A COMPARISON OF THE CULTURAL ECOLOGY OF ADJACENT MUSLIM AND BUDDHIST VILLAGES IN SOUTHERN THAILAND : A PRELIMINARY FIELD REPORT*

การเปรียบเทียบนิเวศวิทยาเชิงวัฒนธรรม ของหมู่บ้านชาวไทยมุสลิมและหมู่บ้านชาวไทยพุทธ ที่อยู่ใกล้ชิดกันในภาคใต้ของประเทศไทย : รายงานภาคสนามเบื้องต้น

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ABSTRACT

Southern Thailand is a region of fascinating contrasts between cultures (Malay and Thai), religions (Muslim and Buddhist), economies (fishing, paddy and swidden farming, and plantations of rubber and coconut trees), and enviroments (coastal/inland, lowland/highland, natural/anthropogenic, sacred/secular). This paper reports on the progress of an ongoing multidisciplinary team study comparing coastal and interior pairs of adjacent Muslim and Buddhist villages through examining how ecology, nutrition, subsistence, economy, society, and religion are related to terrestrial wildlife exploitation. In the four study villages within 30 km of the city of Pattani the research discovered that in southern Thailand hunting is very complex, varied, and situational in character. Buddhists have a wider niche breadth in terms of prey species diversity than Muslims. Hunting is more important economically and socially than nutritionally. The nutritional survey

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revealed widespread protein malnutrition in all four villages, but this was more severe among Muslims. The project also found some evidence of an adaptive function of religious differences in promoting niche differentiation and mutualism which reduce resource competition between the two ethnic groups. The research has implications for theoretical concerns about the relationship between the function and meaning of culture, domains of subsistence (foraging in relation to farming and fishing), and ethnicity and niche differentiation.

บทคัดย่อ

ภาคใต้ของประเทศไทยมีความหลากหลายในด้านวัฒนธรรม ศาสนา เศรษฐกิจ และธรรมชาติแวดล้อม รายงานวิจัยนี้เป็นผลสรุปความก้าวหน้าของงานวิจัยในกลุ่มสหวิชาการเพื่อศึกษาผลกระทบที่มีต่อระบบนิเวศวิทยา โภชนาการ เศรษฐกิจ สังคมและศาสนา อันเนื่องมาจากการใช้ทรัพยากรสัตว์ป่าของชาวไทยมุสลิม ชาวไทยพุทธ ในหมู่บ้านชายฝั่งทะเลและหมู่บ้านเชิงเขาที่ใกล้ชิดติดกัน จากการศึกษาหมู่บ้านตัวอย่าง 4 หมู่บ้านซึ่งอยู่ห่างจากจังหวัดปัตตานีประมาณ 30 กม. พบว่ากระบวนการล่าสัตว์ป่าของประชาชนภาคใต้มีลักษณะซับซ้อนแตกต่างกันไปตามโอกาสและสถานที่ ชาวไทยพุทธมีโอกาสล่าสัตว์ได้มากชนิดกว่าชาวไทยมุสลิม และการล่าสัตว์นี้จะมีผลโดยตรงต่อสถานภาพทางเศรษฐกิจและสังคมมากกว่าทางด้านโภชนาการ นักวิจัยด้านโภชนาการพบว่าประชาชนทั้ง 4 หมู่บ้านตัวอย่างเป็นโรคขาดธาตุอาหารโปรตีน และยังพบว่าคนไทยมุสลิมขาดอาหารธาตุโปรตีนมากกว่าคนไทยพุทธ นอกจากนี้ ความแตกต่างทางศาสนายังมีผลให้เกิดการปรับสภาพการใช้ทรัพยากร ทำให้เกิดการพึ่งพาอาศัยซึ่งกันและกัน และลดการขัดแย้งแข่งขันในการใช้ทรัพยากร ผลจากการวิจัยทำให้ตระหนักถึงการปรับใช้ทฤษฎีเรื่องความสัมพันธ์ระหว่างคุณค่า ความหมาย และบทบาทของวัฒนธรรม ความแตกต่างทางชาติพันธุ์และการยังชีพของชาวไทยมุสลิมและชาวไทยพุทธ

INTRODUCTION*

From the perspective of cultural ecology southern Thailand is a fascinating region because of its great biological and cultural diversity, and the relationships within and between these two kinds of diversity**. Moreover, this diversity is in sharp contrast because of the close proximity of different cultures and environments given the geographic character and position of the region. This character includes the long and narrow shape

*Unless otherwise noted this section is synthesized from field observations made during a road survey within a 100 km radius of Pattani and information extracted from the literature[3,8,31].

