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Review Article

Conservation status of some endangered mammals in Barak Valley, Northeast India

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ABSTRACT

From the ancient time, the Northeast part of India is rich in biodiversity because of its diverse topographic, climatic features. Different varieties of mammalian, avian, and herpetofauna are endemic to this region. Unfortunately, life of this diverse flora and fauna is in jeopardy due to serious anthropogenic pressure. Once a large number of globally important species sustained in the Barak Valley. However, with the increasing population and subsequent demand on natural resources and developing activities, many of the species are no more found in the valley. If the conservation action is not initiated, the remaining species will also vanish with time. This article highlights the distribution and conservation problems of four endangered species in the Barak Valley of Assam, India and recommended conservation tactics.

Introduction

Southern part of Assam (92°15'–93°15' E and 24°8'–25°8' N) comprises three districts (viz, Cachar, Hailakandi and Karimganj) and is popularly known as the Barak Valley. The valley is named after the river Barak, the largest river of the valley and second largest of Northeast India. The area shares its border with other states like Meghalaya in the north, Manipur in the east, Tripura and Mizoram in the south, and flanked with the transnational boundary of Bangladesh in the south. The Barak Valley of Assam has an undulating topography contributed by wetlands, floodplains, grasslands, hillock, mountain, etc. (Mazumder 2014). Drainage of Barak River supports agricultural activities, providing food supply to the population. The valley is a part of the Indo–Myanmar biodiversity hotspot (Myers et al 2000). Approximately 4.8% geographical area of the valley is covered by tea plantations and remaining most of the hillock areas are either in home garden or under reserve forests (RFs). The forests in the valley are tropical evergreen, semi-evergreen, tropical deciduous, and secondary (Talukdar and Coudhury 2017a), and there are large tracts of rainforests in the northern and southern–eastern parts of the valley. The climate of the valley is characterized by subtropical, warm and humid with average rainfall of greater than 3000 cm (Mazumder et al 2014).

Bengali is the dominant community in the valley, living both in plain and hilly areas, while other ethnic communities like *Hmar*, *Kuki*, *Khasia*, *Reang*, *Tripuri*, etc. inhabit in the forested areas. The valley covers 8.9% of the total geographical area of Assam, but it contributes 11.59% human population of the state (Census of India 2011). Owing to its varied topographical features, the area portrays as the unique habitats for wildlife. The available literature documented the presence of myriads of wild species populations from the area (Hunter 1879; Corbett and Hill 1992). However, because of excessive influx of war refugee (from Bangladesh, after 1971) and increased developmental activities including road construction in the forest areas, many of the precious wild animals have lost their habitats and vanished from the Barak Valley. To mention, some of the globally threatened species which have vanished from the area in the last few decades include gayal (*Bos frontalis*), Indian bison (*Bos gaurus*), buffalo (*Bubalus arnee*), barasingha (*Rucervus duvaucelii*), Royal Bengal tiger (*Panthera tigris*), greater Indian one-horned rhinoceros (*Rhinoceros unicornis*), Sumatran rhinoceros (*Dicerorhinus sumatrensis*), Javan rhino (*Rhinoceros sondaicus*), gharial (*Gavialis gangeticus*), etc. It is a matter of concern that some of the species that are globally threatened are found in the valley, but their survival in the area is at stake because of various anthropogenic threats. The only large animal found in the area is Asiatic elephant (*Elephas maximus indicus*). Present article highlights on distribution of four endangered animals in the

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Barak Valley of Assam and conservation problems faced by them and suggests measures for conservation.

Materials and methods

The present study has been carried out by reviewing available literatures as well as open-ended questionnaire by targeting hunters, village headmen, and forest staffs. Participatory rural appraisals as well as interaction with wildlife workers were also done to validate the findings.

