NUANCED NETWORKS: HOW SOCIAL RELATIONSHIPS AND POWER INFLUENCE PARTICIPATION IN PRIVATE LANDS CONSERVATION PROGRAMS

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NUANCED NETWORKS: HOW SOCIAL RELATIONSHIPS AND POWER INFLUENCE PARTICIPATION IN PRIVATE LANDS CONSERVATION PROGRAMS

by

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BACHELOR OF ARTS BIOLOGY AND ENVIRONMENTAL STUDIES
AUGUSTANA COLLEGE, 2013

THESIS

Submitted in Partial Fulfillment of the Requirements of the Degree of

Master of Science in Geography

The University of New Mexico,
Albuquerque, New Mexico

December 2021
DEDICATION

For all the Prairie People doing to the good work of stewardship, who care so deeply, and take great pleasure in the seas of grasses, sedges, and flowers that they care for.
ACKNOWLEDGEMENTS

I would like to offer deep gratitude to my committee, especially my co-chairs, for their kindness, patience, and grace in helping me through the labor of realizing this research. – I quite literally could not have done this without you.

To Andrew DiAllesandro for providing “the vision” and asking, “Who am I missing?”

I would like to thank the dedicated conservation practitioners in Iowa that assisted in making this research a reality.

I would like to thank the willing and dedicated landowners for participating in this research, donating valuable time and experience.

Lastly, to the friends, colleagues, and peers that offered support, drew mind-maps, emanated encouragement, and provided purpose to this project, thank you.
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ABSTRACT

“I say to them ‘Listen, I'm not a farmer, I'm not a conservationist ... but I care, and I'm thankful.’” (Quote from an Iowa landowner, 2021)

Because the majority of land in the Midwestern United States is privately owned, the responsibility for creating and maintaining space for wildlife conservation falls upon private landowners. Numerous state and federal agencies and non-governmental organizations (NGOs) host private lands conservation programs that offer landowners financial and technical support to complete conservation projects on their property (Echols, Front, and Cummins 2019). While the individual motivations and priorities of a landowner may inform how they use and manage their property, a landowner’s ability to connect with the agricultural and conservation communities may determine if they have the opportunity to participate in these private lands conservation programs. Focusing on Iowa, and employing political ecological and social network theories, my research addresses the following questions: (1) How does access and opportunity to participate in private lands conservation programs differ across landowners? (2) What are the barriers
that prevent or limit landowner participation in private lands conservation programs? I use a mixed methods approach in the form of an online questionnaire and semi-structured interviews to capture nuanced narratives of landowners’ experiences. My findings suggest that certain land management behaviors are socially embedded, social networks and landowners’ relationships may influence their ability to access processes of knowledge creation and exchange, and thus private lands conservation programs, and non-dominant landowner groups may have different needs and priorities than dominant landowner groups. Family governance structures, informal mentorship processes, local political alignment, and institutional barriers influence who has access to private lands conservation programs.
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Chapter 1: Introduction

“I say to them ‘Listen, I'm not a farmer, I'm not a conservationist …but I care. And I'm thankful.’” (Vince, Iowa landowner, 2021)

After the sudden death of Vicky’s father, she and her husband, Vince, were thrust into the roles of landowner and manager of Vicky’s family’s farm. Now they manage 1400 acres of row crop, pasture, woodland, and conservation easement. Neither Vince nor Vicky have an educational background in agriculture or conservation. Both still work full-time in off-farm jobs, and together are raising three daughters. They’re overwhelmed with responsibility, dizzied by the complexity of agricultural and conservation institutions, and exhausted by the social expectations embedded in the identity of being a landowner in western Iowa. Despite all this, they treasure their acres and want to do good by the land and their family legacy. They are embracing their position and rapidly learning all they can to make ownership and management of these 1400 acres sustainable for their family. They are shifting the status quo of conventional agriculture by reimagining what those acres may look like, learning how to leverage opportunities for funding, and participate in novel processes of knowledge creation and exchange. They are changemakers, an energetic and motivated group of landowners that are ready to engage creatively and alternatively with agricultural and conservation networks to participate in conservation on their terms.

In the Midwestern United States, the majority of land is privately owned and dominantly used for agriculture. Opportunities for wildlife conservation— the restoration and protection of species’ habitats— largely reside on private lands (Thogmartin et al. 2017). Numerous state and federal agencies, and non-governmental
organizations (NGOs) host programs that offer landowners financial and technical support to do conservation projects on their property (Echols, Front, and Cummins 2019). Many private lands conservation (PLC) programs have stipulations and incentives aimed at conserving a particular resource, land use, species, or ecosystem. For example, the U.S. Department of Agriculture’s Conservation Reserve Program (CRP) is designed to fallow farm fields and build soil health with the intention of returning acres to row-crop. The U.S. Fish and Wildlife Service’s Partners for Fish and Wildlife Program often focuses on conservation projects that build habitat for threatened and endangered species. Because of the variety of funding sources and myriad policies, landowners often find navigating the network of PLC programs challenging. In addition to restrictive stipulations, other well-documented barriers to participating in PLC programs include lack of knowledge about programs, financial limitations, and land use conflicts (Lute et al. 2018; Ranjan et al. 2019). Conservation practitioners, the employees of agencies and organizations administering PLC programs, often depend on professional and personal social networks to deliver their conservation programs. This means the relationships between conservation, agricultural, and landowner communities can partially determine who has the opportunity to participate in PLC programs (Barnes, Mbaru, and Muthiga 2019; Carter 2019).

This research aims to understand the mechanisms of private lands conservation participation and addresses the following questions: (1) How does access and opportunity to participate in private lands conservation programs differ across landowners? (2) What are the barriers that prevent or limit landowner participation in private lands conservation
programs? (3) What relational or institutional characteristics support landowner participation in private lands conservation programs?

While the individual motivations and priorities of a landowner may inform how they use and manage their property, a landowner’s ability to connect with the agricultural and conservation communities may determine if they have the opportunity to participate in PLC programs in the first place. In this thesis, I use social embeddedness and social network theory to explore structures of how landowners relate to one another at different scales (micro, meso, macro) and to examine processes of knowledge creation and exchange. My methodology and analysis utilize principles of political ecology and feminist political ecology to elevate non-dominant landowner narratives and consider how power influences participation in PLC programs. Overall, I want to better understand how social relationships, networks, and power dynamics across scales impact participation in PLC programs. I use a mixed-methods approach in this study, employing an online questionnaire with open and closed-ended questions and semi-structured interviews. These methods allow me to capture broad quantitative data alongside more nuanced narratives of landowners’ experiences. Revealing non-dominant landowner narratives and understanding why some landowners have not participated in PLC programs may allow conservation practitioners to identify how they may serve landowners more inclusively.

I find that participation in private lands conservation is a deeply social act: social networks at different scales impact how or if a person may participate in PLC programs. Additionally, barriers to and opportunities for PLC program participation are different at different social network scales. My findings are consistent with other studies that found
access to knowledge, personal resource limitations, and regulatory requirements are barriers to participation (Dupont 2011; Bennett et al. 2014; Ranjan et al. 2019). In addition, my findings illustrate that landowners who are well-connected to other like-minded landowners often find ways of working within and around these barriers to achieve their land management goals (which often includes participating in PLC programs). Relatedly, demographic factors such as age and gender influence whether a landowner feels a sense of belonging in agricultural and conservation communities and can influence their ability to participate in PLC programs.

Theoretically, this research contributes to the intersection of social network theory and feminist political ecology. I explore how non-dominant landowners may establish alternative social networks of knowledge creation and exchange to cope with barriers related to power dynamics. This research also reinforces the idea that social networks at different scales offer different barriers to and opportunities for knowledge creation and exchange.

The following sections in this chapter help provide context for my study. I will identify a definition for conservation, explain the geographic and programmatic scope, explore how private lands conservation works in practice, delineate the complexities of land tenure and use in rural America, and briefly explain how rural life has changed in the last 50 years.

What Is Conservation?

“Conservation” has many specific definitions; agricultural conservation is different than wildlife conservation, which is different still from soil and water conservation. This study defines “conservation” broadly as conserving natural resources
(ex. soil, water, land) and ecosystems (ex. tall grass prairie, oak savanna) for the protection of native plant and animal species. In an executive order on invasive species the federal government defines “native species” as “…a species that, other than as a result of an introduction, historically occurred or currently occurs in that ecosystem,” (Executive Order No. 13112 1999). I will use this definition of “native” but offer an acknowledgement that the introduction of plant and animal species to landscapes by indigenous populations is part of a deep history of indigenous resource management and survival (Suchet 2002). My analysis of land tenure and conservation focuses on a more recent post-settlement history of the landscape and does not engage with indigenous practices of land and resource management. This study focuses on participation in habitat and wildlife conservation and does not include agricultural conservation, except where it overlaps with wildlife and habitat conservation. Conservation practices such as grassed waterways, no-till conventional farming, and terraced farm fields are useful for maintaining and conserving agricultural lands but are not directly intended to improve habitat for wildlife populations (Daloğlu et al. 2014). Leveraging U.S. Department of Agriculture programs for habitat and wildlife conservation, such as installing a pond for water management and migratory birds or converting farm fields to prairie under the Conservation Reserve Program for pollinators, are included in this study as “conservation.”

To understand the modern manifestation of conservation practices in the Midwest, it is important to understand the historic foundations of conservation in the United States. The ethics of preservation, popularized by John Muir, and conservation, popularized by Gifford Pinchot, define the American West and public land and resource management in
the United States (U.S. Forest Service 1967). Pinchot and Muir provide a foundation for federal land and resource management agencies and delineate two ethics for protecting and managing large swaths of largely undeveloped lands. These narratives are less relevant in the Midwest because most land is not publicly owned and is largely developed, either agriculturally or with urban and industrial land uses. Any hope of purist preservation akin to Muir is long gone; only slivers of undisrupted, remnant prairie remain, while the majority of prairies, grasslands, and savannas have been cleared and tilled for agricultural uses (Dorbush 2004). Similarly, Pinchot’s use of “conservation” which advocates strategic and slow extraction of timber to prolong the financial harvest of forests (Banzhaf 2019) does not apply to the ecosystems and landscape of the Midwest since much of the region is historically unforested and has already been developed for agricultural uses.

Aldo Leopold, a 20th century environmentalist in the United States, offers a more nuanced ethic that is ultimately rooted in Midwestern agricultural ideals (Knight 1999). Leopold grew up in Iowa surrounded by private land and spent many years in the American West exploring and ensuring protections for public lands. Likely Leopold’s most famous written work, *A Sand County Almanac* includes an essay entitled “The Land Ethic” which is still a highly referenced environmental work (Millstein 2018). In the essay, Leopold acknowledges that humans are *part* of the ecology of a place, part of the system with power to protect and destroy (Millstein 2018). He writes, “In short, a land ethic changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such” (Leopold 1949, 204). He offers stewardship, personal
responsibility and gentle intervention as totems of a balanced ethic, which align well with the agricultural land uses (Knight 1999).

The land ethic of Aldo Leopold is still strong in the Midwest. Iowa State University hosts the “Leopold Center for Sustainable Agriculture” which provides community connectivity and educational opportunities for land management and conservation (Iowa State University 2019). Similarly, The Aldo Leopold Foundation, located in Wisconsin offers a modern celebration of “the land ethic” in the form of conferences, lectures, and other educational opportunities (The Aldo Leopold Foundation n.d.). Many landowners experience a social obligation to be a good steward and care for the land is socially embedded (Jarosz 2011).

**Geographic and Programmatic Scope**

Although land throughout the Midwest is primarily privately owned, this study focuses solely on the state of Iowa. Limiting the study scope to a single state eliminates a level of political complexity by excluding any state-to-state governance and inter-state institutions. Similarly, individuals, not private sector developers or corporations, still control most of the private lands in Iowa making the state an ideal candidate for exploring how landowners make management decisions and navigate governance of their property(ies) (Plastina, Zhang, and Sawadgo 2018). Compared to other states, Iowa has a relatively consistent land use: more than 30.6 million acres (Plastina, Zhang, and Sawadgo 2018), approximately 85% of the state (Sassman, Miller, and Burras 2016), are devoted to agricultural land uses. Because there is little public land, wildlife conservation in Iowa depends on private lands conservation efforts to provide habitat and migration corridors for wildlife species (Thogmartin et al. 2017). Converting agricultural land uses,
like corn and soy row crops, to a conservation focused land use is technically straightforward. For example, restoring prairie may simply require spreading a seed mix, monitoring weedy non-native plant species during the growing season, and using prescribed fire every three years to improve soil health (Morton et al. 2010). Because so much of the state is agriculturally engaged, Iowa is also a strong reflection of national agricultural policies, helping us understand how national politics manifest on the landscape (Varble, Secchi, and Druschke 2016).

Keeping Iowa’s agricultural underpinnings in mind, it is important to acknowledge why private lands conservation is unique and relevant. The current design of PLC programs, in which agencies and organizations provide technical and financial support, has only been popular since the 1980s (Morgan et al. 2019). Wildlife conservation broadly gained popularity during the 1970s environmental movement (Morgan et al. 2019). The Food Security Act of 1985, now called the Farm Bill, included funding for programs that encouraged farmers to participate in soil conservation efforts (Morgan et al. 2019). The depth and breadth of PLC programs has grown considerably, but the foundation of these programs is relatively young. Unlike conservation planning for National Parks or National Forests which allow land managers to consider many square miles of land as a single entity, private lands conservation requires each landowner to be a steward, manager, and ecologist. Obviously, different landowners have varying levels of experience, knowledge, and interest in conservation for native species and are often responsible for managing disparate, relatively small areas of land. This requires the agencies and organizations that host PLC programs to be strategic in how and where they are administering their programmatic resources. These agencies and
organizations generally offer technical assistance in the form of project design and industry contacts and provide financial support in the form of cost-shares, stipends, and grants. PLC programs can be restrictive, limiting which landowners, land uses, or habitats are eligible for funding (Echols, Front, and Cummins 2019). In Iowa, the USDA is the most significant source of PLC program funding (Plastina, Zhang, and Sawadgo 2018). Programs like the Conservation Reserve Program (CRP), Agricultural Conservation Easement Program-Wetland Reserve Easement (ACEP-WRE), Environmental Quality Incentives Program (EQIP), and others are funded through the Farm Bill (Natural Resources Conservation Service n.d.; Vaughan and Skinner 2008). Funding for these programs shifts with each presidential administration’s priorities and has been generally declining for the last decade (Echols, Front, and Cummins 2019). Many Farm Bill programs pay farmers to fallow their fields and plant native plant species to help repair and build the soil for future agricultural uses. In contrast, the U.S. Fish and Wildlife Service’s Partners for Fish and Wildlife program focuses on building habitat for Federal Trust species including threatened and endangered species (U.S. Fish and Wildlife Service 2003). The Iowa Department of Natural Resources (Iowa Department of Natural Resources n.d.), Iowa Natural Heritage Foundation (Iowa Natural Heritage Foundation n.d.), and Iowa Department of Agriculture and Land Stewardship also provide financial and technical assistance to landowners via PLC programs. This research is interested in all manner of PLC program participation and seeks to understand how landowners access and choose to participate in PLC programs.
Private Lands Conservation in Practice

In this section I will briefly share how PLC programs are administered, or rather, who is administering them. Conservation practitioners are the employees of conservation agencies and organizations and the people responsible for delivering programmatic resources to landowners, in the form of technical and financial assistance. In the field, conservation practitioners provide conservation counsel to landowners, working to align the management goals of landowners with the conservation priorities of specific PLC programs. Conservation practitioners use their professional social networks to connect with interested landowners and share knowledge of and opportunity for conservation programs. Conservation practitioners often cross-promote programs for other agencies and organizations which ultimately increases the reach of all PLC programs and likely improves processes of knowledge exchange for landowners (Lute et al. 2018).

Conservation practitioners are often landowners themselves and may participate in PLC programs, although program policy may prevent them from participating in any programs they administer directly.

Since conservation practitioners are responsible for many tasks including connecting and negotiating with landowners, designing conservation projects, hiring contractors, and balancing their annual budget, their scope of work may not include marketing their PLC program to landowners outside of their established social networks. Internal agency evaluations of conservation programs generally focus on the technical success of projects (ex. type of habitat built or species assisted), reporting how many acres have been conserved, how many projects have been completed, and how many dollars have been spent (Gooden and ‘t Sas-Rolfes 2020). These evaluations may not
consider broadly which landowners are served by the PLC program, or why a particular landowner chose to participate in the program (Selinske et al. 2015). This research focuses on individual landowner experiences and does not explicitly seek out conservation practitioners’ perspectives as part of the analysis. Conservation practitioners are an obvious and important part of the social networks of PLC programs and are key actors in conservation and agricultural networks. To better understand this research, it is important to understand the roles and responsibilities of conservation practitioners in PLC programs. This research may help PLC programs evaluate who they are serving and explore ways of connecting and engaging with non-dominant or underserved landowner groups.

