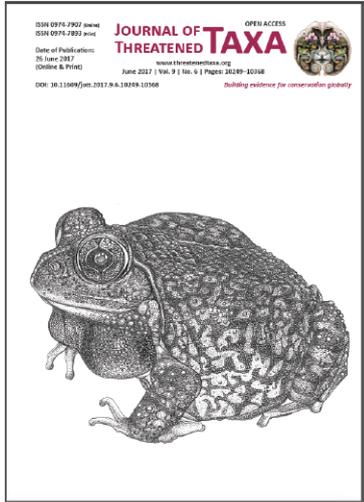


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WILDLIFE HUNTING BY INDIGENOUS PEOPLE IN A PHILIPPINE PROTECTED AREA: A PERSPECTIVE FROM MT. APO NATIONAL PARK, MINDANAO ISLAND

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Abstract: Indigenous people play a major role in the conservation of wildlife species in protected areas. This paper provides an insight on the involvement of indigenous people in protecting and hunting of wildlife species in Mt. Apo National Park, Mindanao Island, Philippines. Here, I assessed indigenous knowledge and practices towards wildlife hunting from three villages from Mt. Apo through immersions, interviews, and focus group discussion between May 2014 and January 2015. The majority of wildlife hunters I encountered were male and married between the ages of 35–60 years old. Commonly hunted wildlife species from the national park included large wildlife species such as the endemic and threatened Philippine Warty Pig *Sus philippensis*, Philippine Brown Deer *Rusa marianna*, Common Palm Civet *Paradoxurus hermaphroditus*, Reticulated Python *Malayopython reticulatus*, Common Monitor Lizard *Varanus salvator* and other large birds such as Rufous Hornbills *Buceros hydrocorax*, large dove species (i.e., *Dacula* spp.). In the past, wildlife hunting was most commonly done for sustenance and culture. But, poverty and the lack of alternative livelihoods have become a recent motivation to hunt wildlife. This current findings in this study suggest that wildlife are essential for indigenous people in protected areas, however, hunting practices should be monitored and provide alternative livelihood options to reduce threats. This study introduced the vital links between local communities and wildlife in protected areas. Thus, engaging and empowering indigenous people and local communities in wildlife protection combined with appropriate conservation planning are the first steps forward in attaining sustainable and effective local conservation in protected areas.

Keywords: Hunting, indigenous people, Mindanao Island, Mt. Apo National Park, Philippines, protected areas, snares, wildlife hunting.

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For **Filipino Abstract** see end of this article.

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INTRODUCTION

The Philippine archipelago is admittedly one of the richest countries in the world as far as biodiversity is concerned. The country's biodiversity is often associated with its species-rich tropical rainforests and protected areas which harbor exceptional species diversity and a high number of endemic species (Heaney 1993; Carandang 2005; Posa et al. 2008). Yet, the massive transformation of the tropical rainforest for agricultural land allocation has led to population decrease of many taxonomic groups in the country (Myers 1988; Myers et al. 2000; Brown & Diesmos 2009). At present, the lowland forests in the Philippines have decreased by about 90%. Roughly 94% of the Philippine land area was once covered by forest and reduced to 40% at the end of World War II, and current estimates to forest cover range from 25% to less than 20%, depending in part on the amount of degraded forest that is included (Carandang 2005; Suarez & Sajise 2010; Forest Management Bureau 2013; Apan et al. 2017).

Although the impacts of deforestation and land-use change to wildlife has been widely discussed. Issues and concerns towards an emerging threat such as wildlife hunting are often overlooked in the Philippines (Scheffers et al. 2012; Tanalgo et al. 2016). Wildlife hunting and trade are considered two serious threats to biodiversity worldwide and largely contributed to the decline of many wildlife species especially in the tropics (Rao et al. 2005; Aiyadurai et al. 2010; Harrison et al. 2016; Benítez-López et al. 2017; Hughes 2017). In Southeast Asia, wildlife hunting along with trade and poaching has caused declines of many wildlife species within and outside protected areas (Kaul et al. 2004; Rao et al. 2005; Corlett 2007; Nijman 2010). Human communities living around forests and protected areas are reliant on native wildlife for sustenance and traditional practices (Bennett et al. 2002; Corlett 2007). Nevertheless, the unprecedented expansion of the human population has increased the encroachment on natural landscapes and led to conflict between wildlife and people in many important habitats to satisfy their needs for survival (Foley et al. 2005; Ravenelle & Nyhus 2017).

