Hum Ecol (2010) 38:265–281
DOI 10.1007/s10745-010-9319-1

Coupling Community Heterogeneity and Perceptions of Conservation in Rural South Africa

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Published online: 23 March 2010

Abstract Concerns about the impacts of national parks and protected areas upon local populations have generated significant interest in community conservation initiatives that attempt to include local knowledge and participation in natural resource decision-making. While there has been much interest in the institutional frameworks and livelihood impacts of community conservation, emerging research is documenting the various factors that shape local perceptions. This paper uses a case study of the Mahushe Shongwe Game Reserve in South Africa to examine the key variables shaping community perceptions of community conservation. We employ multinomial logistic regression models to understand views of the benefits and future direction of the reserve. These models are coupled with information collected from semi-structured interviews that assists in providing a detailed, and more complex, understanding of the diverse ways that community conservation is perceived by local residents. The paper demonstrates that multiple factors, particularly household history, education, and gender contribute in shaping views of the reserve. While these variables are often identified in the academic literature as important, we argue that the combination of qualitative and quantitative methods helps reveal the interplay between them in shaping perceptions of community conservation.

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Keywords Conservation · Community conservation · Heterogeneity · Africa · South Africa

Introduction

There has been a significant amount of research in the academic and policy literatures evaluating the impacts of national parks and protected areas upon social and ecological landscapes (Ghimire and Pimbert 1997; Zerner 2000; Adams 2001; Adams and Mulligan 2003; Zimmerer 2006). Much of this work has documented the ways protected areas restrict the ability of human populations to access resources necessary for livelihood production (Brown 2002; Slater 2002; Robbins *et al.* 2006; King 2007a) or generate conflict between local actors and national conservation agencies (Neumann 1998; Robbins *et al.* 2006). Concerns about the impacts of national parks and other conservation approaches have generated significant interest in community conservation initiatives that attempt to include local knowledge and participation in natural resource decision-making (Ghimire and Pimbert 1997; Songorwa *et al.* 2000; Hulme and Murphree 2001; Adams and Mulligan 2003; Tsing *et al.* 2005; Brockington 2007). Community conservation, which is also known as community-based natural resource management[1] (CBNRM), involves the decentralization of management authority and distribution of benefits to affected communities with the belief that this will generate incentives to support conservation planning. Community conservation

[1] Other terms include co-management, participatory conservation, and conservation-with-development. This paper uses community conservation as a general term to describe the attempt to include local populations directly in natural resource management.

has become a major strategy for conservation and development agencies operating in the developing world and produced numerous studies examining its opportunities and limitations (IIED 1994; Boonzaier 1996; Songorwa 1999; Twyman 2000; Hulme and Murphree 2001; Brown 2002; Wilshusen *et al.* 2002, 2003; Magome and Murombedzi 2003; Algotsson 2006; Blaikie 2006).

A consistent finding from these studies is that communities are often presented in homogenous terms, which obscures the multiple impacts of conservation planning upon local populations (Brosius *et al.* 1998; Agrawal and Gibson 1999; Leach *et al.* 1999; King 2007a; Klein *et al.* 2007; Flint *et al.* 2008). This has generated interest in documenting the specific variables that shape the impacts and perceptions of conservation within partnering communities (Holmes 2003; Adhikari and Lovett 2006; Méndez-Contreras *et al.* 2008; Durand and Lazos 2008). Although research has evaluated the diversified effects of protected areas, there have been few empirical studies that examine the role community differentiation plays in shaping perceptions of conservation. A recent suggestion is that this results from the dominant methodological approach for conservation research, which relies upon case studies that are often qualitative in nature (Agrawal and Chhatre 2006). As Agrawal and Chhatre (2006: 150) assert, "relevant knowledge about the magnitude and relative importance of different causal variables is still relatively poor in part because of the analytical approach that dominates studies of resource management and conservation." In challenging the conventional case study approach, they argue that statistical analyses, particularly at the local level, are needed to trace out the links between local processes and natural resource management. While we are sympathetic to this view, we believe what is most needed is a blending of statistical analyses with the qualitative case study approach to provide a richly detailed picture of how conservation interventions are perceived by individuals within partnering communities. Although quantitative and qualitative methods have been combined to complete poverty evaluations and for understanding perceptions of poverty (Hargreaves *et al.* 2007; London *et al.* 2007), there have been few similar studies on conservation. With the continued push towards community conservation and other participatory models, empirical studies that detail the relationships between socio-economic patterns and perceptions of conservation planning are much needed.

In order to contribute to this need, this paper uses a case study of the Mahushe Shongwe Game Reserve to identify the key variables shaping local perceptions of community conservation. Mahushe Shongwe is an ecotourist game reserve in northeast South Africa that is managed by the Mpumalanga Tourism and Parks Agency (MTPA) and a local committee made up of representatives from the Mzinti community and the Matsamo Tribal Authority. The project is intended to generate tourism and employment in order to provide incentives for the community to support conservation. As will be discussed, households within the Mzinti community are fairly diverse according to demographic, economic, livelihood and educational variables. This makes the community particularly fitting to examine the relationships between community heterogeneity and conservation perceptions. The first section of the paper provides a review of research evaluating how community heterogeneity shapes the impacts and perceptions of natural resource management. Throughout this paper, we examine the relationships between community heterogeneity, measured at the household level, upon perceptions of conservation. This is followed by an explanation of the case study and research methodology, which employed an asset-based livelihood framework that collected quantitative and qualitative data from the Mzinti community. The third section of the paper reports on the findings from two multinomial logistic regression models that were generated to explain community perceptions of the benefits and future potential of Mahushe Shongwe. These are presented in detail and supplemented with qualitative data from semi-structured interviews completed over a one year period in the community. We conclude by discussing the implications of the findings for conservation research and policy.

Community Heterogeneity and Conservation Perceptions

Critical assessments of the role of community heterogeneity in conservation planning have expanded in recent years due to a number of factors. First, it has become axiomatic within the conservation literature to assert that community conservation often operates with a limited understanding of community, which numerous scholars suggest is presented as generic or homogenous (Brosius *et al.* 1998; Agrawal and Gibson 1999; Leach *et al.* 1999; Brown 2002; Campbell and Vainio-Mattila 2003; McShane and Newby 2004; Tsing *et al.* 2005; King 2007a). In a much cited example, Agrawal and Gibson (1999) argue that understandings of community in conservation planning depend upon three elements: the community as a spatial unit, as a distinct social structure, and as a set of shared norms. Similarly, Klein *et al.* (2007: 454) assert that conservation and development agencies consider local people to be "groups of relatively homogenous households who possess common characteristics in relation to ethnicity, religion, caste, and language." The outcome of this particular understanding is that it minimizes differences within communities that directly affect the outcomes of natural resource management. As Leach *et al.* (1999: 228) state, "… all too often it is implied that the public airing of conflict is sufficient, and that social consensus and solidarity will necessarily result."

