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## Indigenous Knowledge and Health Sovereignty

*Contributed by Karim-Aly Kassam*

*Indigenous peoples have the right to their traditional medicines and to maintain their health practices, including the conservation of their vital medicinal plants, animals and minerals. Indigenous individuals also have the right to access, without any discrimination, to all social and health services.*

-UNDRIP, 2007, Article 24, Section 1

Sovereignty is about individuals and communities exercising agency. The notion of sovereignty incorporates dimensions of ecological possibility, cultural appropriateness, knowledge capacity, and social governance structures of communities or regions with respect to meeting their food, health and energy needs.

The notions of health security and health sovereignty are analogous to the discussion of food security and food sovereignty. Food sovereignty encompasses the right and ability of individuals and groups to choose their own food based on the sociocultural and ecological contexts they inhabit (Mousseau 2005; Kassam 2010; Nabhan 2009; Windfuhr and Jonsén 2005).

Similarly, the idea of health sovereignty includes the ability to choose medicines that are socioculturally and ecologically appropriate; thereby, providing practical, reliable and contextually relevant health care options (Kassam et al. 2010). Furthermore, food and health sovereignty are interrelated; although not all medicine is food, food is often medicine.

Denial of self-determination or agency over food and medicine is a repudiation of fundamental rights of autonomy as guaranteed by Article 24, Section 1 of the UN Declaration on the Rights of Indigenous Peoples (quoted above). Throughout the world, health sovereignty is compromised by many forces, including colonialism, social conflict, natural disasters and global climate change. At the same time, health sovereignty provides individuals and communities agency to respond to these same threats, giving them health care options when they need them most. Our research among communities under social and ecological stress in the Pamir Mountains of Afghanistan and Tajikistan provided the context for a critical exploration and articulation of health sovereignty (see Kassam et al. 2010). This spawned further research in indigenous communities in North America as well as other mountain regions of the world.

Health sovereignty relies on knowledge. Ecological knowledge is derived from the web of interactions between humans, plants, animals, natural forces and land forms. For example, presence of knowledge about medicinal plants is directly connected to their use. In addition, researchers can contribute to health sovereignty by building on local and indigenous knowledge and generating new insights that are practicable for novel realities.

In this newsletter, our research group at Cornell University provides contemporary and compelling examples of collaborative research with indigenous communities that contribute to health sovereignty (see Figure 1). Rajeev Goyal describes the role of schools in conserving medicinal plants as well as indigenous knowledge in Eastern Nepal to safeguard health sovereignty. Jeffrey Wall describes how

communities in the Caucasus of Azerbaijan seek medicine for the chestnut blight to cure trees that are central to their livelihood and food systems. Building on this, Morgan Ruelle describes how plant diversity within an agricultural landscape contributes to health sovereignty in the Semien Mountains of Ethiopia. Michelle Baumflek draws from her research among the Maliseet of northern Maine to demonstrate how habitat modeling can contribute to health sovereignty. Each example shows a distinct application of indigenous agency to illustrate sovereignty. Four main elements are foundational to sovereignty: the ecological system, indigenous knowledge working in tandem with institutionalized scientific understanding, the dynamism of native cultural fabric, and social governance structures. These elements, while distinct, are not exclusive but in mutual engagement, thus reinforcing each other.

## **Editorial: Ethnomedicine in the Contemporary World**

*Contributed by [Alain Cuerrier](#) and [Sarah-Lan Mathez-Stiefel](#)*

This issue of the ISE Newsletter focuses on ethnomedicine, sometimes used as a synonym for traditional or indigenous medicine. Ethnomedicine usually refers to the health beliefs, knowledge and practices derived from indigenous cultures, as opposed to the conceptual and practical frameworks of biomedicine or modern medicine, a misnomer since ethnomedicine is still a modern tool in many countries. However, contemporary medical anthropology goes beyond this distinction and considers biomedicine as a form of ethnomedicine, i.e., a medical system among others. The way disease and well-being are perceived and experienced, people's health-seeking behavior, and their knowledge about natural remedies such as plants and animals are greatly influenced by their cultural and natural context, which make these subjects a field of special interest for ethnobiologists.

