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# Aeta Magbukún of Mariveles: Traditional Indigenous Forest Resource Use Practices and the Sustainable Economic Development Challenge in Remote Philippine Regions

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## Abstract

The Aeta Magbukún of Mariveles are one of the least known and researched Indigenous peoples remaining on the fringe of the bay, and within the remaining forests in Bataan province on Luzon Island in the Philippines. This work describes the unique cultural systems and language of the Aeta Magbukún tribe in Bataan, Mariveles, and both the traditional forest resource use and the evolving new subsistence practices developed to adapt to the encroachment of non-Indigenous peoples onto ancestral lands. The Aeta's forest resource use practices are discussed from a sustainable Indigenous development context within unique socioeconomic, cultural, and environmental circumstances in Bataan.

## KEYWORDS

Aeta, Philippines, Bataan, Indigenous, land management, Development

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## Introduction

Despite the countless complex, yet subtle, Indigenous forest management practices occurring in tropical countries (Wiersum, 1997), Indigenous peoples are often seen as naive resource users in need of education by conservation interventions. Conflictingly, they are also romantically viewed as successful traditional environmental stewards, and are often objectified along with flora and fauna (Bryant, 2000). In practice, Indigenous forest management practices have dynamically evolved to suit local ecological, cultural, and socioeconomic needs, and are not necessarily traditional. Therefore, Indigenous forest management should not simply be viewed as a change from forest exploitation to conservation (Wiersum, 1997).

A number of generalized and unsophisticated assumptions of Indigenous land-use practices persist, including the notion of equivalence of sustainability and conservation, which require detailed local evaluation to assess (Eghenter, 2000). As natural ecosystems are variable between regions and seasons, their management must be sufficiently flexible to cater for variability and site specificity (Agardy et al., 2002). Furthermore, while Indigenous cultures are often examined as isolated populations (Peterson, 1981), they often coexist with non-Indigenous peoples, who together influence ecosystems and their respective cultures. Therefore, prescriptive forestry management policymaking must be thoroughly based on empirical evidence of the local ecosystem and the multiple users of

ecosystem resources (Agardy et al., 2002). Such empirical analyses of forestry-based development programs should include analyses of how specific populations interact with the forest, in addition to how they define and value the various forest products and services (Wiersum, 1997).

The Indigenous people of the Philippines resisted colonialization by refusing to abandon traditional practices, thus differentiating themselves from the Filipino majority (Ting et al., 2008). The estimated 12 million Filipino Indigenous peoples, representing 110 major ethno-linguistic groups, are classified broadly as Lumads, Igorot, Ilongot, Negrito, Mangyans, and Palawan tribes (Ting et al., 2008). The Negritos are tropical rainforest hunter-gatherers (Rai, 1982), comprised of 25 different ethno-linguistic groups (Headland, 1984)—including the Ata, Aeta, Alta, Agta, Ati, Pugot, and Remontado (Ting et al., 2008). They are widely dispersed throughout Luzon, some islands in the Visayas, and some provinces in Mindanao; and are largely nomadic, living in independent and dispersed local groups (Rai, 1982; Ting et al., 2008).

Most Indigenous tribes in the Philippines rely on agriculture-based subsistence (Ting et al., 2008). However, the Aeta/Agta of Luzon are some of the few continuous hunter-gatherers to survive agricultural expansion, due not only to the inaccessibility of their traditional lands, but to the development of mutually beneficial relationships with early arrivals (Minter, 2009). A combination of deforestation and population, economic, and political pressures have sustained increased migration into the traditional lands of the Indigenous peoples of the Philippines. Furthermore, the alarming rate of deforestation in the Philippines since Spanish colonial rule (Doedens, Persoon, & Wedda, 1995) has largely gone unrecognized due to lost records, uncertainty over the quality of existing records, and the extent of effective control by the Spanish and American colonists over most of the territory during this time (Bankoff, 2001). With little regard for Indigenous mobility and hunter-gatherer lifestyle, forested areas were viewed by non-Indigenous migrants as unoccupied, neglected, and underexploited (Minter, 2009; Rai, 1982). The various Aeta groups of Luzon have thus experienced demographic stress from forced change and depopulation as encroachment on their traditional lands inevitably leads to conflict, land grabbing, and the depletion of traditional forest resources (Doedens et al., 1995; Headland & Headland, 1997; Rai, 1982; Ting et al., 2008).



FIGURE 1 Map of Bataan, Central Luzon, Philippines.

