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Conservation presence, not socioeconomics, leads to differences in pastoralist perceived threats to argali

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ABSTRACT

Community-based conservation approaches that keep people on landscapes increasingly complement preservationist models of reserves without people. Evaluations of community conservation have shown that economic incentives and socioeconomics primarily drive people's attitudes and perceptions. Work at Mongolia's Ikh Nart Nature Reserve demonstrates how to achieve successful conservation by integrating local people into the overall program. Using a short questionnaire, we interviewed pastoralist families across two *soums* (similar to a U.S. county) in Ikh Nart. We examined (1) pastoralists' perceived threats to argali sheep (*Ovis ammon*), (2) socioeconomic differences among pastoralists, and (3) differences between pastoralists from different *soums*. We found that 15 years of conservation activities—education, research, and modest ecotourism—that occurred in the northern *soum* led to influences on people's perceptions toward argali conservation. Compared with pastoralists from southern Ikh Nart, pastoralists from the northern part of the reserve more likely knew that argali are protected and understood primary threats to the species. Socioeconomic factors, such as age, sex, and wealth, did not significantly influence responses. The negligible economic incentives in Ikh Nart did not lead to response differences. Our results demonstrate that conservation can influence people across socioeconomic classes without providing large economic incentives.

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Introduction

Creating strategic protected areas arguably offers the best approach to helping ameliorate negative anthropogenic impacts on nature; however, protected areas often lead to conflict between locals and preservationists (Lam and Paul 2014; Roe 2008). For example, national park formation in Africa has displaced local communities, leading to retribution killing of wildlife (Western 1997). Community-based conservation provides an alternative or complimentary approach to the old “fence and fines” preservationist model because it keeps people in nature reserves with traditional livelihoods largely intact (Baral and Stern 2011; Berkes 2004; Leisher et al 2012). However, community-based conservation projects have come under attack by some conservationists because the economic ambitions of local people often leads to

unsustainable resource use (Spiteri and Nepal 2006; Wang et al 2006). In addition, some community-based approaches have not understood the interests of rural people (Kühl et al 2009; Mehta and Kellert 1998). Nevertheless, community support is a vital factor to the success of wildlife conservation in protected areas (Ervin 2003; Struhsaker et al 2005). Understanding the perspectives and knowledge of local people allows protected areas to develop programs that better address local concerns and provide viable strategies for conservation.

Worldwide, temperate grasslands are the most underrepresented biome in protected area networks, with only 4.6% protected (Hoekstra et al 2005). With more than 83% of Mongolia classified as steppe and with >17% of the land under some type of protected status, the country is a leader in rangeland conservation (Angerer et al 2008; Oyuungerel and Munkhdulam 2011; Reading et al 2015). In addition, 40% of Mongolia's employment and 20.6% of its gross national product depend on pastoral livelihoods (Bruegger et al 2014). Forty-year grazing enclosures, however, show that rangeland productivity across Mongolia has fallen by 20–30% (Angerer et al 2008). Mongolian pastoralists have already observed

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environmental changes because of climate change (Addison et al 2012; Bruegger et al 2014). Loss of grassland production likely results from both climate change and massive increases in stocking rates (Bedunah and Schmidt 2004; Davie et al 2014; Reading et al 2010). Since the collapse of the Soviet Union and Mongolia's transition from a tightly regulated, command economy to a free market system, livestock numbers in the country have risen greatly. Privatization and lack of regulation caused stock numbers to shoot from 26 million animals in 1992 to >45 million in 2013 (Reading et al 2015, 2010). Furthermore, Western demand for cashmere causes disproportionate stocking of cashmere goats, likely a contributing factor in declines of rangeland condition and certain wildlife populations, including argali (*Ovis ammon*; Berger et al 2013; Mallon et al 1997; Reading et al 2001). Argali, the world's largest wild sheep, are listed internationally as near threatened, and one subspecies was reported extinct in 2009 (Harris et al 2009). Poaching and competition with livestock likely represent the primary drivers of these declines (Harris and Reading 2008).

The United Nations Development Programme's Special Protected Areas Network project adopted Ikh Nart Nature Reserve (Ikh Nart) in southeastern Mongolia as a model protected area in 2010. Ikh Nart has integrated the local herding community into successful conservation of grasslands and argali. We investigated the ecological knowledge of pastoralists living in Ikh Nart and examined if and how conservation activities influenced local people's perceptions and knowledge of grassland resources and conservation issues. Ikh Nart Nature Reserve was created in 1996 to conserve argali. Although poaching in the area has largely ended because of 15 years of conservation and law enforcement, overgrazing of domestic stock remains a concern. A local nongovernment organization, the Argali Wildlife Research Center, manages Ikh Nart using a community-based approach. Local pastoralists continue traditional livelihoods within Ikh Nart, based primarily on sheep and goat production for meat and hair fiber, including cashmere wool. With roughly 1500–2000 argali (Reading unpublished data; Wingard et al 2011a), Ikh Nart has successfully protected the species, but how has the pastoralist community responded to conservation efforts?

