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LEARNING ABOUT THE DEVELOPMENT OF ECO-TOURISM IN THE CONTEXT OF THE SMANGUS TRIBE'S TRADITIONAL ECOLOGICAL KNOWLEDGE

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Abstract: This paper discusses how traditional ecological knowledge is employed, in a community-based ecotourism development, by an indigenous tribe in Taiwan. The field survey followed the Smangus tribe from July 2005 to February 2006; the interviewers had ethno-botanical knowledge related to TEK. Survey results revealed that the Smangus tribe represents a rare example of a successful community-based operation which is owned and operated exclusively by an indigenous group. Their involvement reflects the new wave of awareness of autonomy for indigenous people in Taiwan. They provide a blueprint for TEK to be successfully incorporated into current ecotourism management and applications.

Key words: Traditional Ecological Knowledge, Ethno-botany, Indigenous Ecotourism

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INTRODUCTION

Within the past decade, indigenous people's traditional ecological knowledge (hereafter referred to as TEK) has become a major focus (Toledo, 2002; Turner, 2001). TEK offers a means to improve natural resource management and environmental impact assessments (Huntington, 2000; La Rochelle and Berkes, 2003; Phuthego and Chanda, 2004). On the international front, the Brundtland Report, Our Common Future, notes, "*…the larger society…could learn a great deal from their [indigenous peoples'] traditional skills in sustainable management of very complex ecological systems*" (World Commission on Environment and Development, 1987); these shifts have been influencing academic thought. Johnston indicated that "*many institutional barriers exist for indigenous communities innovating tourism products which incorporate and/or support the continued application of indigenous knowledge and technologies*" (Johnston 2000, pp. 95). For tourism to be sustainable, finding ways to incorporate TEK into it is a critical issue.

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Currently, a vast number of aboriginal people no longer rely on TEK because their education has been outside of their own culture and traditions (Augustine, 1997). Modernization is the main culprit for the non-utilization of TEK (Phuthego and Chanda, 2004). Like many aboriginal tribes in Taiwan, the Smangus are characterized by high unemployment, with few jobs in the community and a lack of economic diversification. Many villagers moved to urban areas for better job opportunities. This lifestyle change significantly eroded their culture and affected their ability to develop tribal integrity and sustainable economic growth. In order to remedy the crisis, TEK creates an important pathway leading to the economic development of unique tourism opportunities. By linking these values to the development of ecotourism, appropriate decisions can be made that will employ aboriginal people, support the continued use and development of their TEK and result in ecologically sustainable economic development (Butler and Menzies, 2007). This paper's ethnobotanical data show the results of the collaboration between Providence University and the Smangus community that began in July 2005 and continued until February 2006. The purpose of this research was twofold: first, to explore the Smangus ethnobotanical knowledge and, secondly, to discuss the application of TEK in the development of ecotourism from the Smangus' perspective. This study will provide recommendations on how to improve the chances for successful Smangus' ecotourism management.

LITERATURE REVIEW

1. Traditional ecological knowledge

Traditional ecological knowledge represents experiences of direct human contact with the environment acquired over thousands of years (Berkes, 1993; Dei, 2002). This is an instinctive adaptation taking place within a few short years and accumulated in regard to specific lands, and then handed down over many generations (Wavey, 1993). Indigenous children and youth actively participated alongside their parents and elders in harvesting and processing these resources. Such information reflects the common sense ideas and cultural resourcefulness of the local peoples' knowledge concerning the realities of everyday living (Dei, 2002). It is often referred to as "*the knowledge of the natural milieu*". Berkes (1999) offers a clear conceptualization of TEK as a cumulative body of knowledge, practice and belief, evolving through adaptive processes and handed down through the generations by cultural transmission; it is about the relationship of living beings (including humans) with one another and their environment. According to Dei (2002), TEK is the ideological beliefs, values and practices that evaluate the history and context of communities which may be shared by other indigenous peoples. It is the privilege of certain core social values for "*reward*" (e.g., responsibilities over rights; community over individual; peaceful co-existence with nature over control and domination of nature) that sets the different knowledge systems apart. Turner et al. (2000) referred to TEK as the knowledge of ecological principles, and provided a basic framework for this study. Its general characteristics are categorized within three broad themes: practice and strategies for resource use and sustainability; philosophy or worldview; and communication and exchange of knowledge and information. These themes are complicated and not easily subjected to fragmentation. The different elements of traditional knowledge are interrelated regardless of where they appear in the framework. Indigenous peoples have resided in a particular locale for a long time, and depended on the resources of their homeland. The scope of TEK is wide and includes detailed knowledge of flora and fauna, natural occurrences and the use of traditional technologies.

