

Status of Asiatic black bears in protected areas of Nepal and the effects of political turmoil

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Abstract: We conducted informal interviews with villagers and park and buffer zone personnel in protected areas of Nepal presumed to contain Asiatic black bear (*Ursus thibetanus*) during 19 September–10 November 2005. Based on these interviews, we assessed the presence and persistence of this species in Nepal. We conducted interviews in Shey Phoksundo National Park, Langtang National Park, Shivapuri National Park, the Junbesi area (south of Sagarmatha National Park), and Kanchenjunga Conservation Area. Bears were documented in all 5 areas; annual bear sightings reportedly increased in Junbesi and the Kanchenjunga Conservation Area; sighting frequency remained similar in the other areas. The extent of human–bear conflicts varied markedly between sites; in all but Langtang National Park, which attributed crop loss to other wildlife, bears were observed raiding corn crops during summer and early fall. Recent bear attacks on humans were reported from Junbesi and Langtang National Park and occurred in villages as well as in the surrounding forest. The Maoist insurgency has had both positive and negative implications for wildlife. Insurgents intimidated outsiders who were responsible for most poaching. However, the presence of Maoists resulted in the departure of personnel associated with conservation and protection, leaving no staff to monitor or oversee wildlife and habitat preservation. Additional surveys are needed to further knowledge of bear distribution as well as research on bear–habitat relations. Understanding bear ecology and developing adaptive management in the protected areas may help alleviate conflicts between bears and humans, thus maintaining or increasing their ability to coexist. However, loss of regulatory control due to the insurgency may make any attempts to monitor and conserve wildlife populations ineffectual.

Key words: Asiatic black bear, indigenous interviews, Maoists, Nepal, protected areas, *Ursus thibetanus*

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Most bear species are declining in numbers due to increased human activities, including habitat alteration or destruction, increased human settlements, and activities such as livestock grazing in bear habitat, shifting cultivation, poaching, unregulated killing for sport, and retaliatory killings attributed to depredation of crops and livestock (Servheen et al. 1999). Asian bears face a combination of these threats, exacerbated by lack of knowledge about their status, distribution, and requirements for survival. The International Union for the Conservation of Nature (IUCN) Bear Specialists Group (BSG) has indicated that Asiatic black bears (*Ursus thibetanus*) are at risk in many areas of Southeast

Asia, and lists the initiation of surveys for their status and distribution as a priority action for bear conservation (Servheen et al. 1999). Other than observations from Makalu Barun in the mid-1990s (M. Shrestha unpublished data), no information was available prior to this study on the status of Asiatic black bear in Nepal (Servheen 1990, Servheen et al. 1999).

His Majesty's Government of Nepal has set aside more than 28,000 km² of protected area (Fig. 1) in 17 parks and reserves that, together with associated buffer areas and reserved forests, constitute perhaps the only remaining areas of intact habitat with viable wildlife populations. Many of these were initially set aside in the 1800s explicitly for hunting by local and European aristocrats (Garshelis 2002). Asiatic black

