Local perceptions of conservation objectives in an alternative livelihoods program outside Bardia National Park, Nepal

Ariane T. LeClerq¹ | Meredith L. Gore² | Maria C. Lopez³ | John M. Kerr³

¹ECODIT, Arlington, Virginia
²Department of Fisheries and Wildlife, Michigan State University, East Lansing, Michigan
³Department of Community Sustainability, Michigan State University, East Lansing, Michigan

Correspondence
John M. Kerr, Department of Community Sustainability, Michigan State University, Natural Resources Room 325, 480 Wilson Rd., East Lansing, MI 48824.
Email: jkerr@msu.edu

Funding information
USDA National Institute of Food and Agriculture, Grant/Award Number: Hatch Project Number MICL02244

Abstract
Promoting alternative livelihoods that do not depend on exploiting biodiversity is a common approach to encourage proconservation attitudes and behaviors among people around protected areas in developing countries. To what extent do participants in alternative livelihoods programs understand the intended connection to conservation objectives? This often-overlooked question is important for understanding program effectiveness. We use exploratory qualitative research to investigate this question in the buffer zone around Nepal’s Bardia National Park. We also examine participants’ attitudes and behaviors toward conservation. Overall, we find low awareness of the program’s conservation objectives. People participating in alternative livelihood activities with a direct connection to conservation, for example, employment in the tourism industry, developing alternative energy that substitutes for biomass from the park, and efforts to limit human-wildlife conflict, are more likely to understand and appreciate the connection to conservation than those receiving alternative livelihood options unrelated to conservation, for example sewing and tailoring. Their attitudes and behavior towards conservation follow similar patterns. Our findings call for conservation programs to establish systems to monitor participants’ understanding of their conservation objectives and how this connects to their attitudes and behaviors towards conservation.

KEYWORDS
biodiversity, biomass energy, elephant, forest, human-wildlife conflict, integrated conservation and development projects, protected areas, rhinoceros, tourism

1 | INTRODUCTION

After decades of widespread implementation, the specific relationship between alternative livelihoods promotion and achievement of biodiversity conservation objectives in protected areas is difficult to discern due to a lack of systematic monitoring and reporting (Roe et al., 2015). Substantial research has revealed that it is unrealistic to try solely to transform livelihoods so as not to threaten biodiversity resources (Barrett & Arcese, 1995; Ferraro, 2001; Reddy, Groves, & Nagavarapu, 2014; Robinson & Redford, 2004; Roe et al., 2015). Accordingly, some recent research has focused on the effects of such programs on local people’s attitudes towards conservation (e.g., Abbot, Thomas, Gardner, Neba, & Khen, 2001; Cranford & Mourato, 2011; Roe et al., 2015; Karanth & Nepal, 2012). Indeed, some evaluations have demonstrated project success in changing people’s attitudes towards conservation (Abbot et al., 2001), sometimes separately and at a different pace from programmatic effects on incomes (Berkes,
This study focuses on the question of the extent to which participants even understand the conservation objective behind an alternative livelihoods program conducted in communities bordering Bardia National Park in Nepal. This question is important because research has shown that knowledge of why conservation matters contributes in part to pro-environmental attitudes and behaviors (Cranford & Murato, 2011; Hines, Hungerford, & Tomera, 1987; Kollmuss & Agyeman, 2002). Ensuring that an alternative livelihoods program generates local support for biodiversity conservation requires that, at a minimum, local people clearly realize and cognitively connect alternative livelihood program activities with conservation objectives (Karki, 2013; Nepal & Spiteri, 2011). The question is also important because it appears to be a common assumption that participants understand conservation projects’ objectives, even though research in related contexts has revealed low levels of such understanding.

The extent to which local people understand the intended conservation objectives of alternative livelihoods programs has received limited attention. Typically, in program documents and the academic literature such an understanding is not questioned and appears to be assumed. However, recent studies of international conservation programs by the authors have consistently found lower than desired rates of awareness and understanding of program activities and objectives. For example, in a study of a forest-based payment for environmental services (PES) program in Mexico, only 43% of program participants surveyed were aware of having received benefits under the program or knowing someone who had (Kerr, Vardhan, & Jindal, 2014). In a conservation program in Indonesia, 79% of members of groups actively participating in the program were aware of it, and only 45% of members of groups that had applied for the program and were waiting for it to begin (Kerr et al., 2014). In a review of programs in Andhra Pradesh, India designed to introduce improved soil conservation practices on agricultural land, less than 70% of participants surveyed could recall having ever interacted with the project staff implementing the work (Kerr, 2002). In Qinghai, China, in a survey of recipients of an ecocompensation fund intended to encourage changes in yak grazing management, 44% of respondents said that they believed they were not required to do anything in exchange for the ecocompensation payment, while another 5% said they did not know what they were supposed to do (Kerr, Lapinski, & Zhao, 2018).

