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Abstract

Across Africa, national policies that established protected areas (PAs) typically limited local use of wildlife and other resources. Over time, these policies have raised tensions with rural communities and today threaten to undermine conservation goals. This article examines community–PA relationships at four important sites in Ethiopia—a country of rich tradition with an unusual colonial past. Using focus groups and household surveys, we found that despite local tensions, most respondents held positive views toward wildlife and nearby PAs. Factors influencing positive views included receiving PA benefits, good relations with PA staff, higher education levels, being older, having a large family, diversified income sources, owning fewer livestock, and fewer incidents of wildlife conflicts. In contrast, the devolved control of PAs from federal to regional levels has not influenced community–PA relations as intended. Our results suggest that relations could be improved through involving communities in co-management arrangements, honoring resource tenure and use rights, providing benefits, and implementing conservation education programs.

Keywords: benefit-sharing, biodiversity, collaborative management, conflict, conservation, local communities, national parks, pastoralism, wildlife

Understanding relationships between local people and natural resources is critical in designing and sustaining effective conservation strategies. Such relationships have particular relevance to the management of protected areas (PAs), where long-standing tensions over land tenure, local use of natural resources, and human–wildlife conflicts may limit local acceptance of conservation goals (Newmark and Leonard 1991; Newmark et al. 1994; Lilieholm and Romney 2000; Whitesell et al. 2002; Balint 2006). In Africa, many PAs were established under colonial rule to allow European colonists access to an unspoiled "Eden" no longer found at home (Anderson and Grove 1987; Neumann 1998). The Convention for the Preservation of Animals (1900) and the London Convention for the African States (1933) formed the basis for most wildlife policies in Anglophone Africa (Lyster 1985). These laws, however, failed to consider traditional resource uses or the need for local support in sustaining conservation. Even after African nations gained independence in the 1960s, many maintained these colonial-era policies while expanding PA networks—actions taken despite growing evidence of the adverse impacts these policies had on local communities (Ghimire and Pimbert 1997; Leader-Williams 2000).

In the latter half of the 20th century, tensions between conservation and local communities escalated as human populations grew and more land was set aside for wildlife protection. In response, a number of community-based conservation programs emerged in the 1990s, such as CAMPFIRE in

Zimbabwe (Balint 2007) and ADMADE in Zambia (Matenga 2002), which sought to encourage local involvement in meeting conservation goals through increased local participation and benefit-sharing programs (Hulme and Murphree 2001).

Since then, much research has been devoted to examining the effectiveness of these collaborative approaches in regions formerly under British colonial rule. These studies have largely found that benefit sharing and the inclusion of local people in PA management improve local support for conservation, although such gains may be insufficient to meet conservation goals (see Wilshusen et al. 2002 and Brechin et al. 2002 for thorough reviews). Absent from the literature is an examination of conservation strategies and collaborative management practices in African countries with more limited exposure to colonial-era natural resource policies, of which Ethiopia is perhaps the best example.

Ethiopia has a long dynastic history that dates back to 1000 BC, and lasted until the monarchy was toppled in 1974. During its reign, the monarchy endured, interrupted only by a period of decentralization in the 18th and early 19th centuries. Ethiopia repelled invading Italian forces in 1896, thereby securing its sovereignty and freedom from colonization. While the Italians returned and occupied the country in 1936, this short period of outside control ended in 1941 following liberation by British and Ethiopian forces.

As a result, Ethiopia emerged from Africa's period of colonial rule as one of only two countries relatively free of European colonial influence.

History of Wildlife Conservation in Ethiopia

While their sociopolitical history contrasts sharply with other East African and southern African nations, Ethiopians have taken a similar approach to conservation and, more recently, their adoption of community participation. Prior to 1900, natural resources in Ethiopia appear to have been sustainably managed through a wide range of common property resource regimes (Ashenafi and Leader-Williams 2005). Early conservation efforts in Ethiopia focused on creating PAs, enacting laws and regulations, developing infrastructure, and assessing wildlife populations (Moore 1982; Misginna 1991; Negarit Gazeta 1970), trends common in African countries colonized by Europeans (Adams 2003).

Formal conservation efforts began in 1909, when the Emperor prohibited the killing of wildlife without official permission (Gebre-Michael et al. 1992). In 1944, a restored monarchy regulated hunting under the Ministry of Agriculture. In 1965, the Ethiopian Wildlife Conservation Organization (EWCO) was created to manage game reserves and national parks (NPs), most of which were established shortly thereafter.

The 1972 Conservation of Wildlife Regulations further limited settlement and hunting within NPs, and typically excluded resource use by local communities (Moore 1982; Jacobs and Schloeder 2001). Such exclusion burdened local communities because PAs often included prime grazing lands and water sources (Lane et al. 1993; Turton 1995, 2002). For example, Kereyu pastoralists lost 60% of their productive pasturelands when Awash NP was established in 1966 (Jacobs and Schloeder 1993). Livestock trespass, increased hostility, and the destruction of NP infrastructure and wildlife resulted during periods of civil and political unrest in the 1990s (Ayalew 2001; Stephens et al. 2001).