In the Philippines information on wildlife hunting and trade in protected areas is limited, as well as information on indigenous knowledge on wildlife conservation. According to national law of the Republic of the Philippines, indigenous people or any recognized tribal groups in the Philippine are allowed to hunt wildlife as based on the Philippine Wildlife Act (R.A. 9147) Chapter III, Article I, Section 7 that states that

“Collection of wildlife by indigenous people may be allowed for traditional use and not primarily for trade: Provided, furthermore, that collection and utilization for said purpose shall not cover threatened species.”, it clearly states that indigenous people can use or exploit wildlife species in their premises for traditional and cultural use (i.e., food and medicine) only and beyond this is punishable by the republic's law (DENR 2011).

Actively involving indigenous peoples and communities around protected areas in wildlife conservation is key to maintaining biodiversity integrity and ecosystem services provisions (FAO 2017). Hence, to sustainably regulate wildlife hunting it requires the information on hunting practices, patterns, and understanding of the drivers and motivation of local hunting (Bennett et al. 2002). This study provides information on the involvement of indigenous people in wildlife hunting and practices from Mt. Apo National Park, with the hope to provide insights for future sustainable policies in the protected areas.

METHODS

Selected local communities in the north Cotabato area of Mt. Apo National Park (6.9833 N & 125.26667 E) were surveyed for indigenous wildlife hunting practices. Mt. Apo National Park, which is the highest peak in the Philippines is known to be a biodiversity hotspot that contains rich endemic and threatened flora and fauna. Mt. Apo National Park was created by proclamation No. 59 on 9 May 1936, amended by Proclamation No. 35 on 8 May 1966. It is one of the ASEAN Natural Heritage Parks in the country. Mt. Apo is inhabited by diverse indigenous groups. There are six tribes that live on the mountain, which is a sacred place for the Lumad tribal people and is their last remaining home (Mallari et al. 2001).

A total of 165 local indigenous people were interviewed coming from Manuvu and B'laan tribes from the three villages surrounding national park (Bongolanon, Sayaban, and New Israel) between May 2014 to January 2015. A convenient-random interview using a semi-structured questionnaire was done during the survey and coupled with a focus group discussion (FGD) to maximize my data and validate the gathered information. Identified key informants that included the *Datus* and village chieftains were also interviewed. What was noteworthy is that, there was more critical information when the interview took place in a group formation rather than one on one interviews. This

may be because locals are more confident of sharing their experiences towards the subject when they are surrounded by their peers. I generally conducted my interviews during the early morning and late dusk when community residents are at their homes or with peers. I used photographs to enhance the description of the species that the interviewees encountered during their hunting. The interview and community engagement was only limited to document wildlife use, hunting practices and techniques, and motivation to hunt, therefore, my questions and information was only limited to these aspects. It also considered secondary hunting information from the past to present (in 20–40 years of range).

RESULTS AND DISCUSSION

The majority of the interviewed hunters from Mt. Apo National Park were married male (87%, $n=144$) between the ages of 35–60 (76%, $n=125$). Most of their reports and responses were based on their experience from actual hunting and secondhand information at least from 10–20 years ago. Women interviewees noted that they were not directly involved in hunting but that their husband and father are known to practice this activity. This is congruent to Kellert & Berry (1987) and Tanalgo et al. (2016) that males have higher knowledge and experience towards wildlife and have a higher tendency to hunt because of their nature of being more adventurous and less fearful, in contrast to women who are more compassionate towards wildlife species. I assessed local hunting practices (hunting frequency, season, methods of hunting, and motivation to hunt) and wildlife use (wildlife species hunted, use of wildlife species, beliefs and traditional connections to wildlife) from confirmed hunters and key informants.

