Comparing Conservation Attitudes of Park-Adjacent Communities: The Case of Mole National Park in Ghana and Tarangire National Park in Tanzania

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Research Article

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Abstract

The success of biodiversity conservation in African countries depends to a large extend on the cooperation of local communities. This study compared factors that influence attitudes of local communities toward the conservation of the Tarangire National Park (Tarangire NP) in Tanzania and Mole National Park (Mole NP) in Ghana. The purpose was to find out if the predominantly agricultural-communities around the Mole NP in Ghana will differ in park-attitude than the predominantly pastoral-communities around the Tarangire NP in Tanzania. Household survey was used to assess attitudes and focus group discussions used to elicit further information from respondents to complement the survey data. The study surveyed 365 households in 7 villages: 3 villages adjacent to the Tarangire NP and 4 villages adjacent to the Mole NP. There was significant difference between the park-attitudes of residents in communities near the Mole NP and their counterparts in communities near the Tarangire NP. However, respondents in both countries showed slightly positive and negative attitudes toward the parks as ecological entities and as community development agents, respectively. Factors that had significant effects on attitudes include: "knowledge of park rules," "employment in park," "distance between village and park," "household size," "access to non-timber forest products," and "livelihood activity." The findings suggest that any efforts aimed at increasing local community support for any of the two national parks should critically consider livelihoods diversification, population control, and extensive conservation education in neighboring communities.

Keywords

attitudes, Mole National Park, Tarangire National Park, Ghana, Tanzania, local communities

Introduction

The cooperation of local communities is important for effective conservation of biodiversity in protected areas (PAs). In conservation circles, a general observation is that positive attitudes toward PAs are likely to engender pro-conservation behaviors (Holmes, 2003; St. John et al., 2012). According to Albarracín, Johnson, Zanna, and Kumkale (2005 p. 4.), "attitude is the psychological tendency of an individual to evaluate an entity (person, place, behavior or thing) with a degree of favour or disfavour." Attitude plays a cardinal role in predicting human behavior toward the natural environment (Clayton, 2012; St. John, Edwards-Jones, Jones, & Moloney, 2010). Understanding the attitude of people living in communities near PAs is therefore useful, particularly to PAs managers and conservation policy makers (Allendorf, 2006; Kideghesho, Røskaft, & Kaltenborn, 2007; Mamo, 2015). With the right information on attitudes of local communities, PA managers and other conservation authorities can design appropriate management programs and interventions that can win the support of local communities and thus ensure effective biodiversity conservation (St. John et al., 2012).

Conservation attitudes are usually influenced by many factors depending on community needs vis-à-vis

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the objectives of PAs and the management strategies adopted to achieve those objectives (Bragagnolo, Malhado, Jepson, & Ladle, 2016). Park-community interaction and socioeconomic and demographic factors such as age, gender, household size, education, livelihood activity, and landholding are often used as explanatory variables to determine attitudes toward PAs or conservation in general (Gifford & Sussman, 2012). Age and gender usually interact with other factors, thereby making their unique contribution to attitudes context-specific and difficult to determine (Bragagnolo et al., 2016). The ethnicity, culture, local economy, and religion of a given society determine how gender roles are shared between men and women. For instance, in many African cultures, women and children are assigned the roles of collecting firewood, feeding animals, or fetching water (Ogato, Boon, & Subramani, 2009). Since these activities are based on the natural environment, conservation attitudes of women and children in such settings are likely to be influenced by the availability or scarcity of these resources (Bragagnolo et al., 2016; Gifford & Sussman, 2012). Formal education and conservation awareness are often found to be associated with positive attitudes toward PAs (Allendorf & Yang, 2015; Shrestha & Alavalapati, 2006; Sudarmadi et al., 2001). It is also argued that local residents with formal education are more likely to obey rules protecting PAs than nonliterates (Bragagnolo et al., 2016). However, it is not always the case that education level is positively associated with favorable attitudes. In Kenya, Guthiga (2008) found that educated households were more dissatisfied with the protectionist approach used to manage the Kakamega Forest despite the ecological effectiveness of the approach.

The availability or scarcity of non-timber forest products (NTFPs) to communities fringing PAs does influence attitudes of residents toward protection of natural resources (Kideghesho et al., 2007). Understanding the availability of NTFPs, and the level to which local communities can access those products, can provide important information about the benefits local communities derive from the forest. This helps to establish the level of dependence of local communities on the forest and how conservation regulations can be made and enforced to ensure that community needs and conservation objectives are both met (Schaafsma et al., 2014).

Spatial factors such as "location," "distance from park to community," and "landholding" in fringe communities also influence attitudes toward PAs. Spiteri and Nepal (2006) point out that residents in communities closer to park boundary (where conflicts are more likely) often have less positive attitudes than those in more distant settlements. Villages that are located inside PAs or in wildlife corridors may have the tendency to show negative attitude because they have higher chance of negative interaction with wildlife than those in distant areas (Synman, 2014). Landholding by households can be a determinant of attitudes toward PAs since scarcity of land can compel residents to fall back on neighboring PAs for resources. Allendorf (2006) reported land-owning residents to be more likely to show positive attitude toward PAs in Burma than their landless counterparts. Elsewhere in Nepal, Shrestha and Alavalapati (2006) did not find significant association between landholding and PA-attitudes.

Available literature indicates that the influence of cost-and-benefit considerations on PA-attitudes of local communities is stronger than the influence of demographic factors such as age and gender (Acquah et al., 2017; Bragagnolo et al., 2016; Synman, 2014). Local communities usually weigh what they stand to gain and what they stand to lose in any conservation policy or strategy before they form an attitude (Fiallo, & Jacobson, 1995). Weladji and Tchamba (2003) and Mamo (2015) recognize that damage caused by wildlife has been a fundamental source of people-PA conflicts due to lack of compensation and mistrust between victims and PA authorities. While victims are sometimes accused of overestimating destroyed property, local communities often perceive governments and conservation authorities to have more regard for wildlife than human beings (Davis, 2011). PA agencies also blame victims for farming or living too close to park boundaries (Synman, 2014). As a result, most people who experience frequent wildlife destruction of crops or livestock tend to show less positive attitude toward PAs. Employment of locals in PAs can alleviate poverty (Roe, 2008) and strengthen PA-community relationship. This engenders positive attitudes and support toward PAs (Cetas & Yasué, 2016).

This study examined and compared factors that influence attitudes of residents in communities near the Tarangire National Park (Tarangire NP) in Tanzania and the Mole National Park (Mole NP) in Ghana. The Mole and Tarangire NPs were selected for this study in an attempt to compare the PA-attitudes of park-adjacent communities in East and West Africa. Previous studies on this topic have confined their work to comparing local community attitudes in single regions of Africa (Synman, 2014) or in individual countries (Mutanga, Vengesayi, Gandiwa, & Muboko, 2015). The two national parks were created around the same time. Mole was gazetted as a game reserve in 1958 and made a national park in 1971 while Tarangire was gazetted in 1957 and made a national park in 1970. Both parks are located within savannah biomes and thus have similar wildlife resources.

The parks however differ in terms of the local communities bordering them and their level of development

for tourism. For instance, the major ethnic groups living around the Mole NP (Gonja, Kamara, Mamprusi, and Chakali) are mostly food-crop farmers who live in nucleated villages and cultivate lands far away from their homesteads. On the other hand, the main ethnic groups living around the Tarangire NP are the Maasai, Iraqw, and Rangi, and the dominant livelihood activities include pastoralism and agro-pastoralist. Their homesteads are scattered and far apart from each other to give space for farmlands. Per their cultures, bushmeat consumption is popular among tribes living near the Mole NP in Ghana but the reverse is true for the tribes in communities near the Tarangire NP.

