coastal prairie (S3-33492, S4-494126, S3-83487, S3-63489, S3-73165, S4-49159, S4-381142, S3-73275).

The use audience also described interconnected attachments to natural settings beyond the coastal prairie. One participant described this split attachment, "Personally, I mean I like the prairie here, and I got enamored with the prairie, uh, and that's my outlet for the outdoors around here. But, personally I like mountains" (S3-13407). Yet, another participant described an attachment for a variety of ecosystems and the desire to return to the coastal prairie if they were to leave:

> Long term, I wouldn't say that I'm specifically tied to the coastal prairie. I'm originally from Denver, I love the mountains, um, I could be a person who retires to the mountains, not necessarily, um, and come back and visit the coastal prairie (S3-03408).

Other use audience descriptions of attachments to the ways in which the coastal prairie was interconnected were through its proximity to the coast (S3-382181, S4-552178), its ability to serve as a learning tool, (S3-235179, S4-385114), its subtle features (S3-63299, S3-638133), its cultural relevance (S3-535184), and its history (S3-135182).

The attachment descriptions given by the use audience stemmed from their rich understanding of many roles and contributions of the coastal prairie. In describing attachments to the coastal prairie, the use audience described attachments toward the prairie in their desire to extend its use and their knowledge. They further described attachments to vast and peaceful features of the prairie which was not influenced by development or people. Just as their deep understanding of the prairie influenced their other prairie place attachments, these deep understandings led to valuing the prairie for its interconnectedness and the changes which occur on the prairie.

Research objective 2: Describe prairie non-use audiences' preferred place attachments toward the coastal prairie.

Analysis of the data collected from the non-use audience yielded five emergent themes: 1) Prairie Detachment; 2) Coexistence and Integration; 3) Volunteerism; 4) Knowledge for Future Generations and 5) Natural Features and Functions of the Prairie. Analysis of the data collected form the non-use audience largely indicated they do not feel attached to the prairie. However, many participants described features which contributed to coastal prairie attachment after exposure to the test messages. Many of the non-use audience members described co-existence of prairies and urban, integration, volunteerism, as well as place where knowledge can be passed down to future generations as features of the test messages that contributed toward attachment to the coastal prairie. The non-use audience also described the natural features and functions of

the prairie as contributing toward their attachment to the prairie. Table 4 shows the

themes expressed from the non-use audience.

Table 4. Non-use audiences' preferred place attachments

Theme	Number of units
Prairie Detachment	26
• It's more of a city than a prairie- Many of the non-use audience described their residence to be in an urban environment rather than a prairie.	
• Attachments to work, family, and life- Descriptions of attachment to place were focused more on aspects of personal life, careers, and education rather than the prairie.	
Coexistence and Integration	15
• Coexistence- Descriptions of attachment toward the coexistence between the prairie and urban landscapes as well as the need for integration of natural architecture.	
• Integration- Descriptions of attachment toward integrating the prairie into people's lives.	
Volunteerism	11
• Volunteerism- Descriptions of attachments toward the act of volunteering and the ability for the participants to see themselves in that role.	
• Volunteerism and attitude change- Descriptions of the ability to potentially change attitudes toward conservation of the coastal prairie.	
Knowledge for Future Generations	11
• Knowledge- Descriptions of attachments to using the prairie to extend knowledge.	
• Connection and education- Descriptions of connecting youth to the natural world as well as extending education to college students and the community.	

Table 4. Continued

Theme	Number of units
Natural Features and Functions of the Prairie.	31

- Biodiversity- Descriptions of attachments focused on the diversity of living things on the prairie
- Ecological services- Descriptions of attachments toward the natural services provided by the prairie such as flood control, air quality, and the role of fire.
- Natural settings- Descriptions of attachments toward the prairie's role in serving as a natural retreat, adding diversity to the landscape, its natural history, relation to community ties, as a natural habitat unaltered by humans, depletion has been human induced, and aesthetic appeal of the area

Total number of units	94

Coastal Prairie Detachment

Analysis of the non-use audience's descriptions of attachment toward the coastal prairie revealed a surprising result. Although it was assumed this audience would describe attachments related to the coastal prairie, the data suggest this audience possessed very little true attachment to the ecosystem in which they resided. In fact so little attachment to the coastal prairie was expressed before exposure to the test message, this audience's attachment to the coastal prairie is best termed a "detachment."

It's More of a City Than a Prairie.

As mentioned, the prairie non-use audience showed very little attachment toward the coastal prairie. Many interview participants described the place they resided in as an urban region rather than a coastal prairie (S2-55171, S1-23167, S2-90173, S1-231126,

S2-56174) One of these audience members summed up this wide consensus among the non-use audience, "I don't really see it as a coastal prairie just because, um, like Houston is pretty much super developed and, um, it's more of a city than a prairie" (S1-64169). Another member did not perceive their residence to be in a coastal prairie. However, they admitted they did have some prior knowledge of the area, "Oh wow, I think that's a very interesting question because I don't think of me residing in a coastal prairie, like my information, the information that we have on the topic is purely out of my kind of interest in conservation in general" (S1-38168).

Attachments to Work, Family, and Llife.

The non-use audience cited work reasons (S1-42484, S2-90493), family ties (S1-39483, S2-55491, S1-68277, S2-56490), or a combination of these reasons (S1-68487, S1-23481, S1-53485, ST-23279) as features of attachments not dependent on the coastal prairie. A non-use audience member indicated they were not originally from the Houston MSA, but their explanation summarized the lack of attachment to the coastal prairie as felt by the non-use audience.

> I came here for a job, so that's what brought me here, not sort of any attachment to the prairie, you know I can't image like a native Houstonian might have sort of a sense of belonging here that I don't have, and being an immigrant to U.S. I don't have a one hundred percent sort of belonging in the U.S. to begin with. You know what I mean? So, I will probably stay here as long as the job keeps me happy" (S1-38482).

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One non-use audience member gave an interesting perspective in describing their lack of attachment toward the coastal prairie:

I teach anatomy and neuroscience and so you know things like the similarity in the structure of the branch patterning of the trees are very similar to the way a neuron branches in its axon terminal, similar to the way that the arteries branch in the body, like these kind of like natural patterns are, that's something that really catches my attention often, but I'm not exactly an ecologist, so I don't, I don't really think along those lines quite as often (S1-23129).

Members of the non-use audience expressed they would possibly leave the coastal prairie for work reasons, yet they indicated they would be interested in remaining in the coastal prairie if job opportunities were available (S2-37480, S2-90493). According to one of these non-use members, "If I leave the coastal prairie, it won't be because of the prairie itself. Like this would be one of the things if there was conservation projects in this area that I could work on, then that would be great" (S2-77492).

Non-use audience members described lifelong residency (S1-68170, S1-64278) as an attachment to the area. In the case of another non-use audience member, the ability to further education was listed with work and family as a reason for attachment to the coastal prairie, "Well, I plan on staying here, mainly because, um, well, I plan on pursuing graduate school and I just want to stay close to family, and they all live here so

that is the main reason why I would be staying here" (S1-64486). Another participant

simply cited the desire to see new places as their reason to leave the coastal prairie, "I

like the ecology of the area, so I'm not really leaving because of that, but I would just

like to see other areas of the United States" (S2-08489).