Conservation efforts languished under the Marxist-led Dergue government (1974–1991), which had toppled Ethiopia's monarchy. After the Ethiopian People's Revolutionary Democratic Front assumed power in 1991, renewed conservation efforts included pilot community-based approaches featuring benefit sharing and the return of limited ownership rights to communities. The central control of most PAs, including NPs, devolved away from the federal agency of EWCO to give regional governments more extensive management authority in order to foster a local sense of ownership toward PAs—a shift largely unique to Ethiopia. This shift was later formalized by the Wildlife Development Conservation and Utilization Policy and Strategy of Ethiopia (2005), which directed that PAs should be managed with community participation at the federal or regional level, or by the private

sector. The only exceptions are those PAs that straddle regional boundaries or lacked sufficient management capacity. As a result, EWCO now only manages four PAs—Yangudi-Rasa and Awash NPs, Senkelle Swayne's Hartebeest Sanctuary, and Babile Elephant Sanctuary.

Today, nearly 40 PAs cover 186,000 km^2, equivalent to 16.4% of Ethiopia's surface area. Of this, 168,932 km^2 are under regional control (90.8%), 12,486 km^2 are under federal control (6.7%), and 4,582 km^2 are under private-sector management (2.5%). Yet as one of Africa's poorest and most densely populated nations, and with more than 80% of its populace engaged in subsistence livelihoods, Ethiopia's human population growth continues to pressure the country's limited forests and arable lands. Protection efforts have failed to stem the loss of Ethiopia's biodiversity, despite the shift toward regional control. National policies adopted since 1991 have sought to improve local relations, although existing laws are still inadequate to stimulate participation sufficient to garner widespread support.

An important first step in creating sustainable and collaborative resource management systems is to understand local attitudes toward wildlife and conservation (Berkes 2004). In Ethiopia, such attitudes are likely to be influenced by the country's unusual sociopolitical history and its historic systems of common property resource management. Unfortunately, few studies have been conducted in Ethiopia to understand local views about

conservation (Ashenafi and Leader-Williams 2005).

Our study examines these attitudes in and around four important Ethiopian PAs. We also compare opinions of PAs under regional and federal control in order to determine if devolution has improved local views. Finally, we compare these views with similar studies conducted in countries with short nationhoods and longer periods of colonization.

Methods

Study Areas, Focus Groups, and Household Surveys

We selected sites representing a wide range of ecological and socioeconomic conditions: Abijata-Shalla Lakes National Park (ASLNP), Bale Mountains National Park (BMNP), Awash National Park (ANP), and Senkelle Swayne's Hartebeest Sanctuary (SSHS) (see Figure 1). ANP and SSHS remain under the federal control of EWCO, while ASLNP and BMNP were devolved to fall under regional control of their respective regions. Subsets of 26 peasant associations—the smallest legally recognized community body—located in and around these PAs were randomly selected to participate in the study (Table 1). Fieldwork was conducted in May–June 2002 and May–June 2003. Six predesigned, open-ended questions were administered to each focus group, asking participants to express their views about: (1) wildlife in their respective PAs; (2) how they believe wildlife should be protected; (3) their

feelings regarding their local PA; (4) whether they feel their PA's presence benefits their community, and if so, how; (5) whether the presence of people and livestock affects PAs; and (6) the desired relationship between PAs and local communities. Where appropriate, we used probes, silence, and echo techniques during the interview process. Focus group discussions were intended to identify key variables to be included in a subsequent household survey described later. This two-stage process allowed us to first identify major issues and themes across the four study sites, and then to incorporate this qualitative knowledge into a household survey to allow for a quantitative analysis of local attitudes.

Two focus groups were held at each site. Group size varied from 8 to 15 individuals identified by senior members of each peasant association following a snowball sampling method (Neuman 2003). Informants represented different socioeconomic backgrounds, were knowledgeable about the historic relationships between PA management and local communities, and included community members who had experienced both good and poor relationships with PA staff. All informants were long-time residents aged 30 to 75 years who had held community leadership positions. Community leaders invited key informants to participate in the focus groups at times and locations of their choice. Local translators were trained in facilitation to ensure that all participants were able to freely express their views (Patton 1990). Silent participants were given a chance

to speak at the end of the discussion. The strong support of community leaders for this research resulted in 100% participation in focus group attendance and discussions.