The result of these critiques has been a growth of research designed to address the specific factors shaping the impacts of protected areas, communal forests, and community conservation projects in various settings (Songorwa 1999; Li 2001; Brown 2002; Belsky 2003; Holmes 2003; Adhikari and Lovett 2006; Agrawal and Chhatre 2006). One consistent finding from this research is that the impacts of conservation are strongly related to the socio-economic patterns, institutional frameworks, and histories of affected communities. Other studies have worked to document the specific variables that shape perceptions of natural resource management (Holmes 2003; Durand and Lazos 2008; Durrant and Durrant 2008; Méndez-Contreras *et al*. 2008). Holmes (2003) for example, argues that local perceptions about wood access in the Katavi National Park of Tanzania are mediated by household needs, wealth, and expected returns from natural resource collection. Klein *et al*. (2007) critique simplistic representations of community to assert that social heterogeneity and traditional institutions shape the relationships between conservation and subsistence practices around the Ambohitantely Special Reserve in Madagascar. Durrant and Durrant (2008) examine the Mount Kilimanjaro Community Conservation Service (CCS) and assert that local attitudes are tied to the amount of exposure to conservation that residents have received. Méndez-Contreras *et al*. (2008) find that community views of the Ria Celestun Biosphere Reserve in Mexico are linked to several factors including the restrictions placed upon natural resource extraction and the limited economic benefits generated by the reserve. Their study documents that while some community residents perceive of the project as an impediment to livelihood production, others, mainly younger residents and those directly involved with the reserve, believe it generates employment opportunities. Durand and Lazos (2008) evaluate perceptions of tropical deforestation in Mexico and find that local views differ markedly about how subsistence practices contribute to deforestation, as well as the feasibility of conservation projects in the area. They conclude that "perceptions were heterogeneous, partial and frequently contradictory depending on the level of analysis" (Durand and Lazos 2008: 390). These studies complicate simple categorizations of community that frame many projects and demonstrate the need to document the divisions that shape the outcomes of conservation planning.

Even when a community is understood as socially and economically diversified, there are conflicting theories about the potential relationships between community heterogeneity and conservation perceptions. Drawing upon economic and political theory, some studies suggest that cooperative behavior is difficult to achieve in highly diverse societies because heterogeneity potentially correlates with differential access to resources generated by projects that simultaneously reveal local power dynamics (Kant 2000; Adhikari and Lovett 2006). Community heterogeneity, therefore, could become a liability in the effectiveness of community conservation since resources are captured by certain stakeholders that in turn increase resentment within local settings. Alternatively, it is theorized that community heterogeneity assists in collective action since wealthier and more powerful actors are able to initiate management schemes that would not exist otherwise (Olson 1965; Baland and Platteau 1999). Similarly, economic heterogeneity likely has differential effects in how local populations perceive of conservation projects. This is evidenced by research that seeks to debunk the prevailing assumption that asset-poor households are the prime collectors of resources and demonstrate that wealthier households might be the most intent upon collecting resources from within conservation areas (Holmes 2003; Coomes *et al*. 2004). Wealthier households, therefore, might be more critical of protected areas that restrict their access to a variety of resources that generate income. These studies suggest that some operating assumptions about the relationships between local resource use and household poverty do not correlate neatly with positive or negative views of conservation. Additionally, it is likely that universal laws about heterogeneity and collective management will prove elusive because "local institutional and historical factors within each community dominate generalisable patterns across communities based on a range of measures of heterogeneity" (Adhikari and Lovett 2006: 442–443).

Regardless of these challenges, it is evident that detailed empirical studies are needed to identify the specific factors that shape community perceptions of conservation planning. Because community conservation operates on the assumption that residents within partnering communities are invested in managing these projects, local views are critical to understand whether conservation initiatives are meeting their social and ecological goals. This has theoretical and policy implications in that identifying the particular factors that influence community views can facilitate more effective management of conservation areas. Additionally, it would contribute to ongoing research within conservation studies (Songorwa 1999; Castro and Neilsen 2001; Wilshusen *et al*. 2003; King 2007a) and political ecology[2] (Ribot 2001; Hecht 2004; Robbins *et al*. 2006) in identifying how local populations are impacted by conservation areas and whether their livelihood systems improve by participating in natural resource management. In order to contribute to this need, the next section details the case study and research methodology employed for this paper,

[2] See Zimmerer and Bassett (2003) and Robbins (2004) for a discussion of the political ecology subfield and how it contributes to conservation research.

which utilized qualitative and quantitative data collection to understand the impacts and perceptions of a community conservation project in northeast South Africa.

Case Study and Methodology

The Mahushe Shongwe Game Reserve was established in 1986 by the then KaNgwane Parks Corporation (KPC), which merged with the Transvaal Provincial Administration to become the Mpumalanga Parks Board (MPB) following the 1994 democratic elections. The MPB underwent a restructuring process in 2001–2002 and was merged with the provincial tourism agency to become the Mpumalanga Tourism and Parks Agency (MTPA) in 2006. Mahushe Shongwe was established within the former KaNgwane bantustan, which was demarcated by the apartheid government to become a separate territory for the Swazi population of South Africa. The reserve was the first community conservation project in KaNgwane and was intended to generate local support for future conservation initiatives. Its creation involved a negotiation between the KPC and representatives from the Matsamo Tribal Authority, which has jurisdiction over Mzinti and other communities in the region. The KPC had to convince the tribal authority to remove communal space from open use in order to introduce wildlife into the reserve to attract tourism. The reserve has a fence surrounding it that restricts the collection of natural resources such as wood, plants for traditional medicine, sand, and livestock grazing. As will be discussed, this directly impacts Mzinti residents who remain dependent upon natural resources for livelihood production and thus plays a role in shaping some views of the reserve.

Following the consolidation of the bantustan territories after the 1994 elections, Mahushe Shongwe is located in Mpumalanga Province in northeast South Africa close to the borders with Swaziland, Mozambique and the Kruger National Park (see Fig. 1).

Mahushe Shongwe is a 1,200 ha wildlife reserve that relies upon the revenues generated by tourism and wildlife hunting to remain operational while providing incentives to the partnering Mzinti community. The reserve is managed through a partnership between the MTPA and a committee made up of representatives from the community and the tribal authority. There is a small tented camp within the reserve that is maintained by the MTPA, which also keeps the revenues generated from tourism. Revenues produced by hunting and annual game meat sales are shared between the MTPA and Mzinti community and, at the time of the research, occasional collection of thatch grass and wood occurred within the reserve by community residents. In addition to wildlife revenues, a limited number of part-time and full-time employment positions are created through the management of the reserve. At time of fieldwork in 2001–2002, Mahushe Shongwe employed two senior reserve managers, 12 field rangers, 13 laborers, one community relations officer, one environmental education officer, four facility managers and one administration officer (Mpumalanga Parks Board 2000). It should be noted that several of these positions are held by individuals who do not live in Mzinti, which was raised as a complaint in several interviews. The reserve also offers educational trips by school groups, recreational opportunities for Mzinti residents in the day visitor area, and community training and development programs in the community hall. MTPA community relations officers work directly with the community committee to distribute information and revenues from the reserve.