**Land Tenure and the Power to Decide**

Land tenure is the way in which a group of people purchase, sell and value land (Salamon 1992). The particular rules and processes of land tenure can be influenced by policy and cultural norms (Carter 2017). Identifying land tenure helps us understand a landowner’s relationship to their property and delineates the powers a land user has in conservation decision-making (Plastina, Zhang, and Sawadgo 2018). In Iowa, the ways in which properties are rented, bought, sold, and inherited are reflective of an agricultural tradition (Salamon 1992). As older landowners die, they often leave their inheritance to numerous people (children, grandchildren, etc.); there is a continual fracturing of family farms that results in smaller parcels and more landowners (Pilgeram and Amos 2015). It is common for parents to divide a property among their children, or for parents to offer their children or other younger family members the opportunity to purchase all or some of the acres of the family property (Salamon 1992). Some sibling groups may choose to
keep the property as one parcel and make management decisions together, while others may prefer legal separation of acres and to manage their shares independently. These inheritance dynamics are just one example of the complexities of land tenure in Iowa. It is also important to acknowledge renters, non-operating landowners, and other roles in discussing land tenure.

Petrzelka et al (2013) discuss the challenges in anticipating the behaviors of absentee landowners, or people that own land but live somewhere other than their property. These landowners may use the property themselves, can be landlords and rent their property to other land users for an annual fee, or may simply own the property as an investment (not actively using or renting it) (Petrzelka, Ma, and Malin 2013). As agricultural profit margins continue to narrow, it is becoming more popular for farm families to live away from the farm and closer to alternative employment opportunities (Gallemore, Munroe, and van Berkel 2018). Many millennials are inheriting land without exclusively intending to farm themselves, disrupting traditions of knowledge creation and exchange in agricultural communities (Gallemore, Munroe, and van Berkel 2018). Reaching absentee landowners can be challenging because they may live far away from their property and are not connected to local social networks and therefore do not participate in processes of knowledge creation and exchange (Petrzelka, Ma, and Malin 2013). Despite living on their property(ies), non-operating farm owners that rent their land to other farmer-operators are often disconnected from the day-to-day management of their property but ultimately retain the power to make decisions about management practices (Varble, Secchi, and Druschke 2016). Overall, researchers have found that agricultural renters are just as likely as landowners to participate in agricultural
conservation practices that are beneficial in the short term, and less likely to participate in agricultural conservation practices that are beneficial in the long term (Soule, Tegene, and Wiebe 2000; Varble, Secchi, and Druschke 2016; Leonhardt, Penker, and Salhofer 2019). This suggests that the perceived and real duration of a land user’s relationship to a property will impact how they engage in managing that property.

In Iowa, it wasn’t until the 1980s that women were recognized as legal co-owners of properties upon the death of their husbands, shifting inheritance patterns away from male-dominated ownership towards a tenure of co-ownership (Carter 2017). Prior to this, women acted as placeholder landowners until their male family members were ready to manage the farm and were expected to make decisions as the generation prior had. Although these women carried the responsibility of the landowner, they did not have the social power to make changes outside of what was expected (Carter 2017). Today, women landowners are more likely to act as landlords than men and thus must navigate land management governance dynamics (Petrzelka, Ma, and Malin 2013). Gendered expectations of landowners still persist, although more women are claiming their power as landowners (Carter 2017).

In Iowa in 2017, 53% of farmland acres were leased (Plastina, Zhang, and Sawadgo 2018); property owners are increasingly not operating themselves, and farmer-operators rent or co-own large swaths of acreage in addition to any acres they own (Varble, Secchi, and Druschke 2016). The practice of farmers owning and managing a portfolio of properties and parcels is a relatively new dynamic that was made possible, in part, by the Farm Crisis (Atkinson 1999), which I will explain more below. This leads to interwoven ownership and land use dynamics that require negotiation and governance for
making land management decisions (Varble, Secchi, and Druschke 2016; Carter 2019). Simply identifying landowners and their values or motivations for engaging in conservation may not be enough to inspire participation in PLC programs. Rather, delineating which acres of a property are managed by whom and identifying the decision-maker(s) are necessary to evaluate potential private lands conservation participation.

Changes in Rural Life

Because of technology, globalization, and economic policy shifts, the world has dramatically changed in the last 100 years (Merrett and Struthers 2002). Iowa and agriculture are not exempt from these changes. From the end of World War II to the 1970s, agriculture was a stable industry and career (Merrett and Struthers 2002). The New Deal offered economic opportunity and rural Americans coordinated to produce food to feed the country (Merrett and Struthers 2002). An agricultural tradition also solidified during this time; processes of inheritance, family legacy, and stewardship became part of “rural America’s” identity (Merrett and Struthers 2002).

In the 1970s, the U.S. Department of Agriculture was encouraging mechanization, industrialization, and consolidation of farms (Madison and Davidson 1997). Because of policies and federal messaging, many farm families grew their farms, heeding the advice of agriculture secretary Earl Butz to “get big or get out” (Merrett and Struthers 2002). Growing farms required taking on large amounts of debt to invest in property, machinery and capital improvements (Merrett and Struthers 2002; Eisenberg 2018). The initial governmental support and short-term financial gains offered a false sense of security and in the early 1980s inflation inspired federal loan interest rates to soar to 20% (up from 8% in the late 1970s) while commodity prices stagnated (Merrett and Struthers 2002). The
federal policies pitted farmers against bankers and ruptured community relationships. Many landowners lost their farms and were forced to seek off-farm employment (Lobao and Meyer 2001), and the community social networks disintegrated (Iowa Public Television 2013).

After the Farm Crisis, rural America found a new, albeit dysfunctional, normal. Families that lost their farms moved to cities to be closer to employment opportunities (Eisenberg 2018). Families that maintained ownership of their farms still sought off-farm employment and often rented their acres to active farmers (Petzelka, Ma, and Malin 2013). Because so many families lost their farms, there were plenty of farmable acres to purchase which centralized power and wealth in the state’s agricultural industry (Eisenberg 2018). Since the 1990s, the agricultural industry has gotten more efficient and continues trends towards consolidation (Eller 2020): fewer individuals are farming more acres. Additionally, farmers are aging, and recruitment of young farmers is low; in 2017, 60% of all farmland in Iowa was owned by individuals over the age of sixty-five (Plastina, Zhang, and Sawadgo 2018). This aging cohort of “successful farmers” have a centralized hold on the majority of farmland and have shaped Iowa agriculture for the last forty years (Merrett and Struthers 2002). Families that were traditionally part of these agricultural communities became disconnected from landownership and management. The children and young adults of the Farm Crisis were encouraged to choose non-agricultural careers, providing another layer of disconnection from rural life (Eisenberg 2018).

Today, rural communities are still struggling. Populations are aging and dwindling, and there are few social services available because these communities are not
large enough to sustain basic services (Eisenberg 2018). In his book, *Broken Heartland*, James Madison (1997) discusses small-town Iowa as a set of rural ghettos. Absentee landownership is increasing as new generations of people inherit land (Petzelka, Ma, and Malin 2013). The rural landscape is demographically shifting and the way in which people connect with their communities is fundamentally different than 50 years ago. These shifts in rural life impact how and if landowners participate in processes of knowledge creation and exchange and if they will participate in PLC programs.

**Conclusion**

As I have explained above, Iowa is mostly privately owned, and the land is largely used for agricultural purposes. Because of the heavy agricultural land uses, the landscape is prime for wildlife conservation. PLC programs are an important mechanism for maintaining biodiversity and protecting threatened and endangered species. Many of the land tenure traditions and the regional land ethic are socially embedded in the culture of the state. Because of the Farm Crisis, globalization and rapid mechanization, agriculture and rural America function very differently than fifty years ago. As new generations inherit land, it is clear that landowners’ connection to the agricultural tradition is shifting and other lifestyle characteristics are taking priority. Fewer landowners are farming their property directly, and many are opting for absentee landownership. It is important to understand how these shifts in landownership may impact access to and participation in PLC programs. With my research, I argue that:

1. Participation in private lands conservation programs is a socially embedded process, and that landowners’ relationships with other landowners matter.
2. Social networks at different scales pose different barriers and opportunities to PLC program participation.

3. How and where landowners participate in and access processes of knowledge creation and exchange can influence whether they participate in private lands conservation programs.

4. The number of non-dominant landowners are increasing and these landowners have different needs and priorities than dominant (older, white, male) landowners.

5. Conservation practitioners generally use social networks established by and for dominant landowners to administer their programs and may be unintentionally excluding new and willing landowners who do not have access to these social networks.

This research uses social embeddedness, social network theory and political ecology to explore how social networks and power dynamics influence PLC program participation. In the next chapter I will explore these theories more specifically and highlight some research that has been conducted on private lands conservation.
Chapter 2: Theoretical Framework

The decisions people make, and the ways people behave are, in part, influenced by their relationships with other people and the communities they connect with. Land and resource management decisions are inherently social and understanding social networks can help identify valuable spaces of knowledge creation and exchange. In this chapter, I will introduce the theories that informed my research and explore how they intersect within the context of private lands conservation. I start with an explanation of social embeddedness and how socially embedded characteristics can influence how people behave. I then explain social network theory, network scales, and social capital to introduce important terminology about relatedness. Finally, I use political ecological concepts to account for power relations and influences of institutions on social networks.

These theories are used to explain the following dynamics in my research: (1) Land and resource management decisions are socially influenced due to embedded norms. (2) Social networks at various scales can be used to understand processes of knowledge creation and exchange. (3) Formal and informal institutions can influence which landowners have access to social networks, and therefore processes of knowledge creation and exchange.

Social Embeddedness

Social embeddedness is an economic-sociological term that helps explain how social relationships influence economic behaviors (Lin and Kede 2011). In their analysis and explanation, Lin and Kede (2011) define embeddedness as “a kind of state which can exert influence on movers and their performance through the elements of relationship network,” (Lin and Kede 2011, 2). Social networks and embeddedness have a reciprocal
relationship in which embeddedness determines the structure of social networks, and social networks are an expression of what is embedded. For example, specific communication behaviors may be embedded in a group of people, which informs how their social network is structured and functions (ex. modes of communication, who talks to who, etc.), and the analysis of the structure of their social network is what may reveal how communication is socially embedded (Lin and Kede 2011). Although initially applied to economic behavior, the idea that behaviors are influenced by social relationships can be applied to non-economic situations as well, and thus embeddedness is relevant to this research.

For my research, it is important to consider what types of behaviors are the result of socially embedded ideas about agriculture, conservation, and community. In rural Iowa, as with many other rural places, stewardship of land and natural resources, and community care are socially embedded practices (Strauser et al. 2019). Landowners are expected to care for their land and resources and are expected to connect with and help their neighbors, their community.

Social Network Theory

Like social embeddedness, social network theory has theoretical roots in economic sociology (Lin and Kede 2011). Social network theory provides language to discuss how people and groups are connected and can be used to trace how information and resources flow through groups of people. Social networks are often visualized with webs of relation in which individual actors (nodes) are connected to each other via bridging and bonding ties (Lin and Kede 2011). Bridging ties connect an individual to
people in different groups (clusters), while bonding ties connect an individual to people within their group (cluster) (Hembrooke, Geri, and Yuan 2006).

Social networks can be explored at different scales: micro, meso and macro. Social networks that focus on individuals and interpersonal relationships represent micro social networks (Bolíbar 2016). Meso social networks may include many micro social networks connected via bridging ties (Bolíbar 2016). In this context, groups of actors that are closely related are called clusters (Lin 2012). Finally, macro social networks “generally trace the outcomes of interactions, such as economic or other resource transfer interactions over a large population,” (Prajna, Savitha, and Ujwal 2013, 2475).

The relative strength or weakness of relationships can help us understand how information is likely to flow through social networks (Granovetter 1983). Granovetter (1983) discusses the strength of weak ties and how an individual’s acquaintances are important for bringing novel and new information from distant social networks to them. Weak ties at all scales can help connect individuals to processes of knowledge creation and exchange that they would not have otherwise had access to (Granovetter 1983).

Technology shifts how we connect with all actors in our social networks, allowing individuals to develop bridging weak ties regardless of geographic location (Carse and Lewis 2017; Liu et al. 2017). Technological tools, such as the internet, can provide the opportunity to create bridging ties with other social networks which can be useful for learning about national policies or new and novel land management practices (Prajna, Savitha, and Ujwal 2013).

Tobler’s first law of geography states “everything is related to everything else, but near things are more related than distant things,” (Tobler 1970, 236). While rooted in
spatial analysis, Tobler’s law is relevant to discussions of social networks, especially in the context of land and resource management. Within landownership and agricultural networks, having ties to people geographically close, such as neighbors or people in the same county, may allow a landowner to connect with people that share similar resources and are subject to similar regulatory institutions. These relationships might be described as bonding ties and will help inform landowners about conventions that may be socially embedded in their social network. These bonding ties may be most relevant within micro and meso social networks, and are necessary for creating a sense of belonging and rootedness (Rocheleau and Roth 2007). It is important to acknowledge that bonding ties may represent and perpetuate processes of knowledge creation and exchange that were designed by and for dominant landowner groups, which may not be useful to an individual landowner. So, while geographically close bonding ties are important and necessary, they may also pose a barrier to PLC program participation. These contradictions offer nuance to Tobler’s Law, extending the spatial relationship of near and far things to evaluate the importance of near and far relationships.

An individual actor may have varying significance and decision-making power in their social networks. For example, a person may be the primary decision-maker within their family, but that same individual may only be peripherally connected to their local community network and thus may not be a significant actor in the community’s social network. This dynamic within social networks can be explained using “social capital.” Social capital is the “value of trust, expectations of reciprocity, and shared social norms embedded in social networks” (Yoder and Roy Chowdhury 2018, 354). Social capital can
indicate how connected an individual is to their various networks and may explain why certain decisions are made or actions are taken by a group of people.

Within agricultural and conservation research, micro and macro social networks are well-studied. For example, farm family dynamics have been a topic of research for decades; we know that men and women have different experiences as landowners, we understand how family succession of land is expected to happen, and how micro social networks respond to large institutional changes as experienced during the Farm Crisis (Elder, King, and Conger 1996; Lobao and Meyer 2001; Leslie, Wypler, and Bell 2019). Similarly, macro social networks are generally accessible for study and are often the topic of private lands conservation research, answering questions about the impacts of institutional barriers and policy design on private lands conservation participation (Bennett et al. 2017; Lute et al. 2018). For example, an international evaluation of forest owner typologies found that a forest owner’s country of origin is often indicative of their perceptions and attitudes towards forest management (Blanco, Brown, and Rounsevell 2015). Their findings suggest that a landowner’s cultural and political beliefs inform conservation participation, illustrating how macro social networks such as national policy agendas can influence landowners’ behaviors (Blanco, Brown, and Rounsevell 2015).

Applying social network theory to PLC programs helps us understand how landowners are connected to each other and their communities. My research examines processes of knowledge creation and exchange at all social network scales and pays special attention to meso social networks. I have established that participation in conservation and making land management decisions are, in part, influenced by socially embedded ideals and values. I have also outlined how social networks can be used to
explore social relationships at various scales. What these theoretical mechanisms lack is a critical lens that asks questions about the influence of power and institutions in social relationships.

**Political Ecology**

The final theoretical component of this research is political ecology. Political ecology is a vast and interdisciplinary field with roots in political science, ecology, environmental studies, anthropology, and, of course, geography (Burke 2015). This framework considers nature-society relations and allows researchers to explore narratives of ecological change and human dimensions, such as political change and cultural norms, simultaneously. Instead of attempting to isolate the various facets of reality, political ecology considers how systems interact (Neumann 2009). Political ecology was used intermittently in the 1970s in conjunction with the environmental movement (Peet and Watts 1993), and the field has grown in recent decades (Batterbury 2018). While political ecological research spans myriad topics and borrows tools from various theoretical frames, a few guiding principles give structure to political ecology.