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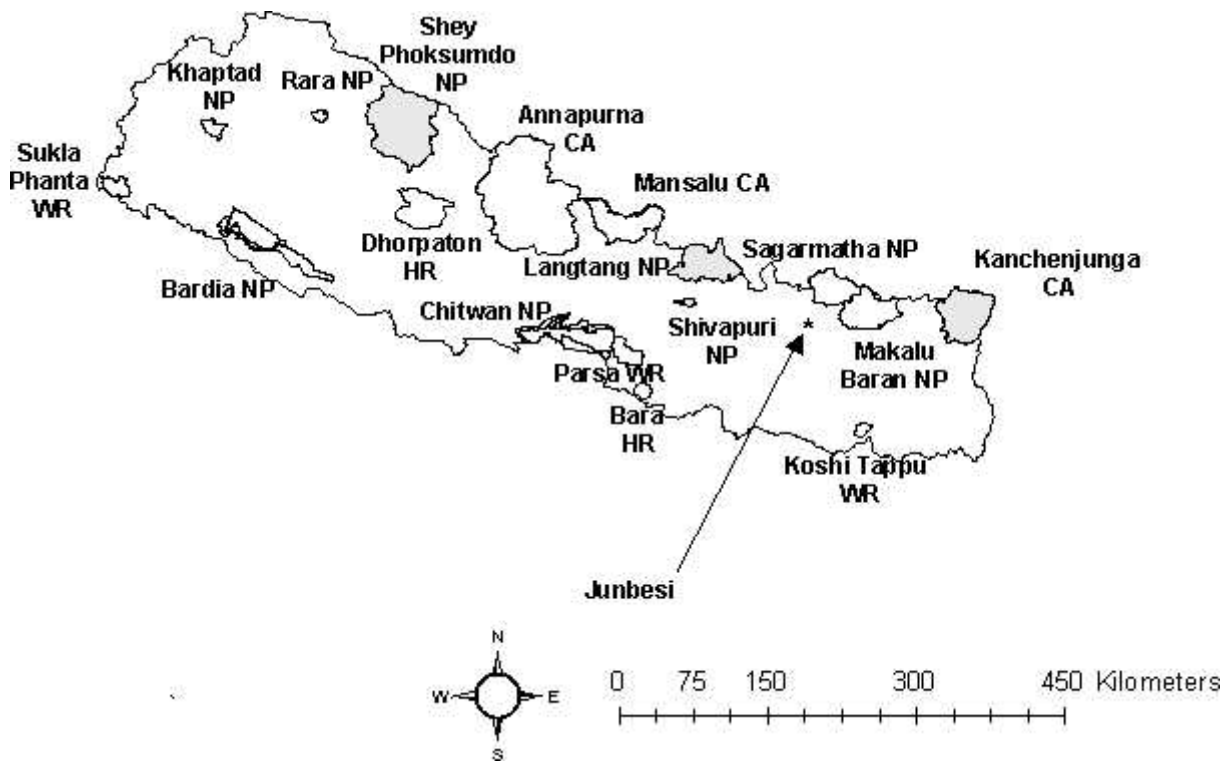


Fig. 1. Protected areas in Nepal. Shaded areas were visited (19 Sep–10 Nov 2005) to assess the status of Asiatic black bears. Residents surrounding the village of Junbesi, a non-protected site, were also interviewed. CA = conservation area, NP = national park, WR = wildlife reserve, HR = hunting reserve.

bears were reported in 11 of these protected areas (J. Gurung, Crystal Mountain Treks, Kathmandu, Nepal, personal communication, 2004; S. P. Phuyal, Institute of Forestry, Pokhara, Nepal, personal communication, 2005); the other 6 are at lower elevations along the Indo–Nepal border and do not contain Asiatic black bear habitat (Sathyakumar 2001). Protected areas reported to contain Asiatic black bear offer limited sanctuary because they are small or have minimal homogeneous forest cover. Protected areas are also spatially segregated. Most protected areas in mountainous Nepal contain enclaves of human inhabitants. All protected areas in Nepal support human populations along their peripheries.

Our objectives were to provide background information on the status of Asiatic black bears through the use of indigenous interviews. Our intent was that this information be used to determine how and where future research and conservation efforts of the Asiatic black bear might best be directed in Nepal. We focused our interviews inside protected

areas under the assumption that, despite competition with humans for resources and space, these areas would be more likely to harbor bears, provide higher quality habitat, and provide greater legal protection than non-protected areas.

