

## Aquatic resource management practices and conservation measures of the *Batangan Tau-Buid Mangyan* in the Mts. Iglit-Baco National Park (MIBNP), Occidental Mindoro, Philippines

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**Abstract.** This article is an offshoot of a study conducted in the Mts. Iglit-Baco National Park (MIBNP) in Mindoro Island, Philippines to provide baseline information on the aquatic resource management practices and traditional conservation measures of the *Mangyan* indigenous peoples (IPs), particularly the *Batangan Tau-Buid*, whose ancestral domain is part of the MIBNP. According to the Protected Area Superintendent (PASu) of the MIBNP, the *Mangyan* IPs in the Park engage in fishing activities which are not properly documented due to the remoteness of the area and elusiveness of the tribes, hence this study. Preliminary results of the study show that members of the *Batangan Tau-Buid Mangyan* employ aquatic resource management practices and conservation measures that are anchored on their cultural beliefs. Some of these practices include *Atas*, a fishing strategy conducted along the river wherein aquatic species are trapped by drying a certain portion of the river. They also use *Nami* and *Anapla* plants in their fishing operations. Other fishing methods used, the aquatic species caught as well as the IPs beliefs and practices, were also noted. Observed problems encountered by the IPs include limited source of food, limited access to health services, lack of supplemental economic activities and encroachment of lowlanders.

**Key words:** upland fishery, river drying, traditional fishing practices, tribe.

**Introduction.** The Mts. Iglit-Baco National Park (MIBNP) is a protected area in Mindoro Island, central Philippines. Protected areas in the Philippines are identified portions of land and water set aside by reason of their unique physical and biological significance, managed to enhance biological diversity and protected against destructive human exploitation (Republic Act 7586). The MIBNP is primarily known as home to the *tamaraw* (*Bubalus mindorensis*) which is categorized as critically endangered in the International Union of the Conservation of the Nature (IUCN) Red List of Threatened Species, given the number of mature individuals estimated to be less than 250 (Hedges et al 2013). The MIBNP also serves as a major catchment area for 5 major rivers and the headwaters of 8 rivers systems of the Mindoro Island. Furthermore, the Park covers a portion of the ancestral home of the *Mangyan*, particularly the *Batangan Tau-buid* and *Buhid* tribes. Both tribes directly depend on MIBNP for their source of food and livelihood (ASEAN Biodiversity 2001). While the other economic activities (e.g. hunting, slash and burn farming) of these indigenous people (IP) are well-documented (ASEAN Biodiversity 2001), there is no knowledge about their fishing activities. Hence, this study aims to provide baseline information on the aquatic resource management practices and conservation measures of the *Batangan Tau-Buid* IP in the MIBNP.

**Material and Method.** Primary data were gathered through key informant interview (KII) with the *Punong-tribu* (tribal leader), Protected Area Superintendent of MIBNP, and MIBNP rangers who are also members of the *Batangan Tau-buid Mangyan* tribe. Interviews were complemented with focus group discussions (FGDs) with the members of

the *Batangan Tau-Buid*, as well as the MIBNP rangers and staff of the Department of Environment and Natural Resources-Tamaraw Conservation Program (DENR-TCP), Region IV. Secondary data were also gathered from the MIBNP-Protected Area Office (MIBNP-PAO) and through literature review. The aquatic species described by the IPs were verified based on local name provided and pictures taken during the field work.

## Results and Discussion

**The MIBNP.** The Mindoro Island is one of the 8 biogeographical zones in the Philippines (Bryant 2000). It is host to the MIBNP (Figure 1) which is a protected area of major socio-cultural and ecological importance. The Park was established in 1970 by virtue of Republic Act 6148; hence, it is an initial component of the National Integrated Protected Areas System (NIPAS) under Republic Act 7586. In 2003, the Association of Southeast Asian Nations (ASEAN) listed it as one of its 4 Heritage Parks in the Philippines. The Park has also been nominated in the Tentative List of UNESCO World Heritage Sites.