**Biodiversity ranges from the variety of biomes in a region to the species diversity of a biome to genetic diversity within a species. Another form of biodiversity is symbiosis --- various kinds of interactions between species and between populations within a species[34].

of the peninsula with the Gulf of Thailand on the east and the Andaman Sea on the west. This position includes the north-south alignment of the peninsula and the location at the juncture of South, East, and Southeast Asia.

The peninsula extends from about 13°N to 6°S latitude, a length of more than 1,500 km. Its width ranges from about 13 to 150 km. The peninsula is a relatively flat plain for the most part, except for a mountain chain with its foothills running north to south through its middle. From north to south there is a gradation in vegetation from seasonally dry evergreen forest north of Chumphon to moist evergreen forest in the southern most provinces. (It is in the tropical rain forest that the highest biodiversity is found for any terrestrial biome in terms of species diversity[25]. In the mountains above 1,000 m hill evergreen forest is found.

From east to west there is a relatively symmetrical progression on either side of the mountain chain of environmental zones from coastal islands, estuaries, bays, and mangrove forest, to interior lowland plains with rice paddies, fruit orchards, and palm plantations, to mountains with forests and foothills with swidden gardens and rubber plantations. Mangrove forest is a very special biome at the interface between land and sea. About two-thirds of the mangrove forest in Thailand is concentrated along the coast of the Andaman Sea from Ranong to Satun, while about one-quarter is along the eastern coast of the peninsula from Surat Thani to Pattani.

The biological diversity of the south is also a result of its geographic position at the crossroads of South, East, and Southeast Asia, as revealed for instance by its mammalian fauna[20]. It is also noteworthy that in Thailand as a whole, bats, rodents, and carnivores have the highest species diversity among the orders within the class Mammalia[21].

Changes in climate and sea level through geological time would add yet another dimension to this biological diversity. At times the mountains must have been intermittent islands surrounded by sea which inundated that present plains[2].

Today the Pattani area receives both the northeast and the southwest monsoons, so there is some rainfall throughout the year. But in the south seasonality is marked more by rainfall than temperature with a long rainy season (May to December) followed by a drier and hotter season. The average annual rainfall is about 1,830 mm.

Different human cultures have adapted to this biodiversity through exploiting different biomes, developing different niches and mutualistic exchange systems[12,18,26].

Although Buddhists compose more than 95% of the population in Thailand as a whole, in the south only about 30% of the people are Buddhists whereas most of the remaining 70% are Muslims of Malay heritage who speak the Yawi language[19]. Traditionally the Muslims were fishers concentrated along the coasts where they exploited marine resources, while the Buddhists were inland wet rice paddy farmers[13,14,15,16]. Both Buddhists and Muslims

work coconut, sago, and rubber tree plantations as well as fruit orchards, Swidden gardens as well as rubber tree plantations are usually grown on the slopes of the foothills in the interior of the peninsula. Some coastal Muslims also work salt farms.

In the south there are also two ethnic minorities of special anthropological interest. The so-called "Sea Gypsies," more appropriately called the Urak Lawoi, live by fishing and gathering marine resources on the coast of the Andaman Sea[12]. The Semang or Sakai are foragers in the mountainous tropical rain forests of the southernmost area and are now found mostly in Malaysia. They trade forest products for agricultural products and other things with their farmer neighbors on the margins of the forest[9]. However, apparently today the Semang are almost extinct in Thailand[12].

In some ways human societies have contributed to biodiversity and its maintenance. For instance, traditional swiddening for subsistence with low population density, plenty of land, and sufficient fallow creates a healthy mosaic of forest at different stages of plant succession with associated animal communities. However, in other ways humans have degraded biodiversity, especially in recent decades such as with the growing conversion of rain forest to rubber plantations and mangrove forests to aquaculture and other purposes in Thailand[1,6,23]. Whereas formerly forests covered most of the south, today only about 22% is forested[27]. This reflects enormous habitat destruction for wildlife and the extinction and endangerment of many species[28,33]. This together with over hunting has left only small game in most areas except for remote wilderness, mostly in rugged mountain terrain which is at best marginal for agriculture. The smaller game species are often more generalized and resilient in adapting to habitats disturbed or created by humans. Clearly both biological and cultural diversity are seriously degraded and threatened in the south by economic development and other aspects of modernization. Part of the challenge in conserving and managing biological diversity is to understand how humans interact with it through resources use and depletion, habitat modification, conversion, destruction, and so on[3,20,22]. Both basic and applied research are urgently needed to document the relationship between biological and cultural diversity in southern Thailand. This report provides a preliminary analysis of one aspect of this research effort, although the data analysis is incomplete and when finished additional information will be included in future reports coauthored with Thai colleagues.