2. Indigenous ecotourism

Ecotourism has been growing in many fragile ecosystems, and has been increasingly linked to the unique natural environment and biodiversity found in these

areas. Maintaining an unspoiled and attractive destination contributes greatly to visitor satisfaction, conserves the area's biodiversity and contributes to the wellbeing of the local populace (Conservation-International, 2007). Indigenous tourism evolves when the indigenous people operate tours and cultural centers, provide visitor facilities and control tourist access to their cultural sites, natural resources and tribal lands (Zeppel, 2006). However, early critics of tourism development pointed out that the industry was dominated by outside interests who retained most of the benefits and left host destinations to bear the costs (Gordon, 1990; Maoz, 2006). Over the past two decades, ecotourism activities (Weaver, 2008) and community-based approaches (Scheyvens, 1999) have gained in popularity. These approaches attempt to mitigate the negative impacts of tourism and accentuate the positive, with a goal of ensuring the net positive impact, along with a fair distribution of said impacts (Butler and Hinch, 2007).

The term Indigenous Ecotourism has emerged since the mid-1990s to describe any communal ecotourism projects developed on indigenous lands and territories in Latin America, Australia and Canada (Zeppel, 2006). Such an approach to ecotourism recognizes the need to promote both the quality of people's lives and the conservation of resources (Scheyvens, 1999). Indigenous ecotourism involves tourism that is based on indigenous knowledge systems and values, by promoting the aboriginal customary practices and livelihoods (Johnston, 2000 pp. 91). In other words, it cares for the environment and involves indigenous people in the decision-making and management. Much of this development focuses on community-based ecotourism that benefits local people (Notzke, 2006). As indigenous people gradually represent themselves and are re-positioned, mostly by environmental activists, as the rightful interpreters of ecosystems, the role of ecological protector is internalized by the many indigenous communities in Taiwan that plan to develop ecotourism.

RESEARCH SITE

The tribe involved in this study belongs to the Austronesian people, known linguistically and ethnically as Atayal (Chen and Ta, 1994), a single tribe of Taiwanese aborigines. In the year 2010, the Atayal tribe numbered 80,061. This was approximately 16% of Taiwan's total indigenous population, making them the third-largest tribal group (Taiwan Interior Ministry, 2010). This tribe is located deep in the mountains of the Jiashih township in Hsinchu county and situated between 24''33'–36' S and 121''18'– 21' E. This area falls within the reservoir of the upper Tahan River, next to the Takechin River. It is near the Yuanyang lake nature reserve, nestled in the mountains of Hsuehpai and Hsichiussu in the northeast and Huli to the north, but south of Fanshechi and west of Hsinachi, with an average elevation between 2000 to 3000 m. Rainfall occurs in a bimodal pattern, peaking around 2652.7 mm/month in February–April, and again in July–October (figure 1).

Until 1995, when the vehicle-access road to the outside world was built, the Smangus people subsisted by fishing, hunting, gathering, and growing crops on burned-off mountain fields. They were once dubbed "*the dark settlements*" because of their underdevelopment and geographical isolation. However since 1991, a nearby grove of up to 1,000 year old ancient Formosan red cypress tress (Chamaecyparis formosensis Matsum), known as "*giant trees*", has drawn increasing numbers of eco-tourists. In order to improve their livelihood, the Smangus people switched their agricultural lifestyle to ecotourism, which involved lodging and a restaurant for ecotourists. Moreover, they developed a co-operative system which eventually turned into revenue sharing for the whole community, reminiscent of the Tayal tribe's traditional mutual system, called "*Tnunan*" in their language. Nowadays, this co-operative system includes land co-operatives, job sharing, co-operative fund management, and work duties as well as equal sharing of profits.