Approximately 75% of the Park lies in the province of Occidental Mindoro, which comprises the municipalities of Sablayan, Calintaan, Rizal and San Jose (ASEAN Biodiversity 2001). The remaining 25%, lies within the province of Oriental Mindoro, in the municipalities of Pinamalayan, Gloria, Bansud, Bongabong and Mansalay (Colegado et al 2001). The research team ascended the Park through Barangay Poypoy, Calintaan, Occidental Mindoro route. The trek through the rugged terrain of the Park entailed crossing a couple of rivers and creeks.

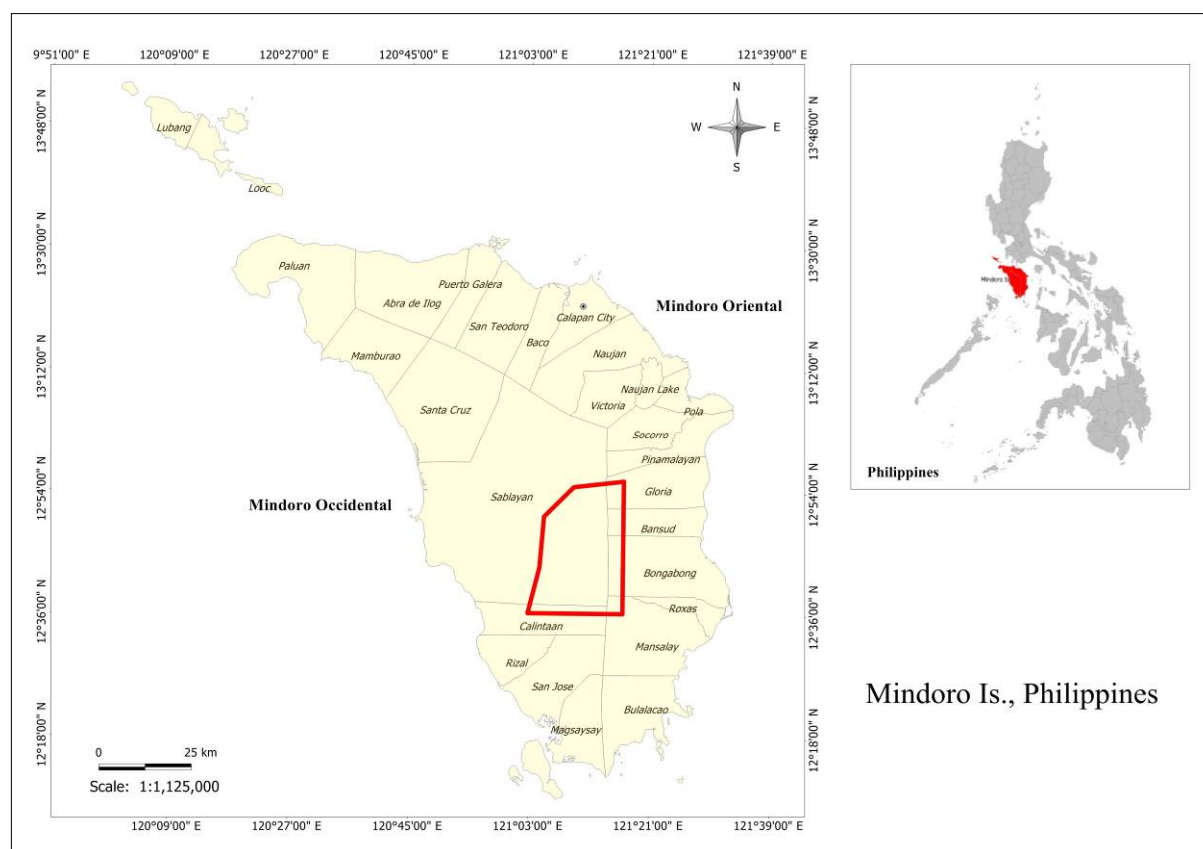


Figure 1. Map showing the Mts. Iglit-Baco National Park, Mindoro, Philippines.