Community-based conservation interventions practiced in communities around the two parks also differ. In Tanzania, wildlife management areas (WMAs) and support for community initiated projects are two intervention programs that are supposed to be helping park-adjacent communities in terms of development and poverty alleviation (Kiwango, Komakech, Tarimo, & Martz, 2015). In Ghana, the operating community-based conservation strategy is known as community resource management area (CREMA). The CREMA mechanism allows communities to identify a resource and develop it with the support of governmental or nongovernmental organizations for sustainable resource use and poverty reduction (Murray, Agyare, Dearden, & Rollins, 2018).

Tarangire NP has better structures for receiving tourists than the Mole NP and therefore is a more popular tourists' destination. Different tourism agencies operate over 15 hospitality facilities and safari services in and around the Tarangire NP. However, only few individuals from the neighboring communities are employed by these agencies. The explanation given is that people in the local communities lack expertise needed to work in such agencies. In an effort to involve the neighboring communities in the tourism business, the Tarangire NP offers some skills training and financial assistance to some members of neighboring communities. In communities near the main entry points of the park, selected individuals are given training and financial support to make and sell artifacts to tourists. Others are given horticultural training to produce and supply fruits and vegetables to the hospitality entities in and around the park.

On the other hand, there are only two lodges in the Mole NP. According to operators of the facilities, most of their employees were recruited and trained from the neighboring communities. Again villages near attraction sites in the Mole NP are assisted by the park to develop homestay accommodation facilities to host tourists who are interested in immersing in local culture. Neighboring communities such as Mognori and Laribanga with ecological and cultural landmarks are becoming satellite tourists' attraction sites that generate some income for the communities (McDowell, 2012). In both national parks, tourists visit neighboring villages to experience traditional setting and culture of the people and this leaves some tourists cash in the villages.

The specific objectives of the study include to:

(i) assess attitudes of neighboring communities toward the Mole and Tarangire NPs,
(ii) determine the effects of some demographic factors, socioeconomic factors, and park-community interactions on the attitudes of communities adjacent the Mole and Tarangire NPs, and
(iii) compare the attitude of respondents in communities near the Mole NP and those of respondents in communities near the Tarangire NP.

Methods

Study Areas

Mole NP—Ghana. The Mole NP was established in 1958 as a game reserve and gazetted in 1971 as a national park. The Mole NP is the first and largest (4,577 km^2) national park in Ghana. It is located in the northern region of Ghana and straddles four administrative districts: West Gonja Disrict, West Mamprusi District, Sawla-Tuna Kalaba District, and Wa District. There are 33 communities fringing the Mole NP with over 40,000 inhabitants. The park is about 149 km from Tamale, the capital city of the Northern Region and is the most important national park in Ghana in terms of visitor attraction and availability of tourists' facilities (Mole NP, 2011).

Tarangire NP. Tarangire NP is the sixth largest national park in Tanzania after Ruaha, Serengeti, Katavi, Mikumi, and Mkomazi National Parks. It is about 118 km from Arusha (the regional capital city) and straddles three administrative districts: Babati, Simanjiro, and Monduli. Tarangire NP has an area of 2,850 km^2 and was designated a game reserve in 1957 and gazzeted a national park in 1970. Tarangire NP is rich in mega fauna, which makes it an attractive tourist's destination. There are over 58 species of large mammals with the popular ones being zebras (*Equus quagga*), wildebeests (*Connochaetes taurinus*), buffalo (*Syncerus caffer*), and elephants (*Loxodonta africana*) (Abukari & Mwalyosi, 2018). Tarangire NP is surrounded by 42 local communities, and most of the people in these communities are agro-pastoralists or pure pastoralists. Figure 1 shows the study areas with the administrative districts hosting the Mole and Tarangire NPs.

Data collection

Household survey sampling design. A village each was randomly selected from the three and four administrative districts hosting the Tarangire and Mole NPs,

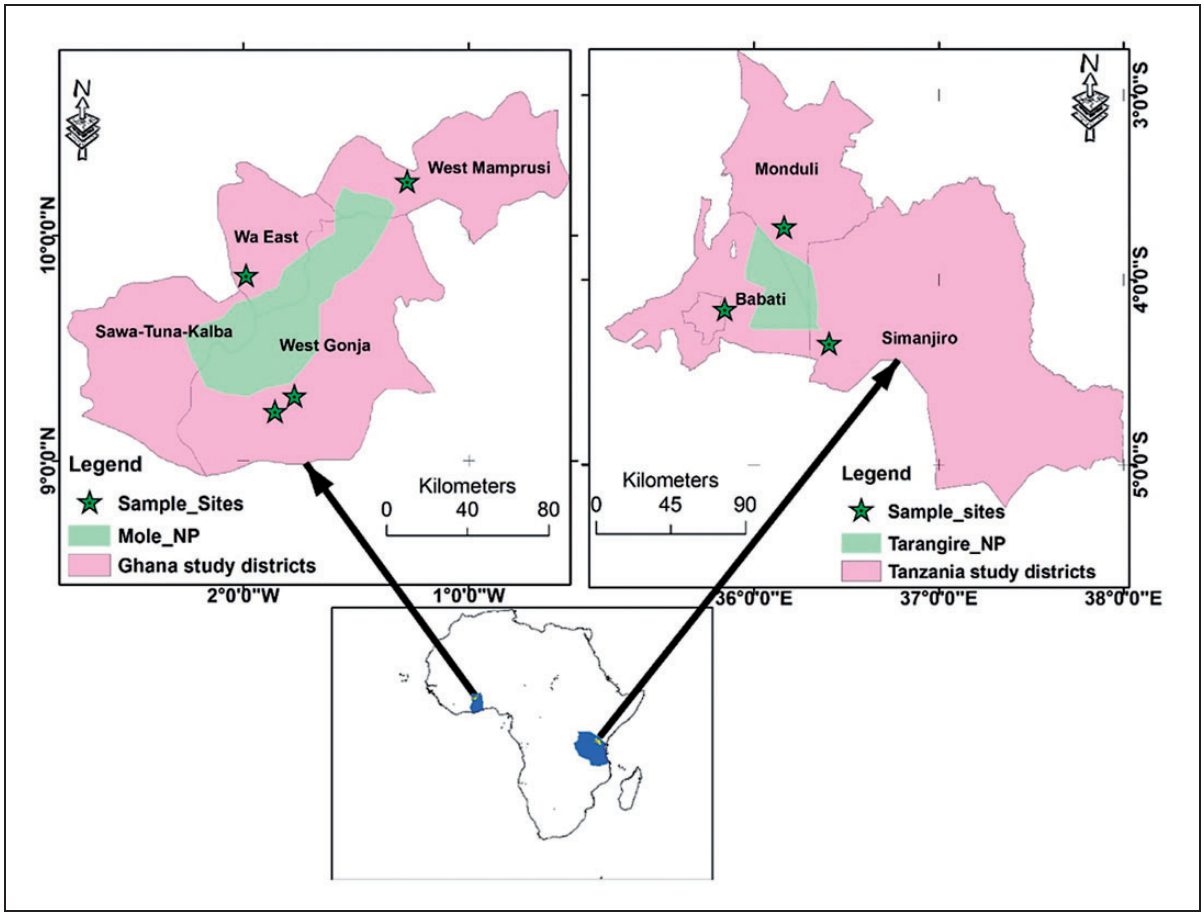

Figure 1. Map of the study areas showing the administrative districts hosting the Mole and Tarangire National Parks.