Methods

Our initial design called for interviewing residents in all protected areas reporting Asiatic black bear during a 60-day period while traveling on a tourist visa. However, safety concerns surrounding the Maoist insurgency precluded visits to Rara and Khaptad National Parks and the Dhorpatan Hunting Reserve in Western Nepal, and to Makalu Baran National Park in Eastern Nepal. To compensate for the reduction in sample sites and for comparison purposes, we visited a non-protected area (the village of Junbesi in the Solu Khumbu District) south of Sagarmatha National Park (Mount Everest) because there were several reports of bear–human conflicts in the area.

Table 1. Status of Asiatic black bears, based on indigenous surveys conducted 19 Sep–10 Nov 2005 in 4 protected and 1 non-protected area of Nepal. Characteristics are based on subjective evaluations made during treks and interviews. A + indicates substantial or strong presence; multiple +s indicate a subjective measure of degree.

Study area	Shey Phoksundo NP	Langtang NP	Junbesi	Shivapuri NP	Kanchenjunga CA
Bears present	Yes	Yes	Yes	Yes	Yes
Sighting frequency	No change	No change/decrease	Increase	No change	increase
Average number of bears per sighting	2	1	2	1	2
Number of sightings per year	Several	Few	Several	Moderate	Several
Crop predation	Yes	No	Yes+	Yes	Yes+
Livestock predation	No	No	Yes	No	No
Human attacks	No	Yes/F*	Yes/FV	No	No
Maoist presence ^a	Yes +	No	Yes++	Slight	Yes++
NGO/GO involvement ^b	Yes	Yes	No	Yes	No
Human population ^c	Low	High	High	Low	Moderate/high
Forest fragmentation	Minimal	Extensive	Extensive	Minimal	Extensive
Poaching	No	No	No	No	Yes ^d
Retribution killing	No	No	Yes	Yes	Yes
Village attitude toward bears	Pests	Fear	Fear/pests	Pests	Pests/fear

^aF = forest attacks, V = village attacks, FV = bear attacks occurred in surrounding forest and village, * = signifies a fatality.

^bNGO is a non government organization, and GO represents Royal Nepali Army or DNPWC involvement within each area.

^cHuman population is a visual assessment of human density, e.g., number of villages, crops, and dwellings spread over the survey area.

^dReports of poaching in the past 5–10 years.

Interviews with local, knowledgeable people are a quick way to obtain information on long-term phenomenon (Sathyakumar 2001, Hwang et al. 2002). Thus, we interviewed individuals residing in or associated with the management of Shey Phoksundo National Park, Langtang National Park, Junbesi area, Kanchenjunga Conservation Area, and Shivapuri National Park (who we refer to herein as “indigenous people”). During 19 September and 10 November 2005, we spent approximately 1 week in each study site, restricting travel and interviews to suspected bear habitat or forested areas between 1,800–4,000 m (Sathyakumar 2001). All of our interview work was done on foot, moving first through the buffer zone then into each protected area. We stayed in houses or lodges and interviewed villagers along the route as well as at the end of each day’s journey. We attempted to loop through each protected area so as to not retrace our path. We interviewed entire families, but concentrated on individuals with long-term residency for historical information. We presented each interviewee with a picture of an Asiatic black bear to minimize errors in bear species identification. The quantity of interviews in each location was roughly proportional to human population density along the travel route. Respondents varied from 45 (in Shey Phoksundo National Park [NP]) to 100 (in Langtang NP).

Results

Asiatic black bears were evidently present in all study sites, but frequency of sightings and magnitude of conflict varied among areas visited (Table 1). Bears are protected within and outside protected areas and all persons participating in the interviews were mindful of their protected status.

Shey Phoksundo NP

Shey Phoksundo NP is located in the midwestern region and is the largest protected area in Nepal (3,555 km²). Asiatic black bears were observed more frequently (3–5 times per year; 1–2 bears observed at each sighting) here than any other area. Correspondents throughout the Park agreed that bears were seen regularly and with the same frequency as in the past 5–10 years. Reports of bear activity were confined to 2,400–3,300 m in forests composed of blue pine (*Pinus wallichiana*), Himalayan spruce (*Picea smithiana*), cypress (*Cupressus torulosa*), poplar (*Populus* spp.), fir (*Abies* spp.), and birch (*Betula* spp.) (Press et al. 2000). At and above Shey Phoksundo Lake (3,600 m), the landscape resembled the Tibetan Plateau with barren slopes devoid of tree cover and presumably was beyond the range of Asiatic black bear.