With this in mind, the current study examines the extent to which participants in an alternative livelihood program in Nepal’s Bardia National Park (BNP) connect project activities to conservation objectives. Our evaluation included examination of local attitudes towards conservation and conservation-oriented behavior. We undertook our study among people living adjacent to BNP, where the National Trust for Nature Conservation (NTNC) has been carrying out alternative livelihoods training for more than two decades. NTNC’s stated desire to have an independent and social science-based evaluation of their program is emblematic of many conservation organizations working around the world (e.g., WCS, 2019; WWF, 2019). We used responsive evaluation, a form of qualitative evaluation that responds to the needs of the program being evaluated as expressed by people operating it (Stake, 2004). Qualitative evaluation necessarily takes a case study approach and tends to focus on the experiences of people who are part of the program being evaluated. It does not aim for generalizable results and it does not try to measure a program’s outcomes. Rather, it aims to gain insights on why certain outcomes might occur by studying the processes that contribute to them and understanding how they work (Patton, 2015). For our study, the qualitative approach provides rich details about participants’ understanding of what the program is trying to achieve, and why.

### 1.1 Case study site

Bardia National Park is a 968 km² protected area, located in the western Terai lowlands of Nepal. It was established as a national park in 1989, previously serving as a royal hunting reserve. The park is home to diverse wildlife including tigers, leopards, rhinoceros, elephants, wild boar, crocodiles, deer, and over 250 species of birds. It is considered a conservation success story, with a large increase in wildlife populations over the years (Wegge, Odden, Pokharel, & Storaas, 2009). With the exception of cutting thatch grass for roof construction for a few days each year, extracting natural resources from the park is illegal. Despite these restrictions, Baral and Heinen (2007) and Allendorf, Smith, and Anderson (2007) reported that it was common for local people to regularly extract various forest products such as fuelwood and timber and other non-timber forest products. In these ways, the context of conservation and development in BNP is characteristic of other geographic regions in the world with resource-dependent human populations living alongside protected areas inhabited by charismatic megafauna.

In 1996, a buffer zone area of 372 km² was established around BNP (Thapa & Chapman, 2010). Buffer zone forests around protected areas allow local people to legally collect forest products while simultaneously providing extended habitat and corridors for animals (Paudel, Budhathoki, & Sharma, 2007). Communities around BNP depend on the forest for leaf litter for animal bedding and fertilizer, firewood for cooking, and fodder for livestock (Karki, 2013). As in many places around the world, if local communities
are not able to legally collect these resources from a buffer zone forest in a consistent and fair manner, they often illegally extract them from the park.

The buffer zone community forest around BNP embodies best practices from the institutional landscape of Nepal's successful Community Forestry Program. Under this program, which began in 1978, local communities organized into forest user groups gained rights to manage local forests, giving them an incentive to create institutions to manage them. Research has demonstrated that this program has led to substantial forest regeneration and increased biodiversity (Acharya, 2002).

1.2 Alternative livelihood program activities

Since 1995 a Nepali semigovernmental organization, NTNC, previously called the King Mahendra Trust for Nature Conservation, has conducted development and conservation projects in the buffer zone areas around BNP (Allendorf et al., 2007). Although other programs now are also working in the region, NTNC maintains a strong presence and commitment. For example, Karki (2013) found that 85% of all households in three buffer zone communities were involved with NTNC programs.

NTNC operates several alternative livelihoods program activities in the buffer zone around BNP including alternative energy (biogas), ecotourism training such as nature guiding and cooking (for a job in a restaurant), green enterprise development, microenterprise, savings and credit, and skills training for work as a tailor or electrician (Table 1). In addition, NTNC helped the local communities secure a community forest area and develop its management system. We categorize these different activities in terms of skills training unrelated to natural resources and conservation (e.g., tailoring, savings and credit), skills training related to conservation and tourism (e.g., training for the tourism industry and cultivation of commercial crops that are unpalatable to wildlife, animal husbandry in predator-proof corrals, training for the tourism industry); and alternative energy (biogas and community forest management). Several of the efforts in the latter two categories contribute to reducing human-wildlife conflict, either by discouraging wildlife from entering the villages and farmland or by reducing people's need to enter the park (Table 1).