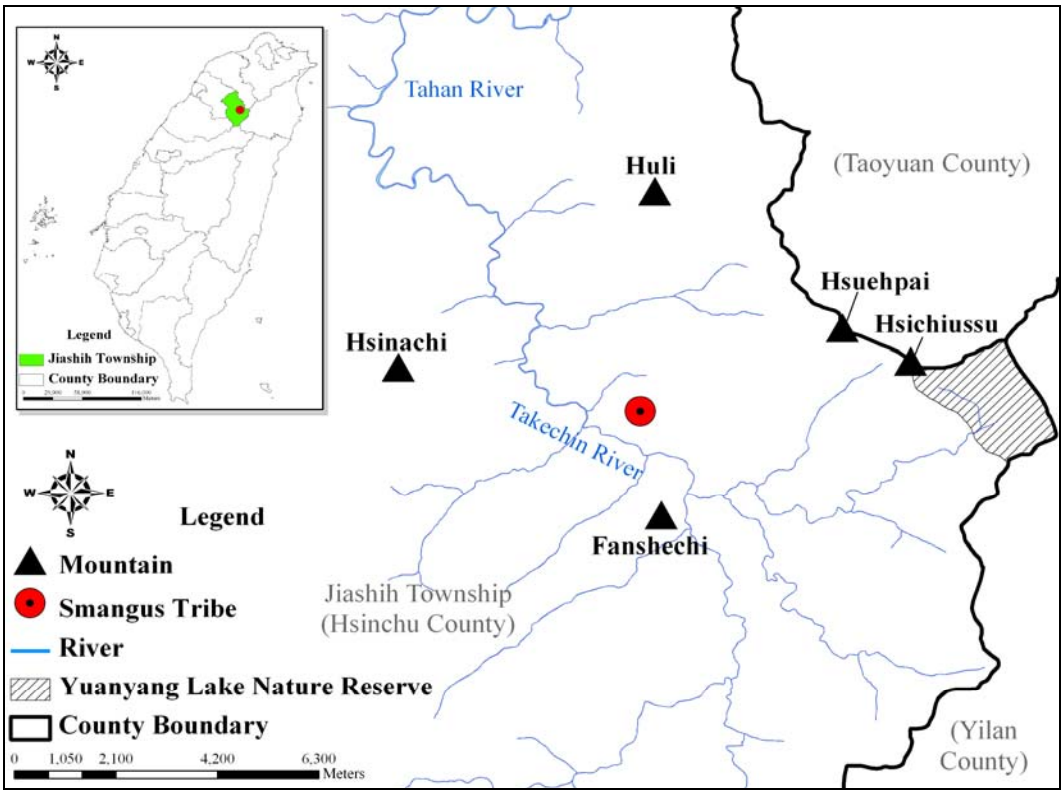

Figure 1. Map of Smangus Tribe location

The Smangus tribe represents an exception in community-based ecotourism development because of their strong sovereignty, appropriate institutions and self-determination. Since the rise of tourism, this tribe has carefully managed its natural resources, forests and wildlife for sustainable use. For example, since 2003 they have maintained a non-hunting program in order to conserve the wildlife and attract ecotourists. The tribe has the power to make decisions and the authority to undertake any projects deemed necessary.

RESEARCH METHODS

Many ethnobotanical studies use questionnaires to interview segments of the population about their ethnobotanical knowledge. Frequently interviewees are asked to name plants they know and to reveal the use of the respective species. Sometimes tribal members are accompanied to sites to collect plant material. This methodology easily misses plants found at further distances from the tribe.

To avoid such information shortfall, and to obtain a more detailed inventory of plant use, this study conducted a field inventory of ethnobotanical knowledge with the local people. Furthermore, three forest trails that surround the Smangus village and are close to daily life (namely Koraw, Ryaq and Slibu) were chosen for the site of the field survey. The line transects the sampling area and visually illustrates how species change along it; key specimens were collected. The attributes from each distinct species were photographed, with as many samples as possible being collected. The main collection of ethnobotanical data was taken from July 2005 to February 2006. This data was collected either directly from field surveys on-site through individual interviews, or off-site by way of focus group interviews with local management committee members. All of the photographs or fresh specimens were

provided during each interview. A total of 6 families with elders from 28 families chosen from 166 people in the Smangus population made up the study group without distinction of gender or age group. Oral consent was obtained from each respondent.

During the interviews, a standardized set of questions was used to inquire about each plant the authors had collected; data was gathered about the use of said plants, information that the community no longer actively uses. The authors believe that it was important to gather such information about these "*unknown*" or considered "*useless*" species in order to document knowledge that would have been lost, and to preserve the knowledge of traditional names. All of the interviews were carried out with at least one of the local people being used as an interpreter or assistant.

Based on the above database, the authors chose to use the theoretical framework of Turner et al's (2000) regarding traditional ecological knowledge to analyze the 70 species of useful plants identified in this study. It categorizes traditional ecological knowledge into three broad themes: philosophy or worldview, practices and strategies for sustainable living, and communication and exchange of knowledge. This framework may be applicable to the Smangus village. Local ethnobotanical knowledge derived from past generations through experimentation, observation and practice. Based on empirical observations, ecological practices and exchange with others, all such knowledge has an obvious survival value. Within their belief system, the Smangus community has a sense of spiritual and practical respect for their environmental components. The philosophy or worldview shapes environmental perception and gives meaning to environmental observations (Berkes, 1999, pp. 14). It has been an integral part of the Smangus' traditional culture. Therefore, the focus was not so much on which resource was, or is, used, as on the concept surrounding their use, the local knowledge of plants.

RESULTS

1. Wild plants database and analysis

The researchers and Smangus' elders collected a total of 240 wild plant specimens (table 1). These included 80 families and 240 species.