The relevance of ethnomedicine has never been as great as nowadays and it goes much beyond the exotic curiosity of the early anthropological studies of the 1920s on beliefs about sorcery and witchcraft. According to the World Health Organization (WHO, 2008), as much as 80% of the population of some developing countries relies on traditional medicine and medicinal plants to respond to their health care needs. The widespread use of indigenous medical systems cannot be explained only because formal health care is not affordable or accessible, as one might think. Instead, these practices are used mostly because they are socially and culturally adapted and correspond to local views on disease and well-being.

Most indigenous people now live in pluralistic medical settings, where different medical traditions coexist and are adopted. This is also true in metropolises of the world, where ethnic groups continue to reproduce their medical knowledge and practices. There is also an increasing recognition of the limitations of biomedicine to provide global well-being and respond to the multiple physical and psychological ailments faced by people. This leads to a growing interest in industrialized countries for indigenous forms of medicine, which are considered to be more holistic than biomedicine. Last but not least, the importance of ethnomedicine lies in the potential benefits for humanity in terms of traditional pharmacopoeias serving as a basis for new drug discovery. Because of all these assets, WHO passed a resolution in 2009 (Beijing Resolution 62.13), in which they emphasized the importance of the following:

- respecting, preserving, promoting and communicating ethnomedicine ;
- creating national policies, regulations, and standards within the national health system to ensure safe and effective use of ethnomedicine ;
- integrating ethnomedicine into national health systems;
- further developing ethnomedicine based on the "Global Strategy and Plan of Action on Public Health, Innovation, and Intellectual Property" adopted at the 61<sup>st</sup> World Health Assembly in 2008;
- establishing systems for the qualification, accreditation or licensing of ethnomedicine practitioners;
- strengthening communication between conventional and ethnomedicine providers and establishing training programs for health professionals, medical students and researchers.

This brings us to the ethical questions related to ethnobiological research in general, and especially in the case of investigating natural remedies. Sharing ethnomedicine is still a great concern for many indigenous people because of possible biopiracy and, at the same time, they are very much aware of the loss of knowledge as younger generations show less interest in ethnomedicine. Ethical implications and the Nagoya Protocol (related to prior-informed consent and benefit sharing) have since gained wide acceptance amongst ethnobiologists, but implementation of proper policies are still wanting in many countries. This is particularly true for countries such as Canada and the USA, where patents and natural health products based on ethnomedicine have been produced without any benefits for First Nations peoples. Furthermore, some industries have looked at the access and benefit sharing (ABS) regime as a free ticket to genetic resources, even though they would need to comply with returning benefits to communities. This is in part due to the word "Access" in ABS; local communities and people may not want to share their knowledge and they should be respected. Also, monetary benefits seem to be the main focus of discussion, although the Nagoya Protocol has a list of non-monetary benefits, which may well be of greater importance to native people (Cuerrier et al., 2012). In Canada, because of lack of policies regarding genetic resources linked to ethnomedicine, First Nations, Inuit and Métis may wish to develop a Research Agreement that protects their knowledge to some extent (Cuerrier et al., 2012). Even though the Protocol will finally be in place, there are still some major problems in fully implementing it. For instance, who should benefit? The Nation? The community? A group of individuals (Healers)? Medicinal plants are often used by multiple indigenous groups.

Further research by ethnobiologists, medical anthropologists, and researchers from related disciplines is needed in order to improve ongoing understandings of Indigenous and biomedical medical systems and how they integrate in people's everyday health-seeking behavior. Such ethnomedical studies can provide invaluable recommendations for improved health policies, both in rural and urban settings, regardless of where we live on the planet.

In this issue of the ISE Newsletter, Karim-Aly Kassam and his research group at Cornell University take us on the journey of indigenous communities in the Himalayan Range, the Pamir Mountains, the Siemen

Mountains and Northern Maine towards health sovereignty, while Nemer Narchi shares the history of marine medicines. We travel with him to China, the Roman Empire and Dioscorides' writing.

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## The Role of Schools in Conserving Medicinal Plants: Findings from Eastern Nepal

*Contributed by Rajeev Goyal*

When the foothill region, known as the “Chure Bawar” or “Little Himalayas,” was first settled, Amrit Bahadur Rai founded the Sawitri Primary School in Yangshila village in 1969, and served as its first headmaster and teacher. Today, Amrit Baaje (“Grandfather Amrit”), as he is known, is also the most knowledgeable medicinal plant expert of Yangshila. He can be found living in a two-story home constructed of planks from local *sal* trees, shrouded in medicinal plants on the eastern edge of the village (see Figure 2). The fact that the very first teacher of Yangshila is also its leading medicinal plants conservationist is suggestive of the numerous possibilities that exist to integrate education and conservation to bolster health sovereignty in the Chure Bawar region of Nepal.