The leading reasons for local hunting among indigenous people are for subsistence and tradition (52%, $n=86$). According to Harrison et al. (2016), people hunt for three main reasons which include culture, food, and money. But, the significance of these motivations varies temporally and influences the hunting preference. In Mt. Apo National Park, hunters prefer larger wildlife species (58%, $n=96$) especially medium to large mammals for their meat and high protein content compared to smaller species (i.e., rodents and civets). Hunters vastly hunt large species such as Philippine Warty Pig *Sus philippensis* and Philippine Brown Deer *Rusa marianna* within forest areas primarily for bushmeat. Both species are endemic and threatened species in the Philippines

with a declining population caused by deforestation and expansion of human settlements near forested areas (Heaney et al. 2010; IUCN Red list 2016). The hunting of warty pigs for bushmeat is commonly reported in many forested areas in Mindanao Island. Garcia & Deocampo (1995) reported warty pig hunting in Northern Mindanao for meat trade and sold in exotic restaurants. In some areas near Ligawasan Marsh, bushmeat from wild pigs are also sold by local traders (K.C. Tanalgo pers. obs. 2016).

Hunters reported that they also hunt large flying foxes (*Acerodon jubatus* & *Pteropus vampyrus*) and medium-sized fruitbats from roosting sites inside the lush rainforests of Mt. Apo for bushmeat. This is similar to the case of hunting and consumption of large fruitbat species (*Rousettus amplexicaudatus* & *Eonycteris spelaea*) in southcentral Mindanao (Tanalgo & Tabora 2015; Tanalgo et al. 2016) and in northern Luzon (Scheffers et al. 2012), where tens of hundreds of bat individuals are hunted from caves and roosting trees. In addition to this, Small Flying Lemurs Kaguang *Cynocephalus volans* and Long-tailed Macaques *Macaca fascicularis* are likewise hunted for bushmeat. While, occasionally and/or by accident, locals report that they hunt large reptile species such as common Monitor Lizard *Varanus salvator*, Reticulated Python *Malayopython reticulatus*, Philippine Cobra *Naja philippinensis* and King Cobra *Ophiophagus hannah*. Large bird species such as hornbills (i.e., *Buceros hydrocorax*) and fruit doves (i.e., *Dacula* sp.) are sometimes hunted. Captured wild animals from the hunting grounds were strictly for subsistence and the excess bushmeat is occasionally sold around the local communities.

Another primary reason for local hunting is for protection and retaliation. In the interviews, they hunt or kill wild animals to protect their cash crops and livestock (24%, $n=40$). For instance, a group of Long-tailed Macaques often raid crops such as corn and cassava and rob harvested food commodities (i.e., dried banana, copra) of the local communities. Traps are installed to deter warty pigs that burrow and destroy seedlings planted in household gardens near forest openings. Trapped animals are often killed when they are left behind. In addition, Common Palm Civet, Malayan Civet *Viverra zangalunga* and Common Monitor Lizard *Varanus salvator* are considered livestock predators. Hence, these species are persecuted by local indigenous people. In the warmer months between March and June, there are few reports of cobra attacks (Philippine Cobra & King Cobra) in villages surrounding the national park, which prompted the local government

and local communities to launch a “King Cobra Hunt” in 2015 to eliminate the population (Magbanua 2015).

Locals also hunt for medicinal and traditional practices. McCorquodale (1997) emphasized that hunting is important among indigenous groups in maintaining the cultural customs and practices. In this part of my study, it showed the another significant reason why locals hunt or use wildlife. Interviewed male hunters claimed that there are health benefits from consuming the meat of herbivore/grazer species such as deer and warty pigs. Hunters feel that when they consume when they consume bushmeats, it enhances and empowers them with the same abilities (i.e., speed and agility) of these animals. Other interviewees also noted that the dried snake bile (i.e., from Cobra or Reticulated Python) is utilized to cure stomach aches and other digestive illness. Interestingly, the majority of interviewed women cited that they use the dried tail and placenta of Long-tailed Macaques suspended in coconut oil and is used to hasten delivery of pregnant women. They associate these to the macaque’s ability of fast delivery during pregnancy and birth delivery. Moreover, the ashes from burned horns of deer are made to a topical ointment for curing various skin diseases.