Table 1. Wild plants collected from the three forest trails

Type of plants	Number of families	Number of species
Ferns	11	36
Gymnosperms	3	8
Monocotyledons	61	185
Dicotyledones	5	15
Total	80	244

Table 2. The Smangus tribe's utilization of plants

Type of plants	Utilization of plants							
	Food		Household utensils	Building materials	Hunting	Agricultural materials	Medicines	Toys
	H	A						
Ferns	3	3	0	0	0	0	2	1
Gymnosperms	1	0	0	5	0	0	1	0
Monocotyledones	0	0	1	0	0	0	0	0
Dicotyledones	13	20	16	8	7	7	3	2
Total	16	23	16	13	6	7	6	3

Note: H= food for Humans; A= food for Animals

The local names and usage were documented for 70 species. The plants were divided into seven main categories based on their level of importance in the Smangus tribe's traditional usage and lifestyles. They also refer to Chang (2003) and Huang's

(2003) categorizations which include: food, hunting, household utensils, construction materials, agricultural materials, medicines and toys (table 2).

As for the category of use, plants were used predominantly for food but also for household utensils, building materials, hunting, agricultural materials, medicines and toys, albeit in varying levels of importance. Those plant species identified as useful do not represent the total plant population as recognized by the Smangus village; instead they represent the study's initial findings. It was estimated that there are around 400+ plant types recognized by the tribe, but not all have names associated with them.

2. Practices and strategies for sustainable living

The practices of indigenous peoples to improve and retain their living resources are derived from generations of observation and experimentation, leading to an understanding of complicated ecological principles (Berkes et al., 2000; Fazey et al., 2006). The traditional management of plants in the Smangus region is a good example of how the many facets of TEK are interwoven to provide ecological sustainability. Teqelung (Pinus taiwanensis Hayata) is an original Formosan plant found locally (Hwang, 2000). It is a large tree, up to 35 m in height and 80 cm in diameter, with a straight trunk, horizontal branches and bark fissured into small scales. Its habitat ranges in elevations between 750 to 3500 m in central Taiwan.

The bark contains a lot of resin. Our ancestors used the Teqelung's resin for lighting just as the Han people use kerosene for lighting. If it is about a person's height, the quality of the resin is good. If you take too much of the cortex, the Teqelung will easily die. Thus, we only carve a little bit of its cortex.

—Smangus villager—

According to the Smangus villagers, after harvesting one Tequlung they move on to another, letting the harvested tree continuously produce resin. This is similar to the Plateau people of British Columbia (Turner et al., 2000). They gather the bulbs of the yellow avalanche lily (Erythronium grandiflorum Liliaceae), then leave the harvested area alone to recover for three or four years, moving on to another location in the interim.

However, the Smangus did not discuss selective harvesting in terms of specific rules. When being asked about how and what can be harvested, most participants responded that it depended on which was the best part. In the case of perennials, for example the Teqelung, it was explained that the best part is close to the root. That part was the most desirable portion of the plant because of its rich oil, harvesters tended to collect only that section (about man height) for lamps. In the case of the Lihang (Mallotus japonicus (Thunb.) Muell. -Arg), it was an important plant for the hunting season. When the leaves of the Lihang grow as big as the palm of a hand, it means the hunting and fishing season is coming. Harvesters tend to prune or cut away part of the plant. One example is Pot (Chamaecyparis obtusa Sieb and Zucc), perennials and evergreen trees, whose bark is collected and used in the roofs of hunting architecture. As long as plants maintain meristematic tissues and have the capacity to absorb sufficient nutrients and water, they can reproduce and maintain populations, even allowing for certain harvesting levels (Turner, 2001).

3. Communication and exchange of knowledge

The modes of communicating and exchanging traditional ecological knowledge in aboriginal societies are inherently different from the ways mainstream society passes on knowledge and information (Berkes et al., 2000; Turner et al., 2000). Plant knowledge in the Smangus village has developed through generations of sharing traditions and stories. This is also manifested by the passing down of information from the elders to the young,

which is the third theme in the Turner et al. (2000) framework. This knowledge begins to accumulate from a young age for the Smangus people and increases over time. Most of the villagers explained that they had acquired their plant knowledge through hunting and gathering activities with village elders, parents or grandparents. Children learned how and where to collect plants while at their sides. Therefore knowledge was gained while exploring the landscape and exchanging ecological information throughout their lifetime. However, there have been changes in the transfer of this traditional ecological knowledge. Tourism development in the village has influenced the Smangus' customs, resulting in the loss of this knowledge. There are two factors at play here. First, most of plants are rarely harvested anymore and elders are no longer teaching the children about them, leading to the younger villagers' lack of knowledge. Secondly, the fact that the children are being educated far away from the village is a critical factor in this loss of knowledge. As people are no longer consuming plants, they are gradually losing their knowledge about them.