METHODS

The project was designed as an exploratory survey to assess whether or not hunting was of any importance for farmers and fishers in southern Thailand and how the role of wildlife varied in contrasting environments and with contrasting cultures and religions*.

The method of controlled comparison[10] was employed in modified from to study how adjacent Buddhist and Muslim villages exploited the same ecosystems in their vicinity. After a survey of possible study sites, two pairs of adjacent Muslim and Buddhist villages were selected, one pair located on the coast of Pattani Bay, the other in the interior near the foot of Sai Khao Mountain. The four villages studies were limited to a radius of 30 km from Pattani because of financial, transportation, and logistic considerations.

Five methods were employed for data collection: household questionnaire, household food consumption survey, village predation record, market survey, and rapid rural appraisal.

The research team formulated a 27-page questionnaire in four parts covering population and social organization, food habits and economy, religious beliefs and practices, and hunting and gathering of wild animals. The questionnaire was pretested on other villages, revised, and then administered to a random sample of 20 households in each of the four villages by the research team working with Buddhist and Muslim students assistants.

The survey of household food consumption was conducted by a pair of advanced nutrition students who weighed and recorded prepared food items in the diet of each of the 20 sample households in each of the four study villages. They spent two weeks in each village. The housewife of each household was interviewed using a questionnaire on food consumption patterns. Direct observations and records of weight of food items consumed by each family member during the day were maintained. The nutritional data were then tabulated and compared with the recommended daily allowances of the Thai Nutritional Board of the Ministry of Health[32]. Originally the nutritional survey was to cover each of the three main seasons, however, it proved feasible to cover only one season (July-October 1988), because of limitations of funding and the complication of catastrophic flooding during the rainy season of November 1988.

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* Wildlife refers to aquatic and terrestrial invertebrate and vertebrate animals which have not been domesticated. Foraging is used as a synonym for hunting and gathering, but in this paper it refers only to wild terrestrial animals.

RESULTS

The project revealed that hunting was of some importance in all four study villages within a radius of 30 km from Pattani and even though two of the villages were less than half an hour from the city by car. The purpose of hunting may be for subsistence, income or trade, recreation and sport, eradication of crop pests, or some combination of these. Several examples indicate the complex, varied, and situational character of the hunting. A fruit orchard owner and his assistants use fishing nets stretched between long poles at night to catch bats which are seasonal crop pests. After the bats are captured and killed they are cooked to eat in a curry stew. A man who lives near Pattani in a village adjacent to a mangrove area forages almost daily for crabs which he sells to venders in the local town market to earn income for his family. Another man hunted on the outskirts of Pattani for lizards which are sold for their skins and for their gall bladders, the latter used as a medicine, because he had no employment or other source of income. A Muslim teenage boy traps birds to provide food for his household, to keep as pets, and to sell for income. Given such diversity, it is not possible to make many generalizations about hunting. However, overall, it is more important for inland villages, Buddhists, adolescent males, and especially those of low income households than for other persons.

Hunting is probably more important in remote villages near wilderness areas. Near Pattani and other major population concentrations there has been too much wildlife habitat destruction with forest conversion to farm fields and tree plantations, growing trends since the 19th century and especially after WWII. Also since WWII guns have become more readily available for hunting, and this has led to game depletion. Yet another factor during the last 30 years is the migration of people from the Northeast into the South who have brought with them their former habits of foraging for wild foods and thereby contributed to game depletion directly and indirectly through their demands on the wildlife market. Many of the people of commercial fishing boats which dock in Pattani are from the Northeast, and they are the main purchaser of wildlife for food from the town market venders. As a result of these and other factors, large game such as tapir is locally extinct, medium size game like deer and wild pig are rare, and only small size game remain including lizards, civets, mongoose, rats, monkeys, squirrels, bats and birds.

Although the questionnaire revealed that hunting is of some importance in all four study villages, the nutritional survey suggests that it is more important economically and socially than nutritionally. The principal regular sources of animal protein are marine and freshwater fish, livestock (cattle, goats, pigs, chickens, ducks), and foraging in wet rice paddies and irrigation canals for fish, eels, shellfish, frogs, crabs, shrimp, snails, and other aquatic fauna. Muslims have a very long and detailed list of wild and domestic animals which are prohibited only one of which is the pig[17]. Muslims favor goats for ritual sacrifices and festivals. Buddhists consume pork as part of a much wider spectrum of wild and domestic animal protein.