Specific to tropical forestry environmental changes, there is a real need for research that articulates the origins of local forest product use (Kummer, 1992), including how different knowledge systems, particularly Indigenous knowledge systems, contribute toward sustainable resources and conservation management (Camacho et al., 2010). While the practices of the Agta of northeastern Luzon, among other groups, are well documented (Griffin & Estioko-Griffin, 1985; Headland & Headland, 1999), each group remains fairly distinct from one another, both identifying and maintaining independence through their language, traditions, and territories. The Indigenous Aeta Magbukún in Mariveles in the Bataan province (Figure 1) are one of the least known and studied groups in the Philippines. Therefore, this review seeks to document the forest resource use, management practices, and forest-based livelihoods of the Aeta Magbukún within the context of rapid change and the influence of development and conservation objectives of non-Aeta groups. The documentation of traditional knowledge is important for prosperity and a valuable resource for the community themselves. It can assist in self-determination, as well as in legitimizing and articulating land and resource claims (Dove, 2006). Additionally, it can provide a means to develop models for sustainable, innovative, and culturally appropriate forest management (Camacho et al., 2012).

## **FORESTRY, CONSERVATION, AND INDIGENOUS PEOPLE:A COMPLEX SPACE**

### **Forestry and Conservation**

Forest resources have been heavily depleted in the Philippines (Buschbacher, 1990; Doedens et al., 1995). At present, 15.855 million (52%) of the 30 million ha comprising the Philippines is classified as public forestlands, with an estimated 7.159 million ha (over 24%) remaining forested (Carandang, 2008). It is useful to recognize that forest ecosystems in the Philippines are subject to land-use change because forest consumption and conversion is financially profitable, while forest conservation generally is less so. The simple quote by Pearce (2001) illustrates the fundamental issue: “sustainable forestry pays, but unsustainable forestry pays more” (p. 294). Thus, forestry overexploitation (legal, quasi-legal, and illegal) has led to long-term forestry productivity declines in the Philippines, which are fundamentally based on a number of successive inadequate, unstable, conflicting, and poorly implemented forestry policies (Carandang, 2008). Rules governing forest utilization and tenure in the Philippines have created both cooperative and competitive land-use pressures over time, involving both the state and civil society (Magno, 2001). Possibly to redress this competitive land-use tenure pressure in the Philippines, the Department of Environment and Natural Resources (DENR) was created in 1987. The DENR transferred significant personnel and financial resources, in addition to planning and decision-making authority, to decentralized provinces and communities (Magno, 2001).

In theory, the integration of local-scale historical knowledge in forest use policymaking creates suitable alternatives that enable sustained forest resource use over the long-term, and is conciliatory to social, economic, and conservation objectives (Eghenter, 2000). In the Philippines, however, links between government agencies and communities are currently undeveloped, particularly in terms of facilitating successful forest establishment and/or subsequent management (Magno, 2001). Complicating the local discourse are international ecological perspectives that forward the notion that environmental conservation differs little from sustainable forest resource extraction, while in practice, conservation can jeopardize traditional livelihoods, particularly in poorer regions (Bryant, 2000). Policies of inhabitant removal using forcible coercion have become a familiar conservation strategy internationally, where conservation interests are powerful, and local residents are not (Adams & Houtton, 2007). These often reactive conservation interventions generally assume local environmental ignorance, and implement restricted levels of local resource use that often do not consider community livelihoods and result in local socioeconomic pressures (Bryant, 2000). These pressures are often disproportionately high for poor local inhabitants at the subsistence level. Such policies often remove local inhabitants’ rights of residence, access, and resource use, and may include the loss of non-consumptive uses and future use, even for places with cultural or religious value (Adams & Houtton, 2007). These policies have been implemented over large forested areas in the Bataan peninsula, forcibly removing

Indigenous and non-Indigenous people without distinction. As a result, conservation planning is commonly (and often accurately) viewed by local peoples in tropical regions as an intervention to gain control over land and resources.

This form of extreme conservation planning fails to develop a shared understanding and often results in resource-use conflict (Sheil et al., 2006). Furthermore, when communities are removed from conservation areas, remaining inhabitants can be exposed to corrupt and rent-seeking behaviour by conservation staff, who have been known to informally charge for real or imagined minor infringements such as cutting firewood, animal grazing, and medicinal plant collection (Adams & Houtton, 2007). In the Philippines, various forestry/conservation funding programs have not uncommonly awarded contracts to rent-seeking/phantom non-governmental organizations (NGOs) that profit from government expenditures and tax concessions at the expense of genuine NGOs involved in forestry and conservation-related activities (Magno, 2001). Such sub-optimal local forestry/conservation institutional resourcing has resulted in limited capability for these activities and poor cross-communication between NGOs and local inhabitants. Even when genuine NGOs exist, “top down” approaches to conservation can compromise traditional communities when governments and/or NGOs perceive the Indigenous peoples as non-extractive users of forest resources, and implement conservation practices to reinforce this perspective (Bryant, 2000). Therefore, it is fundamentally necessary for policymakers and NGOs to consult directly with knowledgeable individuals who plant, maintain, and extract forest resources “on the ground.” These knowledgeable individuals are often poor local inhabitants or Indigenous peoples with no official position or education, who have obtained such knowledge by inheritance, experience, perseverance, and necessity.