Results

Some endangered mammals of the Barak Valley

Asiatic elephant

Asiatic elephant (*Elephas maximus indicus*) has been listed as endangered by the International Union for Conservation of Nature and Natural Resources (IUCN) red list group as more than 50% of its population has been lost in last 60–75 years (Choudhury et al 2008). The species has also been listed in Appendix I of Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and Schedule I of Indian Wildlife Protection Act, 1972. Asiatic elephant occurs in 13 different countries. Among them India is ranked first for the number of species, whereas Myanmar is ranked first for the home range of the species (Eleaid 2017). Approximately, 27,312 individuals are distributed in 23 states of India (Perinchey 2017). In India, elephants are mostly distributed in the Western Ghats and Northeast India. The state of Assam within Northeast India harbors highest numbers of elephants than other states of the region because of its unique topography and congenial habitats for the species. Approximately, 5719 individuals are surviving in different parts of Assam (Perinchey 2017).

Asiatic elephants were once found in all the forested areas of the Barak Valley (Choudhury 2013). However, rapidly growing human population and consequent anthropogenic threats have constrained both the habitats as well as the number of individuals. Distribution of elephant in southern Assam is shown in Figure 1. At present, only nine individuals are left into two different RFs, viz., Patharia Hills RF (PHRF) of Karimganj and Katakal RF (KRF) of Hailakandi. Three individuals consisting of one male, female and one calf are surviving in KRF whereas six female individuals are in PHRF. Human–elephant conflict is common in PHRF, especially in winter season (Talukdar and Choudhury 2017b), although no such case has been reported from KRF. This causes the death of animal and human as well. On August 6, 2017, a female elephant (approx 13 years age) in PHRF while crossing the rubber plantation area of the Medli tea garden was electrocuted because of poor maintenance of the electric wires and poles (Figure 3). The lives of the remaining six individuals of the species are in jeopardy because of continuous threats and lack of conservation initiatives.

Western hoolock gibbon

Western hoolock gibbons (*Hoolock hoolock hoolock*) are the most endangered species of primates and are the only apes found in the Barak Valley (Mazumder et al 2014). The species has been red listed as endangered by IUCN as the species has lost at least 50% of its population over the last 40 years and is expected that the species is likely to lose its similar population in upcoming 40 years because of continuous habitat loss (Brockelman et al 2008). It is included in the Schedule I of Indian Wildlife (Protection) Act, 1972, and Appendix I of the CITES.

Hoolock gibbons are distributed in all three districts of the Barak Valley (Figure 1), especially in the RFs and their adjoining tree garden areas with dense forests and continuous canopy (Figure 3). They also visit fringe areas for searching food. A good number of hoolock gibbon's populations are available in different parts of the Barak Valley (Choudhury 1990, 1996, 2005, 2009, 2013; Dey et al 2015; Islam et al 2013a, 2013b; Talukdar and Choudhury 2017a). The RF and tea estate (TE) supporting the species are specifically in the Inner Line RF, Katakhal RF, Barail Wildlife Sanctuary, PHRF, the Bhuban Range, Shahpur TE, Mesipur TE, Manipur TE, Katlicherra TE, Silcoorie TE, Medli TE, and Putni TE (Choudhury 1988, 2002; Islam et al 2013a, 2013b).

However, the species has been declining their numbers because of habitat loss and other anthropogenic activities. A female gibbon (Figure 4) was rescued from the Rosekandi, 5 kms away from the Assam University. The lady gibbon lost her partner, and the brachiator tried to jump from one tree to another, fell down on the ground, and had severe injury. It was then rescued, and after initial treatment in local veterinary, it was hand over Guwahati Zoo Authority for its better treatment.

Phayre's langur

Phayre's langur (*Trachypithecus phayrei phayrei*) is also known as spectacled monkey for its beautiful spectacled looks. The species was once widely distributed in different parts of Southeast Asia, however the species have been red listed by the IUCN as an "endangered" species as it has lost more than 50% of its population in 40 years. The species has also been listed in the Schedule I of Indian Wildlife (Protection) Act, 1972; Appendix II of CITES (Bleisch et al 2008). The diurnal, folivorous monkey prefer primary and secondary evergreen and semievergreen forest and moist deciduous forest but also are found in light woodlands, bamboo dominated forest, and tea plantations areas where dense forests are available (Molur et al 2003). However, they do not prefer small patches as their troop size is large (20–30 individuals) that can hardly be supported by such habitats (Mazumder et al 2014).