Coexistence and Integration.

Although the non-use audience could largely be described as being detached

form the coastal prairie, they would often describe attachments to the coastal prairie after

exposure to the test messages. These non-use audience attachment descriptions largely

included features of the message which included the co-existence of prairies and urban

landscapes, volunteerism, the passing of knowledge to future generations, as well as the

natural features and functions of the prairie.

Coexistence.

The themes of coexistence and integration were described by many members of

the non-use audience. Attachment to the coastal prairie through the coexistence of prairie

and urban environments (S1-53152, S1-38253) and the value of integration of prairies

into the lives of citizens (S2-37256) were noted as common themes.

Many non-use audience members in the sample described the coexistence of the

prairie and urban landscape as a feature which contributed toward their attachment

toward the coastal prairie (S1-42764, S1-42966, S2-08355, S2-55358, S2-56865, S2-

56359). One non-use audience member clearly articulated the value of coexistence

between humans and the coastal prairie, "I think there needs to be a solution all of us can coexist together" (S1-38563).

Another member of the non-use audience described their coastal prairie attachment by referencing a desire for more coexistence between the built and natural features of the prairie landscape, "My first degree is in architecture and as an architect I see that today's architects are not taking into account the environment which they should be" (S1-53631).

Specifically, an image which depicted a small restored prairie coexisting with large urban buildings in the background was described as very aesthetically appealing:

> Mostly it was the picture of figure two, that, I liked the image of the sun, I
> think it's rising and uh, it's just it's really beautiful, um, and I kind of, like
> the idea that it representing of just having small, like almost a pocket
> prairie in the middle of the city. I think that's what I really like the best
> about it. Just having a small area (S1-42354).

Integration.

While not described as often as the theme of coexistence, integration of the prairie into lives of urban residents was a feature of the message which contributed to non-use audience members' attachment to the coastal prairie (S2-37357, S2-56360). One of the non-use audience members gave an example:

In this one in particular the images show how it is integrated into urban

areas and how people can interact with this very easily. Whereas, some of

the other ones, you don't see the prairie as much, and while I do like that

there are people in some, in one of these pictures, I feel like they should

also be focused on what the prairie actually looks like and how it can be

integrated into, you know our ideas of the city, it's not some distant vision

that it has to be far away and out, like surrounded by nature (S2-77361).

Volunteerism.

Volunteerism was a clear theme which was described by the non-use audience in

their attachment to the coastal prairie (S1-64304, S1-64303, S1-68305, S1-68632, S1-

39810, S1-53911).

In one instance, a participant had previously served as a volunteer to restore a

prairie in a community garden:

When I first moved to Houston I was looking for something to do outside

of work. So, I was a member of community garden just close by Mandell

Park, has a community garden and we had a prairie. Kind of a patch of

land that protected and show cased kind of prairie type of land. And I have

had, and so through that work and the people I met there is where I've

kind of engaged with this topic really (S1-38423).

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Upon further analyzing this participant's description further, it appears the non-use audience's preference toward the theme of volunteerism is due to their ability to see themselves perform similar acts:

I identify myself as the volunteer on the picture, because I am seeking for ways to make positive contributions in the society so that is part of it, but also this idea that we need to kind of save this grassland, not just for our generation but for future generations is important (S1-381301).

Another participant form the non-use audience shared this ability to envision themselves working to conserve the prairie.

And I really like that it is a volunteer, focus here, because it just draws the person to understand our role, right, in contributing to its conservation. So I feel like that, um, opens the door to people, like oh I could volunteer here, right? And they might not have thought about it, it's not just to go and visit but you can go and help out, right? That's why I really liked this one (S1-53302).

Volunteerism and Attitude Change.

Members of the non-use audience described the theme of volunteerism as reasons which could change their attitude toward the need for coastal prairie conservation (S1-39709, S1-64707). A non-use audience member indicated the theme of volunteerism could change their attitude toward the need for coastal prairie conservation, "Well, I

think it definitely opened my eyes, and that, you know, there are always other ways to volunteer, and to be mindful of environment, and conservation and everything. I might actually pay attention more whenever I see a message like this" (S1-68708).

Knowledge for Future Generations.

Knowledge.

The non-use audience also described feeling attached to the coastal prairie because it is a place where knowledge can be passed down to future generations. Members of the non-use audience specifically mentioned features which included the process of extending knowledge to a "younger" or "future" generation (S1-29313, S1-68315, S1-68314, S1-38316). Similarly, one participant reflected on a personal experience in which they extended knowledge of the natural world to their own children:

> So I think that bringing my kids to these natural environments and
> teaching them the importance of these places, and the conservation of
> these places is a big part of why I enjoy it, and so this one has, you know
> the little kid that is learning from his, uh, parents how to value the space
> and so I immediately was drawn to that one (S1-53312).

Education and Connection.

The non-use audience described the value of the prairie's role in connecting children to the natural world (S1-53518). Also, the non-use audience cited the educational value for not only children, but also college students (S1-53631, S1-39326,

S2-08324) and entire communities (S1-29417). A member of non-use audience encouraged the use of prairies as an educational tool for as an alternative to traditional messaging:

> I think having these messages is important, but I think I always learn
> better when I'm doing something. And also engaging kids from a very
> young age would be super important, as part of a school kind of education
> system so that they are out there sort of teaching them, touching the soil,
> and getting their feet dirty (S1-38920).

Natural Features and Functions of the Prairie.

Biodiversity.

When this audience was asked to describe attachments toward the coastal prairie, biodiversity was often mentioned (S1-29541, S2-08546, S2-90551, S2-37339 S1-29237, S1-39238, S2-772129). Specifically, descriptions of the many types of "birds" (S1-23133), as well as "insects, bees, butterflies, and birds" (S1-29134) were mentioned in the use audiences' description of biodiversity.

An in-depth appreciation toward the value of biodiversity of the coastal prairie was also described by a member of the non-use audience:

> For instance, I mentioned, like micro, even tiny microorganisms within the
> waters and also being able to see different species of birds, um, that is
> what really contributes to what I really value in the coastal prairie, really

the amount of life that you could see there, rather than just, looking at

pigeons and the city (S1-39545).

Ecosystem Services.

Ecosystem services of the prairie such as flood control, air quality, and the role

of fire were described as a reason which contributed to attachment toward the coastal

prairie (S2-77235, S2-37440, S1-38543). A combination of biodiversity as well as

ecosystem services was also described by the non-use audience members (S2-37547, S2-

77550).

Natural Settings.

Other reasons non-use audience members described as attachments toward the

coastal prairie included adding diversity to the landscape (S1-64549, S1-23562, S2-

55548, S2-08121), natural history (S1-42544, S2-56542), and community ties (S2-

56594, S1-68595). The non-use audience also described feeling attached to the coastal

prairie because it combines openness with isolation (S2-08276), while another

description included an attachment to the natural aesthetic appeal of the area (S2-56275).

The non-use audience further described feeling attached to the coastal prairie

because they are natural habitats unaltered by humans (S1-53299), or because their

depletion has been human induced (S1-38298, S2-77172, S1-427100, S2-77297, S2-

90225).