### **Indigenous Peoples and Traditional Forest Management**

Due to close links between the biophysical environment and traditional livelihoods, Indigenous people can be described as particularly knowledgeable, practical, and often the keenest to protect their ancestral lands under conservation initiatives (Bryant, 2000). However, institutional and Indigenous forest management objectives have commonly been at odds (Wiersum, 1997), particularly with respect to conservation objectives and what occurs in practice. Around the 1970s, there was widespread recognition that Indigenous peoples should not be removed from protected areas,<sup>1</sup> and that many protected areas exhibited special historical and cultural qualities that were created and subsequently maintained by inhabitants (Adams & Houtton, 2007). Indigenous forest resource management is not a specialized research and management activity, rather, it forms part of a livelihood strategy with the aim of active management practices to facilitate sustained availability of valuable forest resources (Wiersum, 1997). With the recent, rapid evolution of socioeconomic conditions and the changing demographics of Indigenous tribes, traditional land-use and management practices may not necessarily translate into sustainable resource use over time (Bryant, 2000). This is especially so when non-Indigenous knowledge and neighboring land-use pressures influence forest productivity and dynamics. For example, the use of traditional hunting and trapping practices are unsustainable due to the additional hunting pressures from non-Indigenous communities (Seitz, 2002). A more complex example is when the barter system traditionally used by Indigenous peoples is replaced by the monetary culture of political and economic institutions (San Juan, 1999), leading to detrimental forest resource extraction by Indigenous people themselves (Bryant, 2000), often during times of duress as a means of basic survival.

### **METHODS**

The lifestyle and practices of the Aeta Magbukún documented within the following sections were drawn from the field notes, internal reports, and personal experiences of two of the co-authors. As employees of the Peninsula Ecosystems and Health Foundation, Inc. (PEHF), a not-for-profit NGO, they spent a combined total of 2 yr and 7 months living and working with the Aeta as a means to enable the community to engage and participate in economic and political activity of their barangay (the smallest administrative division in the Philippines) of Biaa, the district in which their bayan-bayanan (village) is located, and more broadly in the municipality of Mariveles, and the province

of Bataan. The ethnographic experience of the PEHF employees during this process was documented through the use of a field diary, photographs, and audio-visual recordings. The primary author, in particular, is fluent in Magbukun Ayta/Mariveles Ayta, the language of the Aeta Magbukún, and has spent a total 19 months (October 2008 to May 2010) living with the Aeta Magbukún, and another 12 months living in the Zambales province with the Sambal Aeta. The field notes and internal reports on which this work was based were examined by Aeta community elders and the Aeta individuals concerned for the accurate representation of their lifestyle and experience. Themes and trends present in this data were compared with the current literature on the Aeta/Agta, and the experiences of Indigenous peoples more broadly within the Philippines and other tropical forest locations.

To date, the information contained within this article has only ever been used locally for education, advocacy, and internal reporting. The Aeta Magbukún distinguish themselves from neighboring Aeta groups and from other Indigenous peoples across the Philippines. Thus, it was deemed necessary to present this information in a more widely accessible format to advance understanding of both the distinctiveness and similarities of Indigenous peoples within the same province or region. The documentation of the unique situation of the Philippine Aeta is essential for the reduction of inequity, but also to show how culture and knowledge systems may be adopted or transferred between distinct Indigenous and non-Indigenous groups for the sustainable management of forest systems (Camacho et al., 2012).

## **EVOLVING AETA MAGBUKÚN FOREST RESOURCE USE**

Forest utilization rights and management systems are usually created in Indigenous cultures by the investment of forms of labor or natural and/or socially constructed geographical markers, thus forming a component of an integrated system related to evolving socioeconomic developments (Wiersum, 1997). The Aeta Magbukún of Mariveles, like other Aeta groups in Luzon, combine both traditional economic and productive systems like hunting, gathering, and/or foraging, with newly assimilated subsistence procurement strategies that complement their traditional primary form of subsistence. These new activities have primarily developed as an adaptation to cope with changing environmental conditions generated by non-Indigenous forest resource users, and are becoming particularly important for survival in specific seasons (Headland & Headland, 1997; Rai, 1982). These activities include *pag-uling* (charcoal production) which generates a small cash income, and *gasak* (swidden farming) sweet potatoes, cassava, and bananas (etc.), primarily for additional food sources. Occasionally, some Aeta also enter into temporary employment on cattle ranches or provide domestic services for non-Aeta.