Nepal possesses over 10,000 species of vascular plants, including many that are endemic, contributing to its designation as one of 34 global biodiversity hotspots. In eastern Nepal, this diversity is the result of ecological heterogeneity between the Koshi Tappu Wildlife Reserve (67 meters above sea level), the largest aquatic bird sanctuary in South Asia, and Mt. Kanchenjunga (8,586 masl), the third tallest peak in the world. This altitudinal gradient spans 11 climatic zones that contain diverse plants, including many such as chiraito (*Swertia chirayita*) and laudsalla (*Taxus wallichiana*) that are commonly used as medicine by indigenous communities.

Deforestation threatens this diversity of medicinal plants. Between 1990 and 2005, Nepal lost 1 million hectares of forest—more than 25% of its total forest cover. This period was also marked by a drastic increase in species added to Nepal's Red List. The national education system, not typically considered a potential force for biodiversity conservation, can play a critical role in stewarding thousands of hectares of existing forest, improving landscape connectivity, and promoting health sovereignty through the teaching of medicinal plants. Under the Nepal Education Act of 1971, schools can acquire land but cannot sell it. This provision forms the basis for creating a Biodiversity Education Land Trust (BELT) to conserve landscapes with high medicinal plant diversity. Teachers, conservationists, farmers and researchers at Cornell University have been working together to create this BELT.

Our research began with an inventory of medicinal plants within a 5-kilometer radius of Yangshila. Together with Kumar Bishwakarma, a local teacher, and Yuvraj Poudyal, a medicinal plant specialist, we collected 347 plants from 72 plant families. We documented medicinal uses of these plants with 20 key informants. Results suggest that taxonomic diversity is actively conserved along landscape edges (pathways, roads and administrative boundaries). Other forms of “edge” such as seasonal changes, altitudinal gradients, community boundaries and land use differences, also showed heightened biodiversity.

The two main building blocks for teaching medicinal plant biodiversity already exist in Yangshila: first, the presence of plant diversity for a “living classroom” and second, knowledgeable teachers interested in conservation. Three schools in Yangshila already own between 1.5 and 7 hectares of land that is rich in diverse medicinal plants. Furthermore, local teachers demonstrate strong knowledge of medicinal plants. More field research is being carried out to study how the BELT can help activate this latent potential to bolster the future health sovereignty in the Chure Bawar region of Nepal.

## **Medicine for Trees: Biological Control of Chestnut Blight in Azerbaijan**

*Contributed by Jeffrey Wall*

In the fourth century BCE, the Greek traveler Xenophon reported that chestnut was a prominent food for people of the Caucasus (Xenophon [1895]). The tree and its use as food and timber first spread from this region around the Black Sea and eventually to Central and Western Europe (see Figures 3 and 4). The Caucasus and Eastern Turkey remain the center of highest genetic diversity for the European chestnut, *Castanea sativa* (Villani et al. 1994). The onset of chestnut blight, *Cryphonectria parasitica*, which has been reported in Azerbaijan since 2003, is a threat to this genetic diversity and to the livelihoods of chestnut-cultivating communities in the Caucasus Mountains of Azerbaijan.

In northern Azerbaijan, which is a culturally diverse region, chestnut trees populate a forested region of over 200km<sup>2</sup>, and support numerous rural communities involved in chestnut cultivation, collection and sale. Today, traditional management of chestnut in Azerbaijan is practiced in dozens of villages in combination with that of hazelnut and walnut over a large highland landscape covering more than 4000 km<sup>2</sup> of highly heterogeneous land. A diverse range of management and collection practices can be observed, from multi-cropping, nursery cultivation and grafting, to wild harvesting and the deployment of free-range cattle to distant chestnut forests.

Over a period of one year, we organized a series of community meetings in five villages in order to identify strategies to respond to the chestnut blight. These meetings produced a remarkable consensus. Villagers agreed that: first, chestnut cultivation should remain the primary land use strategy in their territory, and second, the unique and locally preferred chestnut varieties must remain viable. Further, as a guideline, all participating organizations and research should focus attention on (DİQQƏT) and develop a cure for (DƏRMƏN) the chestnut blight.

To draw attention to the chestnut blight, we conducted 22 household questionnaires and extended interviews in two village sites in order to investigate the economic importance of the chestnut to local

livelihoods. Results clearly show the importance of chestnut production to household incomes (see Figure 5).