Similar to other conservation contexts around the world, the conservation-related intentions underlying NTNC's alternative livelihood program interventions are mostly clear. However, also similar across contexts, there has been limited investigation of how local people perceive them. This study aimed to provide information about how NTNC may better serve these communities and conserve local natural resources in the future. NTNC did not take part in executing the research, nor did it help in choosing the respondents or influence interpretation of the results.

2 METHODS

2.1 Study site and population

Our evaluation took place in 2015 in the Village Development Committees (VDCs) of Thakurdwara, Shivapur, and Suryapatuwa, all along the southeastern border of Bardia.

**Table 1** Alternative livelihood programs and their intended benefits

| Type of program               | Categorya | Activities                           | Benefit                                                                 |
|-------------------------------|-----------|--------------------------------------|------------------------------------------------------------------------|
| Skills training               | Unrelated to conservation | Sewing and tailoring, handicrafts, house electrical wiring | Handicrafts, sewing, and tailoring are mostly with women |
| Savings and credit            | Unrelated to conservation | Organize women into savings and credit groups | Gives women opportunity to save money |
| Green enterprise              | Related to conservation | Aromatic plant cultivation (mentha, chamomile, lemon grass) | Unappetizing to wild animals and sold as essential oils |
| Microenterprise               | Related to conservation | Livestock raising, predator-proof corrals, vegetable farming | Predator-proof corrals greatly reduce predation of livestock |
| Ecotourism                    | Related to conservation | Nature guide, cooking | Ecotourism lodges can be run by and employ local people |
| Biogas                        | Alternative energy | Install household biogas plant | Reduces need for firewood and time spent in forest to collect it, reduces kitchen smoke |
| Community forest management (CFM)b | Alternative energy | Help communities develop strong CFM arrangements | Eliminates or reduces the need to enter the park for firewood |

aCategories in Column 2 are for the purpose of our analysis. NTNC programs follow the categorization in Column 1.
bCommunity forest management is not a specific NTNC program in Bardia, but NTNC has devoted substantial effort to helping communities develop successful community forest management institutions.
National Park. (Since completion of our fieldwork, VDCs have been subsumed into another unit of local government called gaunpalikas; but we continue to refer to them here.) Together, the population of the three VDCs is about 26,500 according to the most recent census (ISRC, 2014). More than 50% of the inhabitants are from the Tharu ethnic group (ISRC, 2014), who are known to be more reliant on forest resources than other ethnic groups (Müller-Böker, 1991). The area is also inhabited by Chhetri and Bhramin ethnic groups. Most residents derive their livelihood primarily from agriculture (Karki, 2013).

At the time of study, the three VDCs varied in the productivity of their agricultural lands, access to tourism-related employment, and access to a community forest. In particular, a network of canals supported irrigated agriculture in Suryapatuwa and Thakurdwara, but not Shivapur. Shivapur had less productive agriculture with smaller holdings and little irrigation, less access to government jobs, and no access to a forest besides the national park. As a result, most households in Shivapur depended on illegally extracted park resources to meet their daily needs and supplement their subsistence agriculture (Karki, 2013). All nine wards in both Shivapur and Thakurdwara were eligible for NTNC’s programs because they all fell within the BNP buffer zone, compared to only four of nine in Suryapatuwa. Thakurdwara was home to both BNP headquarters and the NTNC offices and is also to many small lodges accommodating Nepali and international tourists. Suryapatuwa has a few lodges and a wide network of homestay accommodation available to visitors.

2.2 | Qualitative research approach

Since this study aimed to understand the perceptions of local people, a qualitative evaluation based on speaking to participants in an informal and semistructured way was deemed the optimal method. Qualitative data are typically observational or textual, derived from talking to people about their opinions and feelings concerning certain events or circumstances associated with program activities and program uniqueness. In a qualitative interview, the researcher prepares questions to gain a deeper understanding about an individual’s experiences and opinions. There is room for flexibility and the researcher can adjust the questions and path of the interview based on the respondent’s knowledge and interests (Patton, 2015). Questions are asked indirectly, without making obvious at the start of the interview exactly what are the issues of interest. This helps generate a discussion focused on what is important to the respondent and reduces social desirability bias, or the extent to which a respondent gives responses that they think are what the interviewer wants to hear (Fisher, 1993).