### **Aeta Subsistence and the Seasons**

The Bataan province experiences two pronounced seasons: dry from November to April/May, and wet during the rest of the year. The Aeta community's productive systems are intimately tied with these seasons, and the Aeta's subsistence procurement strategies have evolved to adapt to this seasonal fluctuation between what essentially amounts to feast and famine. For example, before the Mount Pinatubo eruption, another Aeta group—the Aeta Mag-antsi—combined seasonal hunter-gatherer activities with swidden agriculture of corn, yams, and rice, which were supplemented with market orientated activities, such as charcoal making and wage labor (Austria, 2008). In contrast, the Aeta Magbukún for most of the year exist below their subsistence food thresholds, and this becomes particularly acute in the wettest months of August and September. An Aeta Magbukún mother in her 30s, confided that she, like many others in the tribe, struggle the most during the wet season to obtain sufficient food and/or income. Despite regularly producing charcoal, she and her husband stated that the income they generate is barely enough to sustain their daily needs during this time. Aside from charcoal production for income, men of the family units hunt while the women gather various foods, including freshwater fish and shellfish (Figure 2), and *paket*, a cassava-like tuber. What is hunted and gathered is barely enough for their nuclear family's food requirements. However, when the dry season arrives almost all Aeta families enjoy abundance, a far cry from the wet season.



**FIGURE 2** Freshwater fish and shellfish cooking with added salt over a standard wood fire (photo by Nathaniel Salang).

### **PULOT, TAG-PULOT, AND PAMUMUAY (HONEY, HONEY SEASON, AND COLLECTING HONEY)**

*Pulot* (honey) is an almost exclusive traditional Aeta commodity in the forests of Mariveles, and non-Indigenous locals commonly source honey from the Aeta Magbukún (Figure 3). A 350 mL bottle of *pulot* costs between PHP60–100 (US\$1.40–2.30), depending on type and quality. During the *tagpulot* (honey season), an Aeta family may produce an average of 3.5–7 L a week, and even more during peak season. *Tag-pulot* is the most anticipated time of the year among the Aeta of Mariveles, beginning around the second half of December, lasting for the entire dry season, and peaking between March and May. *Tag-pulot* is a time of abundance, when the Aeta enjoy surplus food and money, and can repay any debts accumulated during the wet season. Aeta families of Mariveles can make around PHP3,000 (US\$70) each week by selling honey, which is a very large sum compared to their income from any other activity. As such, *Pamumuay*, or harvesting honey, is a major seasonal activity for Aeta families of Mariveles. It is usually the males of the tribe who engage in *pamumuay*, and they can spend a week at a time foraging for beehives in the forest, returning on weekends with an average of 6 to 7 L of *pulot*. A man typically sets out for *pamumuay* at the start of the week, with a *luwak* (a backpack-like container) on his back (Figure 4). Sometimes he knows where he will go to harvest honey, having already been to the forest to do *paniningala* (literally translated as “looking up,” the act of looking for beehives). Aeta boys start their *pamumuay* training young so that adolescents are able to gather on their own, climbing the forest’s highest trees to harvest honey. Pre-adolescent children accompany their older brothers or fathers in the forest to look for and gather honey. Therefore, school absenteeism among Aeta teenage boys in the Biaan community increases during the months of February and March, the peak season of *pamumuay*. While males engage in *pamumuay*, the women undertake the commercial activities of bottling the honey, commonly using San Miguel Ginebra bottles, and walking to the marketplace to sell them.



**FIGURE 3** Honey (photo by Nathaniel Salang).

Among the Aeta Magbukún, an unharvested beehive is considered individual private property once it has been marked. It is considered fortunate whenever a *panilan* (beehive, and also refers to the honey bees) is situated near the ground. However, it is not difficult for the limber climbers of the tribe to harvest a beehive high up in the forest canopy. Smoke from a lighted torch made from leaves is used to drive the honeybees away. Between 3.5–7 L of *pulot* can be harvested from a large *panilan*. In recent years, there has been a small, yet growing commercial market for *pulot*, and the Aeta of Mariveles supply orders for some private companies, and also the University of the Philippines in Los Baños. *Pulot* has become the major cash income for the Aeta Magbukún tribe in Biaan, Mariveles.