Although the non-use audience described being detached from the coastal prairie, attachments were often described after viewing the test messages. The non-use audience described attachments toward the themes of coexistence and integration, volunteerism, and as a source of knowledge for future generations. The non-use audience also described attachments to the natural features and functions of the prairie.

RQ2: How Did the Audiences Perceive the Test Messages?

Research objective 1: Describe prairie use and non-use audiences' perception of the test messages.

The use and non-use audiences' descriptions of features which contribute toward attachment to the coastal prairie were the main themes determined form analysis of the data in answering research question one. However, unique similarities and differences between the audiences' perception of the test messages surfaced during the interviews. Table 5 shows the theme map for audience perceptions.

Table 5. Unique audience perceptions of the test messages

Theme	Number of units
Audience Rejection of the Person Message	9
• Described disapproval of marriage engagement and religious images.	
• Described the desire to view a human interaction on the prairie, without a solely human focus	
Difference of Audience Perceptions toward Agriculture Production on Prairie	3
• The non-use audience described agriculture as a threat to the coastal prairie.	
• The use audience described agriculture as a positive use of the coastal prairie because of food production.	
The Use Audiences' Concerns toward the "Less than 1%" Estimate	4
• The use audience has mixed opinions on the messaging use and accuracy of the "less than 1%" estimate.	
• The use audience recommended using estimations of restorable acreage instead of the "less than 1% estimate".	
Total number of units	16

Audience Rejection of the Person Message.

Both audience groups were critical of the test message meant to embody the "person" dimension of the tripartite model of place attachment. This message featured images and descriptions of a young couple getting engaged on the coastal prairie to assist in inspiring attachments an individual may have toward experiences and milestones which could occur on the prairie. It also featured images and descriptions of a priest blessing a remnant coastal prairie to assist in inspiring attachments an individual may have toward religious and historic features of the prairie. The "person" test message is represented in Appendix B. Although four of the 14 members of the use group actually selected the message, the descriptions the participants gave were contrary to the

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"person" dimension the message was meant to embody. Instead, the main reason

preference was given to this message was due to the "vast" prairie images featured in the

background. Table 6 shows the use audiences' message selection.

Table 6. Use audience message selection

Place Attachment Dimension	*n*	Percent
Person	4	23.5%
Place	7	41.1%
Process	6	35.2%

Specifically, criticisms of the image featuring the couples' marriage engagement on the

coastal prairie were voiced. As one participant described, "This whole couple getting

engaged on the coastal prairie, seems a little foo-fooy to me, like the message there, is, I

mean I don't know. That message is just kind of silly" (S3-339141). Another participant

also rejected the image but liked the fact the image depicted a vast coastal prairie in the

background:

> This is cute. The couple? I don't think anyone would actually, it looks like
>
> he's on a road, like I don't think anyone would actually pull over and
>
> propose, which I think it's sort of silly. But, it is the only picture that's
>
> actually has got the coastal prairie in it really, so that's good (S3-033140).

This same participant described disapproval of the religious image by stating, "I don't think it's a super compelling picture" (S3-03181).

A unique feature of the non-use audience test message selection was no participants selected the "person" message. The non-use audience suggested they preferred messages featuring human interactions on the prairie, but not messages with a solely a human focus (S1-426103, S2-083101, S2-908102, S2-378104). The non-use audiences' message selection is shown in Table 7.

Table 7. Non-use audience message selection

Place Attachment Dimension	*n*	Percent
Place	8	57.1%
Process	6	42.8%

In one instance, a non-use audience member described disapproval for the features shown in the "person" message.

So I like that the overall message here is that people are conserving the prairie because they, it's the right thing to do. Not because they happen to live in a building that is close to it, and definitely not because they do things like propose or go to church (S1-233128).

Another member of the non-use audience believed the "person" message could possibly turn off certain audience members.

> Although I teach at a catholic institution, sort of religion is not a big part of my identity. So, sort of religions image, and one other kind of, it didn't turn me off, but I thought that maybe it may turn off certain kind of audiences (S1-383127).

Difference of Audience Perceptions toward Agricultural Production on Prairie Lands.

Another feature of the test messages the use and non-use audiences' described were the use of prairies for agricultural production. While a participant from the non-use audience described agriculture as a threat to the prairie (S2-089183), the use audience described agricultural production as a positive use of prairie lands because of its ability to provide food to local residents (S3-434161). One participant from the use audience criticized the test messages for their portrayal of agriculture as contributing to the decline of the coastal prairie:

> I think you have to be a little bit careful saying that agriculture use is the cause of the loss of coastal prairie in messaging. While we know that to be very true, um, we also, like I think it's beneficial in messaging to tie in, like the production of food, in the way that a prairie, or the coastal prairie ecosystem itself benefits the community. And, we have to eat. So, rather than citing like the loss of prairie because of agriculture, we sort of

sometimes try to tie in that, protected lands, on the coastal prairie could

include agricultural lands. Because, those are a source of important food

for the region (S3-038162).

The Use Audiences' Concerns Toward the "Less than 1%" Estimate.

While the non-use audience did not question the accuracy or use of the "less than

1% estimate" cited in the test messages, discussion arose amongst the use audience

around this widely cited estimation of the coastal prairie which is still in existence. A

participant described the "less than 1%" estimate as a data point which could make

coastal prairie conservation messages more compelling:

Tying back in urgency of data points, like percentages, like only this much

remains, um, can maybe be a more effective way of messaging. And so the

tiny less than one percent, in the first paragraph, could maybe re-irritated.

Or, brought back out in the call to action (S3-037137).

However, a participant also added the public would not become involved in

conservation efforts because the "less than 1%" estimates suggest the historic coastal

prairie is almost not existent and conservation efforts would be in vein:

I might say, and, and 15 to 20 percent in a somewhat degraded position, so

that you know, gosh, if there's less than one percent, we're not going to,

that's not going to be it. But, you know, one percent of nine million is still

a lot of acres (S3-437136).

Instead of focusing attention of the "less than 1%" estimate, the use audience described the need to raise awareness to the fact that large portions of the coastal prairie could be restored (S4-008138). As one participant described "Our research, I would suggests there's as much as 400,000 acres that could be restored, that have never been land leveled, and they could be restored" (S4-006135).

Research objective 2: Compare Prairie Use and Non-use Audiences Existing Awareness and Attitude toward the Coastal Prairie.

Along with descriptions of attachment toward the coastal prairie, the use and non-use audience were asked to describe their existing awareness of the coastal prairie. They were also asked if their attitude toward the need for coastal prairie conservation changed after viewing the test messages. These questions were asked to the participants to gauge if previous attitude or awareness influenced attachment to the coastal prairie.

After data analysis was conducted, both audiences described a high existing awareness of the coastal prairie. Furthermore, both audiences clearly indicated their attitude remained in favor of coastal prairie conservation after viewing the test messages. Therefore, coastal prairie place attachment, detachment, or attachment descriptions did not seem to be affected by existing awareness or attitude. The audiences' described positive attitudes and high awareness toward the coastal prairie is shown in Table 8.