respectively. Census reports indicated that there were 2,136 and 2,171 people in villages 10 km from the boundaries of the Tarangire NP and Mole NP, respectively (Ghana Statistical Service, 2014; National Bureau of Statistics, 2013). The sum of the two figures (4,307) was taken as the universal population size and Cochran formula (Cochran, 1963) was used to get a representative sample size from the universal population.

$$n_0 = \frac{Z^2}{e^2} \times pq$$

where n_0 is the sample size, Z^2 is the abscissa of the normal curve, e is the desired level of precision, p is the estimated proportion of an attribute that is present in the population, and q is 1–p. The value for Z was taken from statistical tables. For this study, confidence level was set at 95%, precission (margin of error) at ±5% and $p = .5$. The sample size (n_0) was therefore calculated as illustrated later:

$$n_0 = \frac{Z^2}{e^2} \times pq = \frac{(1.96)^2}{(0.05)^2} \times (0.5)(0.5) = 385 \text{ households}$$

For finite and relatively small populations like the one for this study, Cochran suggests an adjustment of the formular which he calls the finite population correction. The correction is necessary to give a more precise sample size. The adjustment was done using Cochran's second equation as shown later:

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}} = n = \frac{385}{1 + \frac{(385-1)}{4307}} = 354$$

where $n =$ the final sample size, $N =$ the universal population size (4,307), $n_0 =$ initially calculated sample size (385).

The resulting sample size (354) was therefore proportionately shared for villages near the two national parks.

At the individual park level, samples were again distributed proportionately among villages based on the number of households in each village. Households were selected through random sampling by using a random number table.

The questionnaire comprised of questions to measure the dependent variable (attitude toward park) and the predictor variables. The predictor variables were derived

from park-community interactions as well as demographic and socioeconomic characteristics (age, gender, education, livelihood activity, landholding, and household size). Park-community interaction variables included (a) distance from community to park boundary (distance), (b) employment by park (employment), (c) knowledge of park rules and regulations (park rules), (d) access to NTFPs, and (e) damage caused by wildlife.

The scale of statements used to measure the dependent variable had two parts. Table 2 shows the statements and percentages of responses given by respondents. Part 1 comprised of statements meant to assess attitudes of respondents toward the national park as an ecological entity, and Part 2 assessed respondents' perception of the national park as an agent for community development. This was done to avoid generalization of attitudes of respondents towards the parks. Care was taken to counterbalance positively and negatively worded statements so as to have equal number of positive and negative statements on each issue (Ajzen, 2002).

The questions were drawned from responses obtained from elicitation studies conducted in three villages each near the Mole and Tarangire NPs prior to designing the questionnaire. The aim of the elicitation studies was to identify salient issues that arise from interactions between the two national parks and their neighbouring communities (Ajzen & Fishbein, 1980).

A 7-point Likert scale ($1 = stongly\ disagree$ . . . $7 = strongly\ agree$) was put against each statement for respondents to indicate their level of agreement or disagreement. Statement scores were added together to give overall attitude scores (Aipanjiguly, Jacobson, & Flamm, 2003).

The questionnaire was pretested in October 2016 and was refined and administered in December 2016 in Tanzania. It was translated from English to Kiswahili for use in Tanzania since Kiswahili is the national and most popular language in Tanzania. In Ghana, the questionnaire was pretested in March 2017 and administered in June 2017. In Ghana, the questionnaire was administered in English because all enumerators could fluently speak English and the local languages spoken in the surveyed villages.

Focus group discussion. A check list of questions was prepared to elicit information on residents' perceptions on: (a) natural resources conservation (e.g., What do you think about protecting some part of the natural environment for future generations?), (b) benefits of the park to the community (e.g., What are the advantages of living next to the national park?), (c) the park's restriction on access to resource use (e.g., What are the disadvantages of living next to the national park?), (d) park governance and management (e.g., Are you involved in decision-making processes to decide how natural resources in your area should be managed?), and (e) livelihood impacts (e.g., How does the national park affect your livelihood activities?). The discussions were held to collaborate, cross-check, or infer the data collected on the household survey questionnaire. Discussions were held in each of the surveyed villages. Total number of participants were 27 and 32 for Tarangire NP and Mole NP, respectively.

Data analysis. Data analysis was conducted using IBM SPSS version 20 with the level of significance set at $p < .05$. Reliability of the scale used to measure the dependent variable (Attitude toward park) was checked using Cronbach's alpha. Cronbach's alpha values lie between 0 and 1 with values ≥ 0.7 indicating high internal consistency (DeVellis, 2003). Chi-square test and t-test were test was used to determine significant difference between park-community interactions and sociodemographic and socioeconomic variables for the two groups of respondents (Table 1). The Student's t test was used to find differences in the mean attitude scores between the groups of respondents in Mole and Tarangire NPs. The effects of independent variables on the dependent variable were determined using stepwise regression. The regression process included checking to ensure no violation of the assumptions of normality, linearity, homoscedasticity, and multicollinearity. Respondents' mean attitude scores were regressed with "Landholding," "Distance," "Park rules," "Employment," "DCW," "Household size," "Age," "Gender," "Education," "Access to NTFPs," and "Livelihood activity" (crop farming, pastoralism, agro-pastoralism, petty trading, and fishing or hunting).

Results

Background Characteristics of Respondents

We conducted a total of 365 interviews with 181 respondents in Tarangire NP and 184 respondents in Mole NP. More males than females were encountered as household heads in both countries (Mole NP: males = 68.5%, females = 31.5%; Tarangire NP: males = 62.4%, females =37.6%). Table 1 shows details of predictor variables investigated to relate with attitude of respondents in Mole and Tarangire NPs.

About two thirds (70%) of respondents in Tarangire NP and about half (54%) of their counterparts in Ghana indicated their crops or livestock have ever been destroyed by wildlife.

Table 1. Predictor Variables Used to Explain Attitudes of Respondents Toward the Mole and Tarangire NPs.

	Tarangire NP		Mole NP				
Continuous variables	Mean	*SD*	Mean	*SD*	*t*	*p*	Cohen's *d*
Age	41.74	12.75	39.70	12.07	−1.569	.118	0.16
Household size	7.32	4.36	7.87	4.04	−1.247	.213	0.13
Distance (km)	2.83	1.54	3.80	3.46	−3.489	.001*	0.44
Education (years)	5.71	3.66	4.59	5.51	2.303	.022*	0.26
Categorical variables	%		%		x^2	*p*	λ
Gender					1.476	.224	0.00
Female	38		31				
Male	62		69				
Landholding					307.93	<.001	0.91
	Yes = 3		Yes = 96				
	No = 97		No = 4				
Access to NTFPs					111.25	<.001*	0.52
	Yes = 19		Yes = 76				
	No = 81		No = 25				
Knowledge of park rules					5.633	.018*	0.00
	Yes = 31		Yes = 43				
	No = 69		No = 57				
HH member employed in park					19.301	<.001*	0.00
	Yes = 3		Yes = 15				
	No = 97		No = 85				
Livelihood activity					170.27	<.001*	0.300
	20		53				
	9		2				
	58		5				
	8		2				
	5		18				
	0		20				

Note. NTFPs = non-timber forest products; HH = household; NP = national park. Distance was measured in kilometers (km) and education measured in terms of number of years spent in formal education.
*p value is significant at .05 alpha level.