Respondents indicated that bears were observed repeatedly in the western section of the Park and that

resident villagers were not engaged in poaching. Maoist insurgents were indirectly involved in managing the Park's wildlife. Although they hunted blue sheep (*Pseudois nayaur*) for food, insurgents did not poach bears. Rather, their presence intimidated outsiders coming to the Park to poach. Because insurgents demanded a portion of the take from poachers, outsiders were discouraged from this area. We were informed the human population density inside the Park was stable and not causing a loss of habitat (G. Paudyal, World Wildlife Fund for Nature [WWF]/Northern Mountains Conservation Project, Dolpa District, Shey Phoksundo NP, Nepal, personal communication, 2005).

There were no reports of retribution killing of bears, nor were there reports of bear attacks on humans or livestock. Bears, however, were perceived as pests due to their depredation of corn crops. The majority of respondents engaged in 'duty,' protecting crops by sleeping in a lean-to in the fields and regularly making large amounts of noise to drive bears or other wildlife away. Duty was undertaken during June–October, between crop maturation and harvest. In addition to duty, many people had at least 1 dog to help keep bears away. Crop raiding was not restricted to villages closest to the tree line; bears were also reported as moving down to crop terraces several hundred meters below the treeline.

Our informal observations suggested that this protected area had a lower human population density (including tourists) than any other area we visited. Despite its limited amount of forest, existing forests appear to be spatially continuous with little fragmentation. There was also an active conservation presence (i.e., WWF) within the Park, helping to promote literacy, environmental stewardship, and capacity building.

Langtang NP

Langtang NP (1,710 km²) is situated in the central Himalaya and extends 32 km north of Kathmandu to the Nepal–China (Tibet) border. Oak (*Quercus* spp.), chir pine (*Pinus roxburghii*), maple (*Acer* spp.), fir (*Abies spectabilis*), blue pine (*Pinus wallichiana*), hemlock (*Tsuga dumosa*), Himalayan spruce (*Picea smithiana*), and various species of rhododendron (*Rhododendron* spp.) are the main forest species (Press et al. 2000). Above the treeline, alpine scrub and grass give way to rocks and snow. About 45 villages are situated within the park boundaries, but are not under its jurisdiction. Approximately 3,000

households depend on park resources, primarily for wood and pasture lands (T. Pasang, Buffer Zone Committee Chairman, Langtang NP, Nepal, personal communication, 2005).

Our interviews were conducted in villages between 2,300 and 3,500 m located in forested areas along the Langtang Khola River. Interviewees consistently stated that bears were not engaged in crop raiding; villagers engaged in duty to deter macaques (*Macaca mulatta*) and wild boars (*Sus scrofa*). There were no reports of bear attacks on livestock; however, there were reports of bear attacks on humans, including one fatality. We collected recent (autumn 2005) reports of 4 non-lethal and 1 lethal bear attack on humans. All attacks, including the fatality, were reported to have occurred while victims were collecting bamboo (*Himalayacalamus falconeri* or *H. jhapra*) in the forest. The only other incident villagers could recollect was a non-lethal attack on a woman 30 years earlier. Unlike Shey Phoksundo NP, where bears were regarded as pests, respondents in Langtang NP feared encountering a bear.

