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Short communication

An evaluation of landowners' conservation easements on their livelihoods and well-being

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ABSTRACT

Private lands protected by conservation easements are crucial in aiding conservation efforts. While most research on measuring conservation efforts has historically been on ecological outcomes of protecting biodiversity, this study aims to measure the social outcomes of the impacts of conservation easements on private landowners' livelihoods and well-being in Colorado. We conducted 35 semi-structured, in-depth interviews with landowners who had completed conservation easements with The Nature Conservancy in Colorado. Using qualitative interview data, we analyzed what motivated landowners to complete conservation easements with TNC and how the conservation easements influenced their well-being. Five dominant themes emerged from the analyses: 1) conservation, 2) financial, 3) legal and process, 4) personal and family, and 5) social and community. Landowner motivations were to protect the ecosystem, prevent development, and financial gain through tax incentives or income. Negative neighbor reactions, time to complete or amend the easement, and tax audits were some challenges experienced. Landowners revealed that community involvement, connections, and networking were unexpected benefits and brought positive change to their life because of easements. The results from this case study can be used to inform conservation strategies that more purposefully incorporate private landowner experiences with conservation easements in planning to achieve biodiversity and conservation objectives. Coupling ecological conservation outcomes with conservation management practices and at the same time understanding the impact of conservation easements on landowners' livelihoods and well-being will further advance conservation efforts on private lands in the future.

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1. Introduction

In addition to public driven conservation such as national parks and monuments, private lands are crucial in aiding conservation efforts (Farmer et al., 2011; Fishburn et al., 2009; Rissman et al., 2007). Conservation efforts tend to preserve, protect and restore agricultural lands, biodiversity including vegetation and wildlife, and cultural sites (Gustanski and Squires, 2000; Rissman et al., 2007). Scott et al. (2001) analyzed land ownership patterns in association with soil productivity, land cover, and biodiversity. They found that many nature reserves were strategically established on lands that were not economically beneficial or fit for human habitation and that privately owned properties tend to be more mesic, lower in elevation, and have more soil productivity than public lands (Rissman et al., 2007; Scott et al., 2001). Therefore, conservation efforts should also be focused on protecting private lands. Over 20 million ha of land in the United States (US) is protected by nonprofit organizations, land trusts, that directly purchased the property (Fishburn et al., 2009; Land Trust Alliance, 2014). While acquisition of a property through a land trust is highly beneficial for conservation efforts, this method is expensive (Fishburn et al., 2009). As a result, an alternative voluntary approach known as conservation easements (CEs), whereby private landowners retain ownership and management but limit development, has become a popular conservation tool (Fishburn et al., 2009; Land Trust Alliance, 2014; Rissman et al., 2007).

CEs are voluntary legal agreements between a private landowner and a land trust or qualified agency (Farmer et al., 2011; Fishburn et al., 2009; Gustanski and Squires, 2000; Lippmann, 2004; Rissman et al., 2007). The easement restricts subdivision, development, and land use in order to protect flora, fauna, and land resources for future generations (Farmer et al., 2011; Fishburn et al., 2009; Gustanski and Squires, 2000; Lippmann, 2004; Rissman et al., 2007). Landowners sell or donate certain property rights to an organization that is responsible for the

Abbreviations: US, United States; CEs, conservation easements; TNC, The Nature Conservancy; NRCS, Natural Resource Conservation Service; CPW, Colorado Parks and Wildlife.

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monitoring and enforcement of protecting the specific conservation values, such as existing biodiversity or an endangered species, outlined in the easement (Farmer et al., 2011; Fishburn et al., 2009). Property owners retain many private property rights, continue to enjoy and manage their property, and may receive financial benefits such as income, tax credits, and tax relief on their decreased property value (Byers and Ponte, 2005; Farmer et al., 2011; Fishburn et al., 2009; Gustanski and Squires, 2000; Lippmann, 2004; Merenlender et al., 2004; Rissman et al., 2007).

Recent research has concentrated on measuring conservation efforts by understanding the ecological outcomes of protecting biodiversity through CEs (Farmer et al., 2011; Fishburn et al., 2009; Kareiva et al., 2014; Merenlender et al., 2004; Rissman et al., 2007). Few studies have been conducted on the social outcomes of conservation efforts, however (Bennett et al., 2016; Chan et al., 2007; Farmer et al., 2011; Sievanen et al., 2012). It is increasingly becoming clear that society and ecosystems are linked and that the well-being of people is tied to the health of the land by maintaining ecosystem services (e.g., clean water, healthy soils, etc.) upon which people depend, while at the same time enhancing human livelihoods and well-being (Chapin et al., 2009; Folke, 2006; Holling, 2001). Thus, social-ecological science has incorporated the well-being and livelihoods of humans while simultaneously understanding how to sustain ecosystems (Bennett et al., 2015).