The Park covers an area of 75,445 hectares and serves as habitat to the critically endangered Mindoro dwarf buffalo (*Bubalus mindorensis*) (Hedges et al 2013), also commonly known as *Tamaraw*. The *Tamaraw* is endemic to Mindoro Island (Custodio et al 1996; Hedges et al 2013). The MIBNP was created to protect the *Tamaraw*, endemic bird species (Mindoro imperial pigeon (*Ducula mindorensis*), Mindoro scops-owl (*Otus mindorensis*), black-hooded coucal (*Centropus steerii*), Mindoro hornbill (*Penelopides*

*mindorensis*), Mindoro bleeding heart pigeon (*Gallicolumba platenae*)) and other wildlife (Philippine deer (*Rusa marianna*), wild pig (*Sus philippensis*) and Mindoro cloud rat (*Crateromys paulus*)) therein (Oliver & Heaney 2008; Oliver et al 2008; BirdLife International 2012; UNESCO 2015; MIMAROPA 2015). The MIBNP management efforts are focused on biodiversity conservation and sustainability of the Park, with due consideration to the culture, traditions and rights of the IPs living in the area. The MIBNP also covers a portion of the ancestral home (Figure 2) of the 2 tribes of the Mangyan: the *Batangan Tau-Buid* and *Buhid*. According to the respondents, the former is the most elusive among the Mangyan tribes.

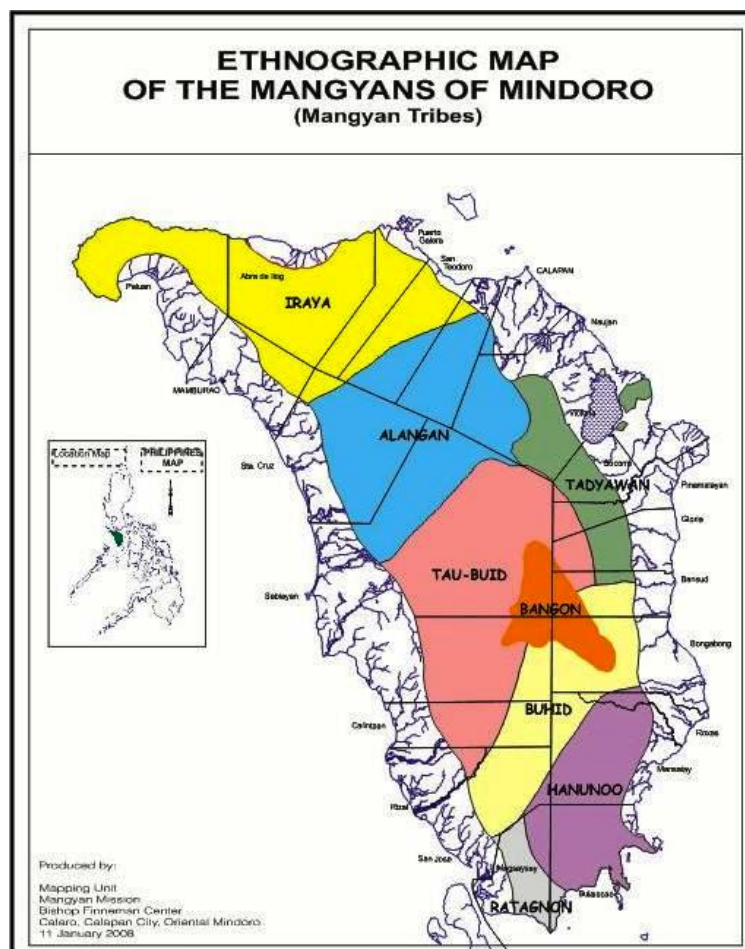


Figure 2. Map showing the ethnographic distribution of the *Mangyan* tribes in Mindoro Island © Mangyan Heritage Center.