Sample surveys using questionnaires can help researchers understand people's perceptions and attitudes toward wildlife or conservation (Htun et al 2012; Tessema et al 2010). Most of the literature suggests that developing positive local attitudes and perceptions toward protecting natural resources require

substantial economic incentives (Holmes 2003; Vodouhê et al 2010) and that socioeconomic and demographic factors often correlate with perceptions (Baral and Stern 2011; Hu et al 2010). For example, nature-based tourism development has often led to positive conservation attitudes across Asia (Baral 2014; Khadka and Nepal 2010; Mehta and Heinen 2001). Yet, in some protected areas residents strongly oppose conservation efforts (Holmes 2003; Mehta and Kellert 1998; Wang et al 2006).

We used a short questionnaire to examine local people's attitudes and perceptions toward nature and nature conservation in Ikh Nart. We further examined if and how Ikh Nart conservation activities—modest ecotourism, jobs, education and outreach programs, and participation in projects—influenced local people's attitudes, knowledge, and perceptions toward conservation. Active conservation activities started in 2000 in the northern portion of the reserve, within Dalanjargalan *soum* (an administrative unit similar to a county), hereafter referred to as Dalan. Dalan conservation presence includes a research center, small-scale ecotourism, a small craft cooperative, and education and outreach programs. International and Mongolian biologists use the research center, with a capacity of ~40 people, year-round. Over 4 years prior to our study, work expanded to include minimal work (ranger patrols and argali captures) in the southern portion of the reserve, within Airag *Soum*. We compared differences in attitudes, perceptions, and knowledge between the two *soums*. Pastoralists from both *soums* participate in small economic opportunities (<\$200/y/person) through ranger programs (2–3 rangers per *soum*), assisting with wildlife capture (~13 people from each *soum*), and some ecotourism assistance. We expected Dalan residents to possess more ecologically informed knowledge and positive attitudes and perceptions toward conservation than Airag residents because of their exposure to extensive conservation work over more than a decade. We also examined our data for demographic and socioeconomic differences.

Material and methods

Study area

Ikh Nart Nature Reserve (666 km²) was established in 1996 in Dornogovi Aimag and lies 300 km south-southeast of Ulaanbaatar (Figure 1). Centered at 45.5°N, 108.6°E, Ikh Nart sits in a transition zone between the Gobi Desert to the south and the Mongolia

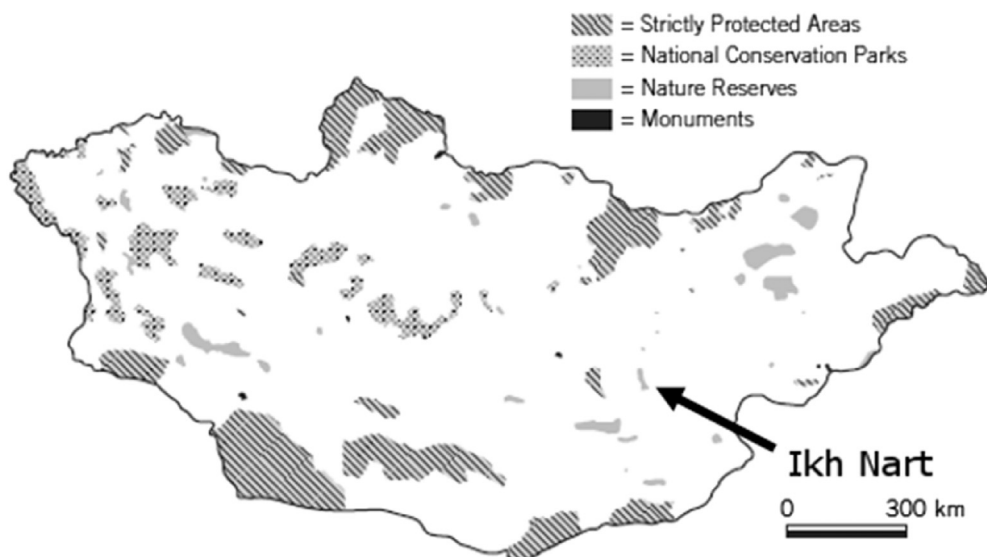


Figure 1. Map of Mongolia's protected areas system from Reading et al (2015). The questionnaires were administered in Ikh Nart nature reserve during the summer of 2012.

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