Table 8. Audiences' high existing awareness and positive attitude

Theme	*Number of units*
Use audience high existing awareness and positive attitude	25
• Awareness- Described as being "very aware," also described awareness occurring from an early age, from a job in prairie conservation, from post-secondary education, from a Master Naturalist or Gardener program, and from other conservation efforts	
• Attitude- Described attitudes as not changing due to previous awareness, as well as reinforced attitudes, and the potential to change others' attitudes.	
Non-use high existing awareness and positive attitude	23
• Awareness- Described a high awareness from an academic setting, participation and a community prairie restoration. Also described the messages as growing their previous awareness.	
• Attitude- Described attitudes which remained in favor, as well as attitudes being reinforced toward the need for conservation.	
Total number of units	48

Use Audience Attitude and Awareness.

As one participant from the use audience described awareness of the coastal prairie started very early in life:

It began very early, when I was about four. We had a house up in Aldine. Right next to it was a prairie remnant, I didn't know what it was we called it the fields when I was growing up. Anyway, my daddy caught a black tailed jack rabbit in a live catch trap, and he was going for raccoons, he wasn't going for jackrabbit obviously. It was the most surreal, beautiful wild thing I had ever seen in my life, and I knew at that point that I just loved animals and wanted to know some more about animals (S3-536127).

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In regards to their level of existing knowledge about the coastal prairie the use audience simply described themselves as "very aware" (S4-00641, S3-12638, S3-53642). The use audiences' awareness stemmed from a job working in coastal prairie conservation (S3-13646, S4-3864, S3-43648, S3-63656, S4-556128, S3-03639), a post-secondary education setting (S3-88647, S3-73644, S4-49651), a Master Naturalist program (S3-13649), and a Master Gardener program (S3-83643), as well as other conservation efforts (S3-23650, S3-34640).

The coastal prairie use audience described a favorable attitude toward the need for prairie conservation as well. The use audience described the test messages as not changing their attitudes because they were already aware of the need for coastal prairie conservation (S3-13757, S3-13755, S3-73758, S3-587129). This lack of attitude change because of a high awareness of the coastal prairie was described by one participant as "the curse of knowledge" (S3-53754). One participant described the message as reinforcing their attitude toward the need for coastal prairie conservation (S3-12752). The use audience also projected on how the message may change others' attitude on the need for coastal prairie conservation (S3-34753, S4-007180).

Non-Use Attitude and Awareness.

The non-use audience described they were already aware of the coastal prairie before being exposed to the test messages. This exposure originated from participation in a community prairie restoration (S1-386120, S1-53619), or and academic setting (S1-

646121, S2-376122, S2-556123, S2-776124, S2-56696). One member of the non-use group described why coastal prairie awareness was important to them:

> It's important for me to know as someone who wants to study science, and also like since it's such a big deal in the scientific community and I didn't know about it before, I feel like, I don't know, it's important for me to know about it (S2-90627).

Yet, in some instances the non-use audience described the test messages as growing their awareness of the coastal prairie (S1-296105, S2-371125, S1-426106, S1-396107).

It should be noted many non-use audience members' attitude toward the need for coastal prairie conservation did not change (S1-237112, S1-236118, S2-087113, S2-377114, S2-557115, S2-907116). Additionally, the non-use audience described the message as reinforcing their views on the need for coastal prairie conservation (S1-297108, S1-387109, S2-777111, S2-567117). As one of these non-use audience participants described, "No, it enforces it, of course, but I was convinced to begin with" (S1-537110).

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Contextual Summary

The purpose of this study was to describe the place attachment dimensions which connect prairie use and non-use audiences to the coastal prairie. These descriptions will aid in the messaging efforts of the CPP and other communication and conservation practitioners.

The coastal prairie is a severely threatened ecosystem (Smeins, Diamond, & Hanselka, 1992). In 2009, the CPP was established with the purpose of uniting individuals and groups involved in coastal prairie conservation (J. Gonzalez, personal communication, February 1, 2017). Cantrill (1998) suggested large-scale ecosystem managers consider "sense of place" in the development of ecosystem management campaigns. Moreover, Scannell and Gifford (2013) tested message strategies which used attachment to place as an audience variable.

Place attachment was defined as "the bonding that occurs between individuals and their meaningful environments" (Scannell & Gifford, 2010, p. 1). The authors designed a three-determinant framework of place attachment to include person, place, and process dimensions known as the tripartite organizational framework (Scannell & Gifford, 2010). This study used this framework to construct three test messages which embodied a different dimension of place attachment. The messages were then presented to individuals who were considered to value the costal prairie for use or non-use reasons based on the classifications of Laurila-Pant et al. (2015) and Williams and Diebel

(1996). This classification allowed the CPP's audience to be segmented into coastal

prairie use and non-use reasons.

Conclusions

RQ1: What Dimensions of Place Attachment do CPP Audiences Most Associate With in Their Connection to the Coastal Prairie?

Scrannel and Gifford (2010) described the bonds between an individual and a

place as being a multifaceted concept. Therefore, research question one was designed to

investigate the multiple dimensions (person, place, process) of place attachment as set

forth in the tripartite framework of Scrannel and Gifford (2010). For this study, three test

messages were designed to accurately embody each of the dimensions of the framework.

Based on available literature, this approach of framing messages consistent with the

tripartite framework of Scrannel and Gifford (2010) had not been attempted before.

Therefore, it can be concluded that this method was a unique approach which traced its

development back to the theoretical foundation of a multidimensional concept of place

attachment. However, the results of this study determined that both use and non-use

audiences described multiple characteristics of attachment to the coastal prairie rather

than one overreaching theme. Although two of the three test messages were often

preferred by the audiences, no single message was consistently preferred. Ultimately,

both audiences' descriptions of multiple themes of place attachment confirms the

multiple dimensional concept described by Scrannel and Gifford (2010).

Therefore, it can be concluded that audiences associate multiple dimensions of

attachment with their connection to place. Based on this conclusion, coastal prairie

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conservation messaging efforts should employ multiple dimensions of place attachment in their design to better inform audiences. In this study, unique coastal prairie place attachment themes were described. Conclusions and implications of each theme and objective are presented in the following sections.

Research Objective 1: Describe Prairie Use Audiences' Preferred Place Attachments Toward the Coastal Prairie.

Objective one required a description of the use audiences' preferred place attachments toward the coastal prairie. The attachment descriptions given by the use audience were drawn from their rich understanding of the prairie which was "awoken" by an event or experience. This description of awoken attachment to the coastal prairie supported the findings of Seamon (2014) who described place attachment as occurring through the activation of six place processes.

According to Seamon (2014,) the first (place interaction) and second (place identity) processes occur when an individual regularly encounters a place and it becomes part of their identity. Based on their descriptions, each member of the prairie use audience had experienced and accepted the coastal prairie which led to their eventual awoken attachment. Seamon (2014) described this "awoken attachment" as occurring after the third (place release) and fourth (place realization) place attachment processes are reached through a "place serendipity and environmental character that, reciprocally, fuel place loyalty and love of place" (Seamon, 2014, p. 19). Therefore, as noted by the awoken attachment theme described by the use audience, we can conclude they had experienced the third and fourth processes of place attachment.