One consequence of colonial and apartheid spatial planning in South Africa was the segregation of the majority African population into small territories that had limited agricultural and development opportunities for residents (King and McCusker 2007). As evidence of this, Murphree (1990) reported a human population density in the communal areas of Zimbabwe of 5–10 people per square kilometer. In contrast, in the same year the human population density in the communal areas of the Northern and Mpumalanga Provinces was calculated at 174 people per square kilometer (Els 1996). These numbers are important to contrast the challenges presented to community conservation in post-apartheid South Africa. Unlike the widely-cited CAMPFIRE programme in Zimbabwe (Logan and Moseley 2002; Murombedzi 2003), human population densities in rural South Africa are much higher and restrict the amount of income generated through wildlife tourism that can be directed to individuals in a community. MTPA officers estimated that the population of Mzinti could be as large as 20,000, with a potential of 3–4,000 households, which presents a challenge to benefit distribution. In general, the community committee has elected to spend the revenues on infrastructure projects, such as building a day care center, fencing of a secondary school and the improvement of the tribal authority office.

In order to evaluate community perceptions of Mahushe Shongwe, this paper details research completed in South Africa from May 2000–July 2000, August 2001–August 2002, and June–July 2004. A combination of quantitative and qualitative methods were utilized to address household livelihood production strategies, access to natural resources, and perceptions of conservation and development projects within the region. Data for this paper were primarily collected using participant observation techniques, semi-structured interviews with community residents and a structured survey administered by a team of enumerators. Fifty semi-structured interviews were completed with household members that provided detail on the impacts

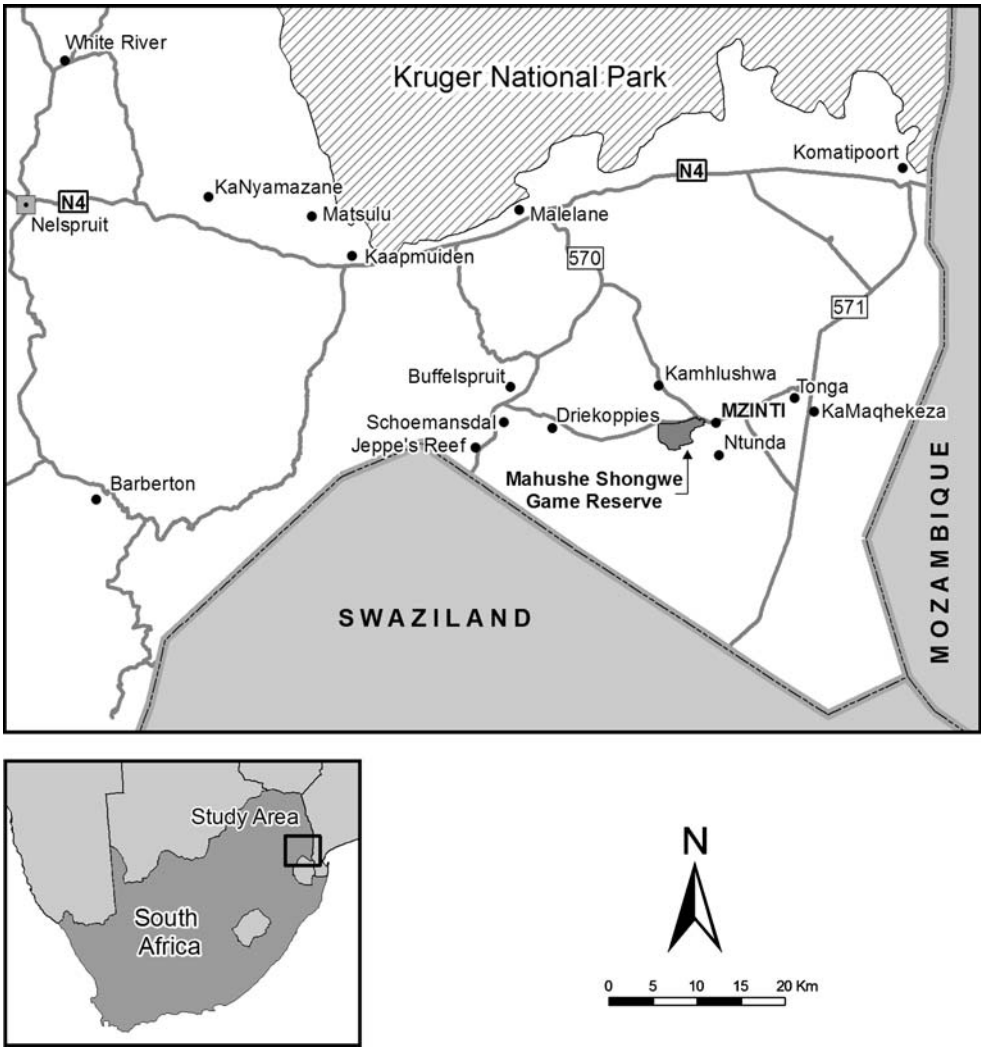

Fig. 1 Map of the study area

and future potential of Mahushe Shongwe. These semi-structured interviews were completed by the first author with a research assistant from the community who helped with language translation. The semi-structured interviews were completed prior to the administration of the structured survey to help contextualize community dynamics and assist in understanding community views of Mahushe Shongwe. This was done deliberately to refine the survey to reflect local context, since perceptions of conservation have been shown to be culturally constructed (Klein *et al*. 2007; Durand and Lazos 2008). It should be noted that this helped refine the survey instrument significantly by identifying subtleties to how community members felt about Mahushe Shongwe. For example, the semi-structured interviews and participant observation within the community revealed that some community members believe the reserve offers a variety of potential benefits beyond the generation of employment or revenue from tourism, which are more commonly referenced in the academic literature as variables shaping conservation perceptions (Holmes 2003; Coomes *et al*. 2004; Méndez-Contreras *et al*. 2008). As a result, the survey was designed to help capture some of this nuance in terms of perceived benefits from community conservation.

The semi-structured interviews were followed by a structured survey of 478 randomly selected households using an asset-based livelihood framework to collect data on financial, physical, human, and social assets[3]. Aerial photography and interviews with enumerators from the

[3] Financial assets were defined as cash, savings, loans and gifts, regular remittances or pensions, and other financial instruments. Physical assets included housing and building materials, land and other physical items which increase in value such as jewelry, or physical items that decrease in value including consumer durables such as household appliances, shoes, clothing, and vehicles. Human assets were defined as skills and knowledge, ability to engage in the labor force, educational training, and health resources. Social assets included membership or participation in social networks or organizations, with particular emphasis upon the tribal authority and local governmental structures.