Although the species has been facing several anthropogenic pressures, the Barak Valley is stronghold of the Phayre's langur. Their distribution in the valley is shown in Figure 1. They are commonly found in Inner Line RF, Katakhal RF, PHRF, Tilbhum RF, Longai RF, and Shingla RF. Although its past distribution was also in Dohalia RF and Badshahitilla RF, currently the species is rare to observe in these RFs. TEs with a sizable populations of the species surviving include Putni TE, Serispore TE, Rosekandy TE, Barjalenga TE, Irongmara TE, and Derby TE (Bose 2003; Choudhury 2004), which are actually fragmented sections of RF.

Chinese pangolin

Chinese pangolin (*Manis pentadactyla*) has been red listed as critically endangered by the IUCN as its population has been declined because of high levels of poaching for meat and their scales. It has been predicted that if the current trends of declining continues, approximately 90% of its population will be reduced over the next 21 years (Challender et al 2014). The species is listed in Appendix II of CITES and Schedule I of Indian Wildlife (protection) Act 1972.

The species prefers primary and secondary, tropical forest, limestone forests, bamboo forests, broadleaf forests, coniferous forests, grasslands, and agricultural fields (Chao Jung-Tai 1989; Gurung 1996). Although the species is rarely found in the Barak Valley of Assam; however, their existences are strongly supported by local villagers (Talukdar and Choudhury 2017a). The species is subjected to illegal trade due to good market demand for its oil and flesh. This phenomenon has been reported from the areas of its distribution in other geographical range as well (CITES 2000; Pantel and Chin 2009; Challender 2011), which made them rare in the area. Whenever, a person spots the species, immediately they try to catch it and sell for cash. Their probable distributional ranges cover