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It was noted in the study that many of the use audience described participating in conservation efforts through current career or volunteer activities. In describing attachments to the coastal prairie, they voiced a desire to extend the prairie's use and awareness. These activities further confirm the body of knowledge by aligning with the fifth (place creation) and sixth (place intensification) processes of the six place processes described by Seamon (2014). The place creation process entails humans extending their commitment to a place by using their knowledge in creative ways in order to enhance place interaction and realization. Furthermore, the process of place intensification is the creation or enhancement of place features (Seamon, 2014). Therefore, it can be concluded that Seamon's processes of place attachment are accurate and meaningful in the conversation about conserving the coastal prairie, particularly when it comes to stakeholders who meet the 'use' criteria.

In describing their attachment to the coastal prairie through extending its use and awareness, the use audience was displaying attachment qualities specific to the place creation process. The use audience was also experiencing the place intensification process by being active in the conservation and restoration of coastal prairies. It should be noted these instances of "awoken attachment" could be described as experiences, realizations, or milestones. Experiences, realizations, and milestones are consistent with the "person" dimension of the place attachment framework (Scannell & Gifford, 2010). Therefore, the tripartite model is an appropriate frame to understand attachment in the use audience, but only in conjunction with Seamon's (2014) six place processes since the manifestation of the "person" dimension in this audience is a realization or

awakening, rather than an assumed pre-existing event. The progression of the six

processes further explains the use audience's desire to partake in prairie conservation

and outreach efforts.

The use audience further described attachments to vast and peaceful features of

the prairie. This description was seen as unique because the audience described physical

features of the prairie rather than biological, ecological, or social features. Attachments

to the physical features of the prairie were described by Scannell and Gifford (2010) in

their "place" dimension of the tripartite framework. These findings support the use of

coastal prairie conservation messaging efforts featuring vast and peaceful themes.

The use audiences' deep understanding of the prairie led them to feel attached

towards the prairie for its complex interconnectedness as an ecosystem, toward

individuals, as well through contributions to culture and history. Additionally, a deep

connection to the coastal prairie led to place attachment through the natural and man-

made changes which constantly occur on the landscape. The use audiences' ability to

observe interconnected features and change on the coastal prairie falls into the "process"

dimension of the tripartite framework of place attachment (Scannell & Gifford, 2010).

Therefore, themes pertaining to the interconnected and changing features of the coastal

prairie should be used in conservation messaging.

The use audiences' description of the "place" and "process" dimensions of the

tripartite model of place attachment organized by Scannell and Gifford (2010) is notable.

As stated by Lewicka (2011) "place attachment literature has placed much more

emphasis on the Person part at the expense of Place, and it largely ignored Processes"

(p.222), therefore the physical features and meanings associated with place attachment are likely not fully explored.

Research Objective 2: Describe Prairie Non-Use Audiences' Preferred Place Attachments Toward the Coastal Prairie.

The non-use audience was found to be detached from the coastal prairie. This does not necessarily mean they feel no emotional bond to place, it simply suggests their feelings of place attachment are not aimed specifically at the prairie. Again, Seamon (2014) offered the best explanation for the non-use audiences' detachment from the coastal prairie. The author described the six processes of place attachment as contributing to intensity of emotional bonds to place, yet these bonds must be activated by the others. The first step of the six place processes is place interaction process, this step involves typical routines with place. However, the non-use group was largely removed from the coastal prairie environment as described through their descriptions of their surroundings, "I don't really see it as a coastal prairie just because, um, like Houston is pretty much super developed and, um, it's more of a city than a prairie" (S1-64169). Therefore, place interaction with the prairie is non-existent and the six place processes have yet to begin.

Another explanation for detachment may be linked to the non-use audiences' age and length of residence in the coastal prairie. As noted in the use group demographic data, 64.20% were between the ages of 18 and 25, while 50% had resided in the area for only 1 to 5 years. While Lewicka (2011) suggested socio-demographics and community ties were poor predictors of place attachment, the findings from this study calls more

attention to these factors. Moreover, socio-demographics and community ties should be taken into consideration along with the six place processes in determining attachment to specific places or features of place.

Although the non-use audience described being detached from the coastal prairie as noted in the first theme of Table 4, features of place attachment were described by participants after they viewed the test messages. Beckley et al. (2007) recommended the use of a tool to help participants reflect on meanings associated with place attachment. The authors' recommendation was helpful to assist the non-use audience in describing attachment toward the prairie. This process encouraged them to interact with the prairie through the message. This place interaction was the first step of the six place processes of place attachment as described by Seamon (2014). Therefore, the use of a messaging tool to elicit feelings of place attachment is a practical and meaningful technique, particularly when audiences may not have had previous exposure the topic.

The non-use audience described attachments toward the coastal prairie through themes of coexistence and integration, volunteerism, the prairie as a source of knowledge for future generations, as well as the natural features and functions which occur there. It is difficult to assign each of these themes to a specific dimension (person, place, process) in relation to the tripartite framework of Scrannel and Gifford (2010). For instance, the theme of natural features and functions of the prairie may seem like an obvious fit for the "place" dimension. Yet, the theme moves beyond the physical features of the prairie to include the non-use audiences' knowledge and appreciation of the existence of biodiversity and ecosystem services provided by the prairie which

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would more align with the "process" dimension. This may indicate a need for a revision of the model to include shared characteristics of attachment across each dimension. When the non-use audiences' becomes connected to the coastal prairie through messaging efforts, their attachment to place is multidimensional as suggested by Scannell and Gifford (2010). Moreover, coastal prairie conservation messaging focused on inspiring attachment to place should be multidimensional in design.

RQ2: How Did the Audiences Perceive the Test Messages?

This research question was meant to identify unique characteristics regarding message content and consumption between the use and non-use audiences. Notable similarities as well as differences were described between the two audiences.

Research Objective 1: Describe Prairie Use and Non-use Audiences Perception of the Test Messages.

Both the use and non-use audiences were dismissive of the test message meant to portray the "person" dimension of the tripartite model of place attachment. Of the 31 total participants, only four of them selected the person test message as their most preferred version of the message. All four of the participants who selected the message were members of the use audience. However, these participants often cited the "vastness" of the prairie featured in the images as a reason for their selection of the image. The physical features of the message the use members preferred was contrary to the "person" dimensions the message it was meant to convey and could be seen more in aligning with a feature of a "place" dimension. Therefore, we can conclude that the

person dimension of place attachment model is not as effective in engaging audience members as the process and place dimensions.

The non-use audience further described their lack of preference for the "person" message in describing they had a stronger attachment to human interactions taking place on the prairie, rather than a solely a human focus (S1-426103, S2-083101, S2-908102, S2-378104). Hence, the non-use audience felt greater attachment toward social interaction on the prairie as opposed to the focus being placed solely on the individual human subjects. This audience disapproval of the "person" dimension of the tripartite framework of place attachment by Scannell and Gifford (2010) again supports the need for investigation of place attachment through the "place" and "process" dimensions as cited by Lewicka (2014).

The use and non-use audiences' described differences in opinion on the use of prairies for agricultural production. A participant from the non-use audience described agriculture as a threat to the prairie (S2-089183), yet the use audience described agricultural production as a positive use of prairie lands (S3-434161, S3-038162). These mixed perceptions of the test messages signify differences in opinion toward land use on the prairie.

The differing audience perceptions could be due to the way the audiences value the coastal prairie. Agricultural production would be seen as a value the use group would have toward the prairie, while prohibiting agriculture production for the benefit of the prairie's existence, biodiversity, or ecosystem services may align more with the values of the non-use group. These audience described values are consistent with the use and

non-use groupings of Laurila-Pant et al. (2015) as well as the prairie values listed by Williams and Diebel (1996). Therefore, coastal prairie conservation messaging should take into account audience land use values when determining audience perception.