2001 South African census were used to ensure a representative sample. Because Mzinti has experienced demographic and migration change over the last several decades, the research methodology was committed to conducting interviews from the entire geographic community. This was particularly important since Mzinti's population expansion has concentrated on the eastern end further away from Mahushe Shongwe. Recognizing the previously stated problems in the community concept, this research worked with the community boundaries identified by local residents, MTPA officers, and provincial government agencies. It is important to state that we are not asserting that the Mzinti community is socially homogeneous; however, there are spatial boundaries that divide the community from the surrounding villages of Tonga, Kamhlushwa, and Ntunda. Households were selected using a random sampling strategy and both male and female members were interviewed whenever possible. The structured surveys were completed by a team of enumerators who had received training in social science methods and collected data on household histories and demographic characteristics, household assets and natural resource collection strategies. Additionally, perceptions of Mahushe Shongwe were documented to understand how community members perceive of the project in terms of benefit distribution and future potential. Previous work has evaluated impacts and community perceptions of conservation and development largely through the use of the qualitative data from the semi-structured interviews (King 2004, 2005, 2006, 2007a, b). In this article, we seek to add a more rigorous quantitative assessment by blending the qualitative and quantitative data to understand the complex factors shaping perceptions of community conservation. The next section details the data analyses employed for this article.

Data Analyses

This research concentrated on evaluating the relationships between community heterogeneity, measured at the household level, to views of the benefits and future direction of Mahushe Shongwe. Two dependent variables were selected to understand the perceptions of Mahushe Shongwe. These derived from the survey questions that asked respondents whether the reserve "provided benefits to the community" and what they felt about the future direction for the reserve. Specifically, respondents were asked whether, in the future, Mahushe Shongwe should be "expanded," "remain the same," "reduced/removed," or "I do not know." Because of the wealth of potential independent variables, we concentrated upon 30 variables that were divided into three main categories: "demographic factors," "employment and assets," and "natural resource use." These categories and their specific variables were intended to broadly measure household history and dominant livelihood patterns to examine their potential relationship to perceptions of conservation. A household asset index was constructed by adding binary variables corresponding to the presence of electricity in the household and ownership of a radio, television, and cell phone. Table 1 outlines the independent and dependent variables analyzed in this study:

The analysis of factors influencing perceptions of conservation was completed in two main stages. The first stage involved univariate statistical tests of the association between the independent variables and each of the dependent variables. In the case of categorical independent variables, cross-tabulations were used to gauge the association between the levels of the dependent and independent variables using Pearson's Chi-square statistics to test for significant associations. For associations between continuous independent variables and dependent variables, tests of significance were based on likelihood ratio chi-square tests from univariate logistic regressions (Hosmer and Lemeshow 2000). Once the marginal significance of each independent variable was established on its own, multinomial logistic regression (MLR) models were fitted to each dependent variable to determine which independent variables influenced conservation perceptions after controlling for, or conditional on, the influence of other independent variables. MLR is an appropriate method for dependent variables having multiple unordered categories. For a dependent variable y with J categories, P_{i1}, P_{i2}, …, P_{iJ} represent the probability that the ith respondent falls into particular categories of y, given a vector of measured characteristics of the respondent ($\mathbf{x}_i$). In general, the response probability P_{ij} can be modeled as (Powers and Xie 2000):

$$P_{ij} = \Pr(y_i = j|\mathbf{x}_i) = \frac{\exp\left(\mathbf{x}_i'\beta_j\right)}{1 + \sum_{j=2}^{J} \exp\left(\mathbf{x}_i'\beta_j\right)}, \quad \text{for } j > 1$$

with the normalization that $\beta_1 = 0$ and the requirement that $\sum_{j=1}^{J} P_{ij} = 1$ for any i. For the normalized model, the odds-ratio between categories j and 1 for a given i are:

$$\frac{P_{ij}}{P_{i1}} = \exp\left(\mathbf{x}_i'\beta_j\right) \quad j = 2, \ldots, J$$

For each dependent variable, the independent variables that demonstrated a high to moderate degree of association (p-value ≤ 0.25) were selected initially for the MLR models (see Table 2). This level of significance was used to avoid excluding variables that may be weakly associated with the dependent variables on their own, but that could become influential in the presence of other inde-

Table 1 Independent and dependent variables

	Variable code	Possible responses	Variable coding
Dependent variables			
Does Mahushe Shongwe provide benefits to the community?	mzbnft_rec	No	1
		Yes	2
		I do not know	3
In the future, what should happen to Mahushe Shongwe?	future_rec	Expanded	1
		Reduced/removed	2
		Remain the same	3
		I do not know	4
Independent variables			
Demographic factors			
Gender of respondent	sex	Male	1
		Female	2
Age of respondent	age	0–25 years	1
		26–40 years	2
		41–55 years	3
		56 or more	4
How long the respondent has lived in Mzinti	residence	Less than 5 years	1
		6–12 years	2
		13–20 years	3
		21–30 years	4
		31 or more	5
Number of people in the household	hsldnum	Continuous	
Presence of children (25 or younger) in the household	nkids	No	1
		Yes	2
Number of women living in the household	fnum	Continuous	
Employment and assets			
Household income	income	No income	1
		R1–R4,800	2
		R4,801–R9,600	3
		more than R9,600	4
Level of education of respondent	education	No education	1
		Some education but no high school diploma	2
		High school diploma or higher	3
Full-time employment in the household	fulltjob	No	1
		Yes	2
Part-time employment in the household	ptjob	No	1
		Yes	2
Existence of other sources of income	otherjob	No	1
		Yes	2
Pension for household	pnsion	No	1
		Yes	2
Remittances for household	remit	No	1
		Yes	2
Household asset index	asset_index	Continuous	
Natural resource use			
Primary cooking fuel	ckngfl	Electricity	1
		Gas	2
		Paraffin	3
		Wood	4
Wood used for cooking	cookwood	No	1
		Yes	2
Purchase wood	woodbuy	No	1
		Yes	2
Farming next to the household	housefm	No	1
		Yes	2
Own cattle	cattle	No	1
		Yes	2
Own goats	goats	No	1
		Yes	2
Own chickens	chkns	No	1
		Yes	2
Collect wood for building	woodblng	No	1
		Yes	2
Collect medicinal plants	cllctmut	No	1
		Yes	2
Purchase medicinal plants	buymuti	No	1
		Yes	2
Collect grasses	clctgras	No	1
		Yes	2
Purchase grasses	buygras	No	1
		Yes	2
Collect sand	cltsand	No	1
		Yes	2
Purchase sand	buysand	No	1
		Yes	2
Fish	fish	No	1
		Yes	2
Natural resource access over time	access	Increased	1
		Decreased	2
		Remained the same	3

pendent factors[4] (Hosmer and Lemeshow 2000). The independent variables selected in this fashion were entered into a backward stepwise procedure to select with probability levels of 0.05 for entry and 0.1 for removal

[4] Even though the independent variable "ckngfl" shows a statistically significant relationship with the second independent variable, it was removed from the regression analysis because the limited number of responses in one cell made the result numerically unstable.