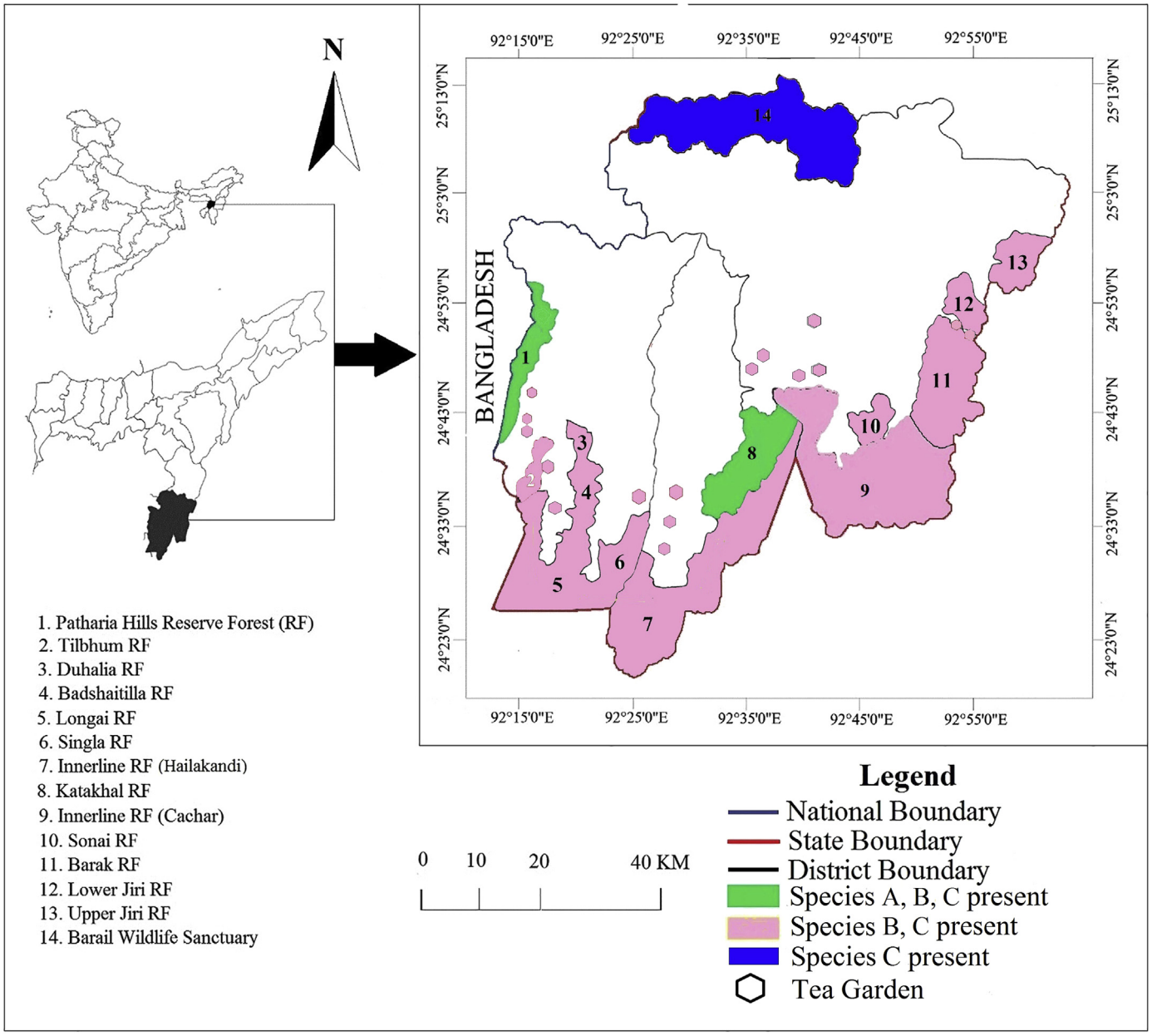

Figure 1. Map of the Barak Valley showing distribution of the endangered mammals. A = Asiatic elephant, B = Phayre's langur, C = Western hoolock gibbon.

all the RF of the Barak Valley (Choudhury 2013), which was identified by interviewing the local people. However, their present status and accurate distribution is still unknown. Because, at present the species is rarely visible, it is necessary to identify its prime areas in the valley, and there is a need for protection and conservation of the species.

Gangetic river dolphin

Gangetic river dolphin (*Platanista gangetica gangetica*) has been red listed as endangered by the IUCN. Its population size has reduced by more than 50% since 1944 and projected to a further reduction of 50% over the next 30–60 years (Smith and Braulic 2012). The species is placed in Appendix I of CITES and Schedule I of Indian Wildlife (protection) Act, 1972. In 2009, it was declared the National Aquatic Animal of India.

The species has earlier been reported from the upper parts of Barak River, namely Jirimukh to Tinganga (Choudhury 2013; Singha et al 2007, 2013; Biswas et al 2007). The species was also frequent in Lalmati Dahr and Niyairgram Dahr areas (both located adjacent to Silchar town area). During winter, when the water level recedes, the species lives in the deep gorge (locally called "Dahr") areas, but during summer and rainy season, they swim across long distances. However, recent study by Mazumder et al (2014) found its existence only in downstream area of the Barak River (Figure 2), Tinganga, and different region of Kushiara River (a tributary of the Barak River), especially into the Bash-Ghat Dahr, Chor-Bazar Dahr, Jokiganj Dahr and Deopur Dahr.

The species is facing steep decline from the area because of siltation, pollution, and hydrological changes of the river Barak, unrestricted use of gill-nets throughout its distributional range of the valley (Mazumder et al 2014). Other reason for its decline is poaching for its oil, which has high market value both for meat and fish attractant (Figure 4). Some local people believe that its oil can cure rheumatic arthritis.