### **PAGDADANSO AND GASAK (GATHERING AND SWIDDEN FARMING)**

*Pagdadanso* is a general term that refers to several traditional activities of gathering and foraging for food sources in the forest and rivers of Mariveles. Gathering/foraging is primarily carried out by women, and common *pagdadanso* activities include *pamamatibat* (gathering *susô*, a freshwater shellfish), *pangangalakal* (foraging for wild tubers), and sometimes *pamumuay* (honey gathering). A few Aeta of the Magbukún tribes in the Philippines have also engaged in swidden farming, a non-traditional activity. Through contact with non-Indigenous peoples in the area, the Aeta began engaging in swidden farming, or slash-and-burn cultivation, in recent decades. At present, only a few Aeta Magbukún families (5 out of 21 families) in Biaan, Mariveles have *gasak* (swidden farming plots). Common *gasak* species planted are sweet potatoes, taro, and banana. In a similar manner to beehives, a *gasak* is considered individual private property. This is despite several Aeta working on the *gasak* on a voluntary basis, a practice known as *lusungan*. *Lusungan* entails that the volunteers working on an individual's *gasak* bring their own food for the day,



and the equitable rotation of the role of volunteer and *gasak* owner sustains the practice (Tebtebba Foundation Indigenous People's International Centre for Policy Research and Education, 2008).



**FIGURE 4** Collecting honey using the *huzak* (photo by Nathaniel Salang).

### **PAG-ULING (CHARCOAL PRODUCTION)**

As *tag-pulot* ceases at the onset of the wet season, the Aeta commence *paguling*, another commercial subsistence strategy (Figure 5). *Uling* (charcoal) is of high demand in the town's market, and generally *uling* costs PHP80–100 (US\$1.80–2.30) for a 10–15 kg (air dry) bag. Although charcoal production is illegal, the Aeta state that it is a traditional practice and at the very small-scale of *uling* production, there is a limitless source of dead and dried forest trees scattered on the forest floor.<sup>2</sup> The production of charcoal is undertaken using a simple built-up earthen pit, which is dug into the ground, filled with the wood, and covered with leaves and soil to regulate air flow (Figure 6). Each batch takes several hours with relatively low conversion efficiencies when compared to more modern conversion systems. The technology type also exposes individuals to the smoky emissions during ignition and conversion from wood to charcoal (Figure 7). *Pag-uling* is not an easy time for the Aeta as there is currently a charcoal embargo in place, and charcoal producers, Aeta and non-Aeta alike, must travel through checkpoints, pay fines, and risk having their produce confiscated. Furthermore, the meager income earned from *pag-uling* relegates this activity to a basic survival strategy to be able to purchase food in the wet season. As one Aeta elder articulated, the hope and the anticipation for the next abundant honey season keeps the Aeta community afloat during the wet season.



**FIGURE 5** Charcoal production (photo by Nathaniel Salang).



**FIGURE 6** Aeta traditional built-up earthen charcoal pit kiln prior to ignition (photo by Nathaniel Salang).



**FIGURE 7** Igniting the traditional kiln (note this method is identical to starting cooking fires; photo by Nathaniel Salang).

### **PANGANGASO (HUNTING)**

Indigenous peoples in the Philippines place a high value on pig fat, and the wild pig (*Sus barbatus*) is the main game animal in Luzon (Headland, 1987). Hunting remains commonplace among the male members of the Aeta Magbukún tribe in Biaan. While the traditional use of bow and arrow has given way to guns (Figure 8), traditional *silo* (traps) remain in use. Common hunting activities include: *pangangaso* (hunting) of *babuy ramo* (wild boar), *bakulaw* (monkeys), and very rarely *uta* (deer); *paninilo* (the setting of traps for wild boar and wild cats); and *pangangati* (trapping red jungle fowl, or *labuyo*). *Pangangati* is a common hunting activity and involves *sagar* (fowl traps), or less commonly, ambush still-hunting.

While there are traditional preferences for hunting particular animals during specific seasons, in a subsistence lifestyle, Aetas are known to hunt whatever they may come across that they can bring home to eat. This includes *bayawak* (forest lizard), *musang* (civet cat), and *pugo* (quail). Aeta hunting is at its peak during the wet season, primarily due to the heightened food scarcity. At the surface level, Aeta hunting does not endanger the remaining game population in the Mariveles' forest, based on anecdotal evidence of Aeta self-reported population density and hunting yields (e.g., see Robinson, & Redford, 1994). If a surplus is able to be hunted, the Aeta will sell game, such as wild boar and red jungle fowl in town. The Biaan Aeta also befriend some local wild animals which can be regarded as pets, such as monkeys.



**FIGURE 8** Traditional hunting bow and quiver of arrows, more recently used ceremonially (photo by Riva Marris Parkinson).