The survey of food consumption in the 20 households in each of the four study villages revealed that the majority of the people consume less than 85% of the recommended daily allowance of animal protein. The deficiency is more serious among infants and children than adults, and among Muslims than Buddhists. The inland Muslim village has the most serious deficiency with about 43% of the sample consuming less than 50% of the recommended daily allowance of animal protein. This village reported the least hunting activity in the questionnaire survey. Their situation may be related to a combination of factors including poorer economy, larger family size, lack of access to marine fishing, and their many religious prohibitions which greatly narrows their possibilities for foraging for terrestrial wildlife.

Although wildlife was insignificant in the diet during the nutritional survey in all four villages, the independent questionnaire and other interviews revealed that some boys and men hunt fairly regularly. This apparent discrepancy may be a sample bias, a reflection of the fear of the villagers to admit to hunting illegal game, an artifact of rainy season conditions, a reflection that other activities take priority in their time allocation, and/or the result of other factors.

The relative lack of interest in hunting by Muslims is probably related in part to their long and detailed list of prohibited wildlife. In turn many of these species are considered unclean because they are associated in some way with the earth. In contrast, most species of fish of the waters and birds of the air are considered clean. Hunting is more important for the coastal Muslim village than the interior Muslim village. For the former it is restricted mostly to adolescent males trapping birds for food, pets, and/or sale. In addition, migratory wader and shore birds are trapped for food, and during the monsoon season when stroms make the Gulf of Thailand too dangerous for fishing, then birds are hunted in the mangrove forests along the coast[29]. Thus prey selection and niche width are much narrower for Muslims than for Buddhists. While game used to be exchanged within and between Buddhist and Muslim villages, in recent decades it is more likely sold.

Buddhist are more generalized and opportunistic hunters and gatherers of wild fauna. Only a few animal species are prohibited to orthodox Buddhists: tiger, leopard, otter, crocodile, snake, monkey, elephant, horse and dog. (Note that the first four wild animals are top carnivores and competitors for prey with humans as well as one of the regulating factors on prey populations). Unlike Muslims, both inland and coastal Buddhists hunt lizards. Lizards are among species which were not previously hunted, but have also become prey under the influence of people who have migrated to the south from the northeast over the last 30 years. Other hunting by adult male Buddhists is often related to gender roles and socializing since wild meat is preferred when they drink alcoholic beverages with their friends. Venders of wildlife in the town markets sell squirrel, monkeys, wild pig, frog, iguana, eel, and many kinds of insects. Some restaurants specialize in wildlife meat including macaque monkey, leaf monkey (langurs), squirrel, deer, wild pig, frog, turtle, eel, iguana and wild chicken. However, there are also some religious restrictions which

Buddhists follow when it comes to hunting. One of the most important restrictions is that they suspend killing animals during the Buddhist lent which lasts about three months (early July through early October). Interestingly lent coincides with the seasons of rain, fruiting, and animal births in the forest, thus the suspension of killing may have a conservation effect.

The primary environmental contrasts are between coastal/interior zones, lowlands/highlands, natural/anthropogenic ecosystems, and sacred/secular places. Coastal villages are tuned to lunar and tidal as well as seasonal cycles. Muslims fish mainly at night using various net techniques including lights to attract fish[13,14]. The biodiversity in the coastal zone is packed into a narrow strip which includes scrub, swamp, beech, and mangrove forests, each with a distinct faunal community and potential prey. It is interesting that both Muslims and Buddhists exploit the mangrove forest, but in very different and complementary ways. Muslims focus on the bird fauna whereas Buddhists focus on crabs and other aquatic fauna in the mangrove ecosystem.

The activity pattern of the inland villages is focused on solar and seasonal cycles. Those adjacent to mountain rain forest have access to greater habitat and resource diversity for exploitation. Forest conversion for agriculture created a mosaic of plant communities in various stages of succession with associated animal communities. Swiddens on the forest hill slopes of the mountains may attract wild pig, deer, and other game which can be hunted for food as well as for pest control. Fruit orchards attract birds, bats, monkeys, and other wildlife which can be hunted for the same reasons. Wet rice paddies in the flat lowlands are an agroecosystem associated with fish as well as a rich aquatic fauna including fish, eels, shellfish, crabs, shrimps, frogs, insects, birds, and other edible organisms many of which can be foraged by children and women as well as men for household food consumption. This mosaic of agroecosystems creates a series of ecotones (transitional environments) which often have higher species diversity, the so-called edge effect, and thereby present special opportunities for foraging.