First, political ecology is inherently political (compared to apolitical); the field assumes that ecological change is partially influenced by political institutions and dynamics. This sets political ecology apart from ecology because many ecological methods are focused on measuring and reporting change objectively, and do not focus on why that change came about (Walker 2005). Blaikie and Brookfield (1986) critically employed environmental history, ecology, and political economy to examine environmental change. They set the stage for what we call political ecology today and
solidified the idea that environmental change is often a consequence of political and social institutions (Blaikie and Brookfield 1987; Walker 2005; Rocheleau 2008).

Second, political ecology uses analysis of institutions and historicization to contextualize how political and ecological systems have changed over time (Rocheleau and Roth 2007; Rocheleau 2008). There is no central definition for an “institution;” political ecologists have mobilized the term at various scales, formally and informally, in concrete and abstract ways (Farole, Rodríguez-Pose, and Storper 2011). Generally speaking, institutions are “systems of established and prevalent social rules that structure social interactions,” (Leftwich 2006, 2). Institutions can be formal, such as rules, regulations and written policy, or informal such as cultural norms, gendered expectations, and social conventions (Leftwich 2006). Placing institutions into historical context can help trace how, and more importantly, why ecological change happens. For example, Carter (2017) explains the history of landownership in Iowa, focusing on the fact that regulations prevented women from being sole owners of farmland. This historic context provides valuable information about the ways in which the institution of gender has excluded women from an equitable right to landownership, and can help us understand gendered landownership dynamics, today.

Third, political ecology examines how power dynamics shape experiences; the field acknowledges that people experience institutions differently and may not have equal access to power (Tetreault 2017; Carter 2019). Feminist political ecology, a sub-field of political ecology, specifically addresses which groups have access to power through explorations of equity and justice (Rocheleau 2008). For example, gendered experiences in agriculture and land ownership are well documented (Jarosz 2011; Feder and Cowan
Carter (2019) found that female landowners were often eager to participate in conservation actions on their property but were consistently challenged by archaic gender roles and industrialized agricultural norms. These gendered discrepancies in access to information may mean that women have less opportunity to participate in processes of knowledge creation and exchange. Importantly, spaces of knowledge creation and exchange can determine, in part, what types of practices and ideals are socially embedded (Barnes, Mbaru, and Muthiga 2019; van Ewijk and Ros-Tonen 2021). Therefore, the people actually participating in these processes of knowledge creation and exchange have the power to shape policy, cultural norms, and can influence how other people experience their environment.

Political ecology is an interdisciplinary theoretical framework that allows researchers to examine the interconnected nature of political, social and ecological systems (Burke 2015). Political ecology and feminist political ecology work to identify alternative narratives and reveal complex social and power dynamics that influence processes of knowledge creation and exchange, which is important to understanding who has the opportunity to participate in PLC programs (Burke 2015; Gustafsson, Wolf, and Agrawal 2017; Sylvester and Little 2020).

Conclusion

Social embeddedness and social networks are connected via a reciprocal relationship. The habits, behaviors and beliefs that are socially embedded are reflective of the social network, and the ways in which the social network functions reflects what is socially embedded. Within agricultural communities in Iowa, as in the many other rural places, certain practices and ideals are socially embedded, including family succession of
property and stewardship of land and natural resources (Pilgeram and Amos 2015; Carter 2017; Marr and Howley 2019). Considering these socially embedded ideals, landowners are subjected to certain expectations and norms that may or may not grant them access to valuable social networks. Social networks at various scales help us understand how landowners are connected and can reveal who has access to processes of knowledge creation and exchange.

Social network theory does not capture how power is distributed within and across networks. For that, I engage political ecology and an examination of institutions. Political ecology recognizes that institutions can impact a person’s lived experience within social networks. For example, researchers have found that women farmers have a much different experience than their male peers. Men and women may own similar amounts of land, may have grown up under similar circumstances, and may be similarly politically aligned, but the institution of gender and the resulting expectations of different genders change how men and women experience and navigate their environments. Understanding what types of networks landowners are connected to can reveal who has the opportunity to participate in PLC programs.

My research uses this theoretical grounding to explore: (1) which, if any, processes and behaviors are socially embedded in Iowa landowner social networks; (2) how landowners are connected to the conservation and agricultural communities; (3) how processes of knowledge creation and exchange are structured; and (4) what barriers to private lands conservation participation exist, for whom.
Chapter 3: Methodology

This research used a mix-methods approach to capture landowner perspectives on and experiences with PLC programs. These methods are informed by political ecology and social network theory, as explained in the previous chapter. I will highlight the theoretical strategies implemented in my methods as I explain each phase of data collection. A central goal of this research is to elevate voices of non-dominant landowners. Put simply, the methods sought to reach young, non-white, non-male landowners to identify barriers to PLC program participation and reveal processes of knowledge creation and exchange. The research design was reviewed and approved by the Institutional Review Board (IRB) at the University of New Mexico on May 4, 2021. The IRB identification number for this research is [1746876-1].

Internet Questionnaire

I used an internet questionnaire to reach a larger number of participants and capture categorical, quantitative data about how landowners use their land and if they participate in PLC programs. I wanted to know which landowners were already engaging with agricultural and conservation communities, and if there were any unique or complex decision-making processes. I also used the questionnaire to capture some broad data about common PLC programs, useful conservation and agricultural organizations, and any blatant barriers to participation in these programs.

The questions were divided topically into the following categories: PLC programs, program participation, connecting to conservation programs, land use and tenure, and personal information. The full questionnaire is included in Appendix B.
I developed questions to help identify characteristics of the landownership experience. I asked about how individuals use their property, how many acres they manage, how they make management decisions, and if other people are involved in that decision-making. I collected demographic information to better understand if I was reaching dominant (older, white, male) or non-dominant landowners. This data helped me understand who common actors are in conservation and agricultural social networks, and began to reveal complex governance structures across social networks (Liu et al. 2017). The questionnaire is not a validated instrument but was reviewed by Iowa conservation practitioners and the Principle Investigator of the project.

The questionnaire was administered using Google Forms. The questionnaire was branched and thus consisted of 30-35 open- and closed-ended questions. Participants were asked different questions depending on their answers. Creating a branched questionnaire allowed me to ask for more detail from landowners that answered a question in a particular way. For example, landowners that indicated that they were co-managers of their property were asked to explain how decisions were made, while solo-managers were not asked for more information. The questionnaire was designed to sort participants based on the depth of their experience with PLC programs; participants who were more familiar with and had participated in PLC programs were asked more specific questions about their experiences while landowners that have not participated in PLC programs were asked about their perceptions of conservation more generally. The questionnaire took participants approximately ten minutes to complete.

Questionnaire participants were recruited in two ways. (1) I utilized key informants and snowball sampling to reach Iowa landowners. I used my personal and
professional contacts to reach out to landowners in Iowa via a recruitment email. Individuals then had the option of participating in the study, or not. (2) I sent an email to ninety conservation and agricultural organizations (non-governmental organizations and governmental agencies) and requested that they send a recruitment email through their organizational email listservs. Seven email addresses were not valid and thus the email was not delivered. Many organizations did not respond to my request and two organizations responded but declined to assist with recruitment. Six organizations responded and agreed to assist me in recruiting participants, including:

a. Practical Farmers of Iowa  
b. County Conservation Boards  
c. Soil and Water Conservation Districts  
d. Nahant Marsh  
e. Iowa Natural Heritage Foundation  
f. Prairie Rivers of Iowa

It is possible that some individuals and organizations shared the research recruitment materials without confirming with me, so I am unable to measure the true reach of the recruitment effort.

The questionnaire was available for completion from July 22, 2021 to September 15, 2021. Landowners that received the recruitment email and clicked on the Google Forms hyperlink were asked to confirm their consent in participating in the questionnaire and were then asked a screening question to determine eligibility. Individuals that indicated they did own land in Iowa were included in the study, while any individual that indicated they did not own land in Iowa was excluded from the study. Only one person was excluded from the study due to the screening question. Questionnaire participants
clicked to select their answers for closed-ended questions and used their computer keyboard to type any answers to open-ended questions. Participants were allowed to skip any question they did not feel comfortable answering. At the end of the questionnaire, participants were asked if they were willing to participate in a follow-up interview.

Questionnaire submissions were collected and collated in a spreadsheet through Google Forms and Google Sheets. The Google Sheets document was downloaded to Microsoft Excel. Data were organized for ease of analysis and Microsoft Excel was used to calculate descriptive statistics as well as to create tables and visualizations. Survey data were also coded using MaxQDA, a qualitative data analysis software. The open-ended questions were coded using inductive and deductive coding techniques and later cross-tabulated with demographic information to identify themes across gender and age groups.

The internet questionnaire not only provided context for which Iowa landowners participated in this study, but also helped me identify some novel and important themes which reinforced what I learned from the follow-up interviews. The survey results are an important set of data that helps strengthen what is already known about participation in PLC programs and assists me in locating and contextualizing differences between dominant and non-dominant landowners.

**Semi-Structured Interviews**

Relational interview techniques encourage the researcher to be an active participant in data creation (Fujii 2018). This approach allows the researcher to be specific in who they choose to interview, celebrates the working relationship between the researcher and participants, and fosters an analysis approach rooted in observational interpretation (Fujii 2018). While the online questionnaire captures broad themes of
barriers to participation and identified common actors in the conservation and agricultural social networks, the questionnaire does not capture deep landowner experiences. Semi-structured interviews allowed me to explore how individual landowners are connected to other people at various scales and how these relationships impact decision-making processes and participation in PLC programs. Additionally, relational interviewing encourages careful selection of interview participants which provided the opportunity for me to elevate non-dominant landowner voices and reveal novel landowner experiences.

All interview participants were recruited through the internet questionnaire. As mentioned above, questionnaire participants were asked if they are willing to participate in a follow-up interview. The participants that indicated “yes” and provided their email address were included in a demographic ranking process to help elevate participation of non-dominant landowners. I decided to prioritize conversations with non-dominant landowners in hopes of revealing lesser-known barriers to PLC program participation and to understand how these landowners access (or don’t access) spaces of knowledge creation and exchange. The age, race/ethnicity, and gender of participants willing to participate in interviews was used to prioritize and select interviewees. Participants were scored from zero (low priority) – three (high priority); one “point” was given for matching each of the following criteria: (1) Age: less than fifty-six years old, (2) Gender: Female or non-binary, (3) Race/Ethnicity: Non-white. I contacted higher priority individuals before contacting low priority individuals, but ultimately interviewed individuals of both high and low priority groups. The prioritization process helped elevate the voices of typically under-represented landowner groups, particularly women,
which utilizes the feminist methodology of focusing on subject positions that are often unheard (Hay 2016, Chapter 4).

I conducted interviews between August 4, 2021 – September 13, 2021. Interviews were scheduled and coordinated via email. Participants chose whether they would like to talk using a video meeting software (Zoom) or phone call. Each interview lasted thirty to sixty minutes. I started each interview by thanking the participant for participating, reviewing the consent form, and providing brief context about my project and the types of questions I would ask. I used a list of approximately six guiding questions and asked follow-up or clarifying questions when relevant. Interview questions focused on understanding processes of knowledge creation and exchange, how landowners make land use and resource management decisions, and what barriers may exist for landowners to participate in PLC programs. A full list of guiding questions can be found in Appendix C.

I used a relational interviewing approach, adding questions and modifying how I asked questions as I interviewed more landowners. Early interview participants serendipitously revealed processes of knowledge creation and exchange that I was unaware existed. These moments of revelation provided space for me to reflect on what I was asking and how I was asking it. I added questions like, “Do you have or practice a land ethic?” and “Have you experienced or observed mentorship relationships?” based on early interview conversations. I often re-phrased and summarized participants’ responses back to them to ensure I was understanding their answers. All interview participants had completed the online questionnaire which helped them understand, at least in part, what I was interested in knowing.
Each interview was audio recorded to assist with transcription; the cell phone application “TapeACall” was used to record phone calls and the computer application Zoom was used to record the audio from video meetings. I transcribed the interviews manually using MaxQDA, a qualitative analysis software. After conducting all interviews, I reviewed my notes and memos and outlined potential codes to use in analysis. I then reviewed the transcribed interviews and coded the text using inductive and deductive coding methods. In other words, I created a basic coding structure and added more specific or new codes as I completed the analysis. Quotes were selected to represent themes and landowner narratives that are explained in Chapter Five.

Using a mixed-methods approach in this study allowed me to capture myriad types of data that are useful for different reasons. The internet questionnaire captured broad quantitative data and helped identify general themes and landowner perspectives, while the interviews provided an opportunity to dive deep into the social networks landowners experience. These methods do not aim to represent all of Iowa landowners but rather sought to specifically promote voices of non-dominant landowners that are less represented by other methodologies. Because I utilized my personal networks along with conservation and agricultural organizations to recruit participants, I connected with a unique group of landowners that, in general, were interested in private lands conservation but have not or do not participate in PLC programs.
Chapter 4: Internet Questionnaire Results

This chapter reports and summarizes the results from the internet questionnaire. The intention of the questionnaire was to reach as many Iowa landowners as possible, and to assess how and if they participate in PLC programs. The questionnaire is not meant to be comprehensive or representative of all Iowa landowners and recruitment methods favored landowners already connected to agricultural and conservation organizations. Only select tables and figures are included in the text. Please refer to Appendix D for more visualizations of this data.

Survey Participants

A total of forty-seven individuals participated in the internet questionnaire. Figure 1 illustrates the distribution of survey participants by age range and gender. 34% of participants are women, 62% are men and 4% preferred not to answer. Survey participants are predominantly White/Caucasian (87%); 4% indicated a non-white race/ethnicity, and 6% preferred not to answer. Approximately 75% of participants are over the age of fifty-five (Table 1). Overall, most questionnaire participants were older (66+ years old), white, males, which represents the dominant Iowa landowner in this study (Figure 1). Middle-aged and older (55+ years old), white, females were the most represented non-dominant landowner group (Figure 1). Because the participants are overwhelmingly white, I cannot make meaningful comparisons based on race and ethnicity but will highlight some differences between landowners based on gender later in this chapter.
Table 1: Age Range of Questionnaire Participants

<table>
<thead>
<tr>
<th>Age Range of Participants</th>
<th>Percentage of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>26-35</td>
<td>6%</td>
</tr>
<tr>
<td>36-45</td>
<td>6%</td>
</tr>
<tr>
<td>46-55</td>
<td>15%</td>
</tr>
<tr>
<td>56-65</td>
<td>32%</td>
</tr>
<tr>
<td>66-75</td>
<td>32%</td>
</tr>
<tr>
<td>76 and older</td>
<td>9%</td>
</tr>
</tbody>
</table>

Figure 1: Population Pyramid of Questionnaire Participants

Survey participants are highly educated; 47% of participants have a bachelor’s degree or higher. This level of education is not representative of landowners across Iowa. The 2017 Farmland Ownership survey found that 39% of farmland owners have a bachelor’s degree or higher (Plastina, Zhang, and Sawadgo 2018). This discrepancy may be because many participants do not identify as agricultural producers and thus have different careers that required higher education. Similarly, it is likely that many survey participants were young adults during the Farm Crisis and were encouraged to pursue higher education instead of or before pursuing a career in agriculture (Atkinson 1999).
Survey participants indicated their primary occupations. The three main occupational industries for questionnaire participants are Agriculture (11 individuals), Natural Resources (8 individuals), and Education (8 individuals). Additionally, approximately 33% of participants are retired or semi-retired.

There are some historical and broad explanations why mostly white landowners and male landowners participated in this study. The Homestead Acts in the late 1800s to early 1900s allowed white men to claim farmland at a very low cost (Horst and Marion 2019). Because of structural exclusion and discrimination against non-male and non-white people, private landowners, especially farmland owners are still more likely to be white men (Horst and Marion 2019). Furthermore, women only recently gained the right to be sole landowners upon the death of their husbands (Carter 2017). Considering the political history of farmland ownership in the United States, socially embedded practices of family farm succession, and the rate of private agricultural land ownership in Iowa (Varble, Secchi, and Druschke 2016), it makes sense that landowners are still predominantly white men. The demographics of survey participants are reflective of some of these structural, historical dynamics.

Participating in conservation is often a privileged, politically progressive act (Escobar 1998; Holmes 2012). As mentioned in Chapter One, men like John Muir, Gifford Pinchot, and Aldo Leopold are celebrated for their conservation ethics. As with farmland ownership, white men have been the dominant voice in conservation for over a century (Peterson and Nelson 2017). Landowners with excess resources and access to higher education may have more foundational knowledge of and access to conservation (Escobar 1998; Holmes 2012). These structural dynamics may explain, in part, why
survey participants were generally highly educated and willing to participate in PLC programs in the future.