Overall Attitudes Toward the Mole and Tarangire NPs

Twenty statements were used to assess the attitudes of residents in communities near the Mole and Tarangire NPs. The internal consistency of the items is considered acceptable ($\alpha = 0.75$). This means over 70% of variance in the scores is reliable variance; a suggestion that most participants answering one question with a positive attitude toward a park, also did so in other questions. Table 2 gives details on responses to the items and reliability contribution of each item. Overall mean attitude scores on the 7-point scale were greater than 4 for both respondents in Mole NP and Tarangire NP, indicating overall positive attitudes toward both Mole and Tarangire NPs.

Independent-samples *t*-test conducted showed significant difference between the overall attitude scores of respondents in communities near the Tarangire NP ($M = 4.46$; $SD = 0.81$) and their counterparts in communities near the Mole NP ($M = 4.22$; $SD = 0.72$), $t(3636) = 3.00$, $p < .05$; $d = 0.32$. The difference is small since the effect size ($d = 0.32$) is far less than Cohen's (1988) convention for large effect ($d = 0.80$). Also on the Likert scale, scores between 4.1 and 5.0 represent slightly positive, thus the overall attitudes of respondents whether in Mole or Tarangire NP, are only slightly positive. Nonetheless, the results demonstrate that respondents in communities near the Tarangire NP have a higher positive attitude than that of respondents in communities near the Mole NP.

Attitude Toward the Mole and Tarangire NPs as Ecological Entities and as Community Development Agents

Attitude toward the Tarangire NP as an ecological entity was higher ($M = 4.33$, $SD = 0.16$) than attitude toward it as an agency to support social and economic development ($M = 3.92$, $SD = 1.09$), $t(360) = 5.0$, $p < .01$; $d = 0.53$. Table 2 shows percentages of responses to

Table 2. Statements Used to Measure Attitudes Toward Mole and Tarangire NPs and Percentages of Responses.

	Response of residents around TNP (Tanzania)					Response of residents around MNP (Ghana)					Cronbach's alpha when item is deleted
	Positive (%)	Negative (%)	Neutral (%)	Mean	*SD*	Positive (%)	Negative (%)	Neutral (%)	Mean	*SD*	
Statements pertaining to attitude toward the national park as an ecological entity for conservation											
Harvesting of forest products (fuelwood, poles, rafters, fruits, and grasses) should be allowed in the park.	69	28	3	4.80^{p}	1.89	2	96	2	1.91^{n}	0.99	0.76
Grazing of animals in the park should be allowed.	59	41	0	4.65^{p}	2.31	2	98	2	1.93^{n}	0.80	0.74
Wildlife should be protected for posterity.	98	0	2	5.93^{p}	0.82	71	27	2	4.93^{p}	1.99	0.73
Picking fruits or nuts and collecting grasses in the park will destroy wildlife habitat.	99	0	1	5.82^{p}	0.86	96	4	0	5.77^{p}	1.10	0.75
Grazing livestock in the park will destroy its natural vegetation.	39	60	1	3.51^{n}	2.03	88	10	2	5.61^{p}	1.46	0.73
It is good the natural vegetation and wildlife near my village is protected.	96	3	1	5.84^{p}	0.89	95	3	2	5.85^{p}	0.93	0.75
If subsistence hunting is allowed in the park wildlife will be decimated.	90	1	9	5.63^{p}	0.95	28	69	2	3.31^{n}	1.88	0.74
Protecting this land is waste of productive land.	24	75	1	3.31^{n}	1.75	5	90	5	2.22^{n}	1.27	0.75
People should be allowed to hunt in the park for their household protein needs.	6	93	1	2.16^{n}	1.16	90	8	2	5.85^{p}	1.52	0.75
Wild animals that destroy crops and livestock should be killed.	9	82	9	2.60^{n}	1.44	69	30	1	4.93^{p}	2.29	0.73
Statements pertaining to attitude toward the national park as an agency for social and economic change											
Government is doing little to help my community with income from the park.	71	23	6	5.37^{p}	1.74	82	17	1	5.55^{p}	1.71	0.73
The park provides social amenities in my community.	62	36	2	4.62^{p}	1.98	45	51	4	3.98^{n}	2.12	0.73
The staff of the park are friendly to people in my community.	30	64	6	3.28^{n}	1.99	72	25	3	4.90^{p}	1.89	0.71
Depending on wildlife trade for income is not a good thing to do.	89	0	11	5.71^{p}	0.99	25	58	17	3.58^{n}	1.72	0.74
The park creates employment for people in my community.	10	86	4	2.48^{n}	1.83	36	61	3	3.41^{n}	1.85	0.72
Tourism in the park creates income-generating opportunities for people in my community.	5	89	6	2.20^{n}	1.29	38	59	3	3.58^{n}	1.96	0.72
Bushmeat trade is part of our income-generating opportunities.	0	99	1	1.81^{n}	0.77	9	90	1	2.29^{n}	1.39	0.75
The park adversely affect our livelihoods through wildlife depredation and limited access to resources.	51	49	0	4.23^{p}	2.55	33	66	1	3.23^{n}	2.12	0.71
Only rich people from outside my community make money from tourism.	94	6	0	6.34^{p}	1.37	82	16	2	5.55^{p}	1.84	0.75
The staff of the park harass people in my community.	58	36	6	3.65^{n}	2.14	35	61	4	4.67^{p}	2.17	0.72

Note. n = negative attitude; p = positive attitude. Reliability of each statement is also shown. The scores were recoded into "positive," "negative," and "neutral" (neither), such that the "disagree" side of the Likert scale (1 = *strongly disagree*, 2 = *quite disagree*, and 3 = *slightly disagree*) represented negative attitude with the middle score (4 = *neither agree* nor *disagree*) representing neutral attitude and the "agree" side (5 = *slightly agree*, 6 = *quite agree*, and 7 = *strongly agree*) represented positive attitude.

statements used to measure attitudes. In the same vein, the attitudes of respondents in Ghana toward the Mole NP as ecological entity was higher ($M = 4.10$, $SD = 0.36$) than their attitude toward it as an agency to support social and economic development ($M = 3.58$, $SD = 0.86$), $t(366) = 5.8$, $p < .01$; $d = 0.61$. The results therefore indicate that respondents have positive attitudes toward the Mole and Tarangire NPs as ecological entities but negative attitudes when the parks are considered as agencies for supporting social and economic development.

Respondents were unanimous on their opinion on the conservation of natural resources in the Mole and Tarangire NPs. Overwhelming majority of respondents in both Tarangire NP and Mole NP agreed with the statement: "wildlife should be protected for posterity." An equally vast majority of respondents in Tarangire NP and Mole NP disagreed with the negatively worded version of the statement, asserting their fondness for the natural environment. Both groups of respondents in Mole NP and Tarangire NP agreed that it was good to have natural vegetation and wildlife near their villages conserved (Table 2).

More respondents in Tarangire NP than respondents in Mole NP disagreed that tourism created income-generating opportunities in their communities. However, the perception of most respondents, whether in Mole NP or Tarangire NP is that only rich investors from outside their communities benefit from tourism businesses.