Within the areas I surveyed across Mt. Apo National Park, indigenous hunters have restrictions on which species to hunt or consume. For instance, they only hunt and cage Zebra Doves *Geopelia striata* for home amulets. Indigenous people believe that this species can foresee when good and bad omens arrive by observing its behavior. The hornbills *Buceros hydrocorax* and forest owls are also less hunted by other hunters because they believe that these species can tell time and may bring death and pestilence to whoever killed these birds. Consequently, they perceive owls as a symbol of death, sorrow, and bad luck. Hence, it is not hunted or is avoided entirely by hunters. Other local indigenous people use some bird species to predict weather patterns. Call sounds of frogmouths during the April and May (especially during dawn) are thought to indicate a longer dry season in the coming months. Others also avoid the hunting of cobras and pythons because they believe that killing these species will result in the death of the family members. Indigenous people also associate bats, especially those large flying foxes (*Acerodon jubatus*, *Pteropus* spp.) to Aswang (a locally known monster that roams around every evening). This belief is also common in nearby cave sites in southcentral Mindanao area (Tanalgo & Tabora 2015; Tanalgo et al. 2016).

Remarkably, one of the villages surveyed (New

Israel, Makilala) entirely prohibits the hunting of Long-tailed Macaques and instead they house around 300 individuals that freely roam around the village. Villagers believe that macaques have sacred connections to their past ancestors and protect them from any devastations. There are also species exempted from hunting because their protection is mainstreamed by the law and have higher attention from the government and environmental groups. The infamous Philippine Eagle *Pithecophaga jefferyi* the country’s national birds symbol, is well protected and neither subjected to hunting or any traditional use by local indigenous hunters due to fear of the sanctions from the existing government laws and regulation.

In terms of the hunter’s timing and strategy, local hunting activities vary within the year. Indigenous hunters choose to hunt during the dry season (March to May) where the food source from agriculture is scarce. It is also the period when access to hunting grounds is easy and the risk of accidents while traversing forested areas are less. Hunters also synchronize their hunting activities on plant phenology. Indigenous people observed that warty pigs feed on a specific plant during the mid-dry season. For instance, they hunt warty pigs when the plant species, Ulayan (*Quercus* spp.) and Kalingag (*Cinnamomum* spp.) are actively flowering and fruiting. Interestingly, current literature about the foraging habit of Philippine Warty Pig lacks this information (Heaney et al. 1998, 2010). Additionally, hunters prefer to hunt in groups of 2–3 individuals accompanied by domesticated dogs *Canis domesticus*.

Indigenous hunters employ different hunting techniques, they use a locally made wooden snare (Lit-ag) to capture larger (i.e., warty pigs and deer) and medium (i.e., Palm Civet) sized species (Image 1). On a single field visit in November 2015, I observed around 30 wooden medium snares installed in the forest openings aiming to catch palm civets in the area. Snares are cheap and easy to construct and are widely practiced in hunting and have become a concern in many Southeast Asian countries (Gray et al. 2017). Wooden or metal spears (Bangkaw) and air guns (de bomba) are used to hunt large and agile species (i.e., warty pigs, deer, and birds). Small birds such as finches and parrots are captured using a sticky sap from Tipolo *Artocarpus blancoi* plant placed on tall trees. The use of sungkit (a long bamboo stick with sharp hooks at the end of it) and kite (borador) embedded with rattan or citrus thorns is also practiced to capture large flying foxes or smaller bats roosting in tree cavities. In terms of hunting success, hunting is not always successful due to different factors such as the