To understand how CEs have impacted landowners' livelihoods and well-being, we conducted interviews to understand the social outcomes of conservation easement efforts by TNC in Colorado. In Colorado, TNC has protected over 400,000 ha and improved 1,000 river miles across the state (The Nature Conservancy, 2017). This study addresses the influence the Colorado TNC CEs have had on private landowner's well-being, family, property, and community. The goal of the project was to begin to understand people's motivations to conserve their property and to measure the impacts of CEs on people's livelihoods.

2. Methods

2.1. Study area

Colorado is the eighth largest state in the US with approximately 26,800,000 ha of land and a population of 5.5 million (US Census Bureau, 2017). Nearly 36% or almost 10,000,000 ha of Colorado is publicly owned land (Vincent et al., 2014). As of 2012, 2.4% of Colorado, or about 650,000 ha, has been conserved via CEs (Jackson, 2012). TNC has protected approximately 174,000 ha through 191 CEs with 126 private landowners (Herrington, 2015). This study was conducted through TNC Colorado who has embarked on a series of livelihood studies to 1) understand impacts of their own easements and, 2) to provide guidance for future investments.

2.2. Study design

2.2.1. Conceptual framework: traditional grounded theory

Grounded theory is a methodology that aims to generate a theory as an explanation for a process or action about issues that impact peoples' livelihoods or well-being (Corbin and Strauss, 2008; Creswell, 2013; Glaser, 1978; Glaser and Strauss, 1967; Mills et al., 2006; Strauss and Corbin, 1998). This study uses traditional grounded theory and inductive data collection, a process to aid in avoiding biases where important concepts and issues become apparent from the interview allowing some flexibility in the research strategy (Glaser, 1978; Guest, 2015; Mills et al., 2006; Morse, 2001).

2.2.2. Landowner selection and interviews

Following TNC protocols, permission was requested and then granted by TNC's Chief Scientist to conduct this research ensuring protection of private personal information. A letter requesting an interview was sent to the 70 randomly selected landowners with a return rate of 24 letters (34%). While Creswell (2013) recommends a non-probability sample size of 20–30 people for grounded theory studies, we pursued a larger sample size, 30–50 people, following the recommendation of Morse (1994). To increase the sample size and participation, a respondent-driven recruiting method occurred via telephone and e-mail to the landowners who did not respond to the mailed letter (Guest, 2015). With the revised non-probabilistic method, a snowball and target sampling strategy was utilized and landowner participation increased to 35 respondents (50% success rate) (Guest, 2015; Trotter et al., 2015).

These sampling approaches resulted in 35 landowners agreeing to participate in semi-structured, in-depth interviews that were audio recorded with permission or with detailed notes. The interviews were conducted in 2015, in person ($n = 17$), on the telephone ($n = 17$), and Skype ($n = 1$). Interviews were conducted in order to a) characterize landowners' experiences in completing CEs when working with TNC in Colorado; b) understand landowners' motivations for conserving their properties; and c) identify the positive and negative impacts of CEs on landowners' livelihoods and well-being. Interview questions were grouped into five categories including: 1) motivations for completing the CE; 2) benefits of the CE; 3) challenges faced because of the CE; 4) changes that may have occurred to the landowners' property, life or community because of the CE; and, 5) landowner's assessment of the CE's overall impact.

2.3. Analysis

Using traditional, inductive grounded theory, a qualitative analysis was conducted after the completion of the 35 interviews (Mills et al., 2006). The qualitative data analysis software program, Atlas.ti (Friese, 2014), was used to organize and evaluate the data. A bottom-up participatory approach was used to understand how TNC CEs impacted landowners. First, the data collected from the interviews were transcribed from the audio recordings or detailed notes into a format that could be loaded into the Atlas.ti software. Second, the information was translated into open codes by reading the transcripts and relationships between codes were developed within each interview question category (Creswell, 2013; Glaser, 1992; Mills et al., 2006). Third, the coding scheme was reviewed by all authors and revised through structured conversation to reduce coding errors and bias (Armstrong et al., 1997; Campbell et al., 2013; Hallgren, 2012). Lastly, the transcripts were read again to incorporate the revised coding for each interview question category. Themes emerged from the iterative coding process conducted in Atlas.ti. They were 'conservation', 'social and community', 'financial', 'personal and family', and 'legal and process'.

Once the themes emerged from the data, the codes were re-examined. The codes within interview question categories 2–5, landowner motivation to complete the CE, benefits, challenges and changes resulting from the CE, were assigned to a specific theme. For example, using question category 2 (motivations), if a landowner said that they were motivated to complete the CE for tax credits and to protect wildlife, we would use codes 'tax incentives' and 'wildlife protection'. 'Tax incentives' are assigned to the 'financial' theme and 'wildlife protection' is assigned to the 'conservation' theme. During the analysis, each landowner quote per question category was coded in Atlas.ti and was then assigned to a theme. Participants were able to discuss multiple motivations, benefits, challenges and changes during the interview resulting in the possibility of multiple codes per landowner in each question category.

3. Results and discussion

The qualitative analysis of the interview questions resulted in five dominant themes: conservation (44% of codes as noted by 95% of landowners), social and community (23% of codes as noted by 77% of