

Oleps' Traditional Beliefs of the Clouded Leopard the Top Predator of Bhutan

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Abstract

The Oleps are the first human inhabitants of Bhutan and the country's last remaining hunter-gatherers. We conducted a preliminary study into the meaning of the traditional Bhutanese saying *tog-ge-teng-nang-gong; gong-ge-teng-nang-thee* (Ole) and *tag-ge-ta-lay-gung; gung ge-ta-lay-theb* (Dzongkha). *Tag* in Dzongkha refers to Bengal tiger (*Panthera tigris*) and *gung* refers to clouded leopard (*Neofelis nebulosa*). The saying describes the existence of a species, which Oleps people believe is the clouded leopard, that is superior to the apex predator the tiger. The saying is further elaborated as *gung-gi-ta-lay-theb* (Dzongkha), which means that a skilled human hunter is superior to the clouded leopard. We used semi-structured interviews to ask 19 Oleps people to explain this traditional saying and narrate the beliefs embedded in it. Participants related the saying to their views of the clouded leopard, and we explored how these views might influence the current conservation status of clouded leopards living in the Oleps' locality. Our interviews showed that Oleps revered and respected clouded leopards, but they also viewed them and other wild cats as harmful to livestock, and some expressed a desire to acquire clouded leopard pelts or to keep them as pets. Indigenous knowledge and beliefs are important to consider in the development of a conservation plan for clouded leopards. We recommend that Oleps' sayings and stories be documented for posterity and that conservationists continue to engage in dialog with Oleps people to better understand the effects clouded leopards and other wild cats have on their livelihoods.

Keywords: Bhutan, cultural landscape, environmental humanities, indigenous people, traditional ecological knowledge

1. Introduction

Monpas are non-Buddhist people of Tibetan or Tibeto-Burmese origin living south of the Himalayas (Pommaret, 1994). Across Asia, Monpas traditionally lived in small groups as hunters and food gatherers (Hitchcock, 2021), and over millennia they have lived and traversed the Black Mountains area of central Bhutan practicing *tseri* (Dzongkha), commonly known as slash and burn cultivation, along with their foraging lifestyle (Namgyel, 2011). Monpas hold pre-Buddhist beliefs (Chand, 2006), and their religious life includes a spiritual relationship with mountains and forests (Giri, 2004). Many within this community follow shamanism as their religion and unlike Buddhists, they hunt and fish. Oleps are a sub-ethnic group of the Monpas and are the first human inhabitants of Bhutan (Chand, 2006).

In the recent past, scholars dismissed knowledge and beliefs of indigenous people as superstitions, but the cultural ethos of indigenous communities is crucial for nature conservation in part because local people have spiritual connections with their physical surroundings (Singh, Youssouf, Malik, & Busmann, 2017; Talukdar & Gupta, 2018) and may live in harmony with nature and contribute to biodiversity conservation through their stewardship of the environment (Kandari, Bisht, Bhardwaj, & Thakur, 2014). Indigenous peoples account for 80 to 90 percent of the world's cultural diversity (Hall & Patrinos, 2012). Traditional beliefs and cultural myths play

important roles in conserving nature in Bhutan (Basnet & Dhendup, 2020) because indigenous peoples' (such as Monpa and Oleps) cultures, traditions, and practices are all linked to the maintenance of healthy forests (Giri, 2004). Oleps people depend on natural resources for their livelihood (Wang, Lee, & Kim, 2018).

The Oleps people of central Bhutan are one of the country's few remaining indigenous groups. Oleps share a landscape with the increasingly vulnerable clouded leopard (*Neofelis nebulosa*), one of nine small-bodied wild cat species in the area [Table 1]. Although traditionally they were hunters and gatherers, Oleps today also practice subsistence farming. Like other people living in central Bhutan, they experience livestock depredation due to wild animals they live near and with. Even so, the clouded leopard has a distinct status in their view as a majestic and effective predator, superior even to tigers (*Panthera tigris*), and clouded leopard presence is viewed as beneficial to humans.