***Mangyan and the Batangan Tau-buid subgroup.*** The Philippines is host to different IPs communities that can be found in the interiors of Luzon, Mindanao, and some islands of Visayas. According to Agillon (2007), most of the Filipino indigenous cultural communities (ICCs) live in the upland forests, retaining many of their attitudes, beliefs, practices and way of life despite the influences of modern living. The major groups of IPs in the Philippines include the Mindanao Lumad, Cordillera Peoples, Caraballo Tribes, Agta and Aeta/Negrito, Mangyan of Mindoro, Palawan hill tribes, and the Muslim Groups (Molintas 2004).

*Mangyan* is the collective name for the 8 IPs ethnically grouped into *Tau-Buid* (also referred to as *Batangan Tau-buid*), *Buhid*, *Tadyawan*, *Ratagnon*, *Iraya*, *Hanunoo*, *Bangon* and *Alangan* (Mangyan Heritage Center 2014). Each subgroup has its language and set of customs. According to Santos (2012), the different tribes only share 40% of their vocabulary words on their mutual languages. The *Mangyans* comprise 15 percent of the total population of the province of Occidental Mindoro (Lumbo 2010).

The *Mangyans* occupy the foothills and interior of the mountains of Mindoro. According to our IP respondent, their ancestors were once coastal dwellers but have since moved to the mountains to avoid religious conversion by migrants. They now lead a semi-nomadic existence and come down only for food and items such as salt and medicine. Some *Mangyan*, especially the ones in the interiors of the mountains like the *Batangan Tau-Buid*, have managed to conserve their traditional lifestyle which revolves mainly on hunting animals (wild boar, deer, bats, etc.) and subsistence agriculture. They still practice *kaingin* (slash and burn) farming. They also grow yams (*Dioscorea hispida*), taro (*Colocasia esculenta*), avocado (*Persea americana*), banana (*Musa* sp.), jackfruit (*Artocarpus heterophyllus*), ginger (*Zingiber officinale*) and rice (*Oryza sativa*). The surplus harvest of the IPs are brought to the lowlands as cash crops or sometimes, bartered for basic necessities like salt and *larina* (rolled dried tobacco). The *Batangan Tau-Buid* subgroup is distinguished through their earthen-tobacco pipe-smoking habit; even the children were observed smoking.

Generally, IPs live in isolated areas, outside the mainstream of national economies and development support (IFAD 2003). The *Mangyans*, in particular, are identified as impoverished and underprivileged group of people not only in Mindoro province, but also in the whole country (Kumar 2011; Melendres-Valenton 2014; Plan Philippines 2014). In the case of the *Batangan Tau-Buid*, poverty has been prevalent for them because they experience shortage of food, inadequate income, as well as lack of access to basic services like water and healthcare. Respondents reveal that they experience food shortage, especially during rainy season when harvesting of *nami* (a rootcrop which serves as their primary source of food) is no longer good. This usually results to unpaid and accumulating debts by the IPs to the lowlanders who usually buy their produce. The research team came across a group of *Batangan Tau-Buid* women and children who dropped by the MIBNP headquarters during the fieldwork. The group was going down the mountains to bring an infant who was inflicted with measles to the municipal hospital. Despite the urgency of the situation, the rains inhibited them from proceeding because it was not safe for them to cross the rivers. According to the respondents, there is high mortality among the IPs children. The IPs also requested if they could have the unused medicines (mostly analgesic) of the members of the research team on the last day of fieldwork.