## **FOREST RESOURCE CAPACITY BUILDING AND DEVELOPMENT**

The increased demand for wood and other forest resources by the expanding non-Indigenous population in Mariveles provides the Aeta Magbukún with commercial opportunities to earn cash incomes from their ancestral lands. The dependence of these hunter-gatherer groups on the non-Indigenous population for symbiotic trade is not a recent phenomenon, and formed a part of the subsistence strategy of the hunter-gather tribes who had formed a dependent relationship with their agricultural neighbors (Headland & Reid, 1989). However, the Aeta/Agta groups were evidently outnumbered with increasing migration, such that trade relationships became impersonal and, lacking the commerce and monetary skills to sustain this once mutually beneficial relationship, the Aeta/Agta were at a disadvantage (Seitz, 2002). Furthermore, issues concerning landgrabbing, lack of capital, and a strong cultural value in relation to egalitarian food sharing meant that the Aeta/Agta did not adopt agriculture as a means for supplementing their subsistence lifestyle (Headland & Headland, 1997). This predicament has attracted significant attention from non-profit organizations and NGOs, most notably the Caritas Bataan-Indigenous People's Apostolate, established in 1998, which offers scholarship programs for several Aeta schoolchildren, and the Institute for Foundational Learning (IFL), a Christian non-profit organization specializing in education and training, medical care, and other development programs. The IFL, through the provision of basic services—such as housing, potable water, medicine, adult literacy classes, and the establishment of an elementary school, the Biaan Aeta School (Figure 9)—enabled Aeta families to live in one settlement. The two elementary school teachers (a husband and wife) are the same two primary volunteers from IFL. However, developing suitable commercial development projects with the Mariveles Aetas remains an ongoing challenge.



**FIGURE 9** One of the classrooms of the Blaan Aeta School in Mariveles, Bataan (photo by Mark P. McHenry).

### **Complexities of Indigenous Forest Peoples and Sustainable Development**

Indigenous economic development forestry resource projects sponsored by NGOs are commonly abandoned, often due to issues downstream from production, such as unsuccessful marketing (Seitz, 2002). The facilitation of capacity building for local people and community organizations to develop, manage, and govern forest resources is fundamentally important (Magno, 2001). While “the tragedy of the commons” often occurs in degraded “open access” forested areas, “common property” forests are often actively sustained, as they are subject to enforced individual use rights, but with communal Indigenous ownership and control (Wiersum, 1997). However, within the Philippines, there are fundamental difficulties in securing land tenure. For example, forested land is often considered unoccupied or underutilized, thus Indigenous claims over ancestral lands are largely unrecognized (Doedens et al., 1995). Furthermore, where land had been reserved for Aeta/Agta use, it was often taken over by squatter farmers (Headland & Headland, 1997). The unique and well-defined characteristics of combining communal ownership with individual-use rights for both beehives and swidden farming plots is a cultural advantage in relation to development for the Aeta Magbukún. However, care must be taken to limit the risk of conflict between Aetas by inadvertent exclusion in communally owned land decision-making, which hinders participation and cooperation (Arnold, 1987).

As management outcomes are often dependent on local capability (Buschbacher, 1990), strong social capital enables the development of cooperative networks and the capabilities that lead to more effective local forest management outcomes (Magno, 2001). Groups who have accepted forest management roles at the local and community level in the Philippines are often reliant on their own capabilities, which are fundamentally variable between regions, peoples, and their collaborative networks over time (Magno, 2001). As such, some sustainable forest resource management options at the small-scale may be viewed as suitable due to smaller capital requirements. These options include small-scale selective commercial logging. Logging at this scale is, in theory, an example of a relatively benign exploitation of tropical forests by Indigenous peoples, although sustainable forest management has never been carried out at larger scales due to economic, social, and cultural barriers (Buschbacher, 1990).

### **Barriers to Indigenous Sustainable Forest Use**

Indigenous peoples seek autonomy, but also do not want to be “left alone” to manage a depleted resource base with inadequate expertise. Ideally, they require technical expertise consistent with their own culture and knowledge systems. Similarly, Indigenous peoples are unwilling to be erroneously classified as either ecosystem destroyers, or romanticized conservationists of a pristine environment (Davis & Wali, 1994). As sustainable forestry management options are more knowledge intensive than simple plantation forestry options (Buschbacher, 1990), a balance between forest use and conservation should ideally be developed through recognizing what local people (including both Indigenous and non-Indigenous peoples) believe is important (Sheil et al., 2006). Communities must be able to manage and negotiate, both internally and externally, a balance between agroforestry and other activities based on forestry harvesting. Where social capital is weak, NGOs commonly serve as intermediaries between Indigenous peoples and agencies to enable a range of initiatives, including securing forest and land tenure (Magno, 2001). Improving the security of forest tenure for Indigenous peoples in the Philippines may provide sufficient motivation for the expansion of small-scale mixed species forestry activities in previously harvested regions. These multiple use plantation forestry activities could successfully incorporate traditional/subsistence activities, as well as establish selected species that enable more efficient charcoal production, increased or extended honey season yields from profuse flowering, additional food security, or new cash crops (such as mangoes, coconuts, cashews, etc.). Particularly for the Aeta, introduced productive species could improve the food availability over the wet season, or feed enough valuable game animals to enhance hunting opportunities during lean times.