Qualitative researchers work to ensure validity and reliability of research findings differently than quantitative survey researchers. The objective of qualitative researchers is to learn insiders’ perspectives rather than test hypotheses using statistical analysis that represents the population at large. As a result, sampling is purposive instead of random, with the objective of selecting those respondents who can provide rich perspectives on the subject at hand (Patton, 2015). As with many kinds of empirical research, one of the main concerns is to avoid reading into the data what the researcher is looking for (Maxwell, 2005). In qualitative research, addressing these concerns requires speaking with the most appropriate respondents; gaining their trust; avoiding leading questions; asking questions that are sufficiently open-ended that respondents can interpret them as they please and take the discussion in the direction that is most meaningful to them; analyzing verbatim transcripts as opposed to just summary notes (Miles & Huberman, 1994) to minimize interpretation bias; and having multiple researchers read the data to increase the chances of capturing different interpretations.

We addressed these concerns as follows. We interviewed NTNC staff with different programmatic responsibilities both in Kathmandu and in Bardia to capture different perspectives regarding their perceptions of what the program is trying to achieve. Among villagers, we sampled according to participation in different program components, and also in villages with different characteristics, in order to observe multiple perspectives on the NTNC programs. To the extent possible, we did not rely on just one respondent per category. A local person conducted the interviews and made clear that she did not have any connection to the NTNC program. The questions were entirely open-ended and the interviews were translated and transcribed verbatim. All of the authors of this study have examined the data in an ongoing iterative and discursive fashion.

Some limitations remain concerning validity and reliability. Only three VDCs were included in the study, and while every effort was made to have them represent a diversity of situations of park proximity, they might not encompass the full array of diversity present in the Terai. Moreover, while we tried to get honest responses, there might be some hesitation on the part of villagers in criticizing the park and its programs.

2.3 | Data collection

Our fieldwork engaged participants from two primary groups, NTNC staff and local people participating in NTNC’s alternative livelihood programs. We interviewed senior NTNC staff members in Kathmandu and Bardia to clarify project managers’ goals in the alternative livelihoods programs; this information was paramount in helping us
characterize the nuances of the program, consistent with responsive evaluation. In total, five NTNC staff interviews were conducted in English. In addition, we conducted digitally recorded, semistructured, in-depth face-to-face voluntary interviews and focus groups with residents in Thakurdwara, Shivapur, and Suryapatuwa villages adjacent to BNP (Figure 1). These villages were chosen based on their longtime experience with NTNC programs. Interview and focus group questions gauged local people’s experiences with the types of alternative livelihood program interventions listed above. The first author (an American female fluent in Nepali) and a local female Tharu research assistant fluent in Nepali and the local Tharu language conducted interviews in accordance with a predetermined field protocol. The first author trained the interviewer in qualitative interview techniques, the interview protocol, and the human subjects protection protocol prior to the fieldwork. The field team translated and transcribed each interview’s digital recording verbatim and double-checked the transcripts.

Following Patton (2015), subjects for interviews with local people were selected based on their involvement in and expertise with the different programs, as well as their availability and willingness to participate. Interviews took place during rice-planting season, so some potential respondents were too busy to participate. At least one male and female from each livelihood category (e.g., alternative energy, ecotourism, green enterprises, microenterprise, savings and credit, skills training) in each of the three VDCs were represented in the study, as well as one female and one male or mixed focus group in each VDC. When necessary, participant lists and recommendations from other participants and staff were used to find possible interviewees from all the livelihood categories.

Focus group participants were recruited using convenience and purposive sampling. At least one female and one male or mixed focus group were conducted in each VDC. Female-only focus groups were intended to avoid women feeling uncomfortable to share their true experiences and opinions about program activities and conservation in front of men. This would be difficult in a mixed group due to local patriarchal norms.

The focus groups consisted of two to eight participants (at least one female group and one male or mixed group in each VDC). In total, 32 individual interviews and 8 focus groups were conducted with local people familiar with the various NTNC programs (Table 2). Since we wanted to
capture diverse perspectives of the different alternative livelihood programs, we included multiple men and women from each livelihood program, and people from the different ethnic groups present in the region. This enhanced our confidence in the results.

2.4 | Data analysis

An iterative process guided the qualitative analysis. We used a scan, order, review, and compare method (LeCompte & Goetz, 1983), a generic form of qualitative data analysis that is popular because it does not dilute participant comments and data are minimally constrained by the researcher. This analysis method enabled efficient and effective coding of responsive evaluation elements as well.