***Aquatic resource management practices and conservation measures of the Batangan Tau-Buid in the MIBNP.*** Results of this study reveal that activities of the *Batangan Tau-Buid* are generally influenced by the annual season, which they describe as *tag-araw* (dry season) and *tag-ulan* (rainy season). The western part of the MIBNP receives heavy rain from May to October but when the prevailing winds shift northeast during northeast monsoon, the western part becomes a rain shadow area. The eastern part of the park on the other hand, experiences brief dry spell (ASEAN Biodiversity 2001). Fishing activities are usually done during the dry season when the water levels are low, thus providing a significant supplement to their daily diet. When the rainy season starts (June–December), the IPs shift to planting and hunting animals. Interestingly, they have strict adherence to this ‘activity-season’ practice. According to *Punong Tribu Fausto* (tribal leader), during rainy season, even if some members of the *Batangan Tau-Buid* tribe step on a fish, they will not catch it. They believe that if they catch fish during a period not intended for fishing, they will not be able to catch fishes in the future as these fishes are intended for the future. Similarly, during rainy season, setting of traps (e.g. silo) for catching wild animals (e.g. deer, wild pig, etc.) is not allowed.

Another notable aquatic resource management practice and conservation measure of the *Batangan Tau-Buid* is what the Katutubo call *atas*, a method of catching fish along the river, usually along the rocky portion, wherein the waterflow is diverted to one side of the river bed and then surrounded by mud and rocks to trap the fishes and other aquatic animals. Setting up of the structure entails participation of the members (children, women and men) of one *pamayanan* (a *pamayanan* is community of about 15 households and 1 household is comprised of about 2-3 families; according to tribal leader of the

*Batangan Tau-Buid*, there are 53 *pamayanan* under his leadership), as it is very laborious and usually lasts for hours. After the set-up is in place, the IPs wait for 2-3 weeks before they return to the site and collect the trapped aquatic species which include freshwater shrimp (*Metapenaeus* sp.), goby (*Goby* sp.), mullet (*Mugil* sp.) and eel (*Anguilla* sp.).

The *atas* is done only during the dry season. The IPs usually transfer their operation in areas in the river where water can still be diverted. The catch from one *atas* operation is good for 1 meal only because whatever amount of fish caught is equally divided among the families in their community. Such sharing scheme extends beyond fishing. According to Mang Oscar, a *Batangan Tau-Buid* who also serves as a Park ranger in the MIBNP, he is obliged to share his earnings as Park ranger with the rest of his community members. He also mentioned that during *kaingin* (slash and burn) season (May–June), rice consumption of the IPs increase because instead of paying for the labor cost of other members of their tribe, they cover their food instead.

Another noted practice of the *Batangan Tau-Buid* is the use of what the IPs call as *nami* (*Dioscorea hispida* Dennst.) in their fishing activity. *Nami* (Figure 3) is a twining vine, arising from tuberous roots, and reaching a length of several meters. The stems are covered with few or many short, sharp twines (Quisumbing 1978). The plant, together with its wild relatives like *D. bulbifera* (*utong-utongan*) and *D. esculenta* (*tugi*), has medicinal potential (DAP 1995) and are poisonous when eaten raw (Tan 1980). The root of *Dioscorea* species contains phytosterols, alkaloids, tannin and a high level of starch, among others (Dweck 2002). *Nami* is also known as *kayos* (Tagalog), *kurot* (Ilokano), *orkot* (Bisaya), etc. It can be found growing wild, chiefly in thickets and forests, at low and medium altitudes throught the Philippines (Quisumbing 1978).

The sprout of the *nami* plant is pounded by the IPs and mixed with rice then broadcasted into the river. The toxins from the *nami* stupefy the fishes causing them to float along the surface of the river and this makes it easier for the IPs to collect the fishes. These fishes caught are equally distributed among the community members for consumption.

The *nami* rootcrop is not only used as a fishing aid, but is also a staple food for the IPs. According to an IP respondent, collection of *nami* normally starts from January and lasts until April. Collected *nami* are sliced thinly or sometimes grated, washed repeatedly, soaked and sun-dried. According to Mang Pedro, a *Tau-Buid Mangyan* who also works as a Park Ranger, they will know if the *nami* is free from toxins when the thinly sliced rootcrop does not break when bent. Dried *nami*, which can last for 2 years, are stored in *kaing* (big native basket). Since the IPs get to enjoy rice only after the *kaingin* season, they subsist on *nami* for the rest of the year.