A survey comprising both closed and open-ended questions was used to explore general household views toward wildlife, PAs, and PA staff. Households were randomly selected from a comprehensive list provided by each peasant association, and the survey was administered via personal interview. Eight local men fluent in Amharic, Oromygna, and Afar were given an overview of the study and hired to conduct and translate each interview. All were literate; five were high school graduates and three had college degrees. No female interviewers were employed, given the lack of literate women in rural areas. As a result, female heads of households are underrepresented in the study due to cultural barriers that restricted our ability to have male interviewers interview female household heads. For each study site, we sought approximately 50 randomly selected households in order to provide a reasonable sample size for statistical purposes (see Table 1). In less populated areas, we set sample minimums at either 5% of households or 50 households, whichever target was reached first. Again, due to strong support from community leaders, all households approached were willing to participate in the survey.

Data Analysis

Text analysis was used to systematically analyze focus-group transcript data by identifying themes, building and applying codes, and making comparisons to discover the regularity with which participants told their stories (Bernard 2002). The principal investigator analyzed the verbatim transcripts to identify themes to determine coding categories and develop a formal codebook. Three coders were hired and trained in the coding system prior to being given the transcripts for coding. Eight transcripts (two from each study site) were distributed to each of the three coders. The SPSS version of KALPHA MACRO software was used to compute Krippendorff's alpha to determine intercoder reliability (Hayes and Krippendorff 2007). Coders achieved a value of Krippendorff's alpha 0.83, indicating a high level of intercoder reliability.

We first analyzed household survey data using Pearson's v^2 tests to determine homogeneity of proportions of categorical sociodemographic variables, followed by forward Wald binary logistic regression models to identify factors related to various attitudes ($p < .05$). Logistic regression modeled the probability of a positive response. Attitudes toward the dependent variables of wildlife and PAs were assigned a value of 0 for negative attitudes and 1 for positive responses. Independent variables, based on input from the focus groups and a review of previous literature, included each of the four study sites, a set of sociodemographic variables, and village location inside or outside of a PA's boundary. Sociodemographic variables included age,

gender, education level, family size, income source, landholding size, number of livestock, whether a household experienced wildlife conflicts, whether or not a household had received PA-derived benefits, and whether or not a household had visited its local PA to use PA resources, recreate, attend a community meeting, or meet relatives or friends who worked in the PA. Goodness of fit for each model was described using the likelihood ratio chi-square test statistic. Model performance on the testing sets was evaluated by calculating the area under the curve (AUC) of receiver operation characteristics plots (Swets 1988). Responses to open-ended survey questions were grouped into different categories based on their similarities. Descriptive statistics were run on selected data to calculate frequencies and cross-tabulations.

Results and Discussion

Focus Groups

Focus-group discussants from ASLNP generally held positive views toward wildlife and the NP. Discussants valued wildlife as a source of national income, and hoped that this would lead to a greater role for local communities in conservation. Villagers were uncertain that people and wildlife could continue to coexist given human population growth and competition for pasture and farmland. Many discussants expressed concern that wildlife outside ASLNP continued to be killed, yet felt that the situation

was beyond their control and hoped for a governmental solution that would protect both wildlife and local interests.

While many discussants supported ASLNP, poor dialogue over the last 30 years had led to mistrust, and many expressed dissatisfaction over how PA staff treated their communities. Discussants were also dissatisfied with the extent of benefits they received from ASLNP, and lobbied for a share of tourism revenues, access to pasture, firewood, and natural water sources such as ponds, swamps, streams, and springs. Only individuals employed by, or receiving benefits from, ASLNP expressed positive views. As a remedy, discussants sought greater involvement in management decisions, a review of the boundary of ASLNP as most were unsure of its location, and the creation of youth conservation programs. All discussants agreed that improving household income would increase local support for conservation.

Discussants from BMNP expressed strong attachments to wildlife, and felt that wild animals were God's creatures possessing spiritual value. Discussants viewed wildlife and people as inseparable, and supported the presence of people in BMNP. Lions, hyenas, and Ethiopian wolves were all perceived as problems, but villagers were surprisingly tolerant of losses. Most knew that BMNP was created to protect wildlife and felt that the NP played an important role in conservation. Villagers also valued the NP because it provided benefits, particularly tourism-related jobs, although more

could be achieved. For example, many felt that household incomes could increase if facilities in BMNP were improved. Participants noted that BMNP staff were more inclusive and provided greater benefits than in years past. Examples included the construction of a health clinic, expanded electrical service, and new jobs. To build on these gains, discussants proposed that BMNP staff improve dialogue and transparency within local communities, and develop youth conservation programs. Finally, some discussants voiced mistrust of local conservation non- governmental organizations (NGOs) because they promised community benefits but seldom delivered.