**Land Ownership and Management**

Overwhelmingly, the landowners surveyed identified multiple land uses for their properties. When asked to mark all the ways landowners use their property(ies), approximately half of the respondents indicated their property(ies) are used for agriculture, recreation, and as a residence (Table 2). Nine (19%) individuals indicated an additional “other” land use not listed categorically in the question. Often “other” land uses were explicitly tied to conservation and restoration; Table 3 captures all “other” responses.

*Table 2: How survey participants use their property(ies). Respondents checked all uses that applied.*

<table>
<thead>
<tr>
<th>How do you use your property?</th>
<th>Percent of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>47%</td>
</tr>
<tr>
<td>Residential</td>
<td>55%</td>
</tr>
<tr>
<td>Recreational</td>
<td>57%</td>
</tr>
<tr>
<td>Hobby Farm</td>
<td>36%</td>
</tr>
<tr>
<td>Other</td>
<td>19%</td>
</tr>
</tbody>
</table>

*Table 3: Responses to "other" land uses.*

<table>
<thead>
<tr>
<th>Responses to “other” land uses:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wildlife Refuge</td>
</tr>
<tr>
<td>Protection, management for native species</td>
</tr>
<tr>
<td>Prairie and woodland restoration and protection</td>
</tr>
<tr>
<td>Restore &amp; expand original native prairie remnants</td>
</tr>
<tr>
<td>Prairie Reconstruction</td>
</tr>
<tr>
<td>Open to community viewing</td>
</tr>
</tbody>
</table>
| I work on lands for enhanced ecological diversity. I document insects including new species to Iowa, new species to science (well, who's looking?) I sing in the sunshine and laugh in the rain. Iowa is the most biologically altered state in the entire US.
I own and live on 5.5 acres, but manage 305 acres that is a non-profit preserve

High value table food, agroforestry, beekeeping; hands-on STEM

The survey did capture a range of land ownership and management scales. Almost all participants (94%) own or manage fewer than ten parcels or properties, with industrial scale landowners and users represented in the study by one participant owning and managing over twenty parcels or properties. Similarly, the number of acres survey participants own and manage is well distributed, approximately half (45%) of survey participants own or manage fifty to five hundred acres. Figure 2 further illustrates the distribution of the number of acres participants own and manage.

*Figure 2: Number of acres survey participants own and manage.*

The properties represented in this study are generally used residentially with 64% of participants indicating that someone lives on the property full-time. 26% of participants (twelve individuals) indicated that they are absentee landowners and that no-one lives on their property. Complex governance structures exist for many survey participants. 57% of participants lease or rent some acres to other land users, and 36% of
participants are co-owning or co-managing acres with other people or organizations (ex. Iowa Natural Heritage Foundation and The Nature Conservancy). Some survey respondents (15%) are not the primary or sole decision-maker for their property(ies). These respondents indicated that they make land use and management decisions with their spouse, siblings, renter(s), and conservation organizations.

Private Lands Conservation

Survey participants were asked several questions about their familiarity and experience with private lands conservation. Most respondents are familiar with PLC programs and are willing to participate in PLC programs in the future (70% indicated “yes”). Many participants (55%) have participated in PLC programs previously and 42% of respondents indicated that they learn about PLC programs from conservation organizations directly.

Mixed Methods Survey Analysis

The internet questionnaire included quantitative and qualitative questions. The qualitative questions were coded using MaxQDA and the answers were cross tabulated with age and gender. Participants indicated numerous barriers to participating in PLC programs including: time, money, knowledge of programs, policy conflict or program eligibility, location of property, and neighbors. The crosstabulation of age and barriers revealed that younger landowners (55 years and younger) were more likely to indicate temporal and financial constraints as a barrier for participation while older landowners (56 years and older) were more likely to indicate policy conflict and program eligibility as a barrier for participation (Table 4). This suggests that younger landowners are limited by time and money and unable to engage in PLC programs because of these constraints,
while older landowners have the time and money and now face institutional and political obstacles when trying to participate in PLC programs. The cross tabulation of gender and barriers revealed that men more often identified financial constraints as a barrier to participation while women more often indicated lack of knowledge of programs was a barrier for participation (Table 5). This inspires an interesting question regarding access to processes of knowledge creation and exchange: are women included in these processes in the same way men are? Because of a small sample size these findings are not examined for statistical significance.

Table 4: Barriers to participating in PLC programs based on the age of respondents.

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Number of Times Each Barrier was Indicated by Age Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>26-35</td>
</tr>
<tr>
<td>Policy Conflict/Program Eligibility</td>
<td>-</td>
</tr>
<tr>
<td>Neighbors</td>
<td>-</td>
</tr>
<tr>
<td>Location of Property/Type of Property</td>
<td>1</td>
</tr>
<tr>
<td>Knowledge of Programs</td>
<td>-</td>
</tr>
<tr>
<td>Money</td>
<td>2</td>
</tr>
<tr>
<td>Time</td>
<td>2</td>
</tr>
<tr>
<td>Government Skepticism</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 5: Barriers to participating in PLC programs based on gender of respondents.

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Number of Times Each Barrier was Indicated by Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
</tr>
<tr>
<td>Policy Conflict/Program Eligibility</td>
<td>4</td>
</tr>
<tr>
<td>Neighbors</td>
<td>-</td>
</tr>
<tr>
<td>Location of Property/Type of Property</td>
<td>2</td>
</tr>
<tr>
<td>Knowledge of Programs</td>
<td>4</td>
</tr>
<tr>
<td>Money</td>
<td>1</td>
</tr>
<tr>
<td>Time</td>
<td>3</td>
</tr>
<tr>
<td>Government Skepticism</td>
<td>-</td>
</tr>
</tbody>
</table>

Questionnaire participants were also asked about where they connect with their communities. Participants checked all answers that applied and were able to add other
spaces of connection that were not included in the original question. In general, older respondents seem more involved in more communities than younger respondents, indicating that all listed locations are places they connect with people. Younger respondents indicated fewer important locations but there were also fewer young participants in the study overall, making it challenging to say if young people _actually_ connect with communities less. Outdoor recreation and nature enthusiast groups are important community spaces for all age groups and genders. This result may be a function of the recruitment method and reflective of the priorities of the participants as a whole. There are no obvious differences in how male and female participants connect with their communities.

*Table 6: Places where participants connect with their communities cross-tabulated by age group.*

<table>
<thead>
<tr>
<th>Where Participants Connect with Their Communities</th>
<th>Number of Times Each Location was Indicated by Age Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>26-35</td>
</tr>
<tr>
<td>Neighbors</td>
<td>-</td>
</tr>
<tr>
<td>School or youth group</td>
<td>1</td>
</tr>
<tr>
<td>Business Association</td>
<td>-</td>
</tr>
<tr>
<td>Outdoor Recreation or Nature Enthusiast Group</td>
<td>3</td>
</tr>
<tr>
<td>Farmer or Agricultural Groups</td>
<td>-</td>
</tr>
<tr>
<td>Church or Religious Group</td>
<td>-</td>
</tr>
<tr>
<td>Total Number of Respondents in Group</td>
<td>3</td>
</tr>
</tbody>
</table>
Table 7: Places where participants connect with their communities cross-tabulated by gender.

<table>
<thead>
<tr>
<th>Where Participants Connect with Their Communities</th>
<th>Number of Times Each Location was Indicated by Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
</tr>
<tr>
<td>Non-joiner</td>
<td>-</td>
</tr>
<tr>
<td>Neighbors</td>
<td>1</td>
</tr>
<tr>
<td>School or youth group</td>
<td>2</td>
</tr>
<tr>
<td>Business Association</td>
<td>-</td>
</tr>
<tr>
<td>Outdoor Recreation or Nature Enthusiast Group</td>
<td>10</td>
</tr>
<tr>
<td>Farmer or Agricultural Groups</td>
<td>6</td>
</tr>
<tr>
<td>Church or Religious Group</td>
<td>4</td>
</tr>
<tr>
<td>Total Number of Respondents in Group</td>
<td>16</td>
</tr>
</tbody>
</table>

The results from the internet questionnaire help to reinforce narratives of landowner experiences that are already documented in academia, such as bureaucratic barriers to participation (Kretser et al. 2019), and limited personal resources (Lute et al. 2018). The forty-seven participant responses help build an image of what Iowa landowners experience and value. These individuals are actively engaging in their communities (albeit in different ways), and experience similar sets of barriers. They care about conservation and their property and are willing to participate in PLC programs in the future. There is some indication that men and women experience different barriers to participation which is something I explore more in the next chapter. This generalized identity of Iowa landowners helped guide the semi-structured interviews and prompted me to explore how knowledge is created and exchanged in these communities and how barriers to participation in PLC programs are dealt with.
Chapter 5: Politics Across Scales

The internet questionnaire provided useful fodder for identifying barriers and opportunities in PLC program participation. It reenforced findings from previous studies, indicating that men and women may experience different barriers in landownership and participation in PLC programs (Pilgeram and Amos 2015; Dillon and Voena 2018; Carter 2019). With this research, I wanted to understand why some landowners participate in PLC programs while others do not. This required a deeper understanding of how landowners make decisions, navigate complicated land tenure situations, and perceive barriers to participation. I wanted to know what was challenging about engaging in private lands conservation and why (if at all) landowners value that facet of landownership. These inquiries could not be addressed fully with a questionnaire and required follow-up interviews.

For reference, all names mentioned are pseudonyms to protect the identities of research participants. As mentioned in the methods chapter, all interview participants first completed the internet questionnaire and indicated their willingness to participate in a follow-up interview. I used age, gender, and race/ethnicity to create a priority ranking of interview participants to help elevate non-dominant landowner voices. Potential interview participants received one point for each of the following criteria: (1) Age less than fifty-six years old; (2) gender: non-male; (3) race/ethnicity: non-white. Thirty-nine of the forty-seven internet questionnaire participants were willing to be interviewed. I sent a follow-up email to twenty-five willing participants to coordinate an interview, focusing on moderate and high priority participants.
Ultimately, I interviewed thirteen individuals between August 4, 2021 and September 13, 2021. Of the landowners that I interviewed, two (15%) individuals were high priority (two or three priority ranking points), eight (62%) individuals were moderate priority (one priority ranking point), and three (23%) individuals were low priority (zero priority ranking points). With these interviews, I reached thematic saturation; interview participants had general knowledge of private lands conservation and thus interviews were rich (high quality) and thick (substantially long) (Fusch and Ness 2015). Of the thirteen semi-structured interview participants, 38% are women and 62% are men. Nearly all (92%) participants are highly educated (hold a bachelor’s degree or higher). Two participants (15%) identified as non-white, while eleven (85%) identified as white. Most interview participants (54%) are fifty-six years or older. Four participants (31%) are thirty-six to fifty-five years old, and two participants (15%) are twenty-six to thirty-five years old. While dominant landowner narratives (those of older, white, men) were still present, the priority ranking did assist in capturing non-dominant landowner perspectives, particularly those of women.

The semi-structured interviews revealed relevant barriers to PLC program participation and the value of social connections at various scales. In general, participants identified ways to mitigate micro scale barriers, such as family conflict, and macro scale barriers, such as employee turnover within conservation and agricultural organizations and agencies. In other words, landowners still participate in PLC programs despite micro and macro scale barriers. In contrast, meso scale barriers, such as access to mentorship and conflict with neighbors, seem to inhibit landowners from participating in PLC
programs. In this chapter, I discuss barriers to PLC program participation and social network dynamics at three scales: micro, meso and macro.

Micro Social Networks: Family and Parcel Dynamics

Decision-making Power

Just as observed nationally, interviewees indicate that land ownership and use are shifting. As the next generation(s) inherits land, who has the power to make land management decisions changes? Co-ownership and parcel management institutions like being a landlord to a tenant farmer often lead to conflict and require unique decision-making structures. Participants illustrated the breadth of options for decision-making from sole decision-maker to deeply collaborative consensus-driven governance, to no decision-making structure at all.

Maya’s story demonstrates a fairly common ownership and management structure. Maya’s mother is the owner of the property, but Maya holds the power of attorney, lives on the property, and is functionally the decision-maker.

“So, I've been living here, this is my mom's farm that her and my dad purchased when I was a toddler... My dad ended up passing away and we moved away from there because it was just way too much for a single mom of four...so then later on in life, I was thinking about having more stability in my career, I've done a lot of traveling and moving around for work as well as traveling within jobs... So I was feeling pretty stressed at having to move so frequently and I thought maybe I would just go hang out on the farm.”

“I'm not the landowner on the deed, it's my mom, but I have the power of attorney and I do all the management and will inherit it someday.”

Maya is a young entomologist who moved back to Iowa to live on and maintain the family property. Since moving back she has enrolled acres into the Conservation Reserve Program and has used goats to help manage and restore some woodlands on the property.
She acknowledges that moving back to the family property was an intentional choice wherein she was seeking more stability. When I asked Maya about what her plans are for living and staying at the farm she responded:

“So long term I've thought about that, I've talked to my mom about what she'd like to do moving forward, I'm not going to live here forever so what is our plan moving forward... on a short term plan, if I move away, possibly getting another renter in and renting the house and trying to keep renewing the CRP lease on the prairie because it does give a payment. It's not as much as you would get from row-cropping it, but it's close and I would love to see it continue on to something like a trust or a wildlife refuge...although, at the end of the day it's my mom's decision and I'm not sure what she'll decide. But that would be ideal for me, or to sell it to someone else that's like-minded and wants to do conservation stuff.”

Although Maya has invested seven years of time, effort, and money into implementing conservation practices on the property, there is still an acknowledgement that her mother is going to make any long-term decisions for the property. This is a fact that is stated without resentment or ill-feelings. Maya is pragmatic about the fact that the property belongs to her mother and her mother should have the final decision-making power, even though her mother may be less involved or aware of what Maya has done or plans to do with the property.

Rose’s story of inherited land and familial conflict illustrate the high-stakes decisions related to landownership and property succession.

“In our case, there were six kids in the family, two of them went together to buy the parents out... but the other four were left out of that deal, some by choice and some not by choice. Two of the siblings, now, don't have anything to do with the rest of the family... So that happens a lot in farming. My husband was an ag banker and he worked with families that had lots of acres and needed to pass it down or sell it, it caused a lot of split families. It happens more often than you think. And
no matter how hard you try to make it work to make everybody happy, there are misunderstandings and there's mistrust and everything else.”

Many of the participants casually brought up familial turmoil and narratives of disagreement and power struggles. In Rose’s story, we see that family members have an uneven amount of power in making decisions. Of the six siblings, two were able to form an alliance and purchase the family property, while others were intentionally excluded from landownershiop. Sorting through who has decision-making power, who wants decision-making power, and reconciling the expectations of previous generations becomes a heavy burden for siblings inheriting land. Shelly is a fifty-something farmer’s daughter that chose a career away from farming. After her father passed away, Shelly and her three siblings inherited half of the farm and farm management defaulted to their mother. Shelly’s mother is still in a place to make decisions and manage the farm independently, but as the family gets older, the siblings are trying to prepare for what is going to happen next.

“Well, it's a small family farm that my parents had, 360 acres, so it only sustained one family. My dad died about fifteen years ago and in doing that, he left it to my mom and my three siblings and myself, so four of us. So, I own one quarter of one half [of the farm] ...it's all run as one...to this point we’ve deferred to mom. ‘Mom, if this is what you want...’ Because she lives there, she still lives on the farm, and she still draws income and needs that farm income. So, to me, it's whatever mom wants, and she's still able to make those decisions...There's one brother and there are three girls, and my brother has done a lot to be farm manager, and his vision is wonderful but it's different than each of ours too. So, management has been an issue. And so far, we've gotten along, but it's an issue.”