Langtang NP was the only area we visited where opinions were inconsistent on the status of Asiatic black bear. A high-ranking and recently hired park official believed that the bear population was increasing because of increased sightings, whereas long-term residents (including a buffer zone committee chair) implied the opposite. The official explained that the lack of bear crop damage was due to the availability of natural foods. Other respondents consistently stated that bears were seen only once/year, and that these sightings were exclusively in the surrounding forest. The buffer committee chairman indicated that bears were more often observed in southeastern Langtang NP through the surrounding buffer zone than elsewhere. Some people believed that few bears were seen because of too many tourists (Langtang NP is one of the most heavily visited protected areas in Nepal) or too much noise, or they blamed the paucity of bear sightings on loss of forest due to livestock grazing. Prior to the Maoist insurgency, the Nepalese Army conducted regular anti-poaching patrols in Langtang. Since the Maoist uprising, the army presence had been limited to the park's periphery and was primarily concerned with the insurgency. However, all respondents agreed there was little poaching of bears because they were more difficult to poach than species such as musk deer (*Moschus chrysogaster*).

Junbesi

Junbesi village is approximately 24 km south of Sagarmatha NP and is a common stopping point for tourists taking a long route to the Mount Everest Base Camp. The majority of respondents in this area (2,500–2,800 m) reported more bears seen than during the previous 5–10 years, primarily June–July through November. Some villagers reported that bears made an initial appearance in May and June during the ripening of the barley crop, then reappeared late summer through early fall when corn crops were ready. Bears in the Junbesi area were observed making an altitudinal shift to lower elevations in winter similar to that reported from Langtang NP. Terraces high on hillside and adjacent to the remaining patches of forest were raided more frequently than those at lower levels or along the main trail. The most vulnerable crops were owned by older women whose husbands worked outside of the village. These women reported being unable to deter bears from their crops unaided. Depending on where a village was located, either the army or the Maoist insurgents were the governing body.

Bear attacks within villages as well as within forests were reported, but we documented no fatalities. As in Langtang NP, attacks within forests occurred when bears were feeding in bamboo, and we infer that bears involved in such attacks were startled by the presence of humans. People also reported bears killing the young of dogs and livestock. We interviewed 3 victims of bear attacks, all from the same village (Tumbu, approximately 1 km south of Junbesi). One victim was a deaf–mute female, approximately 20 years old, who was attacked at night outside her home. The other 2 victims were an elderly married couple who were attacked during the afternoon after encountering a bear inside a water mill. The attacks occurred approximately 2 weeks prior to our visit. Injuries observed were primarily on the back and hip regions and were not very deep. All 3 attacks appear to have been prompted by surprise encounters.

Residents of surrounding villages also reported seeing bears during daylight hours. Residents of Loding village (2,766 m) received permission from the Maoist insurgents to kill 3 bears. Maoists were present throughout this area and more lenient than the Nepalese Army in giving farmers permission to kill bears. However, many people still expressed frustration that they were unable to protect themselves from bears because they were generally not allowed by insurgents to use weapons.

Although we did not document evidence of poaching, some interviewees indicated that retribution killing of Asiatic black bears was common within the Solu Khumbu Region (which encompasses Junbesi and Sagarmatha NP), where neither Maoists nor the army were often present.

Kanchenjunga Conservation Area (CA)

Kanchenjunga CA covers 2,035 km² in the northeast corner of Nepal and has relatively high rainfall and humidity. In 1997, the Department of National Parks and Wildlife Conservation (DNPWC) joined with WWF Nepal to create the Kanchenjunga Conservation Area Project (KCAP). However, as of 2005, both KCAP and WWF offices were abandoned due to the insurgency.

Bear observations were reported from as low as 2,000 m and continued north through 2,500 m (we conducted no interviews at higher elevations). Previous WWF and KCAP staff members as well as villagers indicated that bears had been sighted frequently 9–10 years earlier. Since that time, sightings declined significantly. Some interviewees suggested that poaching reduced the number of bears in the area and thus the number of observations, whereas other respondents reported that bear numbers had declined due to control actions that had been approved to reduce loss of crops. All villagers interviewed reported observing more bears in 2005 than during the previous decade. Some villagers expressed concern for a resurgence in the bear population because of the potential for more crop raids and attacks (although reports of past attacks were vague and sketchy).