Table 1. List of the Small-Bodied Wild Cat Species Found in Central-West Bhutan (Wangchuk, 2004)

Scientific name	Common name	IUCN Red list
<i>Lynx lynx</i>	Lynx	Least Concern
<i>Prionailurus bengalensis</i>	Leopard Cat	Least Concern
<i>Felis chaus</i>	Jungle cat	Least Concern
<i>Octocolobus manul</i>	Pallas cat	Least Concern
<i>Leopardus pardalis</i>	Ocelot	Least Concern
<i>Catopuma temmincki</i>	Asiatic golden cat	Near Threatened
<i>Pardofelis marmorata</i>	Marbled Cat	Near Threatened
<i>Prionailurus viverrinus</i>	Fishing cat	Vulnerable
<i>Neofelis nebulosa</i>	Clouded leopard	Vulnerable

Ecologists and biologists recognize that wild cats play critical ecological roles as apex predators, and small-bodied wild cats account for 83% of global wild cat species (Wangmo, Lhendup, Pejor, & Wangchuk, 2020). The clouded leopard is classified as vulnerable and decreasing on the International Union for the Conservation of Nature (IUCN) Red List, and its continued survival is threatened by habitat destruction and illegal hunting (Gray et al., 2015). There is limited knowledge about its basic ecology and conservation status across its vast range (Figure 1), which includes Bhutan, Cambodia, India, Lao People's Democratic Republic, Peninsular Malaysia, Myanmar, Nepal, and Thailand, with isolated populations close to extirpation in Bangladesh, China, and Vietnam (Chiang & Allen, 2017). Clouded leopards are distributed in varied landscapes in Bhutan, including protected areas (national parks and biological corridors) and places with large human populations (Penjor, Macdonald, Wangchuk, Tandin, & Tan, 2018; Letro & Duba, 2019). Clouded leopards are mainly but not exclusively nocturnal and prey on a variety of arboreal and terrestrial animals, including rodents, deer, and primates (Gray et al., 2021). The species is famous for its stealth: it has been observed "...engaging in acrobatics such as climbing slowly headfirst down tree trunks, hanging upside down while moving along horizontal branches, and hanging from branches using only [its] hind feet (M. Sunquist & F. Sunquist, 2002)." IUCN experts report deforestation as the major cause of species decline across its range (Gray et al., 2021). Direct threats to the continued survival of clouded leopards include habitat alteration, fragmentation, and loss (Penjor et al., 2018).

In Bhutan, the clouded leopard has been reported in Royal Manas National Park (Tempa et al., 2013; Dhendup, Tempa, & Tenzin, 2016), Jigme Singye Wangchuck National Park (hereafter, JSWNP) (Ugyen Wangchuck Institute for Conservation and Environment, 2015), Gedu Territorial Forest Division (Dhendup & Dorji, 2018), and biological corridors connecting protected areas of Bhutan (Penjor et al., 2018). It is strictly protected as a Schedule I species under the Forests and Nature Conservation Act of Bhutan, which means that clouded leopards may not be "killed, injured, destroyed, captured, collected, or otherwise taken" except in situations of imminent threat to human life (Royal Government of Bhutan, 1995, p. 10).

Human-carnivore conflicts include direct and/or perceived threats to humans and livestock (Dhungana et al., 2019). Perceived threats may emerge from peoples' conscious or unconscious estimation of the risks the carnivore poses, sometimes based in part on their attitudes toward the animal. Livestock predation in Bhutan has become a critical issue for people living near wild cat populations (Rajaratnam, Vernes, & Sangay, 2016). For example, people living inside JSWNP experience livestock depredation by common leopard (*Panthera pardus*),

Bengal tiger, Himalayan black bear (*Ursus thibetanus*), and dhole (*Cuon alpinus*) (Wang & Macdonald, 2006). Of six sub-districts, people of Athang Geog reported more predation by common leopard and wild dogs (Dhendup & Letro, 2016). In Bhutan, Oleps raise cattle, pigs, poultry, and fish as part of their subsistence farming. Annually, each household loses an average of one cow to dhole and three poultry to leopard cats (*Prionailurus bengalensis*) (Dhendup & Letro, 2016), so Oleps may also experience conflict with the carnivores they live with.