Relationship between park-staff and local communities in Mole NP may be stronger than that between staff of Tarangire NP and their neighboring communities. This may be because a good number of park rangers in Mole NP are recruited from the neighboring communities while majority of staff members of Tarangire NP are not from the Tarangire area.

Influence of Park-Community Interactions, Demographic, and Socioeconomic Characteristics on Attitudes

Stepwise multiple regression was performed to predict the overall attitudes of respondents toward the Mole and Tarangire NPs. For respondents in Tarangire NP, significant predictor variables include "distance," "household size," "park rules," "access to NTFPs," and "livelihood activities." Only three predictor variables ("distance," "household size," and "park rules") were found to be significant for respondents in Mole NP. Table 3 shows details of the model summary.

The best models (Model 7 for Tarangire NP and Model 3 for Mole NP) explained 82% and 74% of the variation in respondents' attitude toward the Tarangire NP ($R^2 = 0.82$, $F(7, 173) = 114.27$, $p = < .001$) and the Mole NP ($R^2 = 0.74$, $F(3, 178) = 169.59$, $p < .001$),

Table 3. Model Summary of Regression Relating Predictor Variables and Attitudes of Respondents Toward the Tarangire and Mole National Parks.

						Change Statistics				
	Model	R	R^2	Adjusted R^2	Standard error of the estimate	R^2 change	F change	df 1	df 2	Sig. F change
Tarangire NP	1	.872[a]	.761	.760	.39891	.761	570.224	1	179	.000
	2	.883[b]	.780	.778	.38383	.019	15.350	1	178	.000
	3	.892[c]	.796	.792	.37100	.016	13.520	1	177	.000
	4	.897[d]	.805	.801	.36326	.010	8.623	1	176	.004
	5	.902[e]	.813	.808	.35691	.008	7.313	1	175	.008
	6	.904[f]	.817	.811	.35396	.004	3.937	1	174	.049
	7	.907[g]	.822	.815	.35007	.005	4.888	1	173	.028
Mole NP	1	.828[h]	.686	.684	.40451	.686	393.394	1	180	.000
	2	.846[i]	.715	.712	.38643	.029	18.236	1	179	.000
	3	.861[j]	.741	.736	.36962	.026	17.658	1	178	.000

Note. NP = national park.
[a]Predictors: (Constant), distance.
[b]Predictors: (Constant), distance, agro-pastoral.
[c]Predictors: (Constant), distance, agro-pastoral, pastoral.
[d]Predictors: (Constant), distance, agro-pastoral, pastoral, park rules.
[e]Predictors: (Constant), distance, agro-pastoral, pastoral, park rules, household size.
[f]Predictors: (Constant), distance, agro-pastoral, pastoral, park rules, household size, petty trading.
[g]Predictors: (Constant), distance, agro-pastoral, pastoral, park rules, household size, petty trading, access to NTFP.
[h]Predictors: (Constant), distance.
[i]Predictors: (Constant), distance, park rules.
[j]Predictors: (Constant), distance, park rules, household size.

Table 4. Results of Standard Multiple Regression Showing the Effects of Demographic, Socioeconomic Factors, and Park-Community Interaction on Attitudes Toward the Mole and Tarangire National Parks.

Tarangire National Park					
Variable	*b*	*SE* of *b*	β	*t*	*p*
Constant	3.679	.097		37.746	.000
Crop distance	.454	.019	.856	24.122	.000
Household size	–.018	.006	–.095	–2.913	.004
Park rules	.180	.060	.102	2.988	.003
Access to NTFP	.123	.056	.072	2.211	.028
Farming	Reference				
Agro-pastoral	–.313	.061	–.190	–5.155	.000
Pastoral	–.436	.108	–.144	–4.034	.000
Petty trade	.286	.128	.077	2.229	.027
Mole National Park					
(Constant)	4.512	.075		59.878	.000
Distance	–.166	.008	–.800	–20.616	.000
Household size	.029	.007	.161	4.202	.000
Park rules	.277	.057	.190	4.880	.000

Note. b = unstandardized regression coefficient; β = standardized regression coefficient; *SE* = standard error of b; t = student t-test statistic; p = level of statistical significance. "Farming," "agro-pastoralism," "pastoralism," and "petty trade" all represent the variable "livelihood activities."

respectively. Table 4 shows details of Models 7 and 3 for Tarangire and Mole NPs, respectively. Distance from respondents' location to park boundary was the most important variable predicting attitudes in both parks, accounting for 76% and 69% variation for respondents in Tarangire and Mole NPs, respectively.

Discussion

Our results showed significant difference between the park-attitudes of residents in communities near the Mole NP in Ghana and that of their counterparts in communities near the Tarangire NP in Tanzania. However, residents in communities near both parks showed slightly positive attitudes toward the parks as ecological entities and slightly negative attitudes toward them as agencies for economic advancement. The results demonstrate that while residents in communities near the two parks may not be satisfied with the economic support they get from the parks, they appreciate the noneconomic values of conservation. This is in line with the findings of Allendorf (2006) and Synman (2014) who reported that residents in communities near PAs in developing countries do appreciate the noneconomic values of PAs such as ecosystem services and benefit of future generations. When attitudes of local residents toward the ecological values and socioeconomic values of PAs are combined and measured, it can lead to misconception and misinterpretation of findings where local residents can easily be seen to be negative and confutative to the concept of conservation (Allendorf, 2006).

Difference in community-based natural resources management and use strategies adopted in Ghana and Tanzania could also contribute to the slight difference between attitudes of respondents. The CREMA in Ghana allows the state institution in charge of wildlife management (Wildlife Division of the Forestry Commission) to transfer authority and responsibility for wildlife management to rural communities to manage (Asare, Kyei, & Mason, 2013). The main aim of CREMA is to ensure sustainable use of natural resources and improved livelihoods of local communities. CREMA-owning communities are trained on wildlife monitoring and rehabilitation of degraded vegetation. More sustainable local production systems are adopted and both financial and technical assistance given to community members to boost their livelihood activities (Bosu, 2014; Murray, et al., 2018).

On the other hand, the operating community-based natural resources management mechanism in Tanzania is the WMAs system. WMAs like CREMAs are preferably and mostly established in areas adjacent to large state-owned PAs such as national parks. WMAs are a strategy to sustainably manage and use wildlife resources on village-owned lands in Tanzania. Although local communities are said to be the owners and managers of WMAs, management activities are guided by laws and regulations given by state institutions who also have a share in benefits accruing from the WMAs (Green & Adams, 2015; Kiwango et al., 2015). Park-adjacent communities in Tanzania are also expected to benefit from earnings of national parks through a program known as Support for Community Initiated Projects, sponsored by TANAPA.

It would appear the WMA system in Tanzania may be impacting more positively on attitudes toward PAs than the CREMA system in Ghana as our results show that respondents in Tarangire NP are slightly more positive than their counterparts in Mole NP.

Conservation initiatives under the CREMAs and WMAs have common objectives of ensuring sustainable resource management and utilization (Asare et al., 2013; Kiwango et al., 205); however, their impact on the PA-attitudes of neighboring communities may still be marginal. As our results indicated, respondents in both parks showed almost neutral attitudes toward the parks which may be an indication of lack of interest in the affairs of the parks. The CREMAs and WMAs initiatives benefit only a minute fraction of the population living near the parks, thus limiting their ability to influence change in attitudes in the larger park-adjacent communities.