Discussants from ANP viewed wildlife as an integral part of their lives. They expressed sympathy for extirpated wildlife, and supported conservation of remaining populations through government and NGO support. In fact, many felt that the survival of their livestock was directly linked to the fate of wildlife, and that human population growth threatened the coexistence of people and wildlife. Older villagers described the stark contrast between current resource conditions and earlier times, citing degraded pastures as a primary reason for trespassing within ANP. Most were proud of ANP's contribution to the national economy through tourism revenues, although many felt that they received little direct financial benefit. Participants were also disappointed that ANP hired few locals onto their staff, and felt that villagers should have priority for jobs. It was noted that many NP–community conflicts resulted from misunderstandings, arising in part because

many ANP staff were not local to the area. Most believed that the NP's future depended upon improved community relations. Participants wished to see more local jobs and local ownership rights over some ANP resources, including access to pasture and water during dry seasons.

At SSHS, local views toward wildlife in general, and Swayne's hartebeest in particular, soured after the PA was created in 1976, largely due to the loss of pasture and subsequent fines for trespass. Many participants felt that SSHS was too large, and that some lands could be withdrawn without jeopardizing the survival of hartebeest, which had coexisted with people and their livestock for generations. In support of this view, villagers noted that hartebeest populations had declined after SSHS was created and expressed a desire to care for and protect hartebeest like their own livestock, especially if SSHS provided more community support and participation in management. Most believed that SSHS staff, many of whom were not local to the area, viewed wildlife as more important than people. This perception, combined with frustration over SSHS management and limited benefits, led to the destruction of PA facilities during the 1991 coup. Discussants admitted to illegally gathering firewood and thatch within SSHS, as well as trespassing with their livestock. However, they felt that these resources were rightfully theirs. Since 1996, efforts have been made to improve community relations by enhancing community involvement and employing more locals. Participants noted these improvements, and indicated that increased access to

traditional resources would further improve local support for conservation.

Each focus group revealed some common themes. First, many discussants held positive views toward wildlife, which they traditionally viewed as inseparable from humans and their livestock. Nevertheless, discussants believed that human population growth was increasingly threatening this historic relationship. Residents around ASLNP and ANP, two of Ethiopia's most popular PAs located near Ethiopia's capital, Addis Ababa, were proud of the global significance of their PAs, as well as the role these NPs played in attracting tourists and generating foreign exchange. Second, all focus groups sought greater involvement in PA management, as well as increased benefits such as local jobs, revenue sharing, access to resources, and/or public works projects—findings similar to other studies. Communities from ASNP and BMNP also favored conservation education programs for youth.

Household Surveys

Household Demographics. In total, 384 household heads were interviewed across the four PAs (Table 1). Most interviewees were initially suspicious about being contacted, but concerns were allayed after the goals of the study were explained. Most households lived outside their respective PA and were headed by males (Table 2). Respondents ranged from 15 to 62 years in age, while family size varied from two to 16 individuals. Most respondents had no formal education, and just 37% had completed primary school. None had

attended secondary school. Across all PAs, roughly one-half of respondents depended on subsistence farming, one-quarter cited livestock, and 17.4% practiced both. Less than 10% cited other income sources like small-scale business. Subsistence farming was limited by the availability of arable land, with the vast majority of respondents tending plots of 3 ha or less. Plots tended to be smaller around ANP and BMNP as compared to ASLNP and SSHS ($p < .001$).

Community Attitudes Toward Wildlife, PAs, and PA Staff.

Three-quarters of respondents viewed wildlife as important. However, attitudes differed across PAs ($p < .001$), and respondents from ASLNP showed the least support (Table 3). Reasons given for the importance of wildlife included tourism revenues, hunting and viewing opportunities, and bequest values. Some respondents expressed a range of complex cultural values for wildlife. For example, in past times tribesmen killed lion, buffalo, giraffe, elephant, and leopard to gain respect and attract wives. While village elders fondly recalled these traditions, they also expressed regret that large numbers of wildlife had been killed in the absence of effective protection. Over 80% of respondents believed that wildlife and people could coexist, although nearly one-quarter of ASLNP respondents expressed doubts ($p < .008$) (Table 3). Support for this view differs from that expressed by the focus groups, which doubted continued wildlife/human coexistence given population growth and the ever-growing need for new crop and grazing

lands.

The majority of respondents noted that their respective PA was highly important for wildlife, and very few indicated it had no importance (Table 3). However, attitudes differed across the four PAs ($p < .001$). Overall, more than three-quarters of respondents believed that PAs have significant economic and ecological value, a view held consistently across all PAs ($p = .767$) (Table 3). Economic values focused on tourism revenues, while ecological values included potential use for dry-season pasture and water points. Two-thirds of respondents indicated that they had received benefits from their PA, while just one-third felt that they had not. Attitudes differed across sites ($p < .007$), and ANP respondents claimed the least benefits (Table 3). Tourism revenues were the main benefit cited, as also claimed in Tanzania, Indonesia, and Nepal (Gillingham and Lee 1999; Walpole and Goodwin 2001; Mehta and Heinen 2001). Other benefits included jobs, services from health clinics and schools, and resource use during dry seasons.