In addition to these losses, researchers also found there was a gender imbalance concerning the TEK. The plant gathering location was the best place to interview individuals. However, as Iyam (1996) points out, in most indigenous societies the cultural norms grant men greater public access and recognition than women. Thus, any prominent individuals interviewed are often predominantly, if not exclusively, male (Phillips et al., 1994). In the Smangus' Traditional Ecological Knowledge of hunting plants, it also seems to be associated more with men than women, a fact which was substantiated by the respondents who were mainly men. During the interviews, researchers got a lot of responses such as "*I don't know. I didn't know it. I have seen it before... I don't know the function (of plants)... you have to ask those men. This is because woman are forbidden to go hunting with men*" (from the female informants). The women's knowledge appeared scanty; more often than not, the men reminded them of facts about hunting plants. In the words of Brown and Switzer (1991, 5), "*women's use of the environment proves to be sufficiently different from those of men to represent a distinct habitat, in the ecological sense*" (Pfeiffer and Butz, 2005, pp. 242).

4. Worldview from the inside of plants

4.1. Human/nature relationships

4.1.1 A ceremonial prayer for tourists

The Smangus people have a particular affinity with trees and plants, believing in the interconnectedness and integration of all physical and spiritual life. This tradition of human/nature relationship and the strong sense of faith and reverence for the forest illustrate not just the significance of ethno-sociological concepts but, more importantly, the scope of their practical application (Negi, 2010). An example of how elements of the natural world are linked to humans can be seen in a Smangus ceremonial prayer. The chief holds a brief ceremony to pray for everyone's protection before any important meetings or activities. Another example is when a local guide conducts a brief ceremony before taking tourists into traditional territory or along the eco-tourism pedestrian and hunting paths.

Let's pray together (They fill a slice of the bamboo[1] stem with salt). We use salt for the ceremony (Then the chief prays to God in the Tayal language. When the praying is finished, the chief passes the bamboo slice to everybody. Every participant uses his/her fingers to touch the salt a little bit). I hope everybody will be safe.

—The chief of Smangus—

[1] In the ceremony, they frequently use bamboo because it is very important to the people. There are three types of bamboo growing around the Smangus village, both wild and cultivated. It is universally used in the village, such as for construction materials, household utensils, hunting and food.

4.1.2 Spiritual meanings of names

4.1.2.1 Mental healing

Over the millennia the local people have learned how to identify plants for various purposes as they rely on the vegetation for food and medicine and for all other necessities of life. The Smangus people exchange their personal name with a specific tree in order to prevent illness. For example, Kbakeh (Rhus succedanea L) is a local plant known to cause skin allergies. As a preventative measure, if a Smangus native accidentally touches the Kbakeh plant, they stand in front of it and mentally exchange names in order to "release" the plant toxins that cause an allergic reaction. This kind of name-exchange ceremony is done on the ground and is a superficial performance. These indigenous therapeutic measures are also found in Oaxaca, Mexico. Von Der Pahlen and Grinspoon (2002) pointed out four kinds of important plants that are used by indigenous people for medicinal purposes.

4.1.2.2 Naming of children

Names are created and assigned on the basis of obvious and distinctive, though often temporary, morphological features (Dougherty, 1979). The Smangus people will name their children based on positive aspects associated with plant names (table 3). For example, Pusing (Pseudotsuga wilsoniana Hayata) is a name given to a person who is tall, strong and vigorous. This name also implies that a person has the attribute of always behaving according to moral principles that most people believe in, so that person will be respected and trusted. Qesu (Lagerstroemia subcostata Koehne) is a name given to a person who is beautiful and good at dealing with people in such a sensitive way that they are not upset or offended. Riwang (Beilschmiedia erythrophloia Hayata) is a name given to a person who expresses feelings of sadness, empathy, love, etc. Qprung mhway (Chamaecyparis formosensis Matsum) means "mother" and is "*large*" enough to contain and forgive everything. Yaba (Tsuga chinensis (Franch.) Pritz. ex Diels var. formosana (Hayata) Li & Keng) means "*father*". The Yaba tree is not very tall and is easy to climb.

Table 3. Relationship between local plant names and personality characteristics

Local name	Scientific name	Characteristics
Pusing	Pseudotsuga wilsoniana Hayata	integrity, stature, strength, vigor
Qesu	Lagerstroemia subcostata Koehne	beauty, stature, diplomacy
Riwang	Beilschmiedia erythrophloia Hayata	empathy
Ibox	Alnus formosana (Burkill ex Forbes & Hemsl.) Makino	perseverance
(Yaya) Qprung mhway	Chamaecyparis formosensis Matsum	mother, open-minded
Yaba	Tsuga chinensis (Franch.) Pritz. ex Diels var. formosana (Hayata) Li & Keng	father, friendly, amiable

4.2 Plant names related to environmental aspects

As western-trained scientists learn about plant/animal interactions that are recognized and named by indigenous peoples, they can test potential hypotheses to clarify the relative degree of connectivity or exclusivity in such relationships (Nabhan, 2000). In Smangus, the names of many plants are related to elements contained in, or represented by, the natural environment. Plant names often describe physical traits of the plant or refer to other types of animals or vegetation associated with it. The meanings of certain tree names are drawn from an observed relationship between the natural environment and humans, often from a very insightful understanding of natural processes. The Smangus people maintain a traditional relationship with their natural resources, including plants, as they view themselves as members of an integrated natural community.