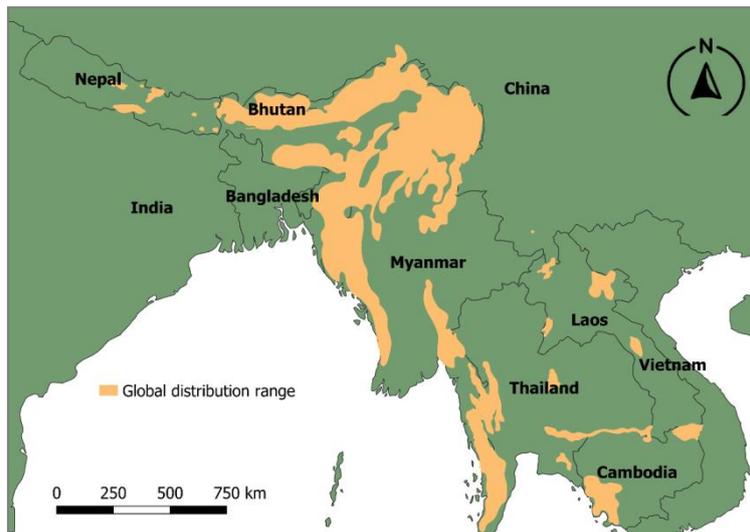


Figure 1. Distribution Range of the Clouded Leopard (Map: Kuenzang Dorji; Data Source: UWICER, www.iucnredlist.org and www.earthexplorer.usgs.gov)

Our goal for this study was to explore how Oleps' beliefs, embodied in the saying *tag-gi-ta-lay-gung* (Dzongkha); *tog-gi-teng-nang-gong* (Ole) influence clouded leopard conservation based on Oleps' direct and perceived human-wildlife threats from this and other wild cat species. We also explore how Oleps' perceptions might affect the continued survival of this species. We seek to develop complementarity between local knowledge and scientific findings in ways that enhance species conservation under changing environmental and social conditions.

2. Methods

2.1 Study Sites

We conducted our study in Rukha village (Figure 2) in Athang subdistrict in Wangdue district, where Bhutan's only and last tribe of 200 Oleps live in clouded leopard conservation landscapes. The village lies in the northwest area of JSWNP and southeast area of Taksha park range office (Figure 3).



Figure 2. Rukha Village and the Surrounding Landscape [Photo Credit: Kuenzang Dorji]

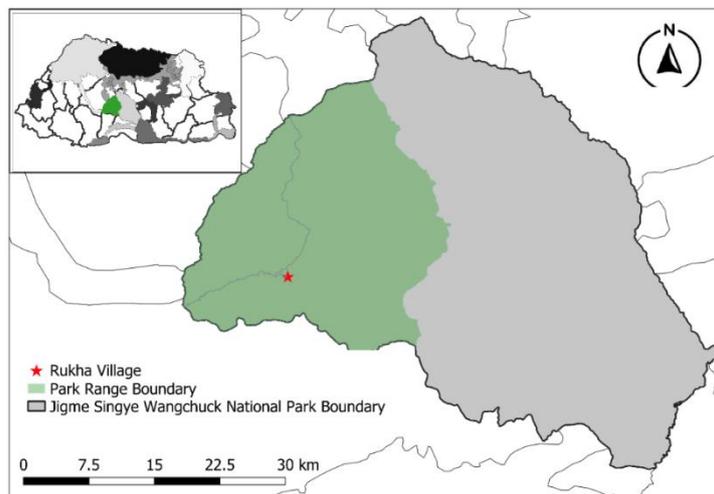


Figure 3. Location of Study Village Rukha under Taksha Park Range, Jigme Singye Wangchuck National Park (Map: Kuenzang Dorji; Data Source: UWICER)

2.2 Survey Methods

We used semi-structured questionnaire interviews (Adams, 2015) to collect information on Oleps' views of the clouded leopard and their impacts on livestock. We ensured approximately equal representation of respondents' genders (10 men; 9 women) and age groups (8 older adults above 45 years and 11 younger adults aged 18-44 years), and people who could read and write and those who could not (11 and 8 people respectively). We divided adults at age 45 because those 45 and older were more likely to have lived as hunter gatherers during early life, while people younger than 45 practiced subsistence farming combined with the hunter gather lifeway and were more likely able to read and write, due to educational reforms that occurred in the past several decades. We pretested the questionnaires with people of the nearby Samthang village in the national language Dzongkha to check whether the questions would elicit the intended information and be understood by respondents (Hilton, 2017).