In listening to Shelly detail their current management structure, which is not overly complex, I can sense she is anticipating chaos once her mother passes away and the four siblings are left to negotiate the inheritance. It is clear that each of the five
individuals who have legal stake in the farm have different visions for how it should be managed, but Shelly’s mother and brother seem to have the most decision-making power in this micro social network. Shelly later explained that part of her decision to participate in my research was to gain more information about PLC program options; she is doing her best to learn and prepare for a more active management role but seems thankful that burden has not yet arrived. Often, there is an obligation and expectation to maintain property ownership as a family legacy. Carter (2017) explores the role of women landowners, particularly women inheriting land, as “placeholders” and “changemakers.” Placeholders are often people that inherit land for a short amount of time (waiting for younger generations to come of age), or are expected to continue the traditions and practices from previous generations (Carter 2017). Changemakers are individuals that claim their power as landowners and work to shift the generational norms and expectations (Carter 2017). In other words, changemakers shed the burden of expectation and embrace their own decision-making capabilities. In Shelly’s case, her mother has embraced and likely feels comfortable being a placeholder landowner. Her mother has continued managing the property the same way Shelly’s father managed it. Shelly and her siblings seem to understand that the management style should change and are doing their best to prepare for their opportunity as landowners and changemakers. Changemaker landowners may engage in alternative processes of knowledge creation and exchange outside typical dominant social networks (Carter 2017).

In contrast, Sally and her two friends, Sonny and Kelly, sought out landownership to be changemakers. In the 1990s, the trio bought a 300+ acre property for the explicit purpose of prairie restoration and conservation. Over the years, the property has grown to
over 700 acres and is a privately owned preserve. Although Sally and her friends contributed different monetary amounts to purchase and maintain the property, they decided the three co-owners needed to reach consensus when making management decisions:

“We thought about having a written agreement, it never happened. But our understanding was that we all had to agree on something before we did it...I can tell you, there were some knock-down, drag-outs. As we got to understand more, we weren't as good of “yes” people as [Sonny] would have liked, so that was interesting...It wasn't majority, we had to all agree on something.”

This agreement was not a requirement, but the three co-owners felt it was important to design a decision-making institution within their micro social network to establish equal power. This institution of consensus led to short-term conflicts as the group negotiated management actions, but ultimately benefitted the group in the long-term. Sonny passed away approximately five years ago, but Sally and Kelly still work closely with the Iowa Natural Heritage Foundation to manage the property. Land ownership stories like Maya’s, Shelly’s, and Sally’s reveal an embedded respect for the landowner as decision-maker. None of these women were the sole landowner of their property, they each had an extra layer of negotiation and communication to navigate before taking action on their properties (if they took any action at all). In each case, there is an obvious and pragmatic acknowledgement of this complexity and an understanding that the landowner or co-owner(s) deserve the opportunity to opine on management decisions.
Access to Resources

Resource availability within landowner micro social networks may be the most obvious barrier to participation in PLC programs. Lack of money, time, and knowledge can immediately exclude landowners from private lands conservation. Although many programs provide both technical and financial support, conservation projects often still require financial investment from landowners (Lute et al. 2018). Additionally, maintaining conservation projects and simply knowing how to maintain projects requires time and knowledge (Stroman, Kreuter, and Gan 2017). Without these resources, landowners may not be able to participate in PLC programs (Kretser et al. 2019; Ranjan et al. 2019).

Vicky and Vince are a wife and husband duo that were thrust into management of Vicky’s family property of 1400 acres after the unexpected death of her father. The property is mixed-use with some natural areas, pasture, and row crops. Vicky and Vince both have off-farm careers but rely on the income from grazing leases and row crop tenants to maintain the natural areas on the property. They are exhausted from managing numerous land users on the property while simultaneously trying to learn about their agricultural and conservation options. They are considering transitioning some of the pasture to a protected woodland status but are grappling with losing the grazing income.

Vicky: But the amount it will cost, about two to five thousand dollars a year...

Vince: Yeah, we'll have to forego that so there's an additional cost in making the decision to not have someone graze...

Vicky and Vince acknowledge the trade-off between losing the rental income and simplifying their management responsibilities. They are faced with an interesting
dilemma of what they value more: additional time and energy, or additional income. This lack of resources (both financial and energetic) limits their ability to consider any additional land ownership responsibilities and may inhibit any decision to participate in PLC programs.

Similarly, Paul, who is a landowner and has a career in natural resource management, recognizes that conservation often costs landowners money. Participating in conservation requires that farm fields are fallow and that the landowner sacrifice that potential crop production income.

“...also the financial side. If they're in production agriculture it doesn't make sense, they don't think it makes sense to implement these conservation practices because it's too costly... even if the government is helping.”

This quote highlights that sometimes the financial and technical support of PLC programs are not enough to inspire participation. Many landowners must consider their financial bottom line and depend on their acres for financial support.

In contrast, not participating in PLC programs is a luxury that people with secure financial backing can enjoy. Sally participated in PLC programs when she needed more financial and technical assistance to establish the prairie and restore the property. Now that the 700+ acres are co-managed with the Iowa Natural Heritage Foundation and there is a financial trust for the property, Sally doesn’t need to participate in PLC programs. She finds the process to be a hassle and feels confident that she has the resources to manage the property how she’d like.

“There are certainly people I know that are participating in these programs but I for one am staying away from them, because I can.
Sally subtly alludes to other challenges she has had participating in PLC programs in the past which will be highlighted later in the chapter. The property she manages is financially secure and the conservation goals are complete, so she simply does not need the support from PLC programs. Her lack of participation is intentional and indicative of her wealth of resources.

Within micro social networks, financial, energetic, and temporal resources can determine if a landowner chooses to participate in PLC programs. Sometimes there is a direct need to participate, other times landowners are sacrificing financial income to simplify their management responsibilities. Resource availability is an obvious barrier to implementing and administering PLC programs.

**Personal Goals and Motivations**

Like resource availability, personal goals and motivations for participating in conservation are well studied. Researchers often focus on identifying landowner typologies based on personal belief and value systems to help predict if landowners may participate in certain PLC programs (Collier, LaPorte, and Seawright 2012; Blanco, Brown, and Rounsevell 2015). The interviews I conducted revealed similarly varied and complex motivations and goals landowners have for their properties. Themes spanned time and space, linking ecological responsibility, familial obligation, and financial gains to help explain why people participate in private lands conservation.
Rose highlights a theme of future-thinking when she explains why she and her husband have participated in private lands conservation and continue to steward their two properties.

“We know what we want to do and we kind of have a feeling that at least one of the kids wants to keep this going. We've done things with the future in mind, it's not just a playground for us, it's an idea that this is something that needs to be perpetuated.

Rose and her husband take their roles as stewards very seriously and have strategically leveraged her husband’s knowledge of agricultural programs due to his career in agricultural banking to participate in myriad PLC programs. They now manage their properties with the hopes that their children will inherit and continue their vision.

Vicky’s motivations are related but represent the inheritor’s perspective. She shares a story of how the property was almost lost and reflects on what her inheritance means for the future.

“And then my grandpa, his first wife died very early, my father was fourteen when she died...and my grandfather lost the love of his life and couldn’t seem to cope. So, of course all the ladies in the community come sniffing around and he married one of them and it was terrible. When my grandfather died, she didn't follow the will because she didn't have to...the whole idea that it [the property] would be my dad's...she took it all and my dad had to buy it back. So, it's been purchased in two consecutive generations. I was a child watching my dad do this...We used to come out on the weekends and help with the weeding and the sowing of the brome and the terraces ...and to watch him work to buy it all back...Now that he's gone and my mother is still alive, she's in a nursing home, we reside here and it's our responsibility to manage it and take care of it and be stewards of it.”

Vicky is deeply motivated by a family obligation and responsibility to stewardship. There is an embedded expectation that the generation inheriting the property will do everything in their power to keep that property in the family. During our conversation, Vicky never
considered sub-dividing or selling the property to ease her and her husband’s responsibilities. Although they did not explicitly choose to be managers of 1400 acres of land in western Iowa, Vicky and Vince are embracing the legacy left by Vicky’s father and are willing to do the intellectual and physical work to maintain ownership of the property.

In contrast to Vicky, Vince, and Rose, Paul bought his property without a family legacy attached. He has a background in ecology and works in a natural resource management position. For him, the value of conservation is obvious and pursuing conservation on his property is personally fulfilling. Paul demonstrates how values and motivations can stack together and how conservation can satisfy many interests.

“So...with my background I'm looking at it from an ecological perspective but also from a perspective of how can I make a little bit of money on it. So I raise goats. I got goats originally to clear invasive species and open up the woods. And then I sell them and do some prescribed goat grazing with them. So that's a little side business I've got. But primarily I am trying to restore what was a degraded woodland savanna type setting.”

Paul plans on completing conservation projects on his property regardless of active participation in PLC programs. He identified his property as a hobby farm and inherently enjoys investing in the conservation and restoration of natural resources. As a bonus, Paul has found ways to ease any resource constraints by monetizing his goats for prescribed grazing.

The stories above illustrate how varied landowners’ motivations and goals are. For people inheriting land, motivations may be centered around family legacy and obligation, for others, there is joy and satisfaction in assembling the ecological puzzle that is conservation work. These goals and motivations clearly inspire curiosity about, if
not engagement in, PLC programs and may indicate types of landowner groups that are more likely to participate in these types of programs (Balukas, Bell, and Bauer 2019).

The examination of micro social networks has revealed a complex set of power dynamics and has reinforced previously identified barriers to participation. Each landowner or group of co-owners bears the responsibility of collecting management options, evaluating those options, negotiating decisions, executing the decision, and maintaining the results. For individuals like Rose who are retired, these responsibilities are manageable, but for others like Vicky and Vince who are still working, the responsibilities can be overwhelming. Any small change requires a cascade of conversations and negotiations which simply may be too much for some landowners to justify participating in PLC programs. Landowners also need to balance their personal resources with their goals and motivations for their property. For many landowners, participating in private lands conservation needs to make financial sense before they will engage in any programs.

While micro social networks are full of important decision-making institutions and offer numerous barriers to participation in PLC programs, they do not offer many opportunities for engaging in knowledge creation and exchange. Micro social networks are small and dense, focusing on an individual’s important relationships with other individuals. This means that landowners may not gain novel or new knowledge about PLC programs from their micro social networks. To examine processes of knowledge creation and exchange, we will explore meso social networks.
Meso Networks: Neighborhood and County Connections

Meso social networks represent a vast in-between where networks are larger than micro social networks but are smaller than macro social networks (Prajna, Savitha, and Ujwal 2013). Despite the nebulous categorical distinction, I found that meso social networks captured some of the more contentious and impactful relationships responsible for determining if landowners participate in private lands conservation. Landowners spatially near one another have a profound impact on each other’s day-to-day experiences. Neighbors can act as informal regulators, upholding institutions reflective of the political ideals and cultural norms of the region.

Meso networks also allow for dynamic spaces of knowledge creation and exchange. As mentioned in chapter two, relationships between neighbors and other members of the community are important partly because landscape and policy characteristics are similar (Tobler 1970). This means that landowners can easily relate and share information about land and resource management. Neighbors may discuss which programs were helpful, which agencies are easiest to work with, and can visit each other’s properties to see what a prairie, wetland, or oak savanna restoration looks like. The quality of these bonding ties can deeply influence if a landowner participates in PLC programs. High-quality bonding ties with neighbors may offer landowners a sense of belonging and bountiful opportunities to create and exchange knowledge. Low-quality or contentious bonding ties may perpetuate antiquated expectations, isolating landowners as placeholders (Carter 2017). Bridging ties complicate Tobler’s Law in the context of PLC program participation. Because knowledge of PLC programs is somewhat inconsistent across different landowner groups, individual landowners may depend on geographically
far away bridging ties to learn about private lands conservation opportunities. Bridging ties may also offer landowners validation and the knowledge they need to embrace their decision-making power and become changemakers (Carter 2017). This may be particularly important in situations where landowners feel isolated or regulated by their neighbors or local community, as explained below. While Tobler’s Law helps reinforce the idea that relationships with geographically close neighbors and community members are important because the resources and policies are similar, social network theory highlights the power of bridging ties to offer isolated landowners the opportunities to participate in processes of knowledge creation and exchange and to realize their decision-making power. In the following sections, I explore meso social network dynamics, highlighting the barriers and opportunities of bridging and bonding ties, near and far.

**Informal Regulation and Political Alignment**

Interestingly, some interviews revealed that landowners are interested in participating in PLC programs, but still haven’t because they feel inhibited or limited by the political alignment of their neighbors and community. In some counties in Iowa, and many other rural places across the United States, wildlife conservation is a progressive, liberal-leaning land use and is not how landowners should use such prime agricultural land. Vince and Vicky identified the national political leanings of their region and the widespread industrialized agriculture and livestock production as a barrier to connecting with their community. They are willing to participate in PLC programs but find it challenging to connect with other landowners that are in similar circumstances and share their values.
Vince: I will probably come off as political with this. You see where we live, it's northwest Iowa, so if you have any understanding about what northwest Iowa, northeast Nebraska, and southeast South Dakota is politically, that's a huge barrier....

Vicky: Yeah, it's Trump land.

Vince: It's Trump land. And if you can't row crop and can't put 20,000 freaking hogs in a building and can't make money and pump crap into the ground, and if you're against that, that's not helpful, you're not helpful, you're a barrier... and it's like "No, no. I'm just asking, the creek that runs through here... that you don't pump a bunch of junk into it."

Despite owning a large acreage, Vince and Vicky know that they do not want to participate in large scale conventional agriculture but feel pressured or criticized for the way they do use their land. Vince and Vicky feel like outsiders and are inhibited by these dynamics with their local agricultural community. They are from the region, are familiar with cultural norms but are excluded from agricultural networks because of how they use their property. It is clear that to some extent participating in conservation is a political act (Giannetta 2018). Conservation issues are often indicative of or help display farmers’ political leanings and values (Sweikert and Gigliotti 2019). How a landowner decides to manage their acres signals to neighbors what that landowner’s priorities, socioeconomic status, and individual values are.

Another example of neighborly contention comes from Maya. Maya has experienced numerous conflicts with neighbors because of her land use choices (converting row crops to prairie and oak savannah) and has experienced prejudices because of her race, gender, and sexuality. Maya shared that some of the hostile dynamics between neighbors are due to political leanings and politicized social beliefs.

“I would say that my other neighbors, one of the couples is a gay couple and I know they have had issues as well... they're male and
they're older so that helps probably but they have also had issues... The more liberal neighbors have also faced a lot of problems. I don't know because I haven’t asked them explicitly on a lot of stuff but I know there are not good feelings between them and a lot of the very conservative people which is most of them that are in that area...”

As Maya described these dynamics, I could sense that she was mentally mapping her neighborhood’s social network, sorting who was friend and who was foe. She revealed some of the network dynamics in which politically conservative people are in conflict with politically liberal people. Maya, Vince, and Vicky feel limited by the bonding ties available in their communities which, in part, prevents these landowners from learning about and participating in PLC programs.

Gary, a long-time conventional farmer who participates in myriad PLC programs through the Farm Bill has seen Iowa agriculture through many presidential administrations and has worked with many generations of federal and state conservation practitioners. Gary shared a pragmatic frustration of how political perceptions, whether a farmer or conservation practitioner identifies as Republican, or Democrat can influence whether PLC projects are completed.

“That's exactly right, they [Democrats and Republicans] don’t work together. One is just as crooked as the other... I'm not gonna say whether I'm Democrat or Republican, but I can tell you right now... when you put politics and you stick it into these government [agriculture and conservation] programs... farmers only have two years... depending on the political persuasion of the people doing the work, whether it [a conservation project] gets done or not.

Throughout our conversation, Gary shared many examples of how conflicting opinions between conservation practitioners and landowners influenced which landowners received financial and technical support for conservation projects. Despite his decades of experience, Gary is still frustrated at the way national political alignment can
impact a landowner’s willingness to connect in the agricultural and conservation communities.

Landowners often watch their neighbors and are uninhibited in providing feedback about how acres ought to be used and managed. People are protective of their lifestyle, their properties, their hobbies and can feel threatened when a new landowner moves into the area. Rose captured this sentiment well when she said:

“We've learned that when you move in, you lay low for a while until people figure out that you're ok.”

Private landowners have the right to exclude people and uses from their property, but without walls around their acres, landowners can be sure that their neighbors are watching. Maya had numerous interactions with her neighbors in which they tried to regulate her behavior on her property. Maya is a single, young, woman and a person of color. Her neighbors have aggressively pushed back on her requests for them to not trespass and have used intimidation tactics in an effort to dominate Maya.

“So I like to walk my dogs, and like I said there's a wooded area. My wooded area is actually connected to a larger wooded area that's relatively pristine ... it's good hunting ground is what I'm trying to say. And all my surrounding neighbors have these people who come out and hunt, like they allow a lot of hunters to come out and hunt. And my property is right up against theirs, two or three sides...and I like to walk my dogs on the property, didn't realize that was a problem for hunters until they started telling me all the time! Basically, that I can't be out here walking my dogs because I'm messing with their hunting activities... and they would be literally right on the property line, they would park right on the property line and set up their stands and blinds right on the line.”