Figure 3. Pictures of the *Nami* (*Dioscorea hispida* Dennst.) rootcrop: raw (left), and, pounded and dried (right) © Bagsit.

The IPs also use another medicinal plant, the *anapla* (*Albicia procera*), in their fishing activity. The bark of the *anapla* is peeled off and the rind is pounded and thrown into the river. The IPs then wait until the fishes float on the surface of the river. According to

Orwa et al (2009), the *A. procera* leaves are also known to have insecticidal and piscicidal properties.

The IPs further use the *anapla* to remove the toxins from the *nami* tuber if these are for their food consumption. The bark of the *anapla* is peeled off and the rind is placed in a basin of water and then stirred to produce bubbles. Thinly sliced *nami* rootcrops are then soaked overnight in the *anapla* bubble bath. The *nami* are then washed and prepared for drying the next day.

In addition to the abovementioned fishing practices, the IPs in the MIBNP use fishing gears like pot *bubo*, *tanggar*, nets (*dala*) and improvised harpoons (*pana*) in catching aquatic animals (Figure 4).



Figure 4. Photos of some of the fishing gears used by the *Katutubo* Park rangers in the MIBNP: a). Pot (*bubo*); b). Net (*dala*); and c & d. Improvised harpoon (*pana*) © Bagsit.

Members of the *Batangan Tau-Buid* uphold respect for each other within their tribe, which is evident in their practices. A *Batangan Tau-Buid* who belongs to a specific *pamayanan* or community for example, do not fish in areas identified with another *Mangyan* community. This practice can be compared to the territorial use rights in fisheries (TURF) which are a spatial form of property rights in which individuals or a collective group of fishers are granted exclusive access to harvest resources within a geographically defined area (Christy 1982). TURF have existed for centuries (Panayatou 1982) and are widely available for sedentary resources (Christy 1982).

Even within their tribe, *Mangyans* who live in the different areas of the mountain can only visit fellow *Mangyans* residing in another community, with prior notice. According to one IP respondent, this is observed to avoid conflict among *Mangyan* members, especially among men. He further revealed that their current practices are still rooted on the traditions of their ancestors and they regard their fellow *Mangyan* with due respect.

One of the interesting observations during the study is the disapproval of the IPs for outsiders to use their established routes. One IP respondent explained that IPs do not want familiarity with the lowlanders since some of the members of their tribe are still afraid of people. In fact, even the sight of people's clothing scares them. Furthermore, they believe that lowlanders bring sickness to their tribe. Such belief is based on their experience wherein every time lowlanders come to their community, a member of their

community gets sick. When this happens, they leave their homes and transfer to other areas in the mountains.

The distrust for lowlanders is further highlighted in the IPs other practices. For example, IPs exchange the rice goods they receive (as support) from government or non-government organizations with the rice supply of the Park Rangers because they believe that the goods given to them have harmful effects to their health. According to one Park ranger respondent, IPs do not mind bartering one sack of rice with whatever amount of rice is available in the Park ranger's headquarters.

**Challenges faced by the IPs and MIBNP management.** One of the issues raised by *Punong Tribu Fausto* is the influx of immigrants in their area. According to him, the IPs were able to balance their life with nature prior to the coming of the *Tagalogs* or *Siganon*.

But with the coming of the immigrants, the situation has changed. For example, even if they had already warned the people from the *barangay* (lowlanders) from entering their community, some still enter their premises and put some chemicals in the river which lead to the decrease of shrimp populations and other aquatic animals. The lowlanders become their competitor for food sources. Because of this, the IPs now have fewer catch compared to before.

When asked about establishing backyard aquaculture activity as a possible additional source of food, *Punong Tribu Fausto* said that it is possible only with the civilized *Batangan Tau-Buid* communities (according to *Punong Tribu*, a civilized Mangyan is someone who wears regular clothes, has some degree of contact and dealings with lowlanders). He said it will be difficult to introduce such idea to communities living in the interior because they are still grounded on their traditional practices like *atas*, and they may not understand it. He further added that as of now, only 14 of the 53 *Batangan Tau-Buid* communities are civilized and have some contact with lowlanders.