Rukha village has 20 house units, one of which no longer has a family living there. In December 2019, we interviewed one adult in each of the 19 house units. We walked to each house unit, explained the purpose of the interviews, and ensured participant consent by explaining and/or providing a copy of the consent form and inviting the interviewee to sign or mark it. We interviewed 19 people and collected data on four major themes: presence of clouded leopard and small wild cats (Appendix A); traditional beliefs about clouded leopards; Oleps' awareness of global and regional conservation status of the clouded leopard; and conservation threats to the clouded leopard. We used illustrated pamphlets (Appendix A) to help people to precisely identify each cat species, including clouded leopard. Some people reported having encountered more than one wild cat species. Interviews lasted 25 to 30 minutes. Two respondents agreed to be photographed during the interview process (Figure 4). Respondents were asked whether they had heard about the traditional saying *tag-gi-ta-lay-gung; gung-gi-ta-lay theb*. We used the audio record function on our cell phones to document the respondent as he or she explained the significance of the saying and the importance of such beliefs to clouded leopard conservation in their locality. We also asked respondents about the common Bhutanese view that the majesty and power of the clouded leopard eclipses those of tigers.

We asked respondents to list perceived and direct threats to their livelihood attributed to the clouded leopard and other wild cats, and to rank them in order of impact. To gain an understanding of how people viewed clouded leopards and other wild cats, we asked about people's wish to keep clouded leopards as pets, and/or to possess all or part of the animal's pelt, and/or the extent of their agreement with the statement "all wild animals have a medicinal value." Using a hypothetical statement (e.g., "have you ever seen anyone..."), we asked each respondent to describe the status of hunting and poaching in their locality. We collected information on direct threats to people from clouded leopards by recording peoples' observations of cats' signs (scats [feces], pugmarks [footprints]), livestock predation, and/or peoples' reports of cat sightings, again using the pamphlet with images of Bhutan's wild cats (Appendix A).



Figure 4. Local Foresters Interviewing Oleps People (Photo credit: Wangchuk Dorji; Photos provided with participant consent)

2.3 Data Analysis

We entered the responses from the 19 participants into Microsoft Excel 2016. We analyzed the data using a Microsoft Excel spread sheet focusing on indicators such as the numbers of cats and cat species seen, knowledge of conservation status of the clouded leopard, cultural significance of the clouded leopard, and degree of predation and threats posed to people by clouded leopards. We performed descriptive analysis in MS Excel 2016 (Turner et al., 2015) and thematic analysis with some presets and open themes. We used pivot tables to create counts, frequencies, and percentages and to visualize the differences in response based on factors such as respondent age, gender, and literacy.

3. Results

3.1 Knowledge of Presence of Small Wild Felids and Clouded Leopards

None of the respondents had ever seen a clouded leopard, but 21% (n=4) of respondents (≥ 45 years old) reported having seen their scats and 5% (n=2) have encountered pugmarks of clouded leopards. Respondents noted that the leopard cat is the most common small wild felid species found in their locality, as 84% (n=16) of respondents have encountered pugmarks, 58% (n=11) of the respondents encountered scats, and 37% (n=7) reported a visual encounter with this cat species. About 11% (n=8) of respondents reported seeing pugmarks, 16% (n=3) of respondents reported seeing scats, and 21% (n=4) of respondents reported a visual encounter with the jungle cat. Asiatic golden cat is the least common small cat species, as only 5% (n=1) of respondents reported seeing it (Figure 5). Some respondents were uncertain of the difference between leopard cat and jungle cat, so in some cases, respondents may have misidentified these two species. Also, none of the respondents reported visual encounters or observations of pugmarks or scats of marbled cats in their locality.

3.2 Knowledge of Clouded Leopard Conservation Status

Sixty-eight percent (n=13) of respondents did not know that the clouded leopard is a Schedule I species protected under Bhutan's Forest Nature and Conservation Act 1995 and Forest and Nature Conservation Rule 2017. However, 32% (n=6) of respondents, mostly males (n=4), who had attended a sensitization meeting on policies in the past, were aware of the species' protected status. Seventy-nine percent (n=15) of respondents were unaware of the clouded leopard's global conservation status, but 21% (n=4) of respondents who were younger than 30 years (n=3), read and write (n=3), and/or were local leaders (n=1) were aware that clouded leopard is vulnerable and protected as Schedule I species in Bhutan.

3.3 Cultural Significance, Individual Opinion, and Peoples' Belief of Clouded Leopard's Superiority Over Tiger

Nearly 79% (n=15) of respondents stated that the clouded leopard has cultural significance in their locality. The remaining 21% (n=4) who are female respondents and/or 25-35 years old (n=3), had no idea of the species' cultural significance. None of the respondents felt that clouded leopards are culturally unimportant.