Descriptions also arose among the use audience in regards to the accuracy and use of the "less than 1% estimate" of remaining coastal prairie cited in the test messages. While one participant described the "less than 1%" estimate as creating a compelling message for coastal prairie conservation (S3-037137), another participant indicated that this figure makes the need for prairie conservation seem beyond reach (S3-437136). Additionally, the use audience described how messaging efforts should be focused on how much coastal prairie could be restored rather than an estimation of the amount still in existence (S4-008138, S4-006135). Therefore, more conversations need to occur within the use group to arrive at a uniform consensus on how best to message conservation of the remaining coastal prairie (either intact or restorable acres).

Based on analysis of this study, the use and non-use audiences have different perceptions of the test messages. These perceptions were derived from their existing knowledge and attachments toward the coastal prairie. This conclusion supports the work of Cox (2013) in understanding audience opinion toward environmental communications. Additionally, the difference in perception amongst the audiences further suggests the importance of audience segmentation as described by Warner et al. (2017).

Research Objective 2: Compare Prairie Use and Non-use Audiences Existing Awareness

and Attitude Toward the Coastal Prairie.

Both audiences expressed a high awareness for the coastal prairie and maintained

a positive attitude toward the conservation of the coastal prairie throughout the interview

process. Due to the fact the audiences' were segmented based on perceived value of the

prairie, individual levels of attitudes and awareness toward the coastal prairie were not

known prior to the study.

Therefore, the test messages were designed to appeal to both audiences through

the central and peripheral routes of persuasion as defined in the elaboration likelihood

model of Cacioppo and Petty (1984). Klockner (2015) described how an individual

needs to be motivated and capable of processing a message in order to be persuaded.

Since the audiences' attitude toward coastal prairie conservation was positive, they were

considered to have the motivation needed to process the messages. Additionally, both

audiences described a previous awareness of the coastal prairie, so prior this knowledge

allowed them to process the message.

Yet, the audiences' previous knowledge of the coastal prairie also caused a

peripheral attitude shift rather than a long lasting attitude change according to the

elaboration likelihood model as described by Klockner (2015). As the author described,

this peripheral attitude shift is usually temporary and does not predict behavior

(Klockner, 2015). Therefore the conclusion can be made that although the audiences'

attitude toward the need for coastal prairie conservation was favorable, this does not

mean their behavior (increase or decrease in performing conservation activities) will

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change as a result. The test messages were constructed to assist in place attachment descriptions, instead of changing attitudes or increase awareness toward coastal prairie conservation. However, introducing new information to the use and non-use audiences may have resulted in descriptions of a commitment to long lasting behaviors in support of coastal prairie conservation.

As noted in Tables 5 and 6, the two audiences did not describe similar place attachment descriptions toward the prairie. However, they both described high levels of awareness toward the prairie and positively expressed attitudes toward its conservation. Therefore, evidence from this study does not support awareness and attitude as predictors of place attachment descriptions pertaining to the coastal prairie. It should be noted that the non-use audience described the place attachment theme of volunteerism as something which could have potentially changed their attitude for the need for coastal prairie conservation (S1-39709, S1-64707, S1-68708).

<div align="center">**Recommendations**</div>

Based on the conclusions from this study, the CPP and other coastal prairie conservation organizations will find the tripartite framework of place attachment organized by Scrannel and Gifford (2010) to be a strong foundational paradigm for messaging focused on inspiring place attachment. This is especially true for conservation organizations which may be perplexed how to connect their audiences to the ecosystem they are trying to conserve. Although the participants in this study described specific place attachment features of the prairie, the specific dimension (person, place, process) was not as important as the fact that the collective descriptions were multi-dimensional.

Therefore, the conclusion can be drawn that conservation messages targeted at inspiring attachment to place should always be multi-dimensional in design. Furthermore, the segmentation of the coastal prairie audience based on use and non-use values is a recommended practice to ensure proper messaging efforts.

The CPP's use audience has a vast knowledge and deep appreciation to the coastal prairie, and they have a deep multidimensional attachment to place. In order to embody powerful messages which attach the use audience to the prairie, more efforts should be focused on the prairie's vast and peaceful features. Likewise, messages which portray the interconnected and ever changing features of the coastal prairie should be explored. Finally, the CPP has an incredible communications ally in the non-use group who feel attached to the coastal prairie through extending its use and awareness. This segment of the audience is currently being underutilized as evidenced by their detachment and lack of progression through Seamon's (2014) processes of place attachment. Therefore, the CPP and other conservation and communication groups should capitalize on this audience's expressed desire for extension by targeting them for opportunities for volunteerism and outreach. Doing so may result in progression through the process steps toward deeper attachment toward the coastal prairie.

The desire to be attached to place is deeply held within human psychology. So, just as the use group is attached to a place (in this case the coastal prairie), the non-use audience is attached to a place (current residence, former residence, etc.) as well. However, the non-use audience is detached from the coastal prairie as both a physical place and unnoticed phenomenon. This detachment is derived from a lack of exposure to

the prairie from where they could draw upon meaning or experience. However, they can be exposed to the prairie through messaging efforts of the CPP. Multidimensional feelings of place attachment also arise after the proper message is selected and applied. In the case of the non-use audience, the CPP should focus on messages relating to coexistence and integration of the prairie into people's lives, volunteerism, the prairie as a source of knowledge for future generations, as well as the natural features and functions of the prairie.

Results of this study determined both audiences described multiple characteristics of attachment to the coastal prairie rather than one overreaching theme. Coastal prairie use and non-use audiences associate multiple dimensions of attachment in their connection to place. Therefore, coastal prairie conservation messaging efforts should employ multiple dimensions of place attachment in their design instead of just one dimension. Further research should be performed using focus groups to describe their perceptions of messages which employ multiple dimensions of place attachment rather than individual interviews. Additionally, future studies should seek to determine if messages could be formed which use multiple dimensions of place attachment with one unified theme. For example, a future study could test whether coastal prairie messaging efforts based on the multidimensional concept of place attachment (person, place, process) could be formed under the unified theme of volunteerism.

After comparing the themes that characterize place attachment in both audiences, it can be concluded that the use audience exhibits higher attachment than the non-use audience. These conclusions were similar to the six processes Seamon (2014) described

in the evolution of place attachment. Therefore, communication strategies which are aimed at incorporating place attachment should take into account audiences' level of attachment to place. Yet as suggested by this study, degree of attachment to place can be difficult to predict. Moreover, community ties and socio-demographics should be explored regarding the six place processes in determining place attachment. However, evidence exists that values aligning with the use criterion established by Laurila-Pant et al. (2015) and Williams and Diebel (1996) may have potential predictive value regarding attachment. Therefore, additional research is needed to better define levels of attachment to place.