The Mole and Tarangire NPs both have it as part of their objectives to ensure that local communities benefit from tourism activities. The two parks are employing various strategies to incorporate local communities into the tourism business but so far only very few of the populations living near parks are benefiting from tourism. The contribution of tourism to the improvement of livelihoods in neighboring communities is minute and may not be able to influence attitudes toward the parks.

Factors Influencing Attitudes Toward the Mole and Tarangire NPs

Distance. Distance from park boundary to respondents' community had the greatest influence on attitudes toward both the Mole and Tarangire NPs. However, while increase in distance between the Tarangire NP and its neighboring communities may lead to more positive attitudes toward the park, increase in distance between the Mole NP and its neighboring communities is likely to engender less positive attitudes. The results for respondents in Tarangire NP falls in line with the findings of earlier studies which indicate that communities that are distant from PAs are more likely to have positive attitudes than communities that are very close to PAs (Jim & Xu, 2002; Spiteri & Nepal, 2006). Human-wildlife conflicts are more likely in communities that are closer to PAs and this often engenders less positive attitudes toward PAs. However, Røskaft, Händel, Bjerke, & Kaltenborn, (2007) and Ansong and Røskaft (2011) did not find distance to have effect on attitudes toward conservation in Ghana and Norway, respectively. The counterintuitive result of the group of respondents in Ghana is due to distant-neighboring communities' indulgence in poaching. Park authorities disclosed that many of the poachers they arrest in the park tend to come from communities that are a little distant from the park. For instance, park authorities cited one of the surveyed villages (Ducie) which is 9 km from the park boundary as one community from which poachers often come.

Knowledge of park rules. Respondents' knowledge of rules and regulations governing the park was a significant factor in determining their attitudes toward the Mole and Tarangire NPs. Respondents who knew the rules and regulations of the Mole NP were likely to have more positive attitude than their counterparts who did not know. Conversely, respondents who knew the rules and regulations of the Tarangire NP were likely to have less positive attitude than their counterparts who did not know the rules. It is instructive to note that wildlife regulations are more punitive and more enforced in Tanzania than they are in Ghana. The result from respondents in Tanzania may therefore be a reflection of their perceptions about wildlife laws and regulations in their country. During focused group discussions in Tanzania, participants opine that laws and regulations protecting wildlife are too punitive and preclude measures for the well-being of people living near PAs.

Respondents in Ghana who knew the regulations protecting the Mole NP may be comfortable with them because laws protecting wildlife are not strictly applied. Local residents who find park rules and regulations to be considerate are likely to hold positive attitudes toward PAs (Allendorf, 2006).

Access to NTFPs. Our results suggest that respondents who have access to NTFPs in areas outside the national park are less likely to harbor negative attitudes toward the Tarangire NP than their counterparts who face scarcity of NTFPs. This is in line with the findings of Kideghesho and Mtoni (2008) who report that residents near Serengeti NP have cited competition for land, scarcity of pasture and water, as their reasons for opposing the creation of new WMAs. However, access to NTFPs did not show significant effect on attitudes of respondents toward the Mole NP. This may be because residents in communities near the Mole NP have access to sufficient land and forest products such as fuelwood, rafters, and thatching grass. There is a marked difference in communities' access to forest resources in areas near the Mole and Tarangire NPs. Residents near the Mole NP have access to sufficient forest products such as fuelwood, rafters, and thatching grass, whereas their counterparts near the Tarangire NP experience scarcity for such resources. Increasing human and livestock populations in communities around the Tarangire NP are identified as major drivers of environmental degradation and scarcity of forest resources (Hariohay and Roskaft, 2015 Mwalyosi, 1991; Sachedina, 2006).

Household size. Our results showed that the independent variable "household size" was the third major predictor of respondents' attitudes toward both the Mole and Tarangire NPs. However, while increase in household size in communities near the Mole NP in Ghana were likely to lead to increase in positive attitudes, large households in communities near the Tarangire NP in Tanzania were likely to have negative attitudes toward the park. The finding from respondents in Tanzania is in line with (Shrestha & Alavalapati, 2006) while the finding from respondents in Ghana corroborates Tessema, Lilieholm, Ashenafi, and Leader-Williams (2010). However, other studies (Allendorf, 2006; De Boer & Baquete, 1998; Kideghesho et al., 2007; Mir, Noor, Habib, & Veeraswami, 2015) did not find household size to have significant effect on attitudes toward PAs. Large rural families need more resources such as fuelwood (for household energy needs) and rafters and poles (as construction materials). Scarcity of these forest resources may explain why large households near Tarangire NP display less positive attitudes toward the park. About two thirds of respondents in Tanzania would like authorities of the Tarangire NP to allow the harvesting of fuelwood and construction materials from the park. On the other hand, increasing economic opportunities created by a nongovernmental organization (A ROCHA International) in communities close to the Mole NP could have influenced the attitudes of large households toward the park. Through CREMA projects, A ROCHA International gives training and financial support to community members to boost their income-generating activities in agro-processing, craft making, and petty-trading. Since the support trickles down to individual members in a group, larger households stand to gain more and may display more positive attitude toward the park than small households may do.

Livelihood activity. Livelihood activity had significant effect on attitudes of respondents in Tanzania but did not show significant effect on attitudes of respondents in Ghana. Majority of previous studies have shown that economic activities of local communities have significant effect on attitude toward PAs (e.g., Anthony, 2007; Bush, Ikirezi, Daconto, Gray, & Fawcett, 2010; Chowdhury, 2014; Roy, 2016). Respondents in Tanzania who are pastoralists and agro-pastoralists had less positive attitude than their counterparts who are farmers and petty traders. Petty traders had more positive attitude than farmers but there was no significant difference between the attitudes of fishers or hunters and farmers. It was disclosed during focused group discussions, that apart from losing their livestock to large carnivores, some of the pastoral communities have land disputes with the Tarangire NP and that might have caused some disenchantment toward the park. The compatibility of pastoralism and agro-pastoralism with wildlife conservation is a matter of debate. Some research findings (Fynn, Augustine, Peel, & de Garine-Wichatitsky, 2016; Tyrrell, Russell, & Western, 2017) have reported the two activities to be compatible with conservation while others reported the contrary (Beschta et al., 2014; Ekernas et al., 2017).

Implications for Conservation

Our study revealed that residents in communities near the Mole and Tarangire NPs accept the concept of setting land aside to conserve natural resources. However, there is also the perception among neighboring local communities that they do not get equitable share of benefits from the parks. Findings of this study point to the need for livelihood diversification in communities near the Tarangire NP to give residents income-generating activities that are more compatible with wildlife conservation. Apart from the potential to engender positive attitudes and support for the park, alternative livelihood activities will avert future pressures that may result from the increasing livestock population and the area of farmlands in the Tarangire ecosystem (Hariohay & Røskaft, 2015). The Mole NP may have to intensify conservation awareness education and extend it to communities that are more distant in order to change attitudes and behaviors about wildlife use in their neighboring districts. More communities around the Mole NP need to be targeted for CREMA projects so that more local people can receive conservation awareness education (Murray et al., 2018) and may become more committed to sustainable use of forest and wildlife resources.

Damage caused by wildlife and the lack of compensation thereafter engender negative attitudes toward PAs and heighten conservation conflicts. Both Mole and Tarangire NPs need to support local residents to find new ways of curbing wildlife attacks on farms, livestock, and humans. This could be done by supporting communities with financial and technical resources to build barriers that will prevent marauding wild animals from entering farms and villages. For example, the elephant repellant fence technique, which comprises of fabric lased with powdered chili pepper, is found to be effective in repelling the elephant from crop farms (Enukwa, 2017). This technique could be disseminated in communities around the Mole and Tarangire NPs to reduce crop-raiding incidences and promote good relationship between Park and community.