When asked about their species preferences, 89% (n=17) of respondents said that they like the clouded leopard because of its cultural significance and its stealthy manner of predation. When compared to other small wild cat species, they said that the clouded leopard does not harm people and their livestock, except for two respondents (10%) who disliked the target species based on the assumption that clouded leopards had killed their livestock in past years. Nearly 95% (n=18) of respondents agreed that conservation of clouded leopards is important and noted that they like the animal, while 5% (n=1) of respondents expressed dislike for the species, had no idea of

its cultural significance, and felt that its conservation is not important (Table 2).

Table 2. Nineteen Respondents’ Views of the Clouded Leopard

Indicators	Yes (%)	No (%)	No idea (%)
Important to conserve clouded leopard	95	5	0
Cultural significance of clouded leopard	79	0	21
Reported liking the clouded leopard	95	5	0

All respondents (n=19) revered the clouded leopard as a top predator, a symbol of Bhutan’s natural history, and as being superior hunters compared to tigers. Respondents described anecdotal information about the species passed down from previous generations. However, only nine respondents aged ≥ 45 years described clouded leopards as acrobatic stealth predators. Elder respondents explained the clouded leopard’s hunting method and noted that its agility and unique attacking techniques made them superior to other predator species, particularly to tigers.

3.4 Livestock Predation by Clouded Leopard and Sympatric Small Wild Felids

From the interviews, we learned that poultry birds were vulnerable to predation by leopard cats and jungle cats, but apparently not by clouded leopards. The affected local people (n=8) used dogs and made noises to keep the problematic wild cat species from attacking their poultry. All respondents expressed that killing or harming wildlife is against the law. If government rules and regulations allowed it, 16% (n=3) of respondents would choose to relocate the problematic cat individual, while 42% (n=8) reportedly wished to poison them, 37% (n=7) would choose to retaliate and kill them, and 5% (n=1) had no solution to suggest for what to do about the problematic cats. Seventeen respondents reported clouded leopards to be harmless and to not kill their livestock, while two respondents thought (probably mistakenly based on ecological surveys of the area) that clouded leopards had killed their livestock in the past.

3.5 Conservation Threats to Clouded Leopard and Small Wild Felids

All respondents reported that clouded leopards and small wild cats are threatened by habitat fragmentation due to construction of transmission lines for rural electrification and road construction. Most respondents (84%, n=16) wish to keep a clouded leopard as a pet, while 16% (n=3/19) of the respondents would not do so. In the case that local people encountered a clouded leopard carcass, 63% (n=12) of respondents reported they would collect the skin, while 32% (n=6) reported that they would not collect any of its parts, and 5% (n=1) said they would collect the tail and whole body (Table 3). Respondents who would collect the pelt believed that the clouded leopard skin has religious significance in driving away evil spirits and keeping livestock predators and crop raiders away from farms. One of the respondents wanted to collect the tail to use as a key fob and another respondent wanted to collect the whole body to stuff and use as a figure to scare animals raiding their crops.

When asked about the extent of hunting and poaching of clouded leopards, 16% (n=3) reported that the extent of hunting and poaching of clouded leopard and other wildlife species in their locality is “low” and 37% (n=7) responded that there is no hunting or poaching. Eight respondents (42%) were unsure of the extent of poaching/hunting, and one respondent (5%) reported that the extent is “medium” because that respondent expected some exceptional retaliatory killing of small cats by affected livestock owners.

Table 3. Assessment Indicators for 19 Respondents’ Perceived and Direct Threats to the Clouded Leopard

Variables	Responses (%)			
Like to keep clouded leopard as pet	Yes (84)	No (16)	Not applicable	
Views on clouded leopard as having medicinal value	No idea (5)	Not at all (47)	Somewhat agree (47)	Not applicable
Preference for dead clouded leopard’s pelt	Skin (63)	None (26)	Tail (5)	Whole body (5)
Current hunting and poaching status	Cannot say (42)	Low (16)	Medium (5)	Not at all (37)

4. Discussion

While the impetus for this research was to explore a local saying expressing admiration for the clouded leopard, the ideas embodied by that saying only begin to capture the local knowledge system from which the saying emerges. In addition, change, including the adoption of subsistence farming and habitat fragmentation associated with modernization are factors affecting both local people and clouded leopards and other cat species. Our brief exploration of Oleps' perspective on the presence and importance of clouded leopards raises two sets of questions for further inquiry, one having to do with the relationships between "western/scientific" and "indigenous knowledge" systems and worldviews; and the other having to do with differences among the Oleps and other Bhutanese people.