Villagers reported that bears were present in crops primarily in the summer and early fall and that some villagers engaged in duty in response to their presence as well as that of other wildlife. Women and small groups of people were limited in their ability to deter bears during duty, and villagers could not use guns to protect themselves or their crops from bears. The only other non-lethal alternative deterrent was to make noise. In addition to regular cereal crops, many KCA residents grew cardamom, which, because it generated high profits (roughly ~200,000 Nepali rupees/yr [2005 US\$2,857]; J. Gurung, formerly of KCAP, Crystal Mountain Treks, Kathmandu, Nepal, personal communication, 2004), was intensely protected. Although bears were not reported to have fed on cardamom, damage caused by their wandering into cardamom fields was

considered equally destructive. We observed carcasses of a muntjac (*Muntiacus muntjak*) and a palm civet (*Paguma larvata*) killed in retribution for damaging vegetable and cardamom crops, respectively. Unlike the other areas we visited, we were informed that the Village Development Committee compensated individuals losing crops to bears and other wildlife. Former KCAP personnel were optimistic that the WWF and KCAP offices would reopen despite the insurgents' requirement that they pay a fee to remain in the area.

Shivapuri NP

Shivapuri NP (114 km²) is located <20 km north of Kathmandu; its proximity to the capital allowed frequent visits by DNPWC staff. There was also a mixed presence of army personnel and Maoist insurgents. Because the park is small, our 3-day trek allowed us to cover much of the park's landscape. Similar to Shey Phoksundo NP, Shivapuri contained contiguous forests characterized by limited fragmentation from agriculture. This was the only park where we observed discernible sign of other wildlife (e.g., leopard [*Panthera pardus*] tracks and scrapes) while traveling through forested areas. We also walked several hours without encountering another human being. Unique to our visit in Shivapuri was our encounter with a monastery and an Ashram. Heinen and Kattel (1992) suggested that religious devotion to certain areas (which they referred to as *de facto* reserves) may offer increased protection to forests and wildlife. The most recent sighting (within 10 days of our visit) of an Asiatic black bear had been near the Ashram. There were no reported bear attacks in Shivapuri NP; however, bears were observed in millet and corn crops north and south of the main village of Chisopani. Respondents indicated that bear sightings occurred almost exclusively during summer, coinciding with crop availability, and that people engage in duty to protect crops. We received reports of bears in 3 of the 4 districts within Shivapuri. Bear observations had evidently been made at similar frequencies to earlier years. One bear was reportedly killed 2–3 years prior to our visit by a group of local people in response to crop damage. There were no reports of bear poaching.

Discussion

Through our informal interviews we obtained information on the status of Asiatic black bears

without intimidating villagers. Interviewees represented multiple ethnic groups and castes, with Hindus dominating among lower elevations and Buddhists at higher elevations. We observed no apparent distinction in attitude toward bears based on ethnicity. At all sites, villagers regarded bears primarily as agricultural pests. Inhabitants of areas with reported bear attacks (i.e., Langtang NP, Kanchenjunga CA, and Junbesi) feared bears.

We confirmed the presence of Asiatic black bears at all sites we visited, but acknowledge that our respondent base was restricted geographically to small sections of each study site. Therefore, we cannot extrapolate our findings within surveyed protected areas or to areas not visited. Although we conducted interviews opportunistically, consistency between respondents supported our general impression that bear poaching was uncommon. Observations from Makalu Barun NP during 1995–96 similarly suggested that poaching was uncommon. At that time, remnants of dead fall traps were observed, but there were no reports of recent poaching (M. Shrestha, unpublished data).