Each participant interview and focus group discussion was digitally recorded, translated from Tharu (if the interview had been conducted in the Tharu language), transcribed into Nepali (usually within 24 hr of the original interview), and translated into English by a professional translator in Kathmandu who has done such work for other international university researchers. The interviews with NTNC senior staff members were conducted in English, digitally recorded and transcribed. Thematic analysis was used to systematically examine the text of the transcripts to identify important themes and concepts that emerged through the discussions (Rubin & Rubin, 2005). These themes and concepts helped to develop a coding system, which was used to label parts of the transcribed text as evidence for each theme or concept. These labels, or codes, allow easy retrieval and categorization of the textual evidence into more meaningful and manageable parts (Miles & Huberman, 1994).

The codes went through a series of revisions throughout the analysis process, resulting in a total of 11 codes. Analysis is also based on the issues and concerns delineated by engagement of primary stakeholders (Spiegel, Bruning, & Giddings, 1999). All of the text was coded according to the rules laid out for each of them (Table S1). The software program NVivo, which facilitates electronic coding of all the transcript documents, was used to simplify the process of data management and analysis. NVivo allowed easy extraction of the evidence for a particular code from all the transcripts and compilation into a single document. From there, all the data relating to each code was read and summarized. The data summaries present the main themes related to the research questions while the quotes from the transcripts provide more detailed and specific examples. We have taken care to present evidence in ways that do not reveal the identity of specific research subjects.

3 | RESULTS

Results are organized around the understanding by staff and participants of the program’s activities as they relate to conservation, and participants’ attitudes towards conservation and the park. We discuss inferences about the connection between program activities and people’s dependence on the national park’s biodiversity resources in the discussion section.

Because of the small, nonrepresentative sample and the qualitative approach of the research, we do not systematically report precise numbers of respondents who understood that conservation objectives drive the program activities. On the other hand, we occasionally report numbers or proportions to point out some very clear differences in responses across respondent groups.

We present quotes from respondents to help illustrate our key findings. Following Patton (2015), we limit our use of quotes to where they offer insights beyond what we report in the general text.
3.1 Staff understanding of the program's contribution to conservation

NTNC staff respondents unanimously said that its programs were intentionally offered to the poorest people in the communities in exchange for local support for protecting the national park and the biodiversity within it. Most expressed the conviction that any increase in income would reduce the pressure that people put on the forest, and that quick-return income-generating activities were particularly effective in engendering support for conservation. NTNC respondents consistently discussed the importance of measures to reduce or mitigate human-wildlife conflict. BNP-based NTNC respondents stressed the importance of access to alternative fuel sources to avoid the need to extract biomass from the park. All five NTNC respondents emphasized the importance of growth of the tourism economy in providing a source of income directly dependent on successful conservation.

One NTNC respondent commented that many of the income-generating activities targeted were not directly related to conservation, and because of that the participants were unaware of the program's conservation objectives:

No! No! No! That's the problem... They really do not have that idea. Very few of them. …they cannot link all these things because they do not think that we are supporting them for these livelihood options just to conserve forest. They think they have the right to demand for livelihood support opportunities from NTNC.

3.2 Participants' understanding of alternative livelihood program activities and their relationship to conservation

Only about one-third of the local respondents who had participated in NTNC programs mentioned conservation when asked about their purpose. Given the open-ended nature of the questions posed to them, we do not know if others also recognize the connection but did not mention it. We report quotes that help demonstrate the sentiments expressed, and we show that people's understanding of the intended connection to conservation varies sharply with the type of training they received.

Local people who participated in training for alternative livelihood activities unrelated to conservation usually were unaware of the intended connection to conservation. For example, of the nine respondents (male and female) who received only sewing training, none made the connection between NTNC's programs and nature conservation. This is consistent with the NTNC staff member's quote above. As one such respondent stated, “The programs have been introduced so that we the poor and backward people can move forward in any way possible.” Women respondents less frequently connected the NTNC programs to conservation objectives than men, but the difference was small and appears to be due to the fact that more women than men received solely sewing training. We did not detect noticeable differences in responses across people from different ethnic groups; future research could equivocate this relationship.

In contrast, for many other types of training, half or more respondents demonstrated a clear understanding of the connection between NTNC's alternative livelihoods training and conservation objectives. For example, most people who had received assistance to set up and run a biogas plant mentioned its connection to conservation objectives. Virtually all of them indicated that it minimizes fuelwood needs from either the community forest or the national park, and several mentioned that it keeps them safer because it minimizes the need for firewood collection from the forest, where they might meet wild animals. Said one such respondent about the purpose of NTNC's programs,

The goals must be that the people can use it for their consumption, to prevent poaching, and to be safe from wild animals. This must be the reason for their establishment.