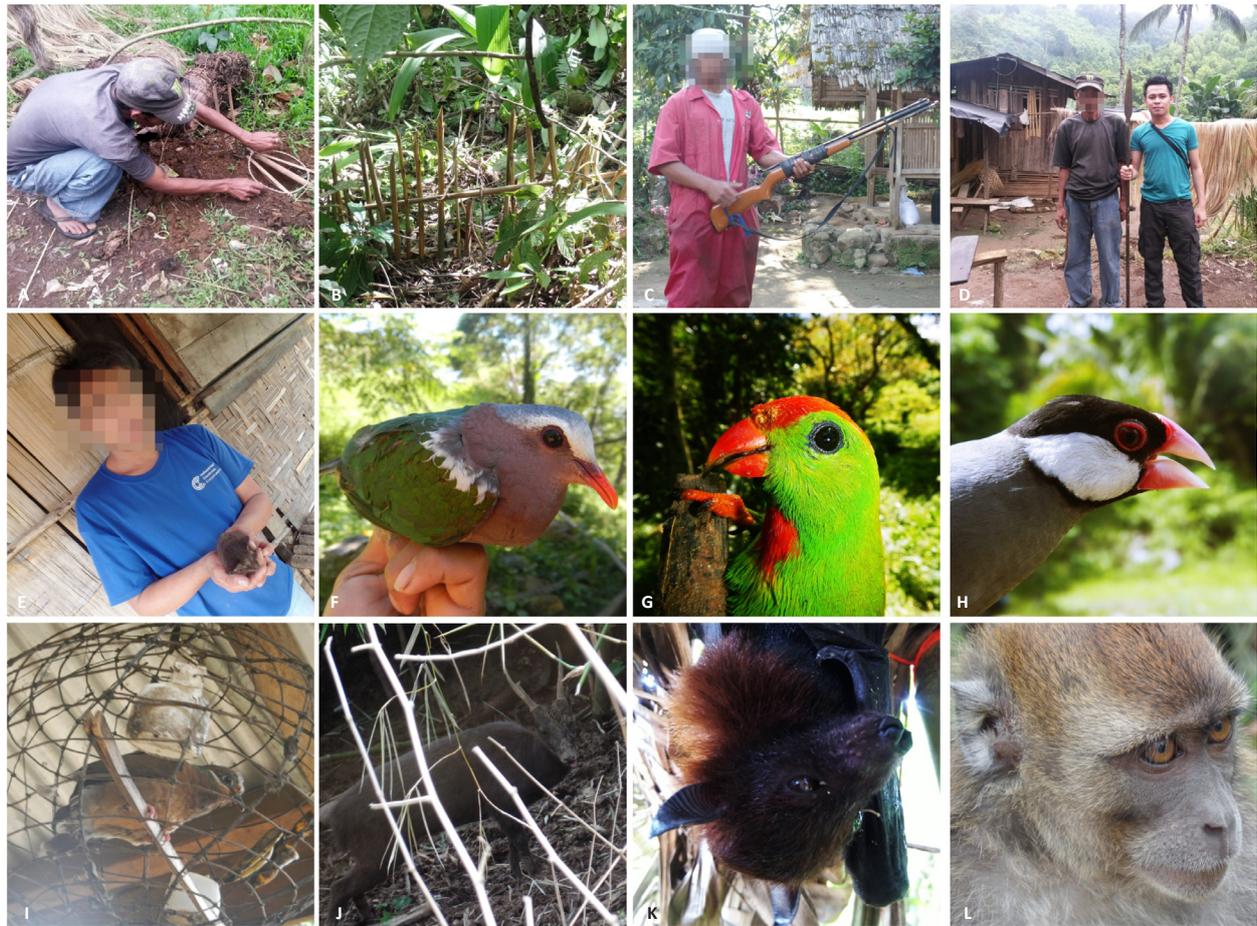


Image 1. A - locally made wooden snares (Lit-ag) to capture small to medium sized mammals; B - installed near forest openings of the national park; C - Airgun (de bomba) used by locals to capture mobile and distant species such as macaques and birds; D - Metal spears (Bangkaw) used by locals to capture larger mammals (i.e., wild pigs); E - Poached juvenile civet cats sold in civet coffee plantations around Mt. Apo; F-L - Some of the bird and mammal species hunted around Mt. Apo National Park; F - Emerald Dove *Chalcophaps indica*; G - Philippine Hanging Parrot *Loriculus philippensis*; H - Javan Sparrow *Padda oryzivora*; I - Zebra Dove *Geopelia striata* caged as home amulet; J - Deer *Rusa* sp. captured by locals from hunting grounds; K - Juvenile Flying Fox *Pteropus* sp. recovered after the mother was shot dead using airgun; L - Long-tailed Macaque *Macaca fascicularis* are considered as pest and hunted (© Krizler Cejuela Tanalgo)

availability and abundance of wildlife species, weather condition or the availability of other food resources.

Unfortunately, although wildlife trade is not a common practice of the indigenous people in Mt. Apo and is prohibited by the government and traditional customs, there are cases of smaller to medium sized species hunted and sold as exotic pets in local markets. These species include Philippine Hanging Parrot *Loriculus philippensis*, small finches (*Oryzivora javacanicus*, *Lonchura atricapilla*), fruit doves (*Geopelia striata*, *Chalcophaps indica*, *Phapitreron* spp., *Dacula* spp.), Tarsier *Tarsius syrichta* and reptiles such as sailfins and monitor lizards. I have also unveiled that there are locals poaching juvenile palm civets and trading this to local civet coffee farmers. Civet cats are placed in an enclosure and forced to defecate to produce civet coffee

beans.

