

## Conference Paper

# Traditional Ecological Knowledge (TEK) in Hunting: From Culture to Nature

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### Abstract

In Papua, the practices of Traditional Ecological Knowledge (TEK) in hunting were: limiting hunting on particular species, performing hunting using traditional hunting techniques, protecting specific land tenure from hunting and hunting on particular period of time. These practices were highly complex and highly variable across Papua – a set of unwritten and cultural law that passed on verbally from one generation to another that played important roles on nature protection.

**Keywords:** Traditional ecological knowledge, hunting, culture, nature

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## 1. Introduction

Traditional ecological knowledge (TEK) is defined as “a cumulative body of knowledge, practice and belief evolving by adaptive processes and passed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment” (Berkes et al., 2000). TEK is site specific, represents the information necessary for cultural survival, accumulated over many years (Drew, 2005).

Many people in Papua rely on benefits from plants and animals from the tropical forests. Gathering and hunting activities to obtain food and collect ceremonial materials also play important roles in traditional cultural life. A customary law, a system of territorial use rights is not written into formal law, but passed on verbally from one generation to another with resource rights vested in individuals, families, clans or entire communities.

This paper evaluates how the common traditional practices and beliefs that still extensively practised among different indigenous communities in hunting contribute to the nature conservation in particular wildlife conservation. Information is gathered by authors from opportunistic surveys through field observations and interviewing people on the practice of TEK in different parts in Papua.

## 2. Methods

Survey was conducted opportunistically during a fieldwork of the first author to 11 sites within Papua and West Papua provinces (Figure 1) from 2004 to 2014. The study



**Figure 1:** The map of Indonesia New Guinea red dots represent the surveyed sites in Papua and West Papua provinces of Indonesia.

sites were Yongsu, Jayapura; Dasigo, Mamberamo; Biak, North Biak; Botawa, Waropen; Napan, Nabire; Kebar, Tambrau; Meyakh, Manokwari; Babo, Bintuni; Mpur, Amberbaken; Karon, Abun and Maybrat, Sorong Selatan.

In each village, we worked in close collaboration with the leaders to ensure villagers understood the rationale and aims of the study and to seek their consent to identify 10 active hunters to partake in the interviews. Semi-structured interviews using protocols and questionnaires developed by the Wildlife Conservation Society (Rao et al., 2005) were conducted. Interviews were conducted individually by visiting hunters at their home.

We also collected information on hunting techniques, preferred game species, motivation and hunting off takes. Photographs were used to aid in proper identification of hunted species. To reduce potential mistakes, biases and failing memories we sought to corroborate the information collected and also interviewed elders, tribe leaders, village chiefs and religious leaders. Results are presented in descriptive technique and different aspects found during the study will be highlighted in the discussions.

### 3. Results

#### 3.1. Cultural-Based Approaches

A wide range of animals are hunted by different ethnic groups. There are introduced species such as deer and wild pig as well as native species for example, cassowaries and parrots (birds), cuscuses, wallabies, tree kangaroos and bandicoots (mammals) in terrestrial ecosystems. While herpetofauna (crocodiles and turtles), are hunted along the coastal and swampy sites. Some reasons that derive peoples' preferences are the presence and the abundance of prey species, difficulties in hunting the animals and the relationship between species and cultural values. Cultural reasons have been highly considered in selecting hunting target and all ethnic groups applied the limitation in selecting hunting target. For example, pigeon and bird's of paradise serving as religious symbol or their ancestor originated.

Hunting is mostly done for subsistence purposes and hunters usually used traditional hunting techniques. In almost all study sites, hunters relied on locally-made hunting weapons such as traps, arrows and bows, spears and blades. More importantly, materials used for weapons are predominantly obtained from the forests: elastic plants – lianas and other plant fibers and bamboos. The use of traditional weapons is acknowledged as the way hunters collect limited number of preys as locally-made weapons are killing less animals than advanced hunting techniques using guns.