Table 2 Relationships between independent and dependent variables (n=478)

	Reserve benefit				Reserve future			
	Pearson Chi-Square	df	Asymp. Sig. (2-sided)	Level of Sig	Pearson Chi-Square	df	Asymp. Sig. (2-sided)	Level of Sig
Demographic factors								
Sex	13.395	2	0.001	[a]***	34.323	3	0.000	[a]***
Age	21.419	6	0.002	[a]**	37.130	9	0.000	[a]***
Residence	33.914	8	0.000	[a]***	80.139	12	0.000	[a]***
Hsldnum	7.438	2	0.024	[a]*	21.615	3	0.000	[a]***
Nkids	5.454	2	0.065	[a]	8.624	3	0.035	[a]*
Fnum	5.809	2	0.055	[a]	12.148	3	0.006	[a]**
Employment and assets								
Fulltjob	3.973	2	0.137	[a]	5.194	3	0.158	[a]
Ptjob	0.223	2	0.895		3.032	3	0.387	
Otherjob	5.069	2	0.079	[a]	3.537	3	0.316	
Pnsion	2.512	2	0.285		6.603	3	0.086	[a]
Remit	8.500	2	0.014	[a]*	6.125	3	0.106	[a]
Income	11.669	6	0.070	[a]	28.898	9	0.001	[a]***
Education	20.339	4	0.000	[a]***	28.994	6	0.000	[a]***
Asset_index	6.440	2	0.040	[a]*	18.745	3	0.000	[a]***
Natural resource use								
Ckngfl	16.294	6	0.012	[a]*	39.717	9	0.000	[a]***
Cookwood	4.132	2	0.127	[a]	5.547	3	0.136	[a]
Woodbuy	2.364	2	0.307		4.030	3	0.258	
Housefm	22.557	2	0.000	[a]***	24.282	3	0.000	[a]***
Cattle	4.818	2	0.090	[a]	25.623	3	0.000	[a]***
Goats	0.408	2	0.815		7.231	3	0.065	[a]
Chkns	2.038	2	0.361		12.012	3	0.007	[a]**
Woodblng	1.432	2	0.489		1.697	3	0.638	
Cllctmut	3.303	2	0.192	[a]	2.048	3	0.563	
Buymuti	0.529	2	0.768		4.006	3	0.261	
Clctgras	0.802	2	0.670		7.656	3	0.054	[a]
Buygras	0.106	2	0.948		1.235	3	0.745	
Cltsand	0.002	2	0.999		6.086	3	0.107	[a]
Buysand	20.498	2	0.000	[a]***	50.366	3	0.000	[a]***
Fish	0.809	2	0.667		5.043	3	0.169	[a]
Access	2.097	4	0.718		28.981	6	0.000	[a]***

[a] Indicates variables showing high to moderate degree of association (p-value ≤0.25)

*Significantly correlated at $p<.05$; **significantly correlated at $p<.01$; ***significantly correlated at $p<.001$

from the model. Finally, a list of potential interaction terms was created using the variables that remained in the MLR models after the stepwise procedure. These terms were added to the models and a likelihood ratio test was used to evaluate if they make a significant contribution to the explanation of the dependent variables. All the analyses were run using SPSS version 12.

Results

Table 2 outlines the results of the univariate statistical tests of the association between the independent variables and each of the dependent variables.

The next step for our analysis was to identify which of the statistically significant independent variables remain

Table 3 Logistic regression model of dependent variable: Reserve provides benefits. Reference category is: No benefits (n=478)

mzbnft_rec		B	Std. error	Odds ratio
Yes	Intercept	3.868***	0.884	
	[sex=1]	0.215	0.474	1.239
	[fulltjob=1]	0.437	0.469	1.548
	[remit=1]	−1.370*	0.541	0.254
	[otherjob=1]	−0.989**	0.345	0.372
	[buysand=1]	1.151**	0.428	3.160
	[education=1]	−1.765*	0.765	0.171
	[education=2]	−1.525*	0.691	0.218
	[income=1]	−1.585	0.831	0.205
	[income=2]	0.673	1.252	1.960
	[income=3]	−0.207	0.983	0.813
	[residence=1]	0.543	0.441	1.721
	[residence=2]	0.075	0.389	1.077
	[residence=3]	−0.179	0.506	0.836
	[residence=4]	−1.046*	0.473	0.351
	[a][sex=1] • [fulltjob=1]	−1.457*	0.586	0.233
	[b][education=1] • [income=1]	1.524	0.984	4.593
	[education=1] • [income=2]	0.502	1.526	1.653
	[education=1] • [income=3]	0.324	1.172	1.383
	[education=2] • [income=1]	1.732	0.907	5.653
	[education=2] • [income=2]	−1.238	1.321	0.290
	[education=2] • [income=3]	2.780*	1.293	16.123

[a] Variable indicating interaction between gender of respondent and full time employment in the household

[b] Variable indicating interaction between level of education of respondent and household income

*Denotes significance at $p<.05$; ** at $p<.01$ and *** at $p<.001$

significant when controlled for the effects of the other variables. Table 3 shows the independent variables associated with the first dependent variable, which assessed whether respondents believed Mahushe Shongwe provides benefits to the community. In this case the response "no" was the baseline and the "I do not know" was removed from the table to simplify the data analysis[5]:

The second dependent variable that was tested probed what individuals felt should happen to the reserve in the future. Specifically, we analyzed whether respondents perceived Mahushe Shongwe should be "expanded," "remain the same," or be "reduced/removed." The response "reduced/ removed" was the baseline and the "I do not know" was removed from the table to simplify the data analysis. Table 4 documents the results of this model:

The next section discusses the main findings from the multinomial logistic regression models and the benefits of coupling quantitative and qualitative data in evaluating perceptions of conservation.

Discussion: Social Heterogeneity and Perceptions of Community Conservation

Livelihood production systems within rural South Africa are highly diversified and depend upon a variety of formal and informal employment strategies, state grants for pensions and child support, and natural resource collection (Shackleton and Shackleton 2000; McCusker 2002; Slater 2002; Twine *et al*. 2003; Kirkland *et al*. 2007). As has been reported elsewhere (King 2005, 2006, 2007a, b), the Mzinti community contains households that are reliant upon natural resources for livelihood production, including wood collection, livestock grazing, and small-scale farming. As in other regions of the country, a variety of natural resources are collected to generate income and meet subsistence needs. Half of the surveyed households report using wood as their primary energy source and 58% of households use wood for cooking at least once a month. Agricultural

[5] The reason for removing the "I do not know" is that it we were primarily concerned with whether respondents had a positive or negative view of the reserve. For a number of cases, respondents who had recently moved to Mzinti indicated they did not know because they were unsure about Mahushe Shongwe and its impacts. A lack of awareness about the reserve was particularly pronounced within the Reconstruction and Development Programme (RDP) housing project that was finished just months before the household survey was completed. Many of these residents have moved from other villages and evidenced less interest in Mahushe Shongwe. For a fuller discussion of intra-community dynamics within Mzinti see King (2007a) and (2006).