We have our own ways of naming places and plants. We call this place "Raga" (Liquidambar formosana), because there are many Raga there. The Tayux is a kind of landform that has a gradually sloping crest line. Therefore, we call this place "Tayux raga".

—Smangus villager—

For example, Yaba qprung mhway means a tree that is huge (Chamaecyparis formosensis Matsum) but it also means "*plenty*" since this kind of tree always grows in clusters. Pqowun is the name of a tree (Pinus morrisonicola Hayata) but is also the name of a flying squirrel which eats only Pqowun nuts. Such perceived differences in flora and its connection with a single ecologically variable species is a critical reason that ecological interactions should not simply be looked at within one locality alone or through the lens of just one cultural community (Nabhan, 2000). As Nabhan (2000) says: "*Ethnobiologists should not confine themselves to taxonomic inventories, but should devote more time to eliciting and testing ecological knowledge from folk practitioners*".

DISCUSSION

There is an important opportunity for the people of the Smangus to link tourism development with their TEK. As we have documented above, this aspect of TEK creates an important pathway towards the economic development of unique ecotourism opportunities. How might the TEK be best incorporated into indigenous ecotourism in order to prevent the loss of knowledge that has been passed down from one generation to the next? Furthermore, how might they benefit from the new applications? The Smangus tribe represents an exception to TEK applications in ecotourism activities. For the village, tourism is not something coming from the outside. It is emerging from the groups themselves as a means to survive, as Tuulentie (2006) has shown. It must be viewed as the first step in an ongoing process of involving aboriginal people and incorporating their inherent knowledge into ecotourism assessment and management.

The Smangus' TEK has three interrelated levels and can be drawn by different structural components. Figure 2 shows the three levels of analysis as concentric ellipses. First, based on the Smangus elders, there is their plant TEK which is seldom used in contemporary life. This level of knowledge was the prototype of their TEK and is embedded with material and didactic characteristics. At the second level of analysis, there is a strategy to re-apply and advance TEK, including teaching materials for children and tourists. The third level of analysis is the worldview, which shapes the principle of ecotourism development and is no doubt renewing the application of TEK as well. Moreover, a higher level of TEK means that it becomes more spiritual and communication-based.

Both the Smangus people and scholars (Berkes, 1999; Turner et al., 2000) acknowledge that TEK is contextual, dynamic and continually being revised. "*We did not have any tradition in woodcraft but it doesn't mean that we cannot have it in the future*", a villager involved in the program planning said. In the words of Stevenson (1996, pp. 280), "*aboriginal people possess knowledge and experiences not grounded in traditional lifestyles, spirituality, philosophy, social relations and cultural values*". Furthermore, rather than being forced upon them, the ecotourism development is occurring under the direction of the Smangus tribe. Clear goals were articulated in the ecotourism strategy, including strengthening tribal sovereignty, thriving sustainable ecotourism and transmission of knowledge among both the insiders and outsiders (tourists).

1. The principle of TEK application

This principle relates to the Smangus' beliefs, which control their lives and the development of ecotourism. They have certain obligations to fulfill toward the Gaga (a respectful relationship within the ecological system). Their unique philosophy is illustrated in the following sections.

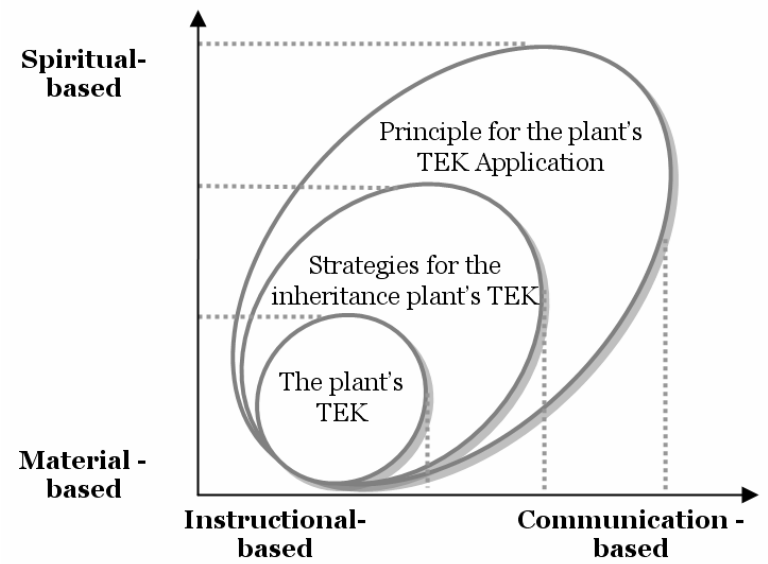

Figure 2. Structural components of the Smangus' plant TEK with its three levels of incorporation into indigenous ecotourism management

1.1. The significance of community consensus

For the Smangus tribe, control was a major component of the ecotourism development project. They proposed how and what was to be developed since funding for the project came primarily from them. Thus, as the project moved forward and the tribe became more excited and involved; its success depended on the participants' enthusiasm. So while control over the pace and scale of what was to be developed rested with the Smangus tribe, they also have the right to choose whether or not these plans could be implemented.