Responses to our questions regarding temporal variation in the frequency of bear sightings were consistent in 4 of the 5 areas we visited (Langtang NP being the exception). Individuals familiar with the history of Langtang NP reported previous incidents of bear–human conflict (Shrestha 2003; S. Sathyakumar, Wildlife Institute of India, Chandra-bani, Dehra Dun, India, personnel communication, 2005; J. Heinen, Associate Professor and Chair, Department of Environmental Studies, Florida International University, Miami, Florida, USA, personnel communication, 2006). Due to the small spatial scale of our sampling, we may have missed sections of Langtang NP where bears were more abundant or engaged in crop raiding. We attempted to compensate by visiting park wardens and other officials with access to information from across the entire protected area as well as the buffer zone. Variation among Langtang respondents in time of residence may explain discrepancies in their reports of bear status. Approximately one-quarter of our interviewees in Langtang NP (including the Park Warden) were neither long-term nor full-time residents. Larger villages in Langtang consisted primarily of lodges catering to tourists. Our only available respondents at these sites were young (<30 year old) men who had lived in the area <5 years prior and managed tourist lodges; they were present

primarily in spring and fall. In general, elderly and long-term residents in Langtang reported decreased bear sightings and speculated that bear abundance had been decreasing over time.

Loss of habitat and the potential for retribution killing present a real threat for Asiatic black bears in Nepal. We observed no evidence that protected areas are managed with any concern for bear habitat needs. Increased numbers of bear sightings (e.g., in Junbesi and Kanchenjunga CA) do not necessarily indicate a growing bear population; they may instead reflect growing human pressure. Some species thrive with the creation of protected areas (Baral and Heinen 2006) because these have eliminated pressures from hunting and poaching. However, we suspect that even in the absence of poaching, some protected areas may be inadequate for bears unless there is some habitat rehabilitation (e.g. reforestation).

Our interaction with Maoist insurgents was limited and without incident, but we did observe remnants of destroyed army buildings in Kanchenjunga CA and in Shivapuri NP. We suspect our uneventful trip was attributable to a 3-month cease fire (commencing in September 2005), and perhaps to the attitude of local insurgents (the army, however, executed 2 Maoist leaders in Kanchenjunga CA during our visit). Elsewhere, as of late 2004, Maoist rebels destroyed 47 physical structures of the DNPWC and gained complete control of Dhorpatan Hunting Reserve and Makalu Barun National Park, forcibly evicting staff and taking communications and other equipment. Maoists also killed staff at Royal Suklaphanta Wildlife Reserve and Parsa Wildlife Reserve in the Terai in ambushes possibly intended for the army. The Department of Forestry has also been targeted: as of January 2003, Maoists destroyed 22 district offices, 39 area offices, 217 range posts, 2 training centers, and 2 armed security camps. The goal of the Maoist insurgents at the time was to drive the government from the forests and take them over for their own residence and training centers (Baral and Heinen 2006).

We suggest that similar interviews be conducted in remaining protected areas reported to contain Asiatic black bears, especially Rara and Khaptad NPs in Western Nepal. In addition, an evaluation of the extent of forest cover between protected areas is necessary to determine whether protected areas inhabited by bears are connected or fragmented. A general bear ecology study, although important, is, in our opinion, of less interest to DNPWC and less

apt to be permitted than one addressing bear–human conflicts. Therefore, we recommend that a comparative study be conducted focusing on the frequency and magnitude of bear damage in different areas. The study area should include Junbesi, and Langtang and Shivapuri National Parks. Such a study should examine correlates of bear–human conflicts such as the availability of natural food, quantity and spatial pattern of remaining forest, human population density, livestock density, degree of Maoist influence, and approximate bear density. The results of such a study would provide not only basic ecological information on Asiatic black bears, but also a better understanding of factors underlying bear–human conflicts and whether they can be minimized. Ultimately, Nepal will need to decide the fate of its Asiatic black bear populations. The ability to implement any management and conservation plan will depend on a relationship between the people and the government that is not hampered by political turmoil.

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