Nearly three-quarters of respondents expressed positive attitudes toward PA staff. However, attitudes differed across the four sites ($p < .001$), and respondents from ASLNP and SSHS were the most positive (Table 3). Nearly two-thirds of respondents had visited their neighboring PA, either for recreation, to attend a com- munity meeting, to meet a relative who worked

in the PA, or to use PA resources, although many fewer ($p < .001$) respondents had visited ANP. Overall, less than one in 10 respondents felt that their local PA should be de-gazetted. However, opinion differed across the sites
($p < .005$), and respondents from ANP expressed most support for de-gazettement (Table 3).

Factors Influencing Community Attitudes Toward Wildlife.

Households that expressed positive attitudes toward wildlife protection tended to have received PA benefits, own small livestock herds, have little experience of wildlife conflict, and have visited their PA (Table 4). The logistic model correctly classified 85.5% of original observations and had an AUC of 0.91. Our findings on the importance of PA benefits, wildlife conflict, and PA visitation concur with studies in Rwanda, Indonesia, Nepal, and Tanzania (Harcourt et al. 1986; Walpole and Goodwin 2001; Allendorf et al. 2006; Kideghesho et al. 2007). Indeed, owners of large herds of livestock are more likely to experience greater losses to predation, and so are often less supportive of conservation (e.g., Gadd 2005; Holmern et al. 2007; Romanach et al. 2007). Overall, the frequency of livestock predation was important in explaining whether respondents supported wildlife conservation, a finding that reinforces the importance of mitigating human–wildlife conflicts (Mehta and Heinen 2001).

As noted earlier, more than 80% of respondents thought that people and wildlife could continue to coexist (Table 3). Logistic regression found that respondents who expressed doubts about the possibility of coexistence were less likely to have benefited from their PA, were dependent upon farming for income, and did not report diverse sources of income (Table 4). The logistic model correctly classified 68.9% of original observations and had an AUC of 0.74. These findings may reflect the likelihood that poorer villagers farming small parcels without other income sources are less able to tolerate crop raiding by wildlife. In contrast, respondents who believed that humans and wildlife could coexist depended on livestock and/or nonfarming sources of income, a finding similar to that found around Uganda's Budongo Forest Reserve (Hill 1998).

Factors Influencing Community Attitudes Toward PAs and PA Staff. Households clearly felt that PAs served an important role in wildlife conservation (Table 3). Logistic regression revealed that respondents who expressed this view benefited from PAs, were better educated, older, and had larger families (Table 4). The model correctly classified 75.6% of original observations and had an AUC of 0.818. Benefits most valued included jobs, tourist revenues, and access to resources like pasture, water, firewood, thatching grasses, construction materials, and mineral salt, similar to those benefits found in studies in Natal, South Africa, and Tanzania (Infield 1988; Newmark et al. 1993; Gillingham and Lee 1999). Older and better educated

respondents tended to recognize the role of PAs in wildlife conservation, likely because they had witnessed the effects of resource degradation over time, as the focus groups showed. Many respondents grieved for lost forests and wildlife and recalled the better life they had enjoyed in earlier times. Their lifetime of experience had contributed to their positive attitudes, even though their relationships with PA staff had not always been good. This suggests the existence of strong environmental nonuse values for local communities, including spiritual and cultural values, as also found in Nepal (Allendorf 2007). Overall, 92% of respondents opposed de-gazetting their PA (Table 3). Logistic regression found that supporters of de-gazettement had experienced wildlife conflicts and/or had not received PA benefits (Table 4), as in Tanzania (Newmark et al. 1993). The model correctly classified 71% of original observations and had an AUC of 0.77. At present, few support abolishing their neighboring PAs, but support for de-gazettement could grow if residents fail to realize more benefits. Logistic regression revealed that attitudes toward PA staff were largely determined by three factors: study site, sources of income, and benefits received (Table 4). The model correctly classified 70.3% of original observations and had an AUC of 0.765. Respondents living in and around ASLNP and SSHS enjoyed good relationships with PA staff, while many from BMNP and ANP did not. Respondents from ASLNP and SSHS cited benefits like social services, including transport during ceremonies, and, in emergency cases, access to water and schools.

Respondents who derived income from farming and livestock tended to hold less positive attitudes toward conservation objectives, as suggested by the logistic regression models showing negative coefficients between number of livestock owned and support for wildlife protection, and between farming and possible coexistence of people and wildlife (Table 4). On the other hand, respondents who reported other sources of income tended to be more positive (note that the Wald statistics for all of these variables are included within sources of income; see Table 4). Indeed, demand for additional farmland and pasture is a recurring source of conflict between PA staff and local communities in Ethiopia. While most respondents understood the utilitarian values of PAs, they were appreciative when PA staff granted access to resources in times of need, as was found in Nepal (Allendorf et al. 2006).