Those who had received livelihoods training related to tourism also tended to show a clear understanding of the purpose of NTNC's programs, as did those who mentioned the importance of tourism in the local economy, regardless of what type of training they had received. The latter included, among others, two people who underwent training as forest guides, a woman who trained to become a cook in a hotel, a woman who offers homestays, and a man growing vegetables for sale to a lodge.

Some respondents mentioned predator-proof cages, including most of those in Shivapur, which is surrounded on three sides by the national park. They praised the cages for making it possible to raise domestic livestock without depredation by tigers and leopards. Half of them specifically mentioned that the cages contribute to conservation objectives.

There was a sharp difference across villages in the extent to which people mentioned the conservation objectives of NTNC’s alternative livelihoods training programs, with a much higher proportion in Thakurdwara and Shivapur than in Suryapatiuwa. This appeared to be related to the kinds of training activities the different respondents participated in. None of the Suryapatiuwa respondents received training related to tourism, for example. Two received support to build and operate a biogas plant. The lone Suryapatiuwa resident (out of 11) who commented on the connection of...
NTNC programs to conservation objectives had both biogas and predator-proof cages.

3.3 | Participants' attitudes about program activities, conservation and the park

Some NTNC staff commented on the importance of program activities demonstrating that the program cares about the people whose livelihoods are damaged by wildlife through human-wildlife conflicts and lost forest access. Some discussed how important it was for program activities to cultivate trust among local stakeholders to engender support for conservation. For example, a Bardia-based staff member said, “The basic purpose, whatever we are implementing from NTNC, is to win the trust of the local community towards conservation.” They discussed various other ways they generate support for conservation through programmatic activities, for example taking villagers to visit the park as tourists annually, encouraging them to volunteer as citizen scientists who monitor biodiversity, and establishing community-based anti-poaching patrol units.

Uniformly, respondents participating in NTNC’s alternative livelihoods programs commented that they thought highly of NTNC. Many appreciated that NTNC was actively trying to help support sustainable livelihoods through activities designed to reduce human-wildlife conflict, as well as promote biogas and other livelihood training activities. Several respondents in Thakurdwara and Shivapur credited NTNC for helping them gain rights to the community forest and establish management institutions. They commented that managing their community forest had helped them learn to appreciate the importance of conservation. In the past, villagers had harvested fuelwood, fodder and other resources indiscriminately because government rules that excluded them were not respected or enforced. Today, the community forests are governed by strict, locally imposed access rules to ensure sustainable biomass yields. As one respondent said, “Now, there is this notion that this [community forest] is ours and we need to conserve it.”

For many respondents, appreciation of NTNC’s role in promoting conservation of the community forest extended to conservation in the park. Virtually everyone mentioned the benefit of annual access to thatch grass:

If the Park had not been established there would have been less grass and firewood. Everything would have become depleted by the cutting. It would have been difficult to find thatching grass either. It would have been difficult.

People with tourism-related employment uniformly praised the park:

The National Park has brought a lot of benefit. If the National Park did not exist this place would not have become a tourist spot. The income of the people has increased because this is a tourist spot. It is because of increase of tourism activities that hotels have opened… Most of the workers are local people.

Many respondents communicated an equivocal perception of the park, recognizing both disadvantages and advantages associated with its existence and often accepting the tradeoffs as inevitable. However, several of those who criticized the existence of the national park did so in very stark terms:

The wildlife comes directly from the national park and destroys our crops. They eat our rice and for some people it's so bad that it makes them want to leave and move somewhere else. What do they get? They give you some money. For someone whose house has been destroyed, what help is 2000 or 4000 rupees? People work hard in the fields all day and get very tired. Then, at night, they [wild animals] come and eat everything and go. At the time, the government just looks on and does nothing. If we go onto their land and take something, cut some grass, steal something, we get fined 25,000 or 30,000 rupees. They put you in jail for a month. If the wildlife do something, they don't see it as a big deal but if we do something, they think it is huge. It probably has some benefit, but … due to the park. Whatever they give, the losses are greater.