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References

Abukari, H. & Mwalyosi, R. B. (2018). Comparing pressures on national parks in Ghana and Tanzania: The case of Mole and Tarangire National Parks. *Global Ecology and Conservation*, *15*, 1–13. https://doi.org/10.1016/j.gecco.2018.e00405

Acquah, E., Rollins, R., Dearden, P., Murray, G., Acquah, E., Rollins, R.,... Murray, G. (2017). Concerns and benefits of park-adjacent communities in Northern Ghana : The case of Mole National Park. *International Journal of Sustainable Development & World Ecology*, *24*(4), 316–327. doi:10.1080/13504509.2016.1221480

Aipanjiguly, S., Jacobson, S. K., & Flamm, R. (2003). Conserving manatees : Knowledge, attitudes, and intentions of boaters in Tampa Bay, Florida. *Conservation Biology*, *17*(4), 1098–1105. doi:10.1046/j.1523-1739.2003.01452.x

Asare, R. A., Kyei, A., & Mason, J. J. (2013). The community resource management area mechanism: a strategy to manage African forest resources for REDD+. *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences*, *368*(1625), 20120311. https://doi.org/10.1098/rstb.2012.0311

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the Theory of Planned Behavior1. *Journal of Applied Social Psychology*, *32*(4), 665–683. doi:10.1111/j.1559-1816.2002.tb00236.x

Ajzen, I., & Fishbein M. (1980). *Understanding attitude and predicting social behavior*. Upper Saddle River, NJ: Prentice-Hall.

Albarracín, D., Johnson, B. T., Zanna, M. P., & Kumkale, T. G. (2005). Attitude: Introduction and scope. In D. Albarracín, B. T. Johnson, & M. P. Zanna (Eds.), *The handbook of attitude* (pp. 3–20). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.

Allendorf, T. D. (2006). Residents' attitude toward three protected areas in southwestern Nepal. *Biodiversity and Conservation*, *16*(7), 2087–2102. doi:10.1007/s10531-006-9092-z

Allendorf, T. D., & Yang, J. M. (2015). The role of gender in local residents' relationships with Gaoligongshan Nature Reserve, Yunnan, China. *Environment, Development and Sustainability*, *19*(1), 185–198. doi:10.1007/s10668-015-9731-1

Ansong, M., & Røskaft, E. (2011). Determinants of attitudes of primary stakeholders towards forest conservation management: A case study of Subri Forest Reserve, Ghana. *International Journal of Biodiversity Science, Ecosystem Services & Management*, *7*(2), 98–107.

Anthony, B. (2007). The dual nature of parks: Attitude of neighbouring communities towards Kruger National Park, South Africa. *Environmental Conservation*, *34*(3), 236–245. doi:10.1017/S0376892907004018

Beschta , R. L., Donahue, D. L., DellaSala, D. A., Rhodes, J. J., Karr, J. R., O'Brien, M. H.,... Williams, C. D. (2014). Reducing livestock effects on public lands in the western United States as the climate changes: A reply to Svejcar et al. *Environmental Management*, *53*(6), 1039–1042. doi:10.1007/s00267-014-0263-5

Bosu, D. (2014). Community resource management areas: Laying the foundation for REDD-plus in Ghana. Accra, Ghana: AROCHA Ghana. Retrieved from http://www.ecosystem-alliance.org/sites/default/files/documents/CREMAs%20and%20REDD%20Plus%20in%20Ghana.pdf

Bragagnolo, C., Malhado, A. M., Jepson, P., & Ladle, R. (2016). Modelling local attitude to protected areas in developing countries. *Conservation and Society*, *14*(3), 163–182. doi:10.4103/0972-4923.19116

Bush, G. K., Ikirezi, M., Daconto, G., Gray, M., & Fawcett, K. (2010). *Assessing impacts from community conservation interventions around Parc National des Volcans, Rwanda*. Kigali, Rwanda: Care International. Retrieved from http://www.igcp.org/wp-content/themes/igcp/docs/pdf/VNP_Socio-Economic-Study_-FINAL.pdf

Cetas, E. R., & Yasue, M. (2016). A systematic review of motivational values and conservation success in and around protected areas. *Conservation Biology*, *31*(1), 203–212. doi:10.1111/cobi.12770

Chowdhury, M. S. H. (2014). *Forest conservation in protected areas of Bangladesh*. Basel, Switzerland: Springer International Publishing.

Clayton, S. D. (2012). *The oxford handbook of environmental and conservation psychology*. New York, NY: Oxford University Press

Cochran, W. G. (1963). *Sampling techniques*. London, England: John Wiley and Sons.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Davis, A. (2011). 'Ha! What is the benefit of living next to the park?' Factors limiting in-migration next to Tarangire National Park, Tanzania. *Conservation and Society*, *9*(1), 25–34. doi:10.4103/0972-4923.79184

De Boer, W. F., & Baquete, D. S. (1998). Natural resource use, crop damage and attitudes of rural people in the vicinity of the Maputo Elephant Reserve, Mozambique. *Environmental Conservation*, *23*(3), 208–218. doi:10.1017/S0376892998000265

DeVellis, R. F. (2003). *Scale development: Theory and applications* (2nd ed.). Thousand Oaks, CA: Sage.

Ekernas, L. S., Sarmento, W. M., Davie, H. S., Reading, R. P., Murdoch, J., Wingard, G. J.,... Berger, J. (2017). Desert pastoralists' negative and positive effects on rare wildlife in the Gobi. *Conservation Biology*, *31*(2), 269–277. doi:10.1111/cobi.12881

Enukwa, E. H. (2017). Human-elephant conflict mitigation methods: A review of effectiveness and sustainability. *Journal of Wildlife and Biodiversity*, *1*(2), 69–78.

Fiallo, E. A., & Jacobson, S. K. (1995). Local communities and protected areas: Attitudes of rural residents towards conservation and Machalilla National Park. *Environmental Conservation*, *22*(2), 241–249.

Fynn, R. W. S., Augustine, D. J., Peel, M. J. S., & de Garine-Wichatitsky, M. (2016). Strategic management of livestock to improve biodiversity conservation in African savannahs: A conceptual basis for wildlife-livestock coexistence. *Journal of Applied Ecology*, *53*(2), 388–397. doi:10.1111/1365-2664.12591

Ghana Statistical Service. (2014). *2010 Population and housing census: District analytical report, West Gonja District*. *Accra*, Ghana: Author. Retrieved from http://www.statsghana.gov.gh/docfiles/2010_District_Report/Northern/West_Gonja.pdf

Gifford, R., & Sussman, R. (2012). Environmental attitude. In E. D. Clayton (Ed.), *The Oxford handbook of environmental and conservation psychology* (pp. 65–80). Oxford, England: Oxford University Press.

Green, K. E., & Adams, W. M. (2015). Green grabbing and the dynamics of local-level engagement with neoliberalization in Tanzania's wildlife management areas. *Journal of Peasant Studies*, *42*(1), 97–117. doi:10.1080/03066150.2014.967686

Guthiga, P. M. (2008). Understanding local communities' perceptions of existing forest management regimes of a Kenyan rainforest. *International Journal of Social Forestry*, *1*(2), 145–166.