Many respondents thought that earlier PA management policies had excluded community participation and ignored local needs, in turn contributing to negative attitudes, as also found in Uganda (Infield and Namara 2001). For example, pastoralist communities have lost grazing lands without compensation in many parts of Ethiopia, and have been left with limited alternatives (Conservation Development Centre 2002). Communities had hoped that the change of government in 1991 would lead to improved PA management, and policies did change to better represent local interests through devolution of authority and the initiation of community-based

projects such as integrated conservation and development projects (ICDPs). Unfortunately, these efforts appear to have been insufficient in the eyes of local com- munities. Indeed, our analysis, while limited to just four PAs, found no significant difference in attitudes toward the staff between federally and regionally managed PAs (i.e., ANP and SSHS vs. ASLNP and BMNP, respectively). Moreover, ICDPs in BMNP and ANP created conflicts both between communities and between communities and the PAs, with villages that received the least benefits expressing the most dissatisfaction. In PAs where people are resident and natural resources remain a key livelihood need, ICDPs may be unable to satisfy broader community interests (Mehta and Heinen 2001; Furze et al. 1996). As a result, our study agrees with another study that showed many Ethiopian ICDPs have achieved only modest success in both conservation and development objectives (Jacobs and Schloeder 2001), and is similar to findings in other countries (Kiss 1990; Western et al. 1994; Gibson and Marks 1995; Alpert 1996; Balint 2007; Linkie et al. 2008).

Conclusions

Conservation efforts in Ethiopia took root within a unique set of social conditions: a powerful monarchy and long-standing feudal system, a long-established church with few European missionaries, limited colonial influence apart from a brief period of Italian occupation, and in recent

decades, periods of rapid population growth and recurring famine. These themes combine to create a unique and previously unexplored set of social conditions in which to examine the development and effectiveness of community-based approaches to conservation.

As described earlier, formal approaches to conservation in Ethiopia followed a similar pattern to other countries in Anglophone Africa, where extensive networks of generally exclusive PAs were established. Yet despite Ethiopia's historical differences, where wildlife resources were conserved through common property regimes often allied to its long-established Christian church (Ashenafi and Leader-Williams 2005), our study has shown that communities in and around four Ethiopian PAs still generally held positive attitudes toward wildlife that had been removed from their control, and toward the modern institutions imposed by their local PA and its staff.

Although some variation was observed across PAs, factors that influenced positive attitudes include receiving PA benefits and services, lack of wildlife conflicts, and good relations with PA staff. These factors have also been found to be important in Anglophone African countries that experienced long periods of colonial rule such as Tanzania (Newmark et al. 1993), South Africa (Infield 1988; Hackel 1990), and Uganda (Hill 1998). Nevertheless, devolving control of PAs from federal to regional levels does not appear to have led to improved attitudes among local communities. Given the strong

influence of PA benefits on community attitudes both in Ethiopia and elsewhere, policies for wildlife conservation need to recognize the need for local communities to derive at least some degree of tangible benefits from PAs, as well as exert some degree of land ownership and control over the use of natural resources. Such policies are not without precedent in Ethiopia. For example, one local community has maintained management control over its own common property resource system, and has shown great support for wildlife conservation outside PAs, despite facing the same political turmoil and humanitarian disasters that have occurred in other regions of Ethiopia (Ashenafi and Leader-Williams 2005). Based on the results of this study, the following recommendations address the issues raised by local communities living in or around four PAs in Ethiopia and aim to further enhance the generally positive attitudes that local residents hold toward wildlife and conservation. Together, these recommendations could form the basis for establishing a legal framework under which communities can collaborate in conservation with a clear understanding of partnership rights and responsibilities.

1. Given the historic and ongoing ties between people, wildlife and PAs, future conservation efforts should include active participation of local communities, including rural women. These efforts should guarantee local communities negotiating power and security in resource decisions. Conservation mandates and authority must be clearly specified at both the

regional and federal levels, as well as for the private sector. Despite provisions in Sections 1.1, 2.4, and 3.1 of the 2005 National Wildlife Policy, expectations of participation are vaguely specified and not yet operational. Thus, transferring control of PAs from a federal to regional bureaucracy does not yet appear to have yielded positive results.

2. Benefit sharing is critical in gaining local support for wildlife conservation. This includes honoring historic resource use rights, as well as the sharing of tourism revenues and creation of jobs and public works. Since the vast majority of rural villagers in Ethiopia are farmers and livestock herders, community development efforts around PAs should focus on diversifying sources of income and ensuring food security. Efforts could include drilling boreholes to alleviate water shortages during extreme dry seasons, and infrastructure development and diversified employment opportunities in and around PAs, especially those that focus on opportunities for wildlife tourism.