4 | DISCUSSION

Our main finding is that local people participating in alternative livelihoods training without any inherent connection to conservation tended not to understand that the training had a conservation objective. In contrast, consistent with findings elsewhere (e.g., Infield & Namara, 2001), people are more likely to make a connection to conservation objectives if they have been trained in alternative livelihood activities with strong relevance to conservation. Our results also affirm the notion that people engaged in such activities express more favorable attitudes towards conservation. These include people with access to, for example, a community forest, a biogas plant, livelihood activities connected to the tourism economy, and secure cages to protect domestic livestock against predation.
A remaining question concerns the extent to which NTNC's alternative livelihoods programs, and local people's understanding of them, influence their use of the national park's biodiversity resources. Answering this question is difficult because one cannot disentangle the effects of understanding conservation objectives and those of other factors with impacts on resource use. Nevertheless, we present our context-bound interpretation here to enhance baseline understanding about conservation-livelihood connections where interactions between stakeholders are often collaborative and responsive (e.g., Abma, 2005).

First, we note that among our study participants, local people involved in the sewing and tailoring training tended not to perceive a connection between this training and forest use. This is similar to what Allendorf et al. (2007) observed in previous research in the area. These alternative livelihood activities had no direct relationship to forest use and had limited income-generation potential, as most people used their skill to save money by sewing their own clothes. The outcomes and impacts of alternative livelihood strategies may be perceived as being locally beneficial, yet not connected to conservation outcomes as intended.

Second, our data indicate several key factors that appear to have influenced people's attitudes and behaviors towards respecting the park boundaries: access to a community forest, access to biogas, and a connection to the tourism economy. Provision of an electric fence and predator-proof cages to minimize human-wildlife conflict also likely contribute to better attitudes towards wildlife, though our data do not illustrate it conclusively. Most respondents commented that they had no need to take biomass resources from the national park due to their availability in the community forest. Continued expansion of the area under community forest management is an important part of Nepal's wildlife conservation strategy (Wikramanayake et al., 2010). In contrast, in Shivapur, with no forest available as an alternative to the national park, many people commented freely that they take fodder and fuelwood from the park because they have no other source. Respondents commented on the benefit of being able to enter the park to collect thatch grass each year; some said that this helps reduce unauthorized park entry. Participant comments suggested that establishing a buffer zone community forest and, more importantly, granting its ownership to local people and helping them develop the capacity to manage and protect it, can reduce pressure on the park. Unfortunately, this is not necessarily possible in all areas. In fact, Shova and Hubacek (2011) reported that residents of Shivapur were offered a piece of degraded forest in BNP to be converted to a community forest, but they refused because it was too degraded. Evidently, they preferred to keep taking biomass resources from the park, even with the risks it entails.

Third, we note income from tourism is widely hailed as a way to generate local support for conservation of protected areas (e.g., Honey, 2008). However, it is also well-known that access to the tourism economy does not distribute income evenly because, for example, not everyone can run a homestay business or be employed as a guide (Adams & Infield, 2003; Belsky, 1999). Almost half of respondents from Thakurdwara (where the entrance of the national park is located), and Suryaputua (where a number of homestays are located) mentioned the tourism economy without any prompting, but only one of 12 respondents did so in Shivapur, which is more distant and has little connection to tourism even though it borders the park. Although a local tourism economy can generate support for conservation, clearly not every protected area can generate tourism. Even where it does, not all local people will benefit from it. In this regard, context-specific insights about the impacts of specific programmatic initiatives may help set more realistic expectations program managers, and also potentially inform evaluation measures for donors.

The main implication of our work for practitioners is that it is important not to assume that project participants understand the conservation objectives of alternative livelihood programs. As simple as this point may seem, it appears to be overlooked. Another implication is that livelihoods training with a stronger conceptual or practical connection to conservation appears to yield a better understanding of the conservation objectives among participants. In addition, there is a strong need to establish systems to keep track of participants' understanding of the project conservation objectives, and how this connects to their attitudes and behaviors towards conservation. This will help programs fill the knowledge gap identified by Roe et al. (2015) that is currently preventing a clearer understanding of the relationship between alternative livelihoods training and conservation outcomes.
ACKNOWLEDGMENTS

The authors thank the National Trust for Nature Conservation staff for being open to a review of their program. They also thank all of the residents of the buffer zones who agreed to share their experiences and opinions. They thank Sushila Chaudhary, Binita Chaudhary, Mohan Chaudhary, Aparajita Manoranjan, Steve LeClerq, and Jessica Kahler for their assistance in the research. The write-up was partially supported by the USDA National Institute of Food and Agriculture, Hatch project number MICL02244.

CONFLICT OF INTEREST

The authors report no conflicts of interest in this research.

AUTHOR CONTRIBUTIONS

A.L. conducted the fieldwork and all of the analysis on which the article is based for her master's thesis; all the other authors were on her guidance committee. J.K. reanalyzed the data for the article and wrote most of the text. M.G. helped situate the article in the literature and wrote some of the text. M.C.L. also wrote some of the text. All authors contributed to revision and preparation of the final version and have given final approval of the version to be published.