Table 4 Logistic regression model of dependent variable: Future direction. Reference category is: Reserve should be reduced / removed (n=478)

future_rec		B	Std. error	Odds ratio
Expanded	Intercept	−0.921	1.335	
	[sex=1]	−1.558***	0.335	0.211
	[fulltjob=1]	−0.964*	0.378	0.381
	[cattle=1]	1.322*	0.632	3.749
	[buysand=1]	1.236*	0.516	3.440
	[access=1]	1.607*	0.660	4.986
	[access=2]	0.983	0.504	2.672
	[education=1]	−0.502	0.573	0.605
	[education=2]	−0.235	0.447	0.791
	[age=1]	0.486	0.758	1.626
	[age=2]	0.075	0.538	1.078
	[age=3]	0.612	0.501	1.844
	[residence=1]	1.744**	0.559	5.719
	[residence=2]	1.004*	0.463	2.728
	[residence=3]	0.088	0.595	1.092
	[residence=4]	0.067	0.513	1.069
	asset_index	0.084	0.135	1.088
Remain the same	Intercept	1.371	1.421	
	[sex=1]	−0.790*	0.383	0.454
	[fulltjob=1]	−0.046	0.424	0.955
	[cattle=1]	−0.633	0.535	0.531
	[buysand=1]	−0.303	0.741	0.738
	[access=1]	0.330	0.654	1.391
	[access=2]	−0.701	0.493	0.496
	[education=1]	−1.338*	0.655	0.262
	[education=2]	−0.957	0.524	0.384
	[age=1]	0.189	0.851	1.208
	[age=2]	−0.992	0.600	0.371
	[age=3]	−0.645	0.541	0.525
	[residence=1]	−0.021	0.743	0.979
	[residence=2]	−0.184	0.543	0.832
	[residence=3]	−0.223	0.692	0.800
	[residence=4]	−1.035	0.616	0.355
	asset_index	0.281	0.154	1.324

*Denotes significance at $p<.05$; ** at $p<.01$ and *** at $p<.001$

production occurs in small plots next to the household and larger farms next to the community. Of the households surveyed, 67% report growing crops next the household and 3% have larger farms further away from the household. These are generally sugar cane farms that have come into the region through the Land Redistribution for Agricultural Development Programme initiated by the Department of Land Affairs and Department of Agriculture, Conservation and Environment. A smaller percentage of individuals reported collecting medicinal plants and thatch grass, owning livestock, and fishing in nearby rivers.

While natural resource collection plays a role in livelihood production for many households, others within the community subsist on income generated by formal employment with the municipality or in seasonal jobs in nearby towns such as Malelane and Komatipoort. Roughly 34% of households reported having a member with a full-time position, 29% reported part-time employment, and 27% of households generate income from the informal economy. Remittances are also important to many households, with family members sending back wages from employment generated by temporary or permanent migration. The consequence is that livelihood diversification is a prominent feature of households within the Mzinti community. In terms of demographic changes, the community has expanded in size due to population increase and migration from Swaziland and Mozambique. Additionally, the recent completion of a Reconstruction and Develop-

ment Programme (RDP) housing project has added nearly 900 families to the Mzinti community, many of which have migrated from other rural villages. There also exist differences within the community in the amount of exposure to formal education. Roughly 29% of respondents reported having no formal education, 23% have received their *matric* (the equivalent of a high school diploma in the United States), and nearly 4% of respondents have received a degree past the *matric*. The remaining respondents had received formal education that ended at various grades.

The diversification of livelihood strategies, coupled with shifting demographic patterns and socio-economic differentiation, present an ideal case study to evaluate how community heterogeneity contributes in shaping the perceptions of community conservation. The completion of univariate statistical tests of correlation between the independent variables and each of the two dependent variables generates several findings that merit discussion. As outlined in Table 2, the univariate patterns of correlation show that all of the demographic variables and most of the employment and asset variables are correlated with the response variables assessing perceptions on the distribution of benefits and future direction of Mahushe Shongwe. Somewhat surprisingly, natural resource use variables were not as likely to be correlated, and only four were correlated with both of the dependent variables. These are the collection of wood for cooking, farming in small plots next to the household, ownership of cattle, and the purchasing of sand for construction purposes. While this contrasts with other studies that emphasize the importance of natural resource collection in shaping conservation perceptions (Méndez-Contreras *et al*. 2008), it supports previous research that indicates that wealthier households might have stronger views about the potential effects of conservation projects (Holmes 2003; Coomes *et al*. 2004). This appears to be the case within the Mzinti community, since a number of the natural resource use patterns are associated with wealthier households, particularly the ability to purchase sand and the ownership of cattle. These livelihoods could be considered "investment strategies" that are only possible for households that have financial assets from which to draw upon. For example, sand is purchased by families from external companies that extract it from nearby rivers. The sand is combined with concrete to make blocks for new home construction. Because the purchase of sand is a significant up-front expense, it is usually only possible when households have acquired enough capital to expand.

The semi-structured household interviews confirm the relationships between livelihoods and conservation perceptions, as many community residents complained that the reserve restricted access to communal space for grazing and wood collection. Perceptions of the reserve as a resource constraint were particularly strong among cattle owners who observed that the open areas were being increasingly removed from use for a number of conservation and development projects. This should be seen as part of a larger change in the communal areas surrounding rural villages in the region, as a number of development projects are removing open access areas for residents (King 2005). The creation of Mahushe Shongwe, coupled with sugar cane projects and population expansion on the edges of the community, were reducing available territory for grazing and natural resource collection. The consequence was that livestock owners often argued that the reserve should be opened to provide grazing space, at least seasonally in the event of a drought. As one livestock owner explained, "they should open up the reserve when there is a drought. Our cattle need space for grazing and the reserve has taken that space." What the combination of quantitative and qualitative methods adds to research on conservation, however, is a more complex understanding of the interplay between economic and cultural assets in shaping local perceptions of conservation. The semi-structured interviews reveal that household economy cannot be seen strictly in terms of material assets but also based upon socio-cultural systems. Within Mzinti and other rural communities in South Africa, livestock are an important resource for families and represent stored capital to be used in the event of an emergency or to meet other household needs (Cousins 1996). Livestock, however, are also cultural capital that give owners power within the community and through the Matsamo Tribal Authority. Interviews with the community committee and the MTPA indicated that cattle ownership was a cultural tradition within the community that required careful deliberation in managing Mahushe Shongwe. The result is that household wealth is not a simple variable in explaining community views of conservation and development projects within the region; rather, wealth is a complicated category that demonstrates the intersections between environmental, economic, and cultural processes within particular settings.