While the various points of view about the rights of disadvantaged Indigenous peoples are unique due their historical land tenure, their basic rights and needs are not dissimilar from other poor long-standing local residents (Adams & Houtton, 2007). Nonetheless, there are often unintended negative impacts stemming from the various forest resource use activities of the local population in aggregate. This is particularly the case with respect to forestry activities in what are often isolated and largely inaccessible tropical regions in poor developing countries. A common example is the construction of roads to transport forest products. Increased accessibility increases the influx of commercial human activities—including illegal forest product exploitation, hunting, and agricultural conversion (Buschbacher, 1990). However, in an attempt to provide an optimistic outlook on Indigenous survival and economic development goals, a conservation planning perspective that moves beyond human exclusion, and instead toward inclusion of human society within nature, is a practical development (Adams & Houtton, 2007).

### **Integrated Land-Use Benefits for Traditional Indigenous Forest Uses**

In contrast to the many negative impacts, an example of an unintended positive impact on Indigenous hunter-gatherers in the Philippines involving land-use change from forest systems to agricultural systems, is the “edge effect.” The upshot of this effect is a higher diversity of vegetative communities (native and agricultural) that attract and nurture a higher density of hunting game, thus facilitating Indigenous hunting activities (Peterson, 1981). Some managed agricultural activities near or even within Indigenous managed lands may compensate Indigenous peoples for areas of forest conversion, but only up to the point where expansion eventually results in poor hunting (Peterson, 1981). This is an example where intensive active management and communication between the Indigenous hunters and primarily non-Indigenous agriculturalists is necessary to create a practical arrangement. Particularly as new agricultural clearings in the Philippines often receive heavy (80–100%) crop losses attributed to game foraging activities (Peterson, 1981), the interface between forests conversion, agricultural production, and hunting potential will require active collaboration and monitoring. However, it is historically more common for forest conservation policies to not tolerate resource use by local people. The exception is tourism, which has been tolerated, and even promoted (Adams & Houtton, 2007).

### **A Note on Non-Consumptive Forest Uses Such as Ecotourism**

In theory, there is potentially a “better fit” between conservation, ethical ideologies, and non-consumptive uses of wildlife and ecosystems, such as ecotourism (Adams & Houtton, 2007). Tourism development, in general, holds

much promise for rural Philippine employment and income generation, although this is often built on a fragile natural and cultural environment (Alampay, 2005). Non-consumptive forest uses, such as eco-tourism and biodiversity prospecting, may be capitalized upon by locals if sufficient capital investment, marketing, and technical knowledge of biological resources exists (Bryant, 2000). Generally however, tourism in the Philippines is fundamentally limited by overpopulation within rural areas, poverty, income disparity, terrorism, and lack of other economic opportunities outside of major urban centers (Alampay, 2005). While tourism and eco-tourism often enhance the local peoples' appreciation of the natural beauty of their culture and environment (Dulnuan, 2005), it is often understated, yet overtly apparent to the tourist, that tourism activities in the Philippines also generate high volumes of non-biodegradable litter, predominantly derived from intra-national tourists. The phrase "eco-tourism" is interpreted rather loosely in the Philippines, and is often used in connection with ordinary tourism activities that have little connection with principles of sustainability, environmental sensitivity, or respect for peoples and cultures. These include golf, cruise lining, and frequenting resort chains, etc. (Alampay & Libosada, 2005). In the Philippines, a number of popular tourist destinations are ancestral lands of Indigenous peoples, yet very little reliable research is available on the impact of tourism on Indigenous peoples beyond the superficial exposure to new cultures, information, products, foods, etc., which in and of themselves can be troubling (Dulnuan, 2005). At the extreme, the direct commodification of the Indigenous culture itself will undeniably impact both private and communal lifestyles in various ways (San Juan, 1999). This is particularly pertinent for tourism, as it can be a major source of income for those directly engaged, while benefits are inequitably distributed to those passively involved (Dulnuan, 2005).