This study and engagement is able to pin-point important human-wildlife issues and concerns in Mt. Apo National Park. In the past decades, sustenance and traditional practices were the important motivation to hunt, however, poverty and the lack of long-term livelihoods as a result of less government attention was frequently mentioned by indigenous people as the modern motivation of wildlife hunting in the national park. Locals also noted that species populations are declining and observed to be few in their areas compared with the past. They associate the species' declining populations to the disappearance of primary forests and the alterations of known wildlife habitats as a consequence of recent rapid development and increasing human population in the surrounding areas

in Mt. Apo National Park.

CONCLUSION AND CONSERVATION IMPLICATION

This study has revealed significant factors and practices in indigenous wildlife hunting. It also presented the important roles played by the local indigenous people and some emerging conservation issues Mt. Apo National Park. I suggest based on the results that the integration and strengthening of indigenous beliefs are pivotal in framing sustainable local policies. Awareness towards other threatened species in the national park should be heightened and mainstreamed by concerned groups since locals only prohibit the hunting of charismatic species such as Philippine Eagle.

The stewardship and protection of wildlife are among the cultures of indigenous people. It is very essential that empowering indigenous people to protect wildlife species and their habitats and understanding their ways and traditions as the first steps towards attaining effective local conservation. Furthermore, collaborating with and creating awareness with people living near conservation areas are the keys to achieving sustainable conservation and protection of protected areas without compromising the nature and its dependents - the people and the community. Lastly, additional studies on wildlife hunting and the extent of wildlife trade from the national park are required to document the impacts of these activities.

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Filipino Abstract: Mga katutubong tao ay gumaganap ng isang mahalagang papel sa pangangalaga ng mga likas na yaman tulad ng mga hayop sa mga protektadong lugar at likas na kagubatan. Ang pag-aaral na ito nagbibigay ng impormasyon sa pakikipaglahok ng mga katutubong tao sa pag-protakta at pangangaso ng mga hayop sa Mt. Apo National Park sa Isla ng Mindanao sa Pilipinas. Aming tinasa ang mga katutubong kaalaman tungkol sa mga pangangaso ng mga hayop mula sa tatlong nayon sa pamamagitan ng indibidwal at kalipunang panayam sa pagitan ng buwan ng Mayo 2014 at Enero 2015. Ang karamihan sa mga katutubong mangangaso na aming na panayam ay mga kasadong lalaki sa pagitan ng edad na 35–60 taong gulang. Karaniwang hinuhuli at inaaso ng mga katutubo ang mga malalaking uri ng hayop tulad ng baboy-ramo *Sus philippensis*, usa *Rusa Marianna*, sibatket *Paradoxurus hermaphroditus*, bayawak *Varanus salvator* at iba pang malalaking mga ibon tulad ng kalaw *Buceros hydrocorax* at malalaking kalapati species (i.e., *Dacula* spp.). Sa mga nakalipas na mga dekada, isa sa mga pangunahing pagganyak sa pangangaso ay para sa pagkain at tradisyon pero sa modernong panahon ang kahirapan at kakulangan ng alternatibong kabuhayan ang isa mga bagong pagganyak. Ang aming kasalukuyang pananaliksik at pag-aaral ay nagmumungkahi ng kahalagahan ng mga hayop para sa mga katutubong nakatira sa mga kagubatan, gayunpaman, ang mga kasanayan sa pangangaso ay dapat subaybayan at ang pagbibigay ng alternatibong pangkabuhayan ay dapat din tingnan. Ang pag-aaral na ito ay pinakita ang importanteng papel na ginagampanan ng mga katutubo sa pag-protakta ng mga kagubatan at kasama na ang mga hayop na nakatira dito. Kaya, ang pag-enganyo at pagpapahusay ng kaalaman n mga katutubo at mga local na komunidad tungkol sa mga hayop at iba pang likas na yaman at samahan ng naangkop na pagpaplanong konserbasyon ay isa mga unang hakbang tungo sa pagtamo ng pangmatagalan at epektibong proteksyon ng mga protektadong lugar tulad ng Mt. Apo National Park.



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