“And two or three times, including one time I remember I was super sick with the flu and it was a blizzard with snow, and all these men drive up with their trucks and trailers and drive straight into, this was before the prairie was planted in so it was an empty field, and start
setting up blinds and getting ready to hunt... and I'm super sick and I have to throw on a coat and go out there and be like 'What are you doing?!' [They said,] 'Oh we have permission to hunt here...' I'm like, 'Really, from who, because it's me you need permission from.' and it was like seven big guys, they're all heavily armed and I'm just like one little person in a blizzard. That was another moment where I'm just like 'leave me alone' you don't just drive up on someone's property... and then he name dropped several of my neighbors as if they gave him permission...and I'm like if you're name-dropping multiple people, do you know whose property you're on? Clearly not! Please! ...There have been multiple times where I have felt extremely unsafe, like what can I really do? They did leave, but what could I do if they didn't?”

This narrative illustrates some of the influential and harmful power dynamics that exist within meso social networks. Although Maya is functionally the landowner and has every legal right to exclude people from using her property to hunt, the neighbor’s friends still felt entitled to question those rights and worked to manipulate Maya into submission. Maya shared that because of these interactions she was considering leaving the property and moving somewhere she felt more welcomed. Experiencing conflict and exclusion in your neighborhood can be a barrier to PLC program participation.

Vince, Vicky, and Maya experienced feelings of exclusion and unwelcome in their neighborhoods and communities. These negative experiences make engaging in processes of knowledge creation and exchange more challenging. In Maya’s case, she needed to shift her priority from managing the property to protecting her personal safety. Vince and Vicky are willing to participate in conservation programs but are relatively new land managers and find it hard to relate to other landowners because of political priorities. The relationships landowners have with their neighbors and local communities seem to influence how empowered an individual is to make decisions on their property.
Access to Knowledge

A landowner’s ability to connect with the conservation and agricultural communities largely indicates if they can engage in processes of knowledge creation and exchange, and therefore have access to PLC programs. In the previous chapter I identified some ways in which landowners access agricultural and conservation information including directly from conservation and agricultural organizations and agencies, from the internet, and by attending conferences and workshops, among other methods. This section discusses the value of formal spaces of knowledge creation and exchange and their influence on PLC program participation.

Ron teaches in higher education and is a lifelong Iowa resident. He is well connected and knows it. He sits on the board of conservation NGOs and is able to leverage his social networks to gain support and assistance with PLC projects without much effort. Ron is immersed in processes of knowledge creation and exchange and is able to navigate the agricultural and conservation networks easily because of his professional training.

“I'm in an enviable position in that this is my professional life as well. So I know very well the secretary of ag in Iowa... all of their division chiefs, all the way down to the local field staff... so I know everybody across the state and if I have an interest it's pretty easy for me to say "Hey I'm interested in this..." and people are, the staff are willing to help anybody out, so anyone who walks in the door, you know in Iowa the Soil and Water Conservation District staff and the NRCS [Natural Resource Conservation Service] staff are just fantastic across the state for helping people.”

This is a novel example of how meso social networks can function and is a useful reminder that conservation and agricultural networks are tight-knit and location-specific. Ron’s experiences with conservation practitioners and PLC programs have been positive;
he is able to connect and have his questions answered and participate in any program his property is eligible for. Ron’s experience is not the experience of all landowners, but it may be hard for Ron to remember that. If someone is new to the area or not professionally connected to these communities it may be challenging to establish ties to these social networks.

For example, Vince is relatively new to the identity of farmer and land manager. Vince has found it challenging to connect and find like-minded individuals in the conservation and agricultural communities in western Iowa, but he keeps trying.

“I say to them ‘Listen, I'm not a farmer, I'm not a conservationist because I don't have enough knowledge to classify myself as such, but I care. And I'm thankful.’ But that's all we have. So the way this is structured, this space, we're kind of "othered" by farmers in the area and we also don't know quite enough...[our neighbors] come from a different space and so they are part of lots of different conservation organizations.”

The conservation community that Vince has tried to connect with include people who are retired, wealthy, and have different personal resources compared to Vince and Vicky. Vince acknowledges the disconnects with the communities he’s “supposed” to connect with and expresses frustration at not being able to find the kind of education he is seeking. These informal processes of knowledge creation and exchange between landowners and conservation and agricultural communities are important for educating new and inexperienced landowners about their programmatic options. More formal educational processes can also impact a landowner’s perception and knowledge of PLC programs.

Throughout our conversation, Rose mentions interesting and sometimes challenging co-management dynamics between her husband and his brother. When their
parents retired, the two siblings decided to purchase and split the family farm. Rose’s husband is proactive and highly engaged in the conservation community and has utilized numerous PLC programs. Rose’s brother-in-law is deeply skeptical of PLC programs and is extremely apprehensive to implement conservation practices, even with family encouragement. I asked Rose why there was such a difference in perceptions between the two siblings:

“Short answer is education. [My husband] is a graduate of Iowa State University in ag sciences... And my brother-in-law went to high school and that's it and has stayed on the farm all of his life and has never really attempted to learn anything more than what he's needed to learn. He's had ten or twelve different jobs in his life, truck driving and things like that, but has never even gone to community college and has just eked by to make a living and just doesn't have the educational equivalent to understand he needs to go look for this information about this and get some ideas. Both of us are college graduates and I think that makes a big difference.”

Between these two siblings, education and access to knowledge about conservation and agricultural practices have deeply influenced which sibling participates in PLC programs and which does not. Similarly, nearly all (92%) of the individuals who participated in a follow-up interview have a bachelor’s degree or higher; this suggests that some people who participate in PLC may already have access to processes of knowledge creation and exchange in the form of higher education.

Carl spent his career as a botany professor for a community college in the Chicago suburbs and has devoted his retirement to conserving and protecting over 300 acres in the Loess Hills region in northwest Iowa. During our conversation, Carl shared a career’s worth of networking stories based in Illinois and quite simply explains how he transferred those skills to Iowa when he and his wife retired to their 300+ acres.
“Well as soon as I got here, I made contacts with the County Conservation Board... But anyhow, I sought them out and became friends with them.”

Carl knew the institutional network of the conservation community and knew who to contact and ask for help. He was familiar with the national and state agencies and already understood how they function. He also spent years volunteering and providing valuable labor to organizations and agencies before needing assistance himself.

Education and access to knowledge about PLC programs is a well-established barrier to participation (Gustafsson, Wolf, and Agrawal 2017; Barnes, Mbaru, and Muthiga 2019). Landowners that have the opportunity to learn about the formal institutions and technical possibilities of private lands conservation may be better able to connect with the conservation communities and enroll in PLC programs.

**Mentorship**

My research reveals evidence that mentorship relationships exist in both the agricultural and conservation communities. When these relationships are present, participation in PLC programs is more accessible. Gary, the conventional farmer reveals the value of mentorship between agricultural producers.

“Everybody should have a mentor and if you have a mentor it should be someone that is successful...not someone that's not makin' it...when you see successful people and they're buying more farms... people know right away... you know right away when people are profitable.”

Gary was the first participant to mention processes of informal mentorship in the agricultural community. I asked Gary how mentors and mentees find each other, how these relationships are formed. Gary alludes to the fact that mentees are responsible for approaching established, “successful” farmers, asking questions, and getting the
information they need. This means that to participate in a mentor/mentee relationship, the person with less knowledge must embrace vulnerability and stay engaged in the local network of landowners to participate.

Gary goes on to suggest that PLC programs are adopted and implemented because of these mentorship relationships. Younger and newer landowners are watching more established landowners and are trying to participate in processes of knowledge creation and exchange.

“The other way is a program will be implemented by a successful farmer, like me, and then somebody else that's struggling, or somebody that's young, or somebody that wants to know will come to me and say, 'Why did you do that... is that profitable? How come you went with that program?' In farming, just like the rest of the world, you don't mimic someone going broke, you mimic somebody that's successful.”

It is unclear how young or new landowners identify or seek out a mentor landowner, but this type of relationship seems extremely valuable when attempting to navigate the complexities of PLC programs and decide where to spend valuable personal resources. After speaking with Gary, I started asking participants about their experiences and observations of mentorship relationships within their own social networks. I found evidence that mentorship relationships are present in the conservation community when Sally shared her story of becoming accidental mentor to her daughter’s friend. Sally has embraced the role, helping this younger landowner achieve her goals for her property.

“Well, the people that I'm aware of seem to get pretty good assistance in my local area, in southeast Iowa. I have a friend, here's a cool story... She was a friend and is a friend of my daughter and I took them out there [to the property] exploring and camping when they were young. They are now 36. And this young woman who is a science teacher in high school came into her inheritance early ... And she called me... and told me that what she, I'll try not to cry here, what she
wanted to do with her inheritance was similar to what I had done. She wanted to find a piece of property to restore. And I have to tell you, of all the things that have happened because of this project, that is one of the, one of the most amazing, and the one I’m most proud of. So, I connected her, she is very smart and could have figured this out for herself, but I short circuited and connected her to a bunch of people I knew who could help her with this.”

These processes of knowledge creation and exchange through mentorship seem socially embedded in the agricultural and conservation networks. There is an understanding that young landowners ought to reach out to more experienced landowners for assistance and access to these networks. Sally is well-connected and has been immersed in the conservation community for decades. She suggests that southeast Iowa has a well-established network of knowledge creation and exchange in the conservation community. Sally continues:

“So there's an informal network of people helping people do this sort of thing, at least in this part of the state, in southeast Iowa, and I'm guessing in the rest of the state too. And sharing experiences and what works and what doesn't work with which organizations and which ones to stay clear of and you know what I mean? There's a casual, informal network of help for people who are trying to do this and Iowa Natural Heritage Foundation of course is very free with their assistance, even if it has nothing to do with a conservation easement or donation or anything, they are very good about helping people do what they want to do as far as conservation and preservation of their property.”

It is clear these mentorship relationships are important and present in both the agricultural and conservation communities. There is also some evidence that this practice of more established landowners assisting younger landowners may be socially embedded and shaping how some landowners relate to each other.

In contrast, other participants shared the observation that, although they were willing and interested in participating in mentorship relationships, they were not sure how
to cultivate them. For example, Rose is an established landowner that has been participating in PLC programs for decades, she expresses willingness to mentor younger landowners but doesn’t know where to find them.

“So, we haven't encountered many young people yet in terms of being able to do anything for them...I'm hoping at some point, through church maybe, we can make that happen, but we'll see. We're some of the younger people in church right now and we're in our 70s, I don't know where the young people are anymore, but maybe that'll show up down the road.”

The social networks of older landowners do not seem as closely connected to the social networks of younger landowners as they once were. Historically, rural families have passed knowledge and property to younger generations (Lobao and Meyer 2001; Pilgeram and Amos 2015). A tradition of mentorship is deeply rooted in agricultural communities (Lobao and Meyer 2001; Pilgeram and Amos 2015). Because of land ownership and land use changes in the last fifty years, the process of creating and exchanging knowledge from elder to younger landowners has ruptured.

Maya is a young landowner without many community ties. She feels isolated because her landownership priorities do not align with most of the surrounding landowners and has experienced conflict with neighbors.

“If I had more support in the community and more like-minded people... just to help me out more... as far as having farmer friends, it's not the same sense of community that you see all these other farmers having, where they all help each other out and all know each other and you know it's all great...but if it was a different type of people I would definitely be agreeable to it..”

When I asked Maya about her experiences and observations of mentorship relationships among landowners, she expressed that those relationships didn’t feel like
they were for her. She indicated that she has observed landowner mentorship relationships but that she didn’t fit in or belong in the same network and thus was excluded from it. This succinctly highlights the importance of bridging ties for landowners like Maya. The geographically close landowners inhibit and limit Maya’s participation in PLC programs. She craves connection and guidance but doesn’t know where to find it. Maya’s experiences mimic Rose’s, both women are willing and interested in participating in mentorship but do not know how to find each other.

Vince and Vicky were thrust into land management more quickly than anticipated. Vince shared:

“*We kinda moved out here under the premise that we would have the opportunity to learn from Bob, from her dad, and over time. But we were only here for three years, and then he died.*”

Vince and Vicky intended to continue the tradition of mentorship but their mentor passed away before they could learn everything they needed to and are left with all of the responsibility and not enough tools to make decisions.

Meso social networks are important spaces of knowledge creation and exchange. This research found that meso social networks are sources of both contention and opportunity. Many landowners experienced conflict with and exclusion from their neighbors. Additionally, political alignment made some landowners feel a sense of isolation and like they didn’t deserve to be part of agricultural and conservation conversations. Access to knowledge creation and exchange can impact landowner’s perceptions of PLC programs. Mentorship relationships are socially embedded in the Iowa landowner networks but not all landowners seem to have equal access to this practice. Meso social networks offer opportunity for deep social connection and may
assist in the education of young or new landowners, making them more aware of PLC programs.

Macro Networks

Institutional Barriers

To some extent, macro social networks align with formal institutions; both can explore political processes, regulatory mechanisms, and social connection at large scales. Since many PLC programs are administered at a federal or state level, it is important to acknowledge the barriers associated with these macro social networks.

Sally shared a story about participating in PLC programs previously but ultimately deciding the financial assistance was not worth the administrative hassle.

There are frequent informational disconnects because conservation practitioners change jobs, which results in ruptures in social network communications that are frustrating to landowners and long-time PLC program participants.

“Oh yeah, that's part of the problem...about the time we get the agent [conservation practitioner] to understand that what we really care about is the land and they can trust us, they retire, or they move... the first one we had was really easy to work with and he understood what we were doing and he trusted us. The second one, man, she was hard as nails. Oh my god. And very suspicious... you know like we're trying to get away with something. Finally, we got to the point where I could tell her attitude had changed and then she left. So, then this third one was when they had changed everything and they wanted us to do this and that and the other and I thought 'You know, I just don't have the patience to train another agent' so that's when we pulled out.”

Sally jokes that she “doesn’t have the patience” to train another conservation practitioner and cites that informal responsibility as one of the reasons she no longer participates in PLC programs. Although she shared the story in jest, Sally’s story touches
on an important and fatiguing reality of these macro networks. When a conservation practitioner leaves a position, their skills, priorities, and work style leave with them. All the work landowners and practitioners do to build their social network evaporates and landowners must begin anew with a new practitioner. These shifts within conservation organizations and agencies can change how PLC program policies are interpreted, which impacts which projects are eligible for programs, and ultimately which landowners have access to PLC programs.

Rose shared a similar narrative of frustration when she reflected on a situation between her husband, her brother-in-law and an NRCS employee.

“My husband is trying to convince [my brother-in-law] that the crop he puts in that particular field isn’t netting him any profit because it’s not producing enough corn to pay the expenses for putting it in... And then when you finally convince him to [put in the buffer strip] and the government comes out and says you need to rip it out [because] it’s not exactly in the right place...it’s like ‘damn, we planted all this buffer strip, leave it alone and maybe it’ll creep into the corn field next year.’ I think if some of the government people would actually come out and see that they can trust these farmers to do these things even if it’s not exactly how it’s supposed to look on paper, it’s working, have a little flexibility.”

Miscommunications and this lack of trust indicate ruptures in the social network. Rose and Sally experienced situations in which conservation practitioners, who have immense power in the distribution of financial and technical resources, challenged or doubted the landowner’s intentions. These moments of mistrust seem to be particularly frustrating since both women were well-versed in the requirements of the programs.

Changes in Rural Life and Gendered Expectations

As discussed in Chapter One, rural life is drastically different compared to fifty years ago. The 1980s farm crisis disrupted socially embedded traditions of farm
succession and pushed many rural families to the cities to seek better employment (Eisenberg 2018). Children and young adults of the farm crisis largely did not pursue farming and opted for non-agricultural careers (Madison and Davidson 1997). Now, those children are adults and are inheriting the family farm, an increasing number of which are women (Eells and Soulis 2013; Carter 2017, 2019; Harcourt 2017). There are more absentee landowners, non-operating landowners, and landowners that simply are not connected to the acres they own (Petzelka, Ma, and Malin 2013; Carter 2017). In short, there are a variety of landowners that do not realize their power as landowners and are not connected to the local social networks. To borrow from Carter (2017), many landowners inheriting land are currently acting as placeholders by continuing management as expected, and may also be changemakers-in-waiting, taking time to learn and build their social networks before unveiling drastic change. At the end of our interview, Vicky added:

“The other barrier and maybe you've encountered this, is to be female. Because I don't know shit, you know... I teach, so in the summers I'm supposed to be the head of this whole [property] thing and be part of the 'cow guy' discussion and the row crops and all this... well, this isn't the face of farming expertise...that's the face of farming expertise...”