DATA AVAILABILITY STATEMENT

See Supporting Information for more details about data collection procedures. The University Committee on Research Involving Human Subjects at Michigan State University (IRB# x15-699e) reviewed and approved methods used in this research. The original data—verbatim transcripts from transcripts and focus group discussions—are not publicly available because they can indirectly reveal the identity of the respondents. This would violate our IRB approval and our consent agreement with respondents.

ETHICS STATEMENT

Human subject's research approval was granted by the Institutional Review Board at Michigan State University in July 2015, approval number x15-699e.

ORCID

John M. Kerr https://orcid.org/0000-0002-0449-5448

ENDNOTE

1 At the time of the evaluation, VDCs were the smallest administrative unit of the Nepali government, and each VDC was subdivided into nine wards. When Nepal's constitution was revised in 2015, VDCs were subsumed into local government units called gaupalikas, or rural municipalities; the jurisdictional change went into effect in 2017. We use VDC in this manuscript to refer to the jurisdiction that was in effect during the time of inquiry.

REFERENCES

Abbot, J. I., Thomas, D. H., Gardner, A. A., Neba, S. E., & Khen, M. W. (2001). Understanding the links between conservation and development in the Bamenda Highlands, Cameroon. World Development, 29, 1115–1136. https://doi.org/10.1016/S0305-750X(01)00033-X

Abma, T. A. (2005). Responsive evaluation in health promotion: Its value for ambiguous contexts. Health Promotion International, 20(4), 391–397. https://doi.org/10.1093/heapro/dai013

Acharya, K. P. (2002). Twenty-four years of community forestry in Nepal. International Forestry Review, 4(2), 149–156. https://doi.org/10.1505/IFOR.4.2.149.17447

Adams, W. M., & Infield, M. (2003). Who is on the gorilla's payroll? Claims on tourist revenue from a Ugandan National Park. World Development, 31, 177–190. https://doi.org/10.1016/S0305-750X(02)00149-3

Allendorf, T., Smith, J., & Anderson, D. (2007). Residents' perceptions of Royal Bardia National Park, Nepal. Landscape Urban Plan, 82, 33–40. https://doi.org/10.1016/j.landurbplan.2007.01.015

Baral, N., & Heinen, J. T. (2007). Resources use, conservation attitudes, management intervention and park-people relations in the Western Terai landscape of Nepal. Environmental Conservation, 34, 64–72. https://doi.org/10.1017/S0376892907003670

Barrett, C. B., & Arcese, P. (1995). Are integrated conservation-development projects (ICDPs) sustainable? On the conservation of large mammals in sub-Saharan Africa. World Development, 23(7), 1073–1084.

Belsky, J. (1999). Misrepresenting communities: The politics of community-based rural ecotourism in Gales Point manatee, Belize. Rural Sociology, 64, 641–666. https://doi.org/10.1111/j.1549-0831.1999.tb00382.x

Berkes, F. (2013). Poverty reduction isn't just about money: Community perceptions of conservation benefits. In D. Roe, J. Elliott, C. Sandbrook, & M. Walpole (Eds.), Biodiversity conservation and poverty alleviation: Exploring the evidence for a link (pp. 270–285). Chichester: Wiley Blackwell.

Brooks, J. S., Franzén, M. A., Holmes, C. M., Grote, M. N., & Mulder, M. B. (2006). Testing hypotheses for the success of different conservation strategies. Conservation Biology, 20(5), 1528–1538.

Cranford, M., & Mourato, S. (2011). Community conservation and a two-stage approach to payments for ecosystem services. Ecological Economics, 71, 89–98.

Ferraro, P. J. (2001). Global habitat protection: Limitations of development interventions and a role for conservation performance payments. Conservation Biology, 15, 990–1000.

Fisher, R. J. (1993). Social desirability bias and the validity of indirect questioning. Journal of Consumer Research, 20(2), 303–315.

Hines, J. M., Hungerford, H. R., & Tomera, A. N. (1987). Analysis and synthesis of research on responsible environmental behavior: A meta-analysis. The Journal of Environmental Education, 18(2), 1–8.
How to cite this article: LeClerq AT, Gore ML, Lopez MC, Kerr JM. Local perceptions of conservation objectives in an alternative livelihoods program outside Bardia National Park, Nepal. *Conservation Science and Practice*. 2019;1:e131. https://doi.org/10.1111/csp2.131