Findings from this study showed neither audiences felt attachment toward—and in fact sometimes felt disapproval of—the test message portraying the "person" dimension of the tripartite framework of place attachment developed by Scannell and Gifford (2010). However, some of their described place attachment themes could be seen as falling into the "person" dimension of the framework. Therefore, this study concluded that there is potential overlap among place attachment determinants. Scannell and Gifford's (2010) framework assumes the place attachment dimensions may possibly overlap or be separable. However, the authors' model depicts taxonomy with mutual exclusion among determinants. This may be problematic given this study validated and confirmed the overlapping multidimensionality of the tripartite place attachment framework through the development of an instrument as suggested by Scannell and Gifford (2010). Thus, it is recommended that researchers and practitioners augment

Scannell and Gifford's model to depict the potential overlap among place attachment

determinants. A proposed model is represented in Figure 6.
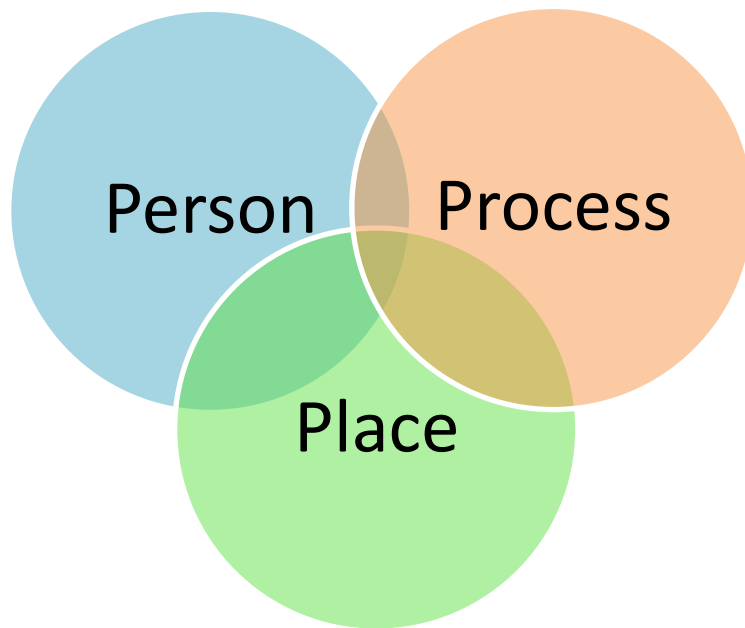
Figure 6. A proposed model of place attachment determinants.

Since both audiences expressed high awareness of coastal prairie and positive

attitudes toward the need for coastal prairie conservation, further research should be

aimed at individuals with lower awareness and opposing attitudes toward the subject.

This could be attempted through further basic qualitative methods such as this study. A

study involving a Q Methodology or other paradigmatic diversity may be a promising

way to gauge degrees of the coastal prairie place attachment involved in the six processes of place attachment which are described by Seamon (2014).

The CPP is encouraged to host discussion within the coastal prairie conservation community to arrive at a common outlook on the role of agriculture on the prairie. Investigating audience values toward coastal prairie wildlife could be a major component for further understanding audience views on the role of agricultural production on the prairie. Additionally, an effort should also be made to come to a unified consensus on the remaining coastal prairie which either exist in its natural form, or has the ability to be restored. After these figures are finalized, the CPP should present the data most appropriate to the audience they are directing the message toward. However, the CPP should avoid messages with a solely human focus as neither audience described these messages as appealing.

It should be noted that the Katy Prairie Conservancy and the Texas Community Watershed Partners are organizations which are conservation oriented. Thus, a potential limitation of this study is the selected use audience sample valued direct use of the coastal prairie as long as these uses ensured land conservation practices. Many other individuals meet the use audience criteria, but put less emphasis toward conservation practices in their direct use of the prairie. For example, a coastal prairie livestock producer would be considered a member of the use audience. Yet, this producer may not make prairie conservation practices a priority if their production goals are primarily based on economics. It is recommended additional research target individuals who value

the coastal prairie for use reasons, but may not be conservation focused in their use of the prairie.

The coastal prairie once provided a pristine habitat for native flora and fauna. The landscape changed after European settlement through the conversion of native prairie into agricultural production. Recent urban development in the Houston MSA has put even more pressure of this endangered ecosystem. Over the last two centuries, humans have used the rich resources of the coastal prairie with little regard to the long term impact of their actions.

However as the growing population of the coastal prairie faces new challenges, the ecosystem is being looked upon in a different way. Mankind is collectively beginning to realize it is responsible for the degradation and fragmentation of the prairie. However, they are also beginning to realize that it is up to them to reverse this trend. Unlike the prairie, mankind functions in a highly complex world which is ultimately controlled by attitudes, beliefs, and values. Therefore, the coastal prairie conservation organizations have recognized efforts which contribute to the conservation of the coastal prairie can best be approached through social science.

Findings from this study will assist the CPP and other communication and conservation groups to improve their communication messages toward the public as well as within the organization. Ultimately, this data will be applied to selecting target audiences and improving communications used in coastal prairie conservation. It is hoped that this study will also further communication efforts of natural resource conservation across the globe. This study done in cooperation with the CPP will stand as

an example of how social science research can better serve our environment and society as a whole.

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THE COASTAL PRAIRIE

The coastal prairie stretches along the western gulf coast from south Texas to southwestern Louisiana. Historically, the region was a tallgrass prairie which covered over nine million acres and was home to a diverse mixture of plants and animals. Yet because of human influence, less than 1% of the coastal prairie remains in its original state.

The historic coastal prairie was comprised of mostly grasses with patches of wildflowers dispersed throughout the landscape. In fact, over 1000 plant species have been identified on the prairie. Furthermore, prairie plants provided food and habitat to animals small and large. Many prairie plants provided nectar to insects. Subsequently, the insects then became a food source for larger species. The coastal prairie also provided wintering habitat to the endangered whooping crane and a year-round home to the endangered Attwater's prairie chicken.

Figure 1. A young couple reaches a milestone after becoming engaged on the coastal prairie. This experience on the prairie marks the start of their life together.

The prairie ecosystem was once maintained in balance by a combination of soil type, fire, rainfall, and the grazing habits of large native mammals. The landscape was dominated by grass rather than woody species due to the effects of drought, fire, and competition from plant species which were adapted to these processes.

Figure 2. This remnant Texas coastal prairie is very similar to the landscape Native Americans and early Texas explores encountered. Recently, a group from St. Mary's Episcopal Church gathered to bless the prairie which was conserved due to their efforts.

However, these once common natural processes rarely occur as the historic coastal prairie ecosystem has largely been lost due to the influence of humans. The conversion of prairie lands for agricultural use has been the greatest factor in its decline. Urbanization and suburban development are also direct causes of coastal prairie loss.

Yet, hope for the coastal prairie has not been lost. A group of concerned citizens and land managers established the Coastal Prairie Partnership (CPP) to promote the conservation and restoration of the coastal prairie ecosystem. Along with the CPP, groups like the Katy Prairie Conservancy, The Nature Conservancy of Texas, Texas Parks and Wildlife, Houston Audubon, and others are working hard to conserve the prairie. With your help, the CPP can create an engaged community to help restore and conserve the once great coastal prairie. To learn more, visit prairiepartner.org.

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Figure 1. A group of researchers from the University of Houston gathers to collect insects on a coastal prairie. The researchers enjoy social interaction with each other as they learn more about the native species which inhabit their city.