Vicky explains that she is responsible for property management conversations in the summer but that she doesn’t have “the face of farming expertise” but her husband does. Vince goes on to share how ironic it is that people assume he’s a farmer because “I don’t know anything!” Both Vicky and Vince are exasperated by this dynamic and call out this sexism as a main barrier to participating in private lands conservation. Women landowners still experience gendered expectations to be placeholders until their male
counterpart(s) can “take over” and often are not given the same respect as male landowners (Carter 2017, 2019).

Rose expressed subtle and gentle exclusion when she talked about her gendered landowner experience:

“I just learned I need to let my husband handle some of this stuff because I don’t have any credibility in terms of my sex with what’s going on here. It’s provincial. It takes some patience. I guess if I’m supportive of him, it helps out, indirectly. I’m too old to fight the fight.”

Rose sounds fatigued as she says this, in a way that signals “well, that’s just the way it is…” Throughout my interviews with women, young landowners, and non-farmers a common theme arrived: a sense that PLC programs, and agricultural and conservation communities are not for them.

Throughout the interviews, it became clear that the women experienced agricultural and conservation communities differently than men. Women indicated that it was challenging to find someone to answer their questions or take them seriously as landowners and decision-makers. This may be, in part, due to socially embedded ideas about gender roles and power in agricultural communities. As Carter (2017) explains, women were excluded from sole landownership both socially and institutionally. Women have only recently been allowed to be changemakers, to embrace their power as decision-makers. Gendered expectations persist today. Examples like those offered by Rose and Vicky indicate at least gentle exclusion from processes of knowledge creation and exchange because of gender which may prevent female landowners from learning about PLC programs, and therefore participating in them.
The interviews also provided evidence that women may create alternative social networks and help each other outside of typical, dominant social networks. For example, as mentioned in the mentorship section above, Sally shared a story of mentoring a young woman who wanted to devote all of her acres to conservation. Sally helped connect her mentee to helpful programs and people to expedite the private lands conservation process. They have established an alternative social network in which women can create and exchange knowledge about PLC programs and land management broadly. Collectively, these women are rejecting the typical, socially embedded norms of how a landowner is expected to behave and are embracing their power as decision-makers and changemakers.

It is likely that other non-dominant landowner groups experience exclusion and engage in alternative social networks to create and exchange knowledge about land management. The demographics of landowners and land tenure dynamics are changing. Identifying the priorities of these landowners and understanding how and where they participate in processes of knowledge creation and exchange is vital to equitable distribution of PLC program resources.
Chapter 6: Contributions and Conclusion

Exploring the social networks of Iowa landowners is important for private lands conservation in practice, as well as for policy development and implementation (Mazé, Calabuig Domenech, and Goldringer 2021; van Ewijk and Ros-Tonen 2021). Federal agencies have a responsibility to distribute technical and financial resources equitably and ought to evaluate how these resources are administered, and to whom. This research revealed that micro, meso and macro scale social networks hold different barriers to and opportunities for PLC program participation. Identifying where landowners learn about PLC programs, how landowners decide to participate in PLC programs, and what the barriers to participation may be are important first steps in understanding how private lands conservation resources are distributed. This research helps create the capacity for implementing more inclusive policies and practices by examining how access to processes of knowledge creation and exchange differs across landowner groups, revealing how meso social network relationships offer opportunity for actionable change, and revealing how changes in land tenure over the last fifty years has complicated identifying who has the power to make land management decisions.

Carter (2017; 2019) extensively explores how gendered expectations impact women’s ability to manage their property as they like. She explains two main roles for women landowners, that of the “placeholder” and the “changemaker” (Carter 2017). While placeholders are more compelled (either by convention or choice) to maintain the status quo in their management decisions, changemakers shed the burden of expectation and embrace their decision-making powers. Carter finds that changemakers often depend on alternative social networks to participate in processes of knowledge creation and
exchange. Many women that I spoke with shared a narrative of gentle exclusion from conservation and agricultural communities. They were not taken seriously or were not valued as knowledgeable actors in these social networks. For these women landowners and other non-dominant landowner groups, access to alternative networks may influence their ability to learn about and therefore participate in PLC programs. Relatedly, the conventions and socially embedded ideals of a landowner’s meso social networks can influence if landowners are included or excluded from processes of knowledge creation and exchange.

Land and resource management are socially embedded processes in which landowners’ behaviors are influenced by their relationships with other people. Interview participants revealed a variety of socially embedded conventions and expectations that are indicative of a long agricultural tradition in Iowa and influence how landowners behave and interact with their property (Lin and Kede 2011; Strauser et al. 2019). One socially embedded convention is that the landowner deserves the opportunity to be the final decision-maker. Maya, Shelly, and Sally shared interesting governance solutions to the challenges of co-ownership and management. There is an embedded understanding that the individuals that co-own land ought to have power in making land management decisions. Similarly, there is an expectation that individuals inheriting land will do everything in their power to maintain ownership of that property and perpetuate the family legacy, as we saw with Vince and Vicky. Practices of mentorship are also socially embedded in conservation and agricultural communities. Landowners that are more experienced offer advice and participate in a knowledge exchange with new or young landowners, as Gary explained. Mentorship relationships are vital to help landowners
learn about PLC programs. Participation in socially embedded conventions can reflect which social networks a landowner has access to and how a landowner is ideologically aligned.

Each social network scale poses different barriers and opportunities to conservation program participation. This research found that micro social network dynamics such as complex land tenure situations and lack of financial resources can prevent landowners from participating in PLC programs. Conservation practitioners can leverage landowners’ personal goals and motivations, like an appreciation for biodiversity or prioritizing family legacy, to administer PLC programs. Macro social networks revealed institutional barriers, like high rates of turnover in government agencies, and gendered expectations of landowners can influence which landowners participate in PLC programs. Because macro social networks encompass a large-scale and are relatively rigid, there are fewer opportunities for immediate change. Landowners and conservation practitioners can find ways to cope with or work around the barriers found in macro social networks. For example, women landowners are increasingly creating their own processes of knowledge creation and exchange in response to being excluded from typical conservation and agricultural networks (Carter 2017). In contrast to micro and macro social networks which represent well-documented barriers to PLC program participation, I found that meso social networks revealed some of the more contentious and impactful relationships responsible for determining if landowners participate in PLC programs. Barriers like conflict with neighbors, lack of belonging because of political affiliation, and limited access to processes of knowledge creation and exchange can discourage participation and distract from PLC program opportunities.
Interestingly, these barriers can be addressed by investing in socially embedded meso social network dynamics like mentorship relationships. PLC program participation may also be improved by leveraging alternative social networks in which non-dominant landowner groups participate in processes of knowledge creation and exchange outside of typical social networks. While micro and macro social network dynamics are relatively fixed, meso social networks are ripe with opportunity to increase community connection, and feelings of belonging which will likely improve participation in PLC programs.

Throughout this document, I explore how land ownership and tenure has changed and is changing in Iowa. Because of the 1980s Farm Crisis, many rural landowners were driven to urban areas and higher education to find work. This disrupted traditional, embedded processes of knowledge creation and exchange within farm families, which has had lasting and cascading impacts on the structures of rural social networks. The initial exodus left the children of the Farm Crisis largely disconnected from their family’s legacy and rural social networks (Madison and Davidson 1997; Eisenberg 2018). Now, the children of the Farm Crisis are inheriting their family properties. These landowners have full, non-farm lives, careers, and obligations to balance with their newfound responsibility of landownership. These landowners are often absentee landowners (Petrzelka, Ma, and Malin 2013), increasingly are women (Eells and Soulis 2013; Carter 2017, 2019), and have different priorities and needs compared to prior generations of rural landowners. Because they are less dependent on their farmable acres for income, these landowners are willing to reimagine how their properties function. As Vince and Vicky explained, their management plates are full and they need participation in PLC programs to be the easiest choice, the most convenient way to manage their acres. These
needs are different than those of dominant, typical landowners that may depend more heavily on the financial bottom line to determine whether they can participate in PLC programs. Furthermore, the number of non-dominant landowners is increasing and conservation practitioners need to consider if and how non-dominant landowner groups differ from dominant landowner groups to ensure equitable distribution of private lands conservation resources.

Understanding the barriers and opportunities present at each social network scale provides context for why landowners do or do not participate in PLC programs. This research may (1) inspire conservation practitioners to reimagine their own professional social networks and deliver conservation resources in a more equitable way, (2) help alleviate barriers and identify opportunities to encourage PLC program participation, especially within meso social networks; (3) lead to an initiative of community building and support for landowners that are interested in PLC programs but may not be connected to typical conservation and agricultural social networks.

Limitations

This study engaged a relatively small sample size of highly educated landowners, creating inevitable limitations with the results. Additionally, the small sample size limited the types of statistical analysis I was able to perform. One goal of the study was to reach non-dominant landowners. While I achieved that goal to an extent and was able to have a fairly equitable distribution of men and women, I did not reach many non-white landowners. Similarly, because of the recruitment methodology, the questionnaire engaged individuals already at generally aware of conservation and agricultural communities in Iowa. While I did reach some individuals that provided novel
perspectives, there are additional landowner groups that ought to be included in this inquiry. Early recruitment strategies included a larger partnership with Iowa conservation practitioners to engage landowners that had participated in specific PLC programs. Due to a lengthy approval process required by the conservation agency, recruitment and the partnership had to be adjusted.

Policy Recommendations

This study identifies several opportunities for improving PLC programs. First, agencies could begin by administering PLC program educational materials (especially names of conservation practitioners and their contact information) to county level conservation and agricultural organizations to distribute to their constituents. In Iowa, the County Conservation Boards may be a useful entity for distributing relevant PLC program information.

Second, agencies should shift focus away from identifying and appealing to individual landowner motivations, and towards engaging with and understanding their local meso social networks. Landowners’ relationships with other landowners and identifying processes of knowledge creation and exchange may be more useful in administering PLC programs. Third, landowners that are inheriting their acres are looking for ways to hold on to their family farms while transitioning to lower maintenance land uses. This need and desire can be leveraged to strategically deliver more conservation resources to the landscape. These landowners are not always engaged proactively in land management but are curious about their options and are willing to think creatively about land and resource management. Finally, access to formal education seems to increase landowners’ valuation of conservation broadly; conservation practitioners could develop
a youth program that helps expose children to conservation and native landscapes to bolster the embeddedness of stewardship and private lands conservation. Overall, understanding some of the complexities and barriers that landowners face within their social networks could encourage conservation practitioners to provide assistance to landowners in new or novel ways.

Future Research

Conservation practitioners hold vast power in administering PLC programs and may be a determining factor of who participates and which projects are completed (Lute et al. 2018). In my project, conservation practitioners are not included as a subject position or participant group. In the future, research on how conservation practitioners make decisions and administer PLC programs would complement this research project and help the field understand how practitioners interact with landowner social networks.
Appendices
Appendix A: Abbreviations List

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<thead>
<tr>
<th>Abbreviation</th>
<th>Name/Meaning</th>
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<tr>
<td>CCB</td>
<td>County Conservation Board</td>
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<td>CRP</td>
<td>Conservation Reserve Program</td>
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<td>FSA</td>
<td>Farm Service Agency</td>
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<td>INHF</td>
<td>Iowa Natural Heritage Foundation</td>
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<td>NGO</td>
<td>Non-Governmental Organization</td>
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<td>NRCS</td>
<td>Natural Resource Conservation Service</td>
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<td>PLC</td>
<td>Private Lands Conservation</td>
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<td>SWCD</td>
<td>Soil and Water Conservation District</td>
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<td>TNC</td>
<td>The Nature Conservancy</td>
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<td>USFWS</td>
<td>U.S. Fish and Wildlife Service</td>
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<tr>
<td>ACEP-WRP</td>
<td>Agricultural Conservation Easement Program-Wetland Reserve Easement</td>
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Appendix B: Questionnaire Instrument

Below are the questions included in the internet questionnaire.

Section 1: Consent and Screening Question

1. Do you consent to participate in the study?
   a. Yes
   b. No

   [If no, the participant will be led to a page to submit the questionnaire and will not be included in the study.]

2. Do you own land in Iowa?
   a. Yes
   b. No

   [If no, the participant will be led to a page to submit the questionnaire and will not be included in the study.]

Section 2: Private Lands Conservation Programs

This study is interested in landowner perspectives and participation in wildlife conservation. **Wildlife conservation includes actions to protect, build or restore habitat for plant and animal species.** Some examples of wildlife conservation in Iowa include restoring a wetland for migratory birds, planting a prairie for pollinators, and protecting an established forest for bat species.

Organizations and government agencies often host private lands conservation programs that provide financial and technical assistance to land owners to complete wildlife conservation on their property(ies).

3. How familiar with private lands conservation programs are you?
   [Likert scale, 1-5-- 1: not at all familiar, 2: slightly familiar, 3: somewhat familiar, 4: moderately familiar, 5: extremely familiar.]

4. Have you participated in the U.S. Fish and Wildlife Service’s Partners for Fish and Wildlife Program?
   a. Yes
   b. No

   [If “yes”, participants will be taken to questions 14-20 If “no”, participants will be taken to questions 5-13.]

Section 3: Has Not Participated in the Partners for Fish and Wildlife Program

5. Had you heard about the U.S. Fish and Wildlife Service’s Partners for Fish and Wildlife program prior to taking this survey?
   a. Yes
   b. No
6. **If yes, where did you hear about the program?**
   a. Friend
   b. Family
   c. Neighbor
   d. Co-worker
   e. Community Event
   f. Online via an email newsletter
   g. Online, general
   h. At a field office or agency office
   i. Other

7. **Have you participated in any private lands conservation programs on your property?**
   a. Yes
   b. No
   c. Unsure

   [If “yes” participant will answer questions 8-10 before continuing to question 11. If “no” or “unsure” participant will skip to question 11.]