3. Most villagers living in and around Ethiopian PAs are illiterate, and this problem is particularly acute for rural women. Given the positive relationship between education and support for conservation goals (Table 4), appropriately targeted education for both youths and adults is a critical precursor to local support and economic development. An important component of such education programs would enable local

people to experience at firsthand the positive role that PAs can play in resource conservation within and outside their borders.

4. Finally, as these recommendations are implemented, they should be set within an adaptive management framework that allows their success or failure to be monitored. This process should include monitoring local attitudes, of which this study can serve as a baseline to evaluate the success of policies adopted in both these and other PAs.

Notes

1. In 2008, EWCO was renamed the Ethiopian Wildlife Conservation Authority.
2. This policy was largely reversed in late 2009 by Federal Negarit Gazeta Regulation No. 163/2008, which returned most parks to the current federal agency, the Ethiopian Wildlife Conservation Authority.

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Figure 1: Protected areas of Ethiopia

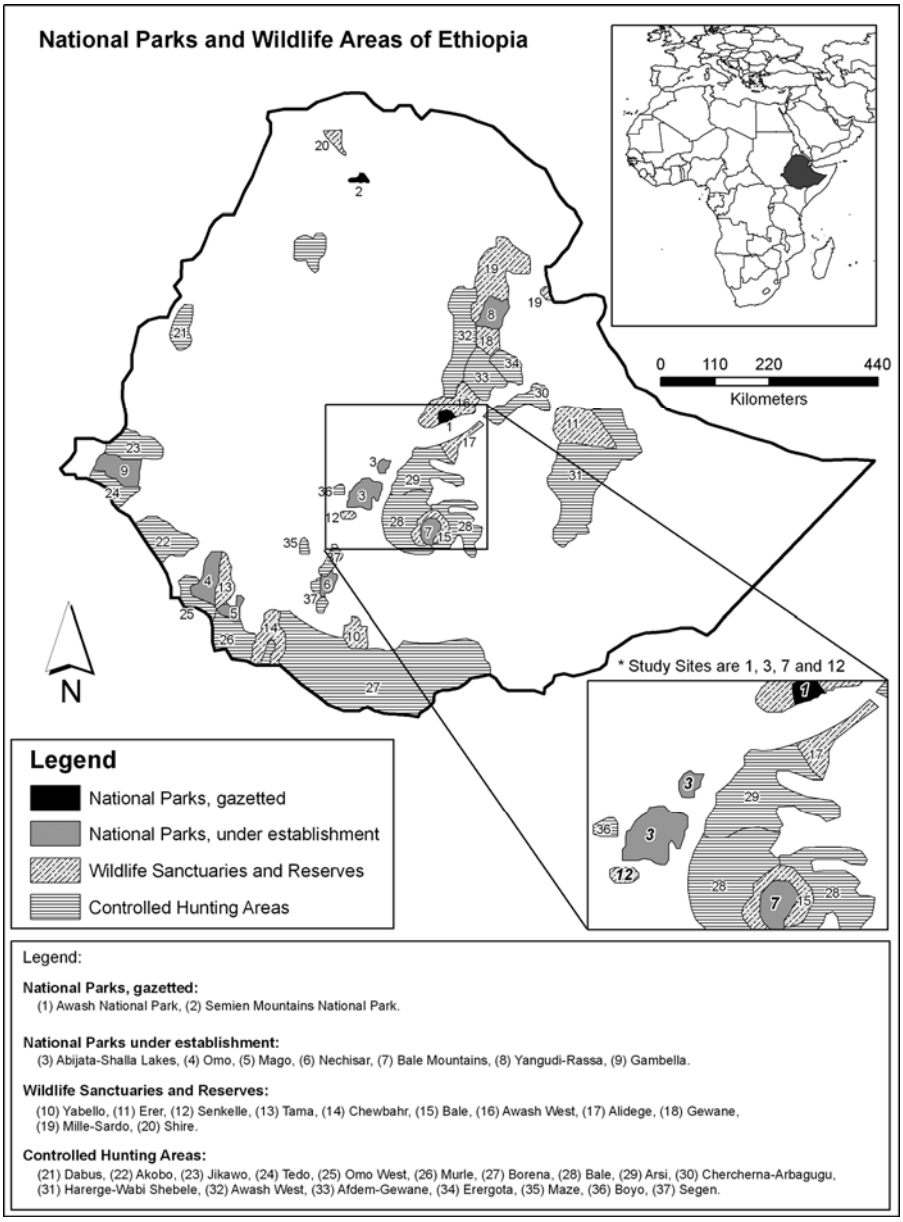

Table 1. Household survey sample characteristics

Peasant associations		Total number of households	Household sample size	
PA	Number		Number	%
ASLNP[a]	8	1980	99	5
BMNP[a]	5	1685	101	6
ANP[b]	9	1985	99	5
SSHS[b]	4	1700	85	5
Total or mean	26	7350	384	5.25

[a]Managed at the regional level.
[b]Managed at the federal level.