As the ecotourism evolved, there was considerable discussion over who would benefit from it and who would be involved. To avoid conflict and competition, the Smangus developed a collective strategy centered on their traditional communal spirit. With strong leadership, it became apparent that the ecotourism initiative was paying more than economic dividends. Control over the ecotourism development is the focus of building autonomy (Hitchcock, 1993; Colton and Harris, 2007).

1.2. Protection and sustainability

Anderson (1991, pp. 220) discusses how "*geography matters*" when developing tourism activities because of each particular place in the world "*having its own unique mix of political, social, cultural, environmental and economic contexts into which must be woven a comprehensive tourism development strategy*". The Smangus' vision for sustainable ecotourism includes a need for more tourists and additional cultural resources. A clear focus on the involvement of Smangus youth was emphasized to preserve TEK and to instill a sense of pride in the younger generation. Consequently, the elders conduct traditional investigations of their territory and share their knowledge with the youth. Furthermore, the integration of TEK into school curricula and tourism programming is also essential for growth.

In light of environmental pressures, the Smangus believe that there may be negative impacts on their tourism industry and its sustainability. A strong connection to the environment and the need to protect its health in order to have a robust ecotourism was recognized by one interviewee who stated:

We need to protect our landscape, buildings and environment, so the tourists will love getting close to aboriginal natural land. They can enjoy the beauty of the original landscape; this will attract more tourists to come and visit.

—Smangus villager—

1.3. Keeping local knowledge alive

Johnston (2000) indicated that the indigenous people's right to self-determination is central to traditional ecosystem management, which can contribute to ecotourism. The Smangus people see aboriginal ecotourism as a means of providing several benefits, most importantly its ability to preserve and protect knowledge. When developing ecotourism activities, they are essentially gathering ethnobotanical knowledge and, in some cases, reassembling valuable parts of plant wisdom that may have been lost to them. Ecotourism is a means of rebuilding, relearning and reconnecting with traditional ecological knowledge.

From my perspective, the cultural knowledge needs to be practiced at ground level and in daily life. It can't be seen as goods to be put on display. If you do so, the culture merely becomes a memory and is going to disappear. In order to prevent this crisis, our idea is to create a living museum. We must keep the culture alive. We don't want our culture to become a memory.

—Smangus villager—

In addition, interviewees saw preserving their ethnobotanical knowledge and sharing it with tourists as a way of protecting the TEK, an important feature of Smangus ecotourism. Likewise, Colton and Harris (2007) pointed out that tourism development has the potential to preserve, revitalize or even allow some aboriginal people to relearn aspects of their culture. Moreover, involving youth in the tourism development process, where they are exposed to the elders' leadership, is stressed by both researchers (Colton ans Harris, 2007) and the Smangus people.

Taking ownership over dissemination of TEK and being able to tell their own story instead of having someone else tell it on their behalf was also deemed critical by the Smangus. In this regard, the Smangus people developed a collective strategy centered on the revival of traditional religious practices. Based on their communal spirit, *Gaga*, they developed a co-operative model called Tnunan. This system merges the traditional Gaga spirit with modern corporate concepts. All of the tourism facilities are collectively owned by the participants who share in the running of the businesses according to the steering committee's directives. Moreover, Smangus puts the sharing spirit within the interpretation and the actual printed programs that guide the tourists. One interviewee in particular stressed the importance of the sharing spirit, saying:

The sharing spirit is very important to our Atyal group. We want to share our culture and knowledge with the tourists.

—Smangus villager—

2. Strategies for the inheritance of plant TEK

2.1. Imparting knowledge to children

Instead of spending their time in apprenticeship with their elders during hunting, gathering and foraging, both boys and girls are now focusing their time in the schoolroom, learning simple arithmetic, how to read and speak Chinese, and even learning English. This phenomenon reflects the fact that the men and women are no longer looking to the forest to provide them with goods and tools with which to improve their day-to-day lives. Instead, they are focused on learning about hospitality and tourism management, which leads to a decreased knowledge and interest in forest plants. Consequently, there is the

potential to improve the ability of communities and societies to deal with shock and stresses, and better withstand change (Berkes and Turner, 2006). Menzies (2006, pp. 88) noted that TEK can adapt to new environmental, political or economic circumstances and is therefore a tangible practice directly rooted in everyday livelihood activities. Thus the researchers' role is obviously to document knowledge before it is lost.