## CONCLUSIONS

Coping with the fast pace of development over the past few years has not been easy for the Aeta Magbukún living in the forests of Mariveles. From traditional hunter-gatherer subsistence activities, the Aeta have to adapt to their educational, monetary, political, lingual, and social systems of their non-Indigenous neighbors. Thus, to redress overtly culturally disruptive interventions, various organizations and agencies will be well advised to communicate directly with local Indigenous inhabitants to understand their remarkably unique predicament, concerns, and abilities. The maintenance of traditional cultural and forest/resource management knowledge that preserves some of the distinctiveness of Philippines Indigenous cultures and lifestyles (Camacho et al., 2012), is threatened by economic, political, and demographic challenges, as well as by alarming rates of deforestation and land-use conflict. Fundamentally for the Aeta, conflicting global perspectives on traditional forest management practices are compounded by insecurity of land tenure, and incompatible dichotomies in forest conservation versus exploitation. The introduction of "expert knowledge" derived from outside the socioeconomic and bio-physical region of the Bataan peninsula, or the Philippines at large, is likely to omit unique characteristics of local forest resources, their uses, and cultural nuances, both Indigenous and non-Indigenous (Adams & Houtton, 2007). Likewise, due to poverty, lack of capacity, and the subsistence nature of typical livelihoods within the region, economic activity is often opportunistic, and undermines long-term perspectives. Thus, government policy that seeks to address the overt, destructive forest resource extraction activities without addressing the underlying causes of poverty and inequity, is destined to be ignored by residents whose livelihoods are directly impacted by those policies. Such disregard is not out of a lack of conviction that forestry conservation policies are a good idea, but out of desperation for survival and to meet the basic needs of a family or tribe. Therefore, there remains significant internal development required for appropriate local governance options suitable for Indigenous cultures in the Philippines. This is both in terms of independence from the central government, and from local non-Indigenous power and control (Hirtz, 2003). The authors' experience within the Philippines suggests that the presence of strong, independent, and critical NGOs and educational institutions are a fundamental predictor of, and influence upon successful human rights, education, and development policy and implementation (Claude, 1991).

This work presents how the Aeta Magbukún complement traditional forest resource management practices (e.g., hunting and foraging) with other activities such as charcoal production, honey collecting, swidden farming, and paid

employment. As mentioned previously, much of this activity is subsistence-based, and while the Aeta continue to live and work in their forest home, they often have little control over policy governing the management and use of that forest occurring at a municipal, provincial, and federal levels. While customary laws and traditions of Indigenous peoples are respected by Philippine law (Camacho et al., 2012), it was the authors' experience that authorities rarely consult with the concerned Indigenous groups in meaningful ways. Yet, traditional knowledge systems and natural resource management practices could potentially be ideal models for the promotion of forest sustainability in the region (Camacho et al., 2012).

The role of Indigenous people in forest resource management and conservation policies has long been challenging, especially where long-term non-Indigenous residents also subsist on local forest resources (Adams & Houtton, 2007). While it can seem easy to offer solutions and recommendations to address these dilemmas, implementation is often the greatest barrier to what are inherently complex and dynamic situations in forest resource management and sustainability. "True" solutions can only be formulated through detailed understanding of the complex dynamics of forest resource management from the perspective of all parties who rely and depend on the forest for both their livelihoods and places of residence. To balance the complex socioeconomic and environmental objectives, there is first a need for additional capacity to facilitate decision-making of management objectives, management personnel, management practices, the collection and collation of spatial distribution data of forest resources, and respective forms of resource control and accountability. This additional capacity will increase the likelihood that management tasks are undertaken in a sustainable manner (Wiersum, 1997). In terms of government involvement, this additional capacity would encourage policymakers and administrators to communicate directly with local inhabitants of all social strata to develop synergistic policies that integrate the often complex active management practices and detailed knowledge that exist "under the radar" of governmental institutions. The intention of this article is not to offer solutions, but to instead document some of the nuanced livelihoods, practices and predicaments of the Aeta Magbukún as a Philippine Indigenous hunter-gatherer group, with the aim to increase understanding and facilitate further development in this field.

## NOTES

1. The Bataan National Park was established by Legislative Act No. 3915 in 1932, which forced the Aeta Magbukún and non-Indigenous people to resettle outside of the 23,688-ha reservation. This Act prohibited the Aeta Magbukún from hunting and gathering food in their ancestral domains (Tebtebba Foundation Indigenous People's International Centre for Policy Research and Education, 2008).
2. The Aeta acknowledge it is often easier to fell nearby standing trees than transport older fallen trees to the kiln as they use only hand tools rather than chainsaws and vehicles. Therefore, the risk of localized deforestation remains if tree felling for charcoal becomes intensive in particular locations. The use of freshly cut trees also increases the level of smoky emissions emanating from the earthen pit due to higher wood moisture content. The authors would like to clarify that the deforestation risk is negligible compared to large-scale commercial deforestation that has occurred, and still occurs to some extent in the region. The major concern is the additional smoky emission exposure for kiln operators using high moisture woods, in addition to the already high exposures from the current open fire cooking method.



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