The acknowledgement of sacred forests is most commonly in Papua. Places that recognized as sacred or taboo places are usually located along the stream, hilly sites surrounded by forests and remote forest sites covered by big trees and canopies. In these areas hunting are not allowed because people believe the spirit of ancestors are lived in, thus they have to be protected. In terms of land tenure hunters can only hunt in their clan's tenures. The practices that passed down and still put into practices are limiting the access of hunters and protecting particular species in their own habitats.

Seasonal hunting are acknowledged by all groups with different approaches. Those along the coast are mostly implement the opened and closed seasons that critically important in performing hunting. The important part of seasonal hunting is more likely similar to the practice of lean agriculture seasons or when sea was not conducive enough to fish along the coast. Principally, seasonal hunting is similar to traditional fallow rotation systems.

#### 3.2. The Contribution of TEK in Nature Protection

Each cultural approach has a special consideration with TEK, for example, certain species are selected because people prefer to hunt species that contribute significantly to food and cultural practices. In terms of hunting techniques, using specific traditional weapons and particular strategies have less impact on environmental damage such as hunting with fire. Using particular techniques also limit the hunting return because people only hunt for family consumption. Limited access to sacred forests also leaves certain preserved areas of cultural importance and at the same time protect particular

wildlife species from hunting. Seasonal hunting gives more opportunities for wildlife species to enrich themselves in number.

#### 4. Discussion

The practice of TEK in hunting has a strong correlation with Colding and Folke's (2001) paper on Resource and Habitat Taboos (RHTs). More specifically, limitation in selecting prey species contributes significantly to protect rare species for the sustainable use of resources. The decision to hunt wildlife species depends not only on nutritional and economic status, but also the other opportunities such as available for food and income generation (Milner-Gulland et al., 2003). The facts showed that, integrating hunting to market would increase harvest rate (Robinson and Bennett, 2004). Some bird species like birds of paradise and pigeons are not allowed to hunt and considered as sacred species and they are respected as totem because in the past they have a strong relationship with their ancestors. *unters* – respected and appointed men in the tribes usually taking only the most beautiful bird with developed and magnificent plumage. Jemison (2015) explains that only dominant fully mature males more than seven years old are hunted for their feathers, limiting the harvest and providing those individuals with earlier reproductive opportunities.

Limitations in using hunting technique give more opportunities in sustainable use of resources and maintain the ecological processes. According to Pajman (1976) material used in making weapons are usually taken from forest plants such as *Hibiscus* sp., *Trema* sp., *Syzygium* sp. and *Dodonea viscosa*. The use of traditional hunting techniques are limited the bag bring home (Ntiamoa-Baidu, 1997) compared to advanced techniques that killed animals indiscriminant. Sillitoe (2002) explained that there is a trend for certain species fall to specific tactics and the combinations men carry reflect the differing strategies they employ.

Limitation in utilizing hunting tenure paly important role in establishing protected areas that maintain ecological processes for sustainable use of the resources. Studies from different places have been evidenced the traditional right in land tenure limit the access of those who are not members of the clans (Wanggai and Kilmaskossu, 1995, Sumule, 1995 and Madhusudan and Karanth, 2002), reflect a form of habitat taboos that regulates access and use of resources in time and space (Colding and Folke, 2001). In some ways indigenous hunting in Indonesian New Guinea has close cultural kinships with Papua New Guinea. For example, land and sea tenure is passed on verbally from one generation to another with resource rights vested in individuals, families, clans or entire communities. Consequently hunting can only be legitimised on *sem* (groups) territories where they reside or where residents elsewhere recognise them as rightful kin (Sillitoe, 2002).

Limitation in determine timing for hunting is important to maintain ecological processes and at the same time allow the sustainable use of resources. The practice of *sasi* along the coast adopted from seasonal marine harvest in Mollucas still in practice to date. In the remote highland sites, seasonal hunting is shown from the way people hunts. Hunting is only performed when they need meat for family consumption. Excess

meat from hunting will be shared to relatives or neighbors and preserved as dry meat for future family consumption.

## 5. Conclusions

Culturally, hunting has been one of the traditional ways of life from the time of their ancestors and people knew and implemented the Traditional Ecological Knowledge in hunting. The acknowledgement of TEK strongly influenced hunting practices that significantly contributed to protect rare species, establish protected areas, and maintain ecological processes for sustainable use of the resources .

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