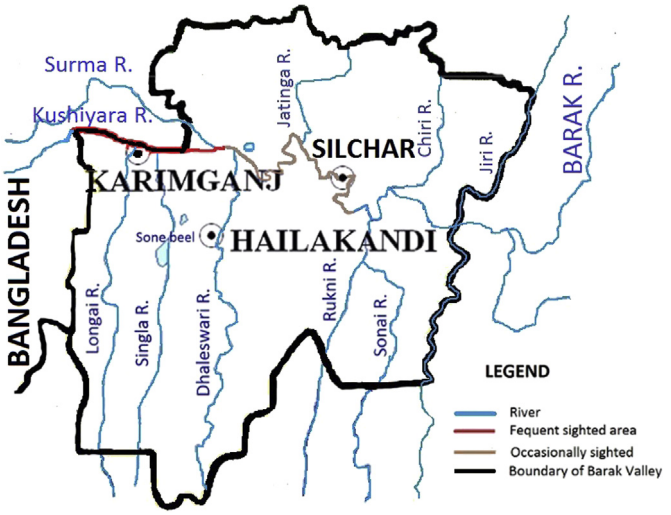

Figure 2. Map of the Barak Valley showing different rivers and dolphin's sites.

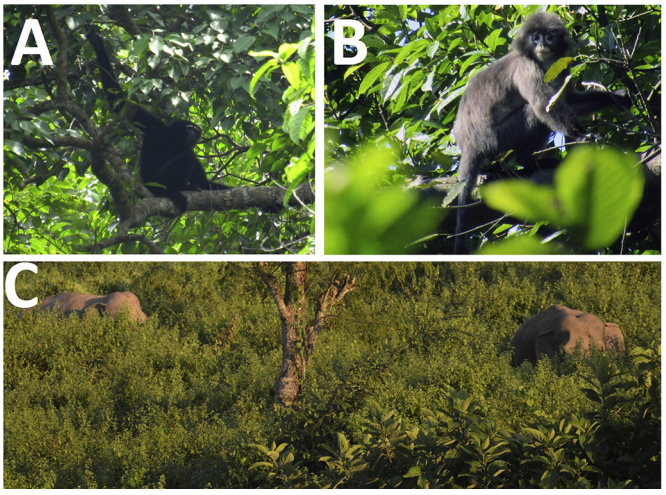

Figure 3. Endangered mammals of the Barak Valley: A, hoolock gibbon; B, Phayre's langur; C, Asiatic elephant.

Conservation problems

All over the world, tropical forests are declining because of various anthropogenic activities; the activities vary from place to place. All the threats in the Barak Valley are summarized here:

Habitat loss and fragmentation

Habitat loss and fragmentation is very common phenomena for declining species diversity. Timber logging and fire-wood collection is south Assam is the prime cause of habitat fragmentation besides monocultural plantation by the Forest Department of Assam. Illegal timbering has caused massive forest destruction in Inner Line RF, Katakal RF, Longai RF, Singla RF. A few timber plants are visible along the boundary of those forests, and in the core areas, timber plants are highly visible. It is noted that illegal timbering although also happens in PHRF, it is much lower in the RF due to patrolling along the border areas by Border Security Forces. However, practice of monoculture in the forest area is causing habitat destruction in the PHRF. It has been shown that plantation of few economically important species such as shala (*Shorea robusta*) and teak (*Tectona grandis*) in all the RF of southern Assam minimizes the food plant species of primate as well as Asiatic elephant.

Figure 4. Threats to endangered mammals in the Barak Valley: A, electrocuted Asiatic elephant in Patharia Hills Reserve Forest; B, injured lady hoolock gibbon nearby Inner Line Reserve Forest; C, Gangetic river dolphin for sale at Rajartilla market of Katigorah, Cachar (Image downloaded from http://samayikprasanga.in/archive.php?dt=2015-09-07&pn=8).

Developmental activities

Developmental activities in the southern Assam include construction of roads, electrifying in the fringe area through forest area, etc. Construction of roads on one hand is accelerating the forest fragmentation, and on the other hand, it is creating problems for migration of small animals.