Table 2. Sociodemographic characteristics of participants across the four PAs (percentages)

PA	Inside PA (%)	Outside PA (%)	Gender		Age class (years)			Family size			Education		Landholding (ha)			Household income			
			Male	Female	15–30	31–46	47–62	2–5	6–10	>10	Literate	Illiterate	<1	1–3	>3	Farming	Livestock	Both	Other
ASLNP[a]	67.7	32.3	64.6	35.4	54.5	43.4	2.1	36.4	43.4	20.2	47	53	24.2	51.5	24.3	97.9	0	1	1.1
BMNP[a]	48.5	51.5	66.3	33.7	47.5	30.7	21.8	36.6	42.6	20.8	42.5	57.5	58.4	36.7	4.9	31.7	18.8	28.7	20.8
ANP[b]	42.4	57.6	72.7	27.3	13.1	39.4	47.5	38.4	45.4	16.2	6.8	93.2	80.8	14.1	5.1	4	83.8	1.1	11.1
SSHS[b]	0	100	90.1	9.9	32.9	52.9	14.2	27	37.6	35.4	51.8	48.2	25.9	70.6	3.5	61.2	0	38.8	0
Total or mean	39.6	60.4	73.4	26.6	37	41.6	21.4	34.6	42.2	23.2	37	63	47.3	43.2	9.5	48.7	25.7	17.4	8.2
χ^2	19.1		19.1		82.9			10.9			46.9		111.78			368.2			
df	3		3		6			3			3		6			9			
p	<.001		<.001		<.001			>.05			<.001		<.001			<.001			

[a]Managed at the regional level.
[b]Managed at the federal level.

Table 3. Household attitudes towards wildlife, PAs, and PA staff (percent)

PA	Q1			Q2		Q3				Q4		Q5		Q6		Q7		Q8	
	Yes	No	Don't know	Yes	No	High	Medium	Low	Not important	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
ASLNP[a]	62	6	32	77	23	58.9	22	5	14.1	89	11	68	32	87	13	62	38	8	92
BMNP[a]	79	15	6	87	13	93.3	1.9	0.9	3.9	76	24	72	28	59	41	64	36	4	96
ANP[b]	81	6	13	79	21	76.8	0	0	23.2	78	22	52	48	63	37	45	56	16	84
SSHS[b]	89	1	10	81	19	89.4	1.2	0	9.4	76	24	74	26	88	12	84	16	4	96
Mean	77.8	7	15.2	81	19	79.5	6.3	1.5	12.7	79.8	20.2	66.5	33.5	74.2	25.8	63.8	36.5	8	92
χ^2		44.3		12.1				128.3			1.4		12.5		35		36.7		13.4
df		6		3				12			3		3		3		3		3
p		<0.001		<0.008				<0.001			0.767		<0.007		<0.001		<0.001		<0.005

[a]Managed at the regional level.
[b]Managed at the federal level.
Notes: Q1: Is wildlife important and deserving of protection?
Q2: Can people and wildlife coexist?
Q3: Of what importance is your PA to wildlife?
Q4: Does your local PA provide important economic and ecological values?
Q5: Do you receive benefits from your PA?
Q6: Do you have a positive attitude toward PA staff?
Q7: Have you visited your PA?
Q8: Should your PA be de-gazetted?

Table 4. Factors influencing respondents' attitudes toward wildlife, PAs, and PA staff

Dependent variable	Independent variables	Regression coefficient (B)	Df	Wald statistic	Significance
Wildlife are important and should be protected	Benefited from PA	4.49	1	11.35	<.01
	Number of livestock owned	–1.68	1	6.50	.01
	Experienced wildlife conflicts	1.54	1	5.63	.01
	Visited PA	2.18	1	4.24	.04
	Constant	8.36	1	6.99	.01
People and wildlife can coexist	Benefited from PA	1.56	1	21.37	<.01
	Source of income:				
	Other	0.54	1	9.23	<.002
	Farming	–1.87	1	6.26	.01
	Constant	–1.91	1	20.43	<.01
My local PA is important for wildlife conservation	Benefited from PA	1.87	1	23.67	<.01
	Education level	1.02	1	6.14	.01
	Age	0.53	1	4.17	.04
	Family size	0.67	1	6.68	.01
	Constant	–2.61	1	13.15	<.01
My local PA should be de-gazetted	Experienced wildlife conflicts	1.92	1	7.58	.006
	Benefited from PA	–1.79	1	5.52	.019
	Constant	–0.78	1	0.73	.39
I have positive attitudes toward my local PA staff	Protected area[a]	_	3	20.33	<.001
	Source of income[a]	_	3	13.7	<.01
	Benefited from PA	0.88	1	6.6	.01

[a]For categorical independent variables, results for overall effect are presented, but regression coefficients are not reported.