Hariohay, K. M., & Røskaft, E. (2015). Wildlife induced damage to crops and livestock loss and how they affect human attitudes in the Kwakuchinja Wildlife Corridor. *Environment and Natural Resources Research*, *5*(3), 72–79. doi:10.5539/enrr.v5n3p72

Holmes, C. M. (2003). The influence of protected area outreach on conservation attitude and resource use patterns: A case study from western Tanzania. *Oryx*, *37*, 305–315. doi:10.1017/S0030605303000565

Jim, C., &. Xu, S. S. (2002). Stifled stakeholders and subdued participation: Interpreting local responses toward Shimentai Nature Reserve in South China. *Environmental Management*, *30*(3), 327–341. doi:10.1007/s00267-002-2623-9

Kideghesho, J. R., & Mtoni P. E. (2008). Who compensates for wildlife conservation in Serengeti? *International Journal of Biodiversity Science and Management*, *4*(2), 112–125. doi:10.3843/Biodiv.4.2

Kideghesho, J. R., Røskaft, E., & Kaltenborn, B. P. (2007). Factors influencing conservation attitude of local people in western Serengeti, Tanzania. *Biodiversity and Conservation*, *16*(7), 2213–2230. doi:10.1007/s10531-006-9132-8

Kiwango, W. A., Komakech, H. C., Tarimo, T. M. C., & Martz, L. (2015). Decentralized environmental governance: A reflection on its role in shaping Wildlife Management Areas in Tanzania. *Tropical Conservation Science*, *8*(4), 1080–1097. doi:10.1177/194008291500800415

Mamo, Y. (2015). Attitude and perceptions of the local people towards benefits and conflicts they get from conservation the Bale Mountains National Park and Mountain Nyala (*Tragelaphus buxtoni*), Ethiopia. *International Journal of Biodiversity and Conservation*, *7*(1), 28–40. doi:10.5897/IJBC2014.0792

McDowell, D. (2012). The impact of income generating programs at Tarangire National Park, Tanzania (unpublished). *Independent Study Project (ISP) Collection* (Paper No. 1402). Retrieved from http://digitalcollections.sit.edu/isp_collection/1402

Mir, Z. R., Noor, A., Habib, B., & Veeraswami, G. G. (2015). Attitude of local people toward wildlife conservation: A case study from the Kashmir Valley. *Mountain Research and Development*, *35*(4), 392–400. doi:10.1659/MRD-JOURNAL-D-15-00030.1

Murray, G., Agyare, A., Dearden P., & Rollins, R. (2018). Devolution, coordination, and community-based natural resource management in Ghana's community resource management areas. *African Geographical Review*. Advance online publication. doi:10.1080/19376812.2018.1426022

Mutanga, C. N., Vengesayi, S., Gandiwa, E., & Muboko, N. (2015). Community perceptions of wildlife conservation and tourism: A case study of communities adjacent to four protected areas in Zimbabwe. *Tropical Conservation Science*, *8*(2), 564–582. doi:10.1177/194008291500800218

Mwalyosi, R. B. B. (1991). Ecological evaluation for wildlife corridors and buffer zones for Lake Manyara National Park Tanzania and its immediate environment. *Biological Conservation*, *57*(2), 171–186. doi:10.1016/S0301-4797(05)80094-5

National Bureau of Statistics. (2013). *2012 Population and housing census population distribution by administrative areas*. Dar es Salaam, Tanzania: Author, Ministry of Finance.

Ogato, G. S., Boon, E. K., & Subramani, J. (2009). Gender roles in crop production and management practices: A case study of three rural communities in Ambo District, *Ethiopia*. *Journal of Human Ecology*, *27*(1), 1–20.

Roe, D. (2008). The origins and evolution of the conservation-poverty debate: A review of key literature, events and policy processes. *Oryx*, *42*, 491–503. doi:10.1017/S0030605308002032

Røskaft, E., Händel, B., Bjerke, T., & Kaltenborn, B. P. (2007). Human attitudes towards large carnivores in Norway. *Wildlife Biology*, *13*(2), 172–185. doi:10.2981/0909-6396(2007)13

Roy, A. K. D. (2016). Local community attitude towards mangrove forest conservation: Lessons from Bangladesh. *Marine Policy*, *74*, 186–194. doi:10.1016/J.MARPOL.2016.09.021

Sachedina, H. (2006). *Conservation, land rights and livelihoods in the Tarangire ecosystem of Tanzania: Increasing incentives for non-conservation compatible land use change through conservation policy*. Paper presented at Pastoralism and Poverty Reduction in East Africa: A Policy Research Conference.

Oxford, England: University of Oxford/Nairobi, Kenya: ILRI. Retrieved from http://hdl.handle.net/10568/79447

Schaafsma, M., Posen, R. D., Swetnam, A., Balmford, I. J., Bateman, N. D., Burgress, S. A.,... Turner, R. K. (2014). The importance of local forest benefits: Economic valuation of non-timber forest products in the Eastern Arc Mountains in Tanzania. *Global Environmental Change*, *24*, 295–305. doi:10.1016/j.gloenvcha.2013.08.018

Shrestha, R. K., & Alavalapati, J. R. R. (2006). Linking conservation and development: An analysis of local people's attitude towards Koshi Tappu Wildlife Reserve, Nepal. *Environment, Development and Sustainability*, *8*, 69–84. doi:10.1007/s10668-005-0188-5

Spiteri, A., & Nepal, S. K. (2006). Incentive-based conservation programs in developing countries: A review of some key issues and suggestions for improvements. *Environmental Management*, *37*(1), 1–14. doi:10.1007/s00267-004-0311-7

St. John, F. A. V., Edwards-Jones, G., Jones, J. P. G., & Moloney, K. (2010). Conservation and human behaviour: Lessons from social psychology. *Wildlife Research*, *37*, 658–667. doi:10.1071/WR10032

St. John, F. A. V., Keane, A. M., Edwards-Jones, G., Jones, L., Yarnell, R. W., & Jones, J. P. G. (2012). Identifying indicators of illegal behaviour: Carnivore killing in human-managed landscapes. *Proceedings of the Royal Society B: Biological Sciences*, *279*(1729), 804–812. doi:10.1098/rspb.2011.1228

Sudarmadi, S., Suzuki, S., Kawada, T., Netti, H., Soemantri, S., & Tugaswati, A. (2001). A Survey of perception, knowledge, awareness, and attitude in regard to environmental problems in a sample of two different social groups in Jakarta, Indonesia. *Environment, Development and Sustainability*, *3*, 169–183.

Synman, S. (2014). Assessment of the main factors impacting community members' attitudes towards tourism and protected areas in six southern African countries. *Koedoe*, *56*(2), 1–12. doi:10.4102/koedoe.v56i2.1139

Tessema, M. E., Lilieholm, R. J., Ashenafi, Z. T., & Leader-Williams, N. (2010). Community attitudes toward wildlife and protected areas in Ethiopia. *Society & Natural Resources*, *23*(6), 489–506. doi:10.1080/08941920903177867

Tyrrell, P., Russell, S., & Western, D. (2017). Seasonal movements of wildlife and livestock in a heterogenous pastoral landscape: Implications for coexistence and community based conservation. *Global Ecology and Conservation*, *12*, 59–72. doi:10.1016/J.GECCO.2017.08.006

Weladji, R. B., & Tchamba, M. N. (2003). Conflict between people and protected areas within the Bé noué Wildlife Conservation Area, North Cameroon. *Oryx*, *37*(1), 72–79.