However, an explicit interest by outside agencies in the preservation and integration of the TEK into the lifestyle being chosen by the Smangus could be an important step in the integration process. Incorporating TEK into school curricula in the form of weaving courses (figures 3 and 4), bilingual storybooks, plant and animal guides, and encouraging the development of cultural centers within the community are several possible strategies that could and should be employed. Such innovative strategies for preserving the TEK are urgently needed because the Smangus people are no longer hidden repositories of traditional knowledge. There is even less room than was previously imagined for complacency in the race to document this knowledge for future generations.

Figure 3. Weaving course with children

Figure 4. Weaving course with adolescents

2.2. Ecotourism as a measure for TEK practice

The Smangus people retain a record of what the resources and land have provided for generations. They are the principle managers of resources who also bear the burden of any negative impacts. Consequently, they must develop unique strategies for adjusting to and accommodating said impacts to continue their direct use of the land and its resources. The tribe intends to ensure an environmental quality such that their traditional pursuits are maintained. Since the vehicle-access road to the outside world was built and the Formosan red cypress trees, known as "*giant trees*", were discovered, indigenous tourism has blossomed and drawn increasing numbers of eco-tourists to the tribe. The tribal people are well aware of the dangers of the erosion of their traditional ecological knowledge. The impact of tourism development and having the children educated far from tribal leaders reduces the TEK's use. In order to preserve their ancient knowledge, they hold activities such as investigating traditional territory and ecotourism programs to educate the younger generations, while still following proper practices and participating alongside tribal ecotourism interpreters.

We went into the forest with tribal elders. They teach me how to make a trap.
—Smangus teenager —

TEK is acknowledged as having a fundamental importance in the management of local resources and in the husbanding of worldwide biodiversity (Turner et al., 2000; Huntington, 2000). Much has been written about the potential benefits of documenting

and applying TEK. Traditional resource management structures can continue to provide effective stewardship for lands and ecosystems which are not yet significantly disrupted by development and all of its related ecological pressures (Wavey, 1993).

Nicholson (1997) discussed different conceptualizations of cultural tourism as they apply to tourism based on the culture of indigenous peoples (Ryan, 2002, pp. 954). Indigenous tourism may be defined as the movement of people desiring cultural stimuli such as study tours, performing arts, cultural tours, travel to festivals, visits to sites and monuments, and folklore that are all associated with indigenous people. Besides, the application of TEK can be used for ecotourism programming and interpretation, in order to enhance the context of eco-tourism or nature-based aboriginal tourism (figures 5 and 6). This combination of interests and activities is ideally suited to the incorporation of TEK into tourism planning and highlighting it as part of the tourist experience (Butler and Menzies, 2007).

Figure 5. Historical interpretation program

Figure 6. Cultural guiding program

CONCLUSION

For the village, tourism is not something coming from the outside. It is emerging from the groups themselves as a means to survive, as discussed by Tuulentie (2006). It should be viewed as the first step in the ongoing process of involving aboriginal people and incorporating their knowledge into ecotourism assessment and management. The Smangus Village acknowledges that TEK is contextual, dynamic and continually being revised. In the words of Stevenson (1996, pp. 280), "*aboriginal people possess knowledge and experiences not grounded in traditional lifestyles, spirituality, philosophy, social relations, and cultural values.*" It also allows the Smangus people to engage in ecotourism development. This is particularly important in the context of tourism planning and development with or by indigenous people (Butler and Menzies, 2007). Recalling Weaver's (2008) assertion that aboriginal ecotourism is frequently used to further political objectives and assert territorial rights, it can be seen that the Smangus do more than this. It can be considered a form of geopolitical resistance, the implicit assertion of territorial rights and their role as ecological stewards. As such, the Smangus may be a model, and perhaps an inspiration, for other colonized peoples seeking to negotiate an ecologically and culturally sustainable future in an era of increasingly aggressive globalization. The Smangus' case suggests a number of perspectives. It is rare to find an ecotourism organization that is community based which is not managed or co-managed by outsiders in Taiwan. As Scheyvens (1999) emphasized, it is important for local communities to have control and share in the benefits of ecotourism initiatives. Ecotourism should promote both conservation and development at the local level; the Smangus are one of those rare examples since it was initiated and managed exclusively by

them. It involves tourism revenue sharing, in the form of scholarships, operational grants for the tribe, and local employment, all of which are designed in accordance with traditional Smangus communalism. Also, it has been suggested that TEK systems and institutions can serve as entry points into sustainable natural resource utilization and management. This could be achieved through the exploration of the local people's cultural practices and integrating useful aspects into modern natural resource management.

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