The distinction between "indigenous" and "scientific" knowledge has given rise to a long-running discussion in scholarly, conservationist, and resource development literature concerning the utility of each for the conservation of ecosystems and biodiversity. Scientific knowledge is generally privileged over indigenous knowledge in governmental management and decision-making. As early as 1995, Agrawal argued that the distinction between scientific knowledge and indigenous knowledge is spurious: each knowledge category is highly heterogeneous, local, and embedded in particular worldviews and ways of knowing. He further argued that acknowledging these characteristics could lead to dynamic complementarity that would give indigenous people a greater voice in their own future (Agrawal, 1995). More recently, researchers are showing the value of a collaborative approach in diverse socio-ecological contexts. Skroblin et al. (2021) developed species distribution models that combine local tracking and observational practices with rationalized survey techniques. The combined techniques have been used to confirm and expand understanding of habitat and ecosystem dynamics and the impact of change on species distribution (Skroblin et al., 2021). Others have examined the balance between human impacts and resource use from indigenous and scientific perspectives in the case of forest management in Brazil (Matuk et al., 2020). Indigenous knowledge of how to live sustainably in a particular ecosystem is an important resource for conservation of biodiversity in human occupied landscapes.

A second set of questions arises from differences in the information bases of Oleps and other Bhutanese people. According to the sayings and beliefs handed down to current Oleps generations, virtually all Oleps consider the clouded leopard to be a majestic and auspicious forest inhabitant that does not prey on livestock or humans. The clouded leopard's skin has religious significance and is believed to drive away evil spirits, it keeps livestock predators and crop raiders away from farms, and it brings good luck and good prospects for rainfall and harvest. Nevertheless, if it were not prohibited by law, Oleps would poison (42%) a problematic clouded leopard and would retaliate against (38%) any wild cats preying on livestock. On the other hand, many would like to have a clouded leopard as a pet—presumably kept captive as they are not domesticated and avoid humans. Present day Oleps have not seen a clouded leopard. They believe them to be inhabitants of remote high forest areas that are difficult to track because they bury their scats. In contrast, camera traps set by foresters confirm that clouded leopard exist in the current Oleps environment (JSWNP). Research in other parts of the species' range confirms that they are carnivores that patrol and mark their territories (Santiapilai & Ashby, 1988) and prey on livestock (Gray et al., 2021).

Given the discrepancies between Oleps beliefs about clouded leopards and researchers' findings, there is more to explore concerning Oleps and other groups that live in the clouded leopard's habitat. Does the saying about the superiority of the clouded leopard come from a time when clouded leopards were more numerous and observable, or when Oleps were more reliant on hunting in the high forest? How do Oleps categorize and identify the various felid species? What is their typology of behavior, preferences, and habitat features for the various cat species? Given their willingness as non-Buddhists to hunt and to retaliate against wildlife by poisoning, trapping, or relocating problem cats, how will their attitudes change as farming and habitat degradation affect the clouded leopard and other sympatric cat species? What techniques would they use to hunt, trap, or poison a problem animal? How might the Oleps participate in assessing direct and perceived threats and co-managing this and other cat species as conditions change (Varghese & Crawford, 2021)? Local knowledge documented and taught in schools would best serve humans and clouded leopards if it could be incorporated into collaborative expansion of understandings about changing conditions and how to maintain biocultural diversity and co-existence between clouded leopards, other felid species, and humans in Bhutan's changing landscapes.

5. Conclusion

Oleps people coexisted with wild cats in Bhutan for millennia, and their rich culture includes beliefs, stories, and records regarding the clouded leopard as a stealth hunter revered above all other wild cats. Given their close proximity to wild cats and other wildlife, however, Oleps are impacted by actual and perceived threats to their

livestock and livelihoods. The preservation and incorporation of Oleps people's views of clouded leopards and other wildlife is critical to the creation of sustainable conservation strategies.

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Appendix A

Pamphlet we used during interviews with Oleps to determine which cat species they have encountered.



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