Electrifying around the forest is now a days a serious threat for wild animals in the valley. Electrifying in the fringe areas is important as many people are living there, but proper maintenance is essential. In the rural areas of the Barak Valley, the distance between two electric posts are too long, and electric lines often reach near the ground.

Encroachment

Encroachment is another evil and ruinous threat in the valley. Owing to lack of strict enforcement by the government, many parts of those RFs are under encroachment. Even one or two RFs is/are about to lose the identity. A large part of Duhalia RF and Longai RF has been encroached. PHRF is also an important example. Large portions of the RFs are encroached by *Khasi* and *Tripuri* tribes in Dubri and Sonatula area of the RF, and they are continuously increasing the area for *Piper betle* and *Areca catechu* plantation. People residing in the RFs are increasing the area through encroachment for settlement as their family size increases.

Shifting cultivation

A slash and burn type of shifting cultivation, locally called *Jhum* is prevailed in many forested areas of southern Assam (Choudhury 1987, 2013; Islam et al 2013a). *Jhum* cultivation devastates the forest covers and creates canopy gaps and hence habitat loss and fragmentation. People residing in the RF practice *Jhum* cultivation for planting several crops, fruits, and plants. *P. betle* is one of the most commonly cultivated plants by the *Khasi* tribe as a cash crop.

However, dependency on *P. betle* cultivation has been declining in the *Khasi* community. But, they are alternatively extensively practicing *Areca catechu* cultivation in those areas. PHRF is a familiar example.

Deterioration of food plant species

Conversion of forest land into agriculture and human settlements is common in the valley. Bose (2003) reported a large part of Longai RF has been changed for bamboo and paddy cultivation. It has also been noted that government enacted various scheme for plantation in the RFs. Under those planned, specifically few economic timber plants have been planted (e.g. *T. grandis*, *S. robusta* etc.). In all these cases, food plant species of wild animals (especially folivorous species) has been declining. This is a serious silent threat that increases food scarcity of the species and impels human–wildlife conflict.

Others

Like other parts of Northeast India, illegal hunting or poaching is not practiced largely in the Barak Valley. The occurrence of poaching is mainly reported from southeast parts of the valley where different ethnic tribal communities (*Reang*, *Mizo*, *Kuki*, *and Khasi*) live and use their flesh as food (Choudhury 1995, 2013; Islam et al 2013a). In addition, because of habitat fragmentations, species migrate from one patch to other patches, which makes them easy prey to encounter by human and predators.

Discussion and conclusion

Wildlife in south Assam (especially endangered species) is in risk because of several anthropogenic activities. To protect and conserve the wildlife in south Assam, different stakeholders such as local people, forest department, and conservationist need to work together. Long-term protection and survival of the endangered species in the valley through encouragement, strengthening the capacity of local community in the restoration of degraded habitats, mitigation of human–wildlife conflict, and support of alternate livelihood should be the prime focus for conservation. This will help to achieve the shifting of human–wildlife conflict to co-existence of human with wildlife. Restoration of wildlife habitats in southern Assam is urgently necessary through plantation of food plant species in the wildlife habitats, and minimizing gap among the stakeholder is indispensable. Developmental activities can be done, keeping in mind about the conservation and protection of wildlife, their habitats, and corridor. Different governmental agencies like, Department of Forest, Public Work Development and Electric Department should jointly plan and implement the developmental activities in sustainable ways. Proper maintenance of electric lines by the Electric Department in close proximity to the RFs and creating awareness to the local people for slow driving of vehicles to minimize death of nocturnal animals is necessary. No doubt, encroachment is mainly because of negligence of forest authorities which can be mitigated through rehabilitation of landless people and eviction of encroachment areas. Strict action against the encroacher is needed to protect both forest and wildlife habitats. Alternative livelihood should be encouraged by the forest department to minimize collection of non-timber forest products. Moreover, awareness among local communities is important for the protection and conservation of the species.

Conflicts of interest

The authors declare that there is no conflicts of interest.

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