8. **Which private lands conservation program(s) have you participated in?**
   Check all that apply.
   a. USDA, Farm Bill Programs
   b. Non-Profit/Non-governmental Organizations (Ex. Ducks Unlimited, Bird and Butterfly Habitat Fund, Iowa Natural Heritage Foundation)
   c. State Agency (Ex. Iowa Department of Agriculture and Land Stewardship, Iowa Department of Natural Resources)
   d. I have not participated in any conservation program(s)
   e. Other, please list

9. **Instead of completing a project by yourself, why did you participate in a private lands conservation program?** Check all that apply.
   a. Financial Assistance
   b. Technical Assistance
   c. To build relationships or connect with my community
   d. Other, please list

10. **To what extent do the following motivate you to participate in the private lands conservation program(s)?**
    [This is a multiple choice grid. Participants will select: (1) not at all important, (2) low importance, (3) neutral, (4) moderately important, (5) extremely important for the following statements]
    a. Improves my ability to hunt or fish
    b. Improves my ability to see wildlife
    c. Good for the environment/wildlife
    d. Conservation programs help me financially
    e. Conservation programs help me build and leave a legacy
    f. Other, please list

11. **Are you interested in participating in private lands conservation programs in the future?**
    a. Yes
b. No

12. Why or why not?
[Short answer question, participant will type in their answer]

13. Please rate how important the following statements are for you when making land use and management decisions:
[This is a multiple choice grid. Participants will select: (1) not at all important, (2) low importance, (3) neutral, (4) moderately important (5) extremely important for the following statements:]
   a. I want to hunt and/or fish on my property
   b. I want to see a variety of wildlife on my property
   c. I want to manage my property in an environmentally responsible way
   d. I want to make land use decisions that benefit me financially
   e. I want to build and leave a legacy
   f. I want to grow food and support my community
   g. Other, please list

Section 4: Has Participated in the Partners for Fish and Wildlife Program

14. Where did you learn about the Partners for Fish and Wildlife program?
   a. Friend
   b. Family
   c. Neighbor
   d. Co-worker
   e. Community Event
   f. Online via an email newsletter
   g. Online, general
   h. At a field office or agency office (Ex. USDA field office)
   i. Other

15. Instead of completing a project by yourself, why did you participate in the U.S. Fish and Wildlife Service Partners for Fish and Wildlife program?
   a. Financial Assistance
   b. Technical Assistance
   c. To build relationships or connect with my community
   d. Other, please list

16. To what extent do the following motivate you to participate in the Partners for Fish and Wildlife program?
[This is a multiple choice grid. Participants will select: (1) not at all important, (2) low importance, (3) neutral, (4) moderately important, (5) extremely important for the following statements]
   a. Improves my ability to hunt or fish
   b. Improves my ability to see wildlife
   c. Good for the environment/wildlife
   d. Conservation programs help me financially
   e. Conservation programs help me build and leave a legacy
   f. Other, please list
17. Overall, how satisfied are you with the following aspects of the Partners Program?  
[This is a multiple choice grid. Participants will select (1) Extremely Dissatisfied, (2) Slightly Dissatisfied, (3) Neither Dissatisfied nor Satisfied, (4) Slightly Satisfied, (5) Extremely Satisfied for the following aspects:]  
   a. Staff  
   b. Policies  
   c. Terms of Agreement  
   d. Cost-share Arrangement  
   e. Technical Assistance  
   f. Ability to manage property under the terms of agreement

18. Overall, how satisfied are you with your experience working with the Partners Program?  
   a. Extremely Dissatisfied  
   b. Slightly Dissatisfied  
   c. Neither Dissatisfied nor Satisfied  
   d. Slightly Satisfied  
   e. Extremely Satisfied

19. Are there additional private lands conservation programs you have participated in on your property?  
   a. Yes  
   b. No  
   c. Not sure

20. If yes, which program(s) have you participated in? Check all that apply.  
   a. USDA, Farm Bill Programs  
   b. Non-Profit/Non-governmental Organizations (Ex. Ducks Unlimited, Bird and Butterfly Habitat Fund, Iowa Natural Heritage Foundation)  
   c. State Agency (Ex. Iowa Department of Agriculture and Land Stewardship, Iowa Department of Natural Resources)  
   d. I have not participated in any conservation program(s)  
   e. Other, please list

Section 5: Connecting to Private Lands Conservation Programs

21. Do you have a personal or professional contact with conservation related agencies or organizations? (Examples: U.S. Fish and Wildlife Service, Soil and Water Conservation District, Iowa Natural Heritage Foundation, etc.)  
   a. Yes  
   b. No  
   c. Unsure

22. Independent of private lands conservation programs, do you do wildlife conservation on your property (new projects, invasive species/weed control, maintenance and monitoring of native landscapes, etc.)?  
   a. Yes  
   b. No  
   c. Unsure
23. Briefly describe your experience(s) with wildlife conservation on your property.
   [Short answer question, participant will type in their answer]

24. Where do you learn about wildlife conservation projects and programs?
   a. Online
   b. From friends, family, neighbors
   c. At work
   d. From conservation organizations directly
   e. Other______________

25. Where are some places where you connect with your community? Or what types of groups are you part of? (Mark all that apply.)
   a. Church or religious group
   b. Outdoor recreation or nature enthusiast group (Ex. Pheasants Forever, Sierra Club)
   c. School or youth groups (Ex. 4H, Future Farmers of America)
   d. Farmer or agricultural group
   e. Business Association (Ex. Farm Bureau)
   f. Other, please list

26. To what extent do you agree or disagree with the following statements?:
   [This is a multiple choice grid. Participants will select (1) strongly disagree, (2) disagree, (3) neither disagree or agree, (4) agree, (5) strongly agree for the following aspects:]
   a. The goals of private lands conservation programs do not match what I want to do on my property(ies)
   b. Wildlife conservation is not a priority for me
   c. Wildlife conservation is not a priority for the people I co-own and/or co-manage land with
   d. I generally do not like working with government agencies
   e. Private lands conservation programs have too many rules and regulations
   f. Enrolling in private lands conservation programs is too much work.

27. Please explain any other challenges or barriers that may prevent you from participating in a private lands conservation program:
   [Short answer question, participant will type in their answer]

Section 6: Land Tenure and Use

The researchers realize that people may own and manage many separate parcels of land across Iowa. Please consider all parcels while answering the following questions. You may answer generally, we understand some nuance or detail may not be captured by the questions.

28. How do you use your property(ies)? Mark all that apply.
   a. Agricultural: Row crop or livestock
   b. Residential: You or others live on the property
c. Recreational: Hunting, seasonal/occasional use
d. Hobby Farm: Grow food and/or raise animals but not for profit
e. Other____________________

29. How many acres do you own and/or manage?
   a. Less than 10 acres
   b. 10-49 acres
   c. 50-249 acres
   d. 250-499 acres
   e. 500-999 acres
   f. 1000 or more acres

30. How many parcels/properties do you own and/or manage?
   a. 1
   b. 2 to 10
   c. 10 to 20
   d. More than 20

31. Does someone live on the property(ies)?
   a. Yes, full-time
   b. Yes, part-time (3-6 months out of the year)
   c. Yes, occasionally (less than 3 months out of the year)
   d. No

32. Are any of the acres rented or leased to other land users?
   a. Yes
   b. No
   c. Not currently, but acres have been rented or leased in the past.

33. Are any of the acres co-owned or managed with other people?
   d. Yes
   e. No

   [If “yes”, participants will be taken to question 34. If “no”, participants will be
taken to question 35]

34. Who co-owns or manages the acres with you?
   a. Family Member
   b. Neighbor
   c. Business Partner
   d. Friend
   e. Other____________________

35. Are you the primary decision-maker for land management decisions?
   a. Yes
   b. No.
   c. It’s complicated.

   [If “yes”, participants will be taken to question 37. If “no” or “it’s complicated”,
participants will be taken to question 36.]

36. Briefly describe how land use and land management decisions are made. For example, who is involved in making decisions?
Section 7: Personal Information

37. How old are you?
   a. 18-25
   b. 26-35
   c. 36-45
   d. 46-55
   e. 56-65
   f. 66-75
   g. 76 and older

38. What gender do you identify as?
   a. Male
   b. Female
   c. Non-binary
   d. Prefer not to say

39. What is your race/ethnicity? Mark all that apply.
   a. American Indian or Alaska Native
   b. Asian
   c. Black or African American
   d. Hispanic or Latino
   e. Native Hawaiian or Other Pacific Islander
   f. White/Caucasian
   g. Other ____________________

40. What level of education have you completed?
   a. Some High School
   b. High School or GED
   c. Some College
   d. Associate’s Degree
   e. Bachelor’s Degree
   f. Graduate Degree
   g. Other ____________________

41. What is your primary occupation or industry?
   [Short answer question, participant will type in their answer]

42. Which county(ies) in Iowa do you own property?
   [Participants will choose from a drop-down list of all counties in Iowa.]

Section 8: Follow-up Interview

43. Are you willing to participate in a follow-up interview with a student researcher?
   a. Yes
   b. No
[If “no”, the participant will be led to a page to submit the questionnaire. If “yes.” The participant will be taken to question 44.]

44. Please enter your email so the student researcher can contact you for follow-up:
[Short answer, participant will type their answer.]
Appendix C: Semi-structured Interview Questions

Below are the base questions asked during each interview, as appropriate. Follow up questions were asked on a case-by-case basis.

<table>
<thead>
<tr>
<th>Question</th>
<th>Rational/Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can you tell me about your property and your experience with conservation, if any?</td>
<td>To build rapport and identify what the landowner values about their property; to understand how they use their property and what their land use priorities may be.</td>
</tr>
<tr>
<td>What are your goals/hopes for your property? How do you measure success on your property?</td>
<td>To understand if the landowner has a plan for their property, to understand the landowner’s future-thinking; to identify to what extent the plan for the property influences their day-to-day decision-making.</td>
</tr>
<tr>
<td>Who are the important people, places, or communities where you can discuss conservation and land management?</td>
<td>To identify to what extent a landowner’s relationships with others influence their decision-making.</td>
</tr>
<tr>
<td>Where do you learn or talk about conservation and land management? Are there any organizations or agencies that you look to for land management information or opportunity?</td>
<td>To identify which agencies, organizations, or communities the landowner trusts as an “authority” for learning about land management.</td>
</tr>
<tr>
<td>Do you practice a land ethic? If so, what is it?</td>
<td>To understand what a landowner’s relationship to conservation is, broadly. *this question is purposefully vague. Depending on how the participant answers, various follow-up questions may be appropriate.</td>
</tr>
<tr>
<td>Are there any barriers to participating in Private Lands Conservation programs? How about connecting with conservation or agricultural communities?</td>
<td>To explicitly address any barriers or challenges people have experienced in PLC program participation.</td>
</tr>
</tbody>
</table>
Appendix D: Additional Tables and Figures

**Table D1: Gender of Survey Participants**

<table>
<thead>
<tr>
<th>Gender of Survey Participants</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>34%</td>
</tr>
<tr>
<td>Male</td>
<td>62%</td>
</tr>
<tr>
<td>Prefer not to say</td>
<td>4%</td>
</tr>
</tbody>
</table>

**Table D2: Race/Ethnicity of survey participants**

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Percentage of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-white</td>
<td>4%</td>
</tr>
<tr>
<td>White/Caucasian</td>
<td>88%</td>
</tr>
<tr>
<td>Prefer not to answer</td>
<td>6%</td>
</tr>
</tbody>
</table>

**Table D3: Highest Level of Education of Survey Participants**

<table>
<thead>
<tr>
<th>Highest Level of Education</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>High School or GED</td>
<td>5</td>
</tr>
<tr>
<td>Some College</td>
<td>4</td>
</tr>
<tr>
<td>Associate's Degree</td>
<td>1</td>
</tr>
<tr>
<td>Bachelor's Degree</td>
<td>13</td>
</tr>
<tr>
<td>Graduate Degree</td>
<td>21</td>
</tr>
<tr>
<td>Ph.D.</td>
<td>1</td>
</tr>
<tr>
<td>Prefer not to answer</td>
<td>2</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>47</strong></td>
</tr>
</tbody>
</table>

**Table D4: Primary Occupation of Survey Participants**

<table>
<thead>
<tr>
<th>Survey Participant Primary Occupation</th>
<th>Count of Primary Occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>11</td>
</tr>
<tr>
<td>Agriculture</td>
<td>3</td>
</tr>
<tr>
<td>Farmer</td>
<td>8</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td><strong>8</strong></td>
</tr>
<tr>
<td>Education</td>
<td>3</td>
</tr>
<tr>
<td>Education Consulting</td>
<td>1</td>
</tr>
<tr>
<td>Professor</td>
<td>2</td>
</tr>
<tr>
<td>Retired</td>
<td>2</td>
</tr>
<tr>
<td><strong>Healthcare</strong></td>
<td><strong>2</strong></td>
</tr>
<tr>
<td>Healthcare</td>
<td>1</td>
</tr>
<tr>
<td>Semi-Retired</td>
<td>1</td>
</tr>
<tr>
<td><strong>Law</strong></td>
<td><strong>1</strong></td>
</tr>
<tr>
<td>Manufacturing</td>
<td>1</td>
</tr>
<tr>
<td>Occupation</td>
<td>Count</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Retired</td>
<td>1</td>
</tr>
<tr>
<td>Natural Resources</td>
<td>8</td>
</tr>
<tr>
<td>Conservation/Environmental Education</td>
<td>2</td>
</tr>
<tr>
<td>Education</td>
<td>1</td>
</tr>
<tr>
<td>Education, Farm Manager</td>
<td>1</td>
</tr>
<tr>
<td>Entomology</td>
<td>1</td>
</tr>
<tr>
<td>Land Trust Manager</td>
<td>1</td>
</tr>
<tr>
<td>Natural Resource Manager</td>
<td>1</td>
</tr>
<tr>
<td>Naturalist &amp; Natural Resource Manager</td>
<td>1</td>
</tr>
<tr>
<td>Roadside Vegetation Manager</td>
<td>1</td>
</tr>
<tr>
<td>Photography</td>
<td>1</td>
</tr>
<tr>
<td>Prefer not to answer</td>
<td>2</td>
</tr>
<tr>
<td>Retail</td>
<td>1</td>
</tr>
<tr>
<td>Semi-retired</td>
<td>1</td>
</tr>
<tr>
<td>Retired</td>
<td>9</td>
</tr>
<tr>
<td>State Government</td>
<td>1</td>
</tr>
<tr>
<td>Truck Driver</td>
<td>1</td>
</tr>
<tr>
<td>Retired</td>
<td>1</td>
</tr>
<tr>
<td>Veterinary Medicine</td>
<td>1</td>
</tr>
<tr>
<td>Grand Total</td>
<td>47</td>
</tr>
</tbody>
</table>

Table D5: Number of parcels/properties survey participants own/manage.

<table>
<thead>
<tr>
<th>How many parcels/properties do you own and/or manage?</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>2-10</td>
<td>24</td>
</tr>
<tr>
<td>11-20</td>
<td>2</td>
</tr>
<tr>
<td>More than 20</td>
<td>1</td>
</tr>
<tr>
<td>Grand Total</td>
<td>47</td>
</tr>
</tbody>
</table>

Table D6: Does anyone live on the property(ies)?

<table>
<thead>
<tr>
<th>Does someone live on the property(ies)?</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>12</td>
</tr>
<tr>
<td>Yes, Full-time</td>
<td>30</td>
</tr>
<tr>
<td>Yes, Part-time (3-6 months out of the year)</td>
<td>2</td>
</tr>
<tr>
<td>Yes, Occasionally (less than 3 months out of the year)</td>
<td>3</td>
</tr>
<tr>
<td>Grand Total</td>
<td>47</td>
</tr>
</tbody>
</table>
Table D7: Count of landowners that rent or lease acres to other land users.

<table>
<thead>
<tr>
<th>Count of Are any of the acres you own rented or leased to other land users?</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>27</td>
</tr>
<tr>
<td>Not currently, but acres have been rented/leased in the past.</td>
<td>2</td>
</tr>
<tr>
<td>Yes</td>
<td>18</td>
</tr>
<tr>
<td>Grand Total</td>
<td>47</td>
</tr>
</tbody>
</table>

Table D8: Co-ownership and/or management

<table>
<thead>
<tr>
<th>Are any of the acres co-owned or managed with other people?</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>30</td>
</tr>
<tr>
<td>Yes</td>
<td>17</td>
</tr>
<tr>
<td>A non-profit board and staff owns and manages 305 acres</td>
<td>1</td>
</tr>
<tr>
<td>Business Partner</td>
<td>3</td>
</tr>
<tr>
<td>Family Member</td>
<td>9</td>
</tr>
<tr>
<td>Farm manager and bank trust representative along with family</td>
<td>1</td>
</tr>
<tr>
<td>Friend</td>
<td>2</td>
</tr>
<tr>
<td>Iowa Natural Heritage Foundation</td>
<td>1</td>
</tr>
<tr>
<td>Grand Total</td>
<td>47</td>
</tr>
</tbody>
</table>

Table D9: Table showing to what extent survey participants are the primary decision maker and who they may make decisions with.

<table>
<thead>
<tr>
<th>Decision Maker</th>
<th>Are you the primary decision maker?</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>It's complicated.</td>
<td>No</td>
</tr>
<tr>
<td>Renter</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Conservation Organization</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Sibling</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Spouse</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SUM</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>N = Documents</td>
<td>6</td>
<td>1</td>
</tr>
</tbody>
</table>
Figure D1: Survey participants' familiarity with PLC programs.

Table D10: Interest in PLC programs

<table>
<thead>
<tr>
<th>Are you interested in participating in private lands conservation programs in the future?</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>6</td>
</tr>
<tr>
<td>Yes</td>
<td>33</td>
</tr>
<tr>
<td>Grand Total</td>
<td>39</td>
</tr>
</tbody>
</table>

Table D11: Previous participation in PLC programs?

<table>
<thead>
<tr>
<th>Have you participated in any private lands conservation programs on your property?</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>12</td>
</tr>
<tr>
<td>Unsure</td>
<td>3</td>
</tr>
<tr>
<td>Yes</td>
<td>26</td>
</tr>
<tr>
<td>Grand Total</td>
<td>41</td>
</tr>
</tbody>
</table>

Table D12: Where do you learn about wildlife conservation projects and programs?

<table>
<thead>
<tr>
<th>Where do you learn about wildlife conservation projects and programs?</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>At work</td>
<td>5</td>
</tr>
<tr>
<td>From conservation organizations directly</td>
<td>20</td>
</tr>
<tr>
<td>From friends, family, or neighbors</td>
<td>4</td>
</tr>
<tr>
<td>Online</td>
<td>11</td>
</tr>
<tr>
<td>All of the Above</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
</tr>
</tbody>
</table>
References


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