Assessing the specific independent variables that interact to influence the dependent variables generates several results. First, it appears that univariate correlation is not as useful for explaining perceptions since many variables are no longer significant once they are controlled for the effects of the other variables. As evidence of this, Table 3 reveals that a combination of livelihood and demographic factors proved to be important in explaining whether respondents indicated that Mahushe Shongwe provided benefits to the community. For example, the absence of remittances and lack of engagement in alternative sources of income decrease the likelihood of indicating a positive perception of the benefits provided by the reserve. It is possible that this reflects the fact that these households have a higher reliance upon the collection of natural resources and are

inclined to view Mahushe Shongwe as a constraint upon access. For the demographic factors, the gender of the respondent and the length of time in the community, specifically whether the respondent had lived in Mzinti for 21–30 years combined with the other independent variables as significant. The length of time that respondents had lived in Mzinti appeared critical in the semi-structured interviews as well, since residents often complained that the MTPA was not meeting its original promises to the community. Residents with a longer-term understanding of the reserve described its current state in relation to previous time periods. As one person mentioned, "In the beginning we thought it was good, but now it is not good. The reason is that they said we will get wood if we wanted, and also the traditional healers will get medicine inside the camp if they wanted, but now that is not happening." This historical view was reflected in other interviews and clearly contributed in shaping perceptions of the benefits provided by the reserve. The amount of formal education received by respondents was also significant, with individuals reporting either "no education" or "some education but no high school diploma" making it less likely that they would indicate the reserve provided benefits. There were few natural resource use patterns that proved important in the model with only the purchasing of sand remaining significant. Finally, male respondents from households without a member engaged in full-time employment were less likely to report that the reserve provided benefits to the community.

The household surveys probed the specific benefits that community members identified as being generated by Mahushe Shongwe in order to understand the perceptions held by local residents. Specifically, for respondents that stated the reserve provided benefits, the surveys had them rank order the following potential benefits: conservation, education, recreation (for day visit), recreation (for overnight), development, employment, and other (fill in the blank). These benefit categories were created after the completion of the semi-structured interviews over the nine-month period and were intended to replicate the ideas articulated by community residents. The generation of benefits included a range of possibilities; however, the ones identified by residents as the most important were, in order, employment, conservation and education. Community members who were interviewed about the potential benefits raised a number of issues related to the project. As one respondent explained:

> Mahushe Shongwe is there because nature is being preserved and generations in the near future will know about the camp there…I think it is well protected because you see sand and other things are being sold over there, so the more they take the sand they just make their own roads going in and out of there. If it rains it will create more erosion but inside the camp I think it is protected.

Another individual explained, "For me, I think it is good thing…it has created jobs for people here who are not working. Sometimes we use it for farewell functions at the school. We go there for a *braai* or party, so I think that is a good thing." It is important to note that these perceptions represent a section of the community but they are related to a combination of independent variables.

Table 4 outlines the variables associated with how Mzinti residents perceive of the future direction of Mahushe Shongwe. As compared to the first dependent variable, there was a different combination of demographic factors and employment and natural resource use variables that intersected to explain perceptions of the future for the reserve. In general, male respondents were more likely to answer that the reserve should be reduced or removed than women. Similarly, respondents from households that did not have a member engaged in full-time employment were less likely to answer that the reserve should be expanded. In contrast, respondents that were more likely to answer that the reserve should be expanded in the future were from households that did not have cattle, did not purchase sand, and who considered that their access to natural resources had increased over time. Similarly, respondents from households present in the area for less than 12 years indicated a positive view towards the future expansion of the reserve compared to older households.

Based upon the surveys and household interviews, respondents who said Mahushe Shongwe should be expanded in the future tended to view the reserve in a specific way: as an opportunity for employment. This view stemmed from the belief that a larger reserve would necessitate hiring more people from Mzinti to assist in the construction of buildings and infrastructure, and in managing the project. Rather than perceive of the reserve as a livelihood constraint, respondents within this category claimed there were development and employment opportunities from Mahushe Shongwe and hoped to capitalize from its expansion. As one resident explained:

> …what I know is that it is a Game Reserve and it has natural resources that are being preserved there. I may not know the types of animals they have but it is a place that is good but maybe needs to be developed to attract more people…I think as a camp maybe it can develop in such a way that it can accommodate people who may want to come and visit for a couple of days. Maybe if there are roads inside that are made to be conducive to cars they can see what is there. Other than plants, I think that more animals can be added so that they can attract other people.

Another community member stated, "The Parks Board should expand the game reserve so that we can get employment in the near future. They should add more animals in the camp and also advertise the game reserve so that everyone can know and visit the park." Numerous interviews confirmed that individuals who wanted Mahushe Shongwe to expand in the future were interested in the creation of employment and other economic opportunities for the community. This appears to confirm other studies that show that some residents perceive of conservation as a constraint upon natural resource extraction, while others believe it generates employment opportunities (Méndez-Contreras *et al*. 2008). The combination of quantitative and qualitative methods helps show that perceptions of conservation as either a constraint or opportunity are related to household history, particularly in terms of length of time within the community. Many of the new residents in the Mzinti community are less dependent upon the natural resource base and therefore interpret conservation and development projects in different ways than other residents (King 2006, 2007a, b). The consequence is that livelihood systems need to be seen in relation to other variables shaping household history and economy, including migration patterns into the community and desired engagement with certain employment strategies.

There were two independent variables associated with the response that Mahushe Shongwe should remain the same, specifically the gender of the respondent and lack of any formal education. Based upon the semi-structured interviews, household respondents who assert that Mahushe Shongwe should remain the same believe the project provides benefits to the community but that its expansion would not provide additional benefits. Many of these respondents explained that the community will need space for housing in the future because of in-migration and high birth rates. Additionally, if the reserve were expanded there would be less space for cattle and agriculture. They reasoned, however, that removing Mahushe Shongwe would eliminate jobs for some members of the community and were therefore unwilling to suggest the reserve should be eliminated entirely. An additional point that warrants attention is the role the reserve plays in providing surveillance of resource collectors in the region. Because of the existence of Mahushe Shongwe, the MTPA has a regional office in the neighboring village of Ntunda. MTPA officers are regularly present in the area and are responsible for administering the 1998 Mpumalanga Nature Conservation Act, which places additional restrictions upon the collection of wood, medicinal plants, and fishing. For residents that are dependent upon natural resource collection to generate income and meet subsistence needs, the continued presence of the MTPA in the region is unwelcome.

The combination of qualitative and quantitative methods helps show that several variables, particularly household history, education, and gender contribute in shaping views of the reserve. While these variables are often identified in the academic literature as important, we argue that the combination of qualitative and quantitative methods helps reveal the interplay between them in shaping perceptions of community conservation. As an example of this, while existing research in the conservation literature has shown that local attitudes are shaped by the amount of exposure to conservation that residents have received (Durrant and Durrant 2008), our study also connects the length of time in the community to demographic and livelihood patterns. Recently arrived community members, particularly those in the RDP housing project, tend to have more positive views about the future of Mahushe Shongwe because they do not see it is a constraint upon natural resource collection and believe it might generate future employment. This confirms the findings in the Méndez-Contreras *et al*. (2008) study that found that while some residents perceive of conservation as a livelihood impediment, others, mainly younger residents and those directly involved with conservation projects, believe they can create jobs. Coupling the structured surveys with qualitative interviewing over many months reveals that the length of time in the community is important, but particularly in relation to other factors such as age or dominant livelihood system.