The historic coastal prairie was comprised of mostly grasses with patches of wildflowers dispersed throughout the landscape. In fact, over 1000 plant species have been identified on the prairie. Furthermore, prairie plants provided food and habitat to animals small and large. Many prairie plants provided nectar to insects. Subsequently, the insects then became a food source for larger species. The coastal prairie also provided wintering habitat to the endangered whooping crane and a year-round home to the endangered Attwater's prairie chicken.

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Figure 2. A small coastal prairie has been restored in an urban setting. The prairie provides a natural habitat amongst an otherwise man-made environment.

However, these once common natural processes rarely occur as the historic coastal prairie ecosystem has largely been lost due to the influence of humans. The conversion of prairie lands for agricultural use has been the greatest factor in its decline. Urbanization and suburban development are also direct causes of coastal prairie loss.

Yet, hope for the coastal prairie has not been lost. A group of concerned citizens and land managers established the Coastal Prairie Partnership (CPP) to promote the conservation and restoration of the coastal prairie ecosystem. Along with the CPP, groups like the Katy Prairie Conservancy, The Nature Conservancy of Texas, Texas Parks and Wildlife, Houston Audubon, and others are working hard to conserve the prairie. With your help, the CPP can create an engaged community to help restore and conserve the once great coastal prairie. To learn more, visit prairiepartner.org.

APPENDIX C

PROCESS TEST MESSAGE

THE COASTAL PRAIRIE

The coastal prairie stretches along the western gulf coast from south Texas to southwestern Louisiana. Historically, the region was a tallgrass prairie which covered over nine million acres and was home to a diverse mixture of plants and animals. Yet because of human influence, less than 1% of the coastal prairie remains in its original state.

The historic coastal prairie was comprised of mostly grasses with patches of wildflowers dispersed throughout the landscape. In fact, over 1000 plant species have been identified on the prairie. Furthermore, prairie plants provided food and habitat to animals small and large. Many prairie plants provided nectar to insects. Subsequently, the insects then became a food source for larger species. The coastal prairie also provided wintering habitat to the endangered whooping crane and a year-round home to the endangered Attwater's prairie chicken.

Figure 1. This resident of the coastal prairie represents two generations of knowledge being passed down about prairie conservation. His parents are working to restore the prairie for the benefit of future generations.

The prairie ecosystem was once maintained in balance by a combination of soil type, fire, rainfall, and the grazing habits of large native mammals. The landscape was dominated by grass rather than woody species due to the effects of drought, fire, and competition from plant species which were adapted to these processes.

However, these once common natural processes rarely occur as the historic coastal prairie ecosystem has largely been lost due to the influence of humans. The conversion of prairie lands for agricultural use has been the greatest factor in its decline. Urbanization and suburban development are also direct causes of coastal prairie loss.

Figure 2. A happy volunteer takes pride in coastal prairie conservation. He values the prairie because it is a rich place to gain knowledge.

Yet, hope for the coastal prairie has not been lost. A group of concerned citizens and land managers established the Coastal Prairie Partnership (CPP) to promote the conservation and restoration of the coastal prairie ecosystem. Along with the CPP, groups like the Katy Prairie Conservancy, The Nature Conservancy of Texas, Texas Parks and Wildlife, Houston Audubon, and others are working hard to conserve the prairie. With your help, the CPP can create an engaged community to help restore and conserve the once great coastal prairie. To learn more, visit prairiepartner.org.

INTERVIEW PROTOCOL

Questions based on Cantrill's (1998) sense of place interviews.

- ❖ What is it like to reside in the coastal prairie?
- ❖ What qualities "attach" you to the coastal prairie the most?
  - ➢ Note Any Place Attachment Dimension/ Ask to Expand "tell me more about that"

Present all three test messages and ask participant to select one.

- ❖ What features about the message you selected contributes to your attachment toward the coastal prairie the most?
  - ➢ Note Any Place Attachment Dimension/ Ask to Expand "tell me more about that"
  - ➢ Is there anything specific about the image or image description that you felt attached toward?
  - ➢ Is there anything specific in the main body of the text that you felt attached toward?
- ❖ Why do you plan to remain in or leave the coastal prairie in the future?

Questions developed to measure place attachments related to value and attitude toward coastal prairie conservation.

- ❖ What do you value about the coastal prairie?
- ❖ How aware are you/were you of the coastal prairie before viewing this message?
- ❖ Does the previously selected message change your attitude toward the need for coastal prairie conservation? Why or Why Not?
  - ➢ Note Any Place Attachment Dimension/ Ask to Expand "tell me more about that"
- ❖ Are there any other comments pertaining to the message you selected you would like to mention?
- ❖ Are there any other comments pertaining to the coastal prairie or coastal prairie conservation you would like to mention?

APPENDIX E

UNIT BIBLIOGRAPHIES

Audience	Session Number	Participant Number	Interview Information
Non-use	S1	42	University of St. Thomas, Interviewed February 6, 2018
Non-use	S1	29	University of St. Thomas, Interviewed February 6, 2018
Non-use	S1	23	University of St. Thomas, Interviewed February 6, 2018
Non-use	S1	38	University of St. Thomas, Interviewed February 6, 2018
Non-use	S1	68	University of St. Thomas, Interviewed February 6, 2018
Non-use	S1	39	University of St. Thomas, Interviewed February 6, 2018
Non-use	S1	53	University of St. Thomas, Interviewed February 6, 2018
Non-use	S1	64	University of St. Thomas, Interviewed February 6, 2018
Non-use	S2	37	Rice University, Interviewed February 16, 2018
Non-use	S2	77	Rice University, Interviewed February 16, 2018
Non-use	S2	56	Rice University, Interviewed February 16, 2018
Non-use	S2	8	Rice University, Interviewed February 16, 2018
Non-use	S2	55	Rice University, Interviewed February 16, 2018
Non-use	S2	90	Rice University, Interviewed February 16, 2018
Use	S3	3	Katy Prairie Conservancy, Interviewed February 8, 2018
Use	S3	13	Katy Prairie Conservancy, Interviewed February 8, 2018
Use	S3	23	Katy Prairie Conservancy, Interviewed February 8, 2018
Use	S3	33	Katy Prairie Conservancy, Interviewed February 8, 2018
Use	S3	43	Katy Prairie Conservancy, Interviewed February 8, 2018
Use	S3	53	Katy Prairie Conservancy, Interviewed February 8, 2018
Use	S3	63	Katy Prairie Conservancy, Interviewed February 27, 2018

Use	**S3**	73	Katy Prairie Conservancy, Interviewed February 27, 2018
Use	S3	83	Katy Prairie Conservancy, Interviewed February 27, 2018
Use	S3	12	Katy Prairie Conservancy, Interviewed February 27, 2018
Use	S3	34	Katy Prairie Conservancy, Interviewed February 27, 2018
Use	S3	58	Katy Prairie Conservancy, Interviewed February 27, 2018
Use	S4	55	Texas Community Watershed Partners, Interviewed February 28, 2018
Use	S4	0	Texas Community Watershed Partners, Interviewed February 28, 2018
Use	S4	88	Texas Community Watershed Partners, Interviewed February 28, 2018
Use	S4	38	Texas Community Watershed Partners, Interviewed February 28, 2018
Use	S4	49	Texas Community Watershed Partners, Interviewed February 28, 2018