In a paper by Borrás et al (2007), it was noted that *Mangyan* claimants have been urgently lobbying the government to convert the Certificate of Ancestral Domain Claim (CADC) that was issued to them into a 'title' (Certificate of Ancestral Domain Title) because of the increasing encroachment of lowlanders into the territory. Some of the *Mangyan* sub-groups living in the other side of the MIBNP have received their titles however, the community of *Punong Tribu Fausto* remains hopeful that in due time, they will also receive their own title. Unfortunately, his tribe cannot come up with a consensus because some of the members are hesitant. According to Colegado et al (2001), the *Mangyans* have consistently stressed their desire to maintain their cultural identity and ancestral domain. They assert their right to use resources for their physical sustenance and cultural survival.

*Punong Tribu Fausto* also expressed his sentiments in the construction of the irrigation system by the National Irrigation Authority (NIA) in the lowlands. According to him, one problem faced by his tribe at present is the migration of fishes from the sea to the rivers. The construction of irrigation canals by NIA is affecting the spawning of the fishes because the structures obstruct the passage of the fishes along the river. He further said that he already discussed with the NIA people that they should provide a small tunnel or space along the ramps to allow migration of goby fry, especially from September to October. Now that there is a dam, the fry cannot pass through because they are very small, just like hair strands. But these are abundant.

On the part of the MIBNP management, the PAO-TCP staff also acknowledge that they encounter problems on encroachment of the lowlanders. According to the MIBNP PASu, they lack the adequate manpower to monitor and police the area. He also mentioned about the lack of support and low awareness of the local government units in the Province about the importance of the MIBNP not only to Mindoro but also to the Philippines, as a whole. The MIBNP Park rangers also articulated that they are defenceless against encroachers who carry more powerful weapons. They cannot fully enforce laws because they worry about their safety. Currently, there are 19 Park rangers patrolling the area day in and out. Clearly, the number of rangers is not proportionate to the total area of the Park (75,445 hectares).

Another noted problem is the lack of willingness and hesitancy of the IPs to projects initiated by the MIBNP management. This is because of the doubt of the IPs on the motive behind any project from the lowlanders hence, the lack of support. According to *Punong Tribu Fausto*, even if he is open for development, he can not decide because he needs the approval of all the leaders of his tribe.

There is also the conflicting land use between the IPs and the government. The IPs expressed their dismay that the government is giving more importance to the *Tamaraw* over them.

**Conclusions and Recommendations.** The *Batangan Tau-Buid Mangyan* employs *atas*, a fishing practice wherein the waterflow of a river is diverted to one side of the river bed by surrounding the area with mud and rocks to trap aquatic animals like fish and shrimps. The IPs also use *nami* (*Dioscorea hispida* Dennst.) and *anapla* (*Albizia procera*) in their fishing activities. Both plants contain toxins which the IPs use to stupefy aquatic animals, making the collection of fishes and shrimps much easier. In addition, the IPs use fishing gears like pot, nets and improvised harpoon in catching aquatic animals which include eel, mugil, goby and freshwater shrimps.

As part of the cultural beliefs of the IPs, they observe 'no fishing' during wet season. They believe that this season is the time for the river to replenish itself. The IPs also have a mutual understanding with the different communities under their tribe, in their *atas* operation which is comparable to TURF as a management strategy.

In terms of the challenges faced by the MIBNP management and the IPs, there is a need for further integration of the MIBNP staff into the day-to-day life of the IPs to forge better relationship and understanding of each other. Although the initiative of the MIBNP of hiring some IPs as Park rangers is a step towards this direction, it is still not enough because the IPs feel that many of the activities of the MIBNP are geared towards the conservation and protection of the *Tamaraws* and are not inclusive of their concerns. The MIBNP must then intensify their efforts to strengthen the bridge towards better communication and relationship with the IPs.

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