Our study also contributes to the current thinking in the conservation literature on the role of wealth in shaping conservation impacts and perceptions. As other studies show, wealthier households, rather than poorer ones, might be the most intent upon collecting resources from within conservation areas (Holmes 2003; Coomes *et al*. 2004). The qualitative interviews from the Mzinti community help reveal that the concept of wealth needs to be contextualized to the particular case. In fact, wealthier households that have disinvested from agriculture or natural resource collection tend to view the reserve in positive terms. However, other households that would be considered wealthy, in this case livestock owners, had the most negative views about the reserve. In the case of livestock ownership, it is not simply a function of identifying these residents as "wealthy" because of the capital involved in owning cattle or goats. Rather, it is the underlying cultural and political dimensions of livestock ownership that help shape conservation perceptions.

It bears mentioning that there are three independent variables that showed statistically significant relationships to both dependent variables. Specifically, the gender of the respondent, the amount of time in the community, and the amount of formal education were significant to perceptions about the benefits of Mahushe Shongwe and its future direction. This is probably a combination of a number of factors, including livelihood production systems and identification of the educational benefits of Mahushe Shongwe.

Livelihood patterns within the community are highly gendered, as males are the most likely to own cattle and farm larger agricultural plots located away from the household. Female residents tend to small gardens next to the home and are responsible for multi-generational care-giving and other tasks within and outside the household. During the semi-structured interview phase of the research, it was relatively common for female respondents to indicate their belief that Mahushe Shongwe provided benefits to local children by allowing school groups to visit for environmental education. In addition to the gender of the respondent, the amount of formal education was a significant variable to each of the dependent variables, as was the amount of time respondents had lived within the Mzinti community. This suggests there are some common elements shaping perceptions of community conservation while highlighting the fact that demographic factors might be more important as explanatory variables than the reliance upon natural resources for livelihood production. This is certainly more pronounced within a highly diversified community like Mzinti where multiple livelihood systems are common, but it demonstrates that household history and composition are potentially more important in shaping perceptions of conservation planning. These variables are most likely connected to particular livelihood strategies; however, they are useful indicators for how community residents perceive of the benefits and future potential of community conservation.

Conclusions

The expansion of national parks and protected areas throughout the developing world has generated interest in community conservation initiatives that attempt to devolve some measure of decision-making authority to local communities with the intention of generating incentives for supporting nature preservation. The impacts of community conservation projects upon local communities have been of interest in the conservation literature with recent assessments arguing that there are varied effects linked to socio-economic patterns, institutions, and power dynamics (Brosius *et al*. 1998; Agrawal and Gibson 1999; Leach *et al*. 1999; Songorwa 1999; Li 2001; Belsky 2003; Magome and Murombedzi 2003; Blaikie 2006; King 2007a). These studies have also worked to demonstrate how simplistic representations of community guide many programs and restrict attention to the diverse factors shaping the effectiveness of community conservation. This makes it necessary to document the links between local patterns and conservation to support more successful planning. As this paper demonstrates, coupling a qualitative case study approach with statistical analyses is helpful in providing a detailed understanding for how heterogeneity contributes in shaping perceptions of community conservation. Univariate patterns of correlation reveal that demographic variables and many employment and asset variables are correlated with local perceptions about the benefits and future potential of Mahushe Shongwe. Several natural resource use variables are also statistically significant, although these proved to be less important than the others. Additionally, this paper reported the results from two multinomial logistic regression models to understand community members' views of the benefits and future direction of the reserve. In both of these models, a combination of demographic, economic and natural resource use variables proved to be statistically significant.

The combination of qualitative and quantitative methods helps demonstrate that there exist multiple factors shaping local perceptions of conservation, which has several implications for conservation planning. First, this paper shows that detailed information is needed about partnering communities in order to reduce the negative impacts of conservation while expanding its potential benefits. The fact that older residents were more likely to have negative views of Mahushe Shongwe shows that participatory management should be seen as an ongoing and dynamic process. Conservation agencies must continually work with local communities to ensure that their concerns and needs are being met. Just as conservation projects change over time, so do communities, and thus the perceptions of community conservation will also undergo transformations that require detailed analysis and careful interventions in order to effectuate successful conservation planning. As other studies confirm (Stern 2004; Méndez-Contreras *et al*. 2008), regular information flow and the generation of mutual confidence between conservation officials and local populations are necessary to ensure the goals of community conservation are achieved. Yet at the same time, understanding the complicated intersections between livelihood systems, education, migration, and other factors are needed to support the effectiveness of natural resource management. Within the Mzinti community, livelihood systems that influence perceptions are closely related to other factors shaping household history and economy, including migration patterns into the community and desired engagement with certain employment strategies. As this paper demonstrates, perceptions about the future direction of Mahushe Shongwe are both diverse and complex, largely because they are closely intertwined with the demographic and livelihood patterns of the community. As partnering communities experience social change over time, so will the local views on the viability of community conservation.

Second, the paper assists in showing that perceptions can be highly varied within partnering communities and that the unit of community might be meaningless for managing

conservation projects. Communities cannot be approached by conservation organizations in the aggregate but must be examined as collections of individuals with specific priorities, needs, and views. In the case of the Mahushe Shongwe Reserve, the MTPA works with a committee that is comprised of representatives from the Mzinti community that are either elected or appointed by the local tribal authority. The reliance upon a supposedly representative committee remains a conventional approach to the management of community conservation projects but it glosses over the schisms within communities that are important in shaping successful outcomes. As others have noted (Coomes *et al*. 2004), conservation and development initiatives that downplay community differentiation are inherently flawed and overlook potential targets for intervention. This paper demonstrates that conservation agencies might have more success in working directly with sections of the community that have particularly negative perceptions. This could assist in improving service delivery and fostering support for conservation planning. In order for community conservation initiatives to be effective, the specific views of partnering communities must be taken into consideration and addressed whenever possible. While the expansion of community conservation in the developing world represents a laudable attempt to combine the goals of nature preservation with economic development, local perceptions of these projects must be fully understood in order to ensure their long-term sustainability.

Acknowledgements Data collection from 2001–2002 was funded by the Institute for the Study of World Politics, the Association of American Geographers (AAG), the Cultural Ecology specialty group of the AAG, the Graduate School at the University of Colorado, and the Program in Developing Areas, Research and Teaching (DART) at the University of Colorado. Additional fieldwork in 2004 was supported by the Department of Geography and the Environment at the University of Texas. A University of Texas Special Research Grant helped fund the data analysis. The authors want to thank the members of the Mzinti community who helped make this research possible. Thanks also to the three anonymous reviewers who commented on a previous version of the paper, as well as the helpful suggestions from Kelley Crews, Erica King, and Dan Powers.

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