Turning to a more direct consideration of the underlying ecological and cultural processes, one of the most important and ancient is a complex set of related factors which include resource competition, cooperation, and niche differentiation as the Muslims and Buddhists interact. Ethnicity marked by religious differences promotes niche differentiation which in turn facilitates ethnic survival instead of competitive exclusion through resource competition. For instance, both Muslims and Buddhists exploit the mangrove forest, but in very different ways which do not directly compete for the same faunal resources. On the other hand, both groups compete to some degree for interior land for rubber plantations. Moreover, there may be some cultural loss and convergent adaptations of these two groups in working on the plantations.

Several other factors further complicate matters. Buddhism, and to a lesser degree Islam, are superimposed to some extent on the antecedent religion of animism.

Muslims are the majority in the lower part of the south but a minority in Thailand as a whole, and ethnicity has been politicized in various ways such as by Muslim separatists. Also the Chinese are an important but unstudied factor in the wildlife trade, mainly for traditional folk medicines.

Through forest conversion humans are also competing with wildlife species for space, habitat, and other resources. An interesting illustration is the two species of macaques (pig-tailed and crab-eating) which have been selected out of more than a dozen primate species for capture and training to harvest coconut plantations. In this manner these two monkey species are evolving into a new niche as their traditional forest habitat is converted to plantations, although the breeding population remains almost entirely in the wild rather than captivity.

However, in many ways overwhelming most ecological and cultural processes is a new phenomenon --- modernization which includes economic development, industrialization, urbanization, materialism, consumerism, Westernization, and the negative environmental and sociocultural impacts of these[4, 31]. For instance, vast areas of rich forests have been converted to monocrop plantations of rubber trees which are relatively sterile environments that produce little if anything for local consumption except modest income. Only a few species like squirrels and birds as well as occasional transient animals may be foraged in these plantations for food. Also linked to modernization is the commercialization of wildlife largely for export which is degrading traditional beliefs, values, and uses of wildlife. Although there may have been centuries or even millennia of trade in wildlife[9], modern levels are unprecedented as a result of new transportation and trade networks, and perhaps the habitat destruction and wildlife depletion which is more advanced in other countries. Cultural as well as biological degradation are products of this modernization process[30].

CONCLUSIONS

Wildlife has probably always been of some importance to humans in Thailand, although its role has varied with specifics including time and place. Different types of hunting need to be distinguished and documented: subsistence, commercial, sport, and crop pest reduction. For instance, it is likely that commercial hunting is more specialized and intensive, and thus much more damaging ecologically than subsistence hunting. The legitimate concerns for habitat and wildlife conservation should not automatically reject subsistence hunting at appropriate levels any more than tigers, bears, or other top carnivores would be rejected. Wildlife often plays an important role in many aspects of traditional village life, culture, and probably diet. (See the case of Khao Yai Park in Brockelman[5]). Wild animal and plant resources may also provide natural insurance of emergency foods during times of crop failure[7]. Beyond the study area another village which ceased most of

its hunting because of strict enforcement of government regulations has experienced serious crop damage from wild pig herds. The role of traditional cultural ecology in wildlife management and conservation urgently needs exploration and documentation to inform government policy and its implementation [11, 20, 22]

Widespread protein malnutrition among both Muslims and Buddhists calls for more basic and applied research as well as government assistance to improve resource management, nutrition, and health. This is underlined by the fact that protein malnutrition may become an increasing problems in the future. Furthermore, not only is terrestrial game increasingly depleted and domestic meat increasingly expensive, but also fisheries are in serious trouble. For example, the Gulf of Thailand has already been overfished and fishery yields are declining (during 1961-1985 from 350 to 70 kg/h of trawling effort)[24], Fisheries also suffers from the problem of pollution of fresh and marine waters, mangrove destruction, and many other problems [23, 27] Mangroves are being destroyed for fuelwood, charcoal, and aquaculture development.

On a more theoretical level, the project suggests that function and meaning can not always be readily and realistically segregated in anthropological analyses. For instance, sacred mountains may function as biodiversity reserves. Foraging is not always a discrete domain. Foraging for wildlife is of some importance to farmers and fishers, and to Muslims as well as Buddhists. Interethnic relations between Muslims and Buddhists in southern Thailand can not be reduced simply to competition or cooperation, both are involved among other factors. Ethnic survival may be facilitated through niche differentiation, cooperation, and mutualism, reducing resource competition and the possibilities of competitive exclusion and violence. Hunting provides some examples of mutualistic exchange. In the very specific terms of prey diversity, the Muslims have a much narrower niche breadth which reflects their numerous religious prohibitions.

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