Average chestnut sales per household were 2997 AZN (1 AZN  $\approx$  USD 1.2) in 2010, more than the average annual salary of a teacher.

To find medicine for the chestnut tree, we conducted widespread sampling and characterization of the chestnut blight fungus in Azerbaijan. This has opened up the possibility of pursuing a biological control technique known as applied hypovirulence. For European chestnut, applied hypovirulence has been demonstrated to effectively inhibit the spread of chestnut blight within treated and non-treated neighboring trees (Heiniger and Rigling 2009; Hoegger et al. 2003). Still in pursuit of an effective cure, our next step is to undertake a social impact analysis and then apply hypovirulence in the first-ever trials to biologically control chestnut blight in Azerbaijan.

## Healing Agriculture: Medicinal Plants in the Semien Mountains of Ethiopia

*Contributed by Morgan Ruelle*

Subsistence farmers in the Semien Mountains of Ethiopia maintain a rich legacy of plant diversity, including many plants they know how to use as medicine. These farming communities are encountering a number of complex changes, including population growth, new road construction and local effects of global climate change. Favorable market prices induce farmers to increase production of a few cash crops, often decreasing crop diversity and increasing the amount of land under permanent cultivation. As land use changes, medicinal plants may be eliminated from the landscape, thereby diminishing important local health care options.

Our research team is conducting human ecological research in the Debark District on the western slopes of the Semiens (2600-3000 metres above sea level). We are exploring the ways that farmers conserve plants and contribute to their food and health sovereignty. Over the past two years, we have conducted 199 interviews, including multiple visits with eighteen farming families in villages along an altitudinal gradient. To elicit indigenous ecological knowledge related to plants, we employ a variety of ethnobotanical techniques including participatory mapping, free-listing, preference ranking and pile sorting.

Participatory mapping with farmers has shown that most families tend to plant and graze animals in multiple fields and grazing areas in different directions from their houses (see Figure 6). Although outsiders often describe land ownership in Debark as “fragmented”, this pattern provides access to a greater diversity of plants in different parts of the landscape, including many medicinal plants that are associated with specific habitats.

Within these varied environments, free-listing activities have identified 142 useful plants, of which 29 have medicinal uses. Of these medicinal plants, 5 (17%) are cultivated, 14 (48%) are non-cultivated, and 8 (28%) are occasionally cultivated.

Preference ranking activities help us understand the relative significance of plants as medicines. We selected the 18 plants most frequently described as medicines. We found that on average, each family recognized 10 out of the 18 plants as medicines. Only one plant (haregresa, *Zehnnaria scabra*) was recognized as a medicine by all participants, and was also consistently ranked as one of the most important medicinal plants. Other than *Z. scabra*, the plants were ranked by different families in different ways, indicating a diversity of knowledge and use of medicinal plants within our study area.

During pile sorting activities, participants arranged plant names into categories of their own choosing. Findings indicate that medicinal plants are often used in many other ways. For example, although indod (*Phytolacca dodecandra*) was identified as a medicine by 10 out of 18 families during preference ranking, it was sorted by most participants based on its usefulness for washing clothes (see Figure 7). The use of indod as soap reinforces health sovereignty by improving hygiene. These observations suggest that the conservation of medicinal plants is driven by multiple uses broadly related to health.

There is no question that loss of biodiversity poses a grave threat to health sovereignty in the Semien Mountains. Plants are essential to human health, not only because they are primary sources of food and medicine, but because they perform many other vital functions within food and health systems. Access to a variety of plants means that farmers have multiple options to meet their needs; these choices are fundamental to their health sovereignty. Therefore, despite pressures to devote all of their land to cash crops, farmers are conserving plant diversity. Research should support farmers' conservation efforts to maintain health sovereignty in an era of dramatic change.

## **Habitat Modeling for Health Sovereignty: The Case of Muskrat Root in Northern Maine**

*Contributed by Michelle Baumflek*

Medicinal plants and fungi play important roles in the health of Maliseet people from northern Maine, USA. A critical aspect of health sovereignty for this community is being able to locate and have access to these plants. Commercial development on their traditional gathering sites and restricted access to privately owned lands limit the ability of the Maliseet to gather medicinal plants. Habitat modeling can enhance health sovereignty by identifying locations in which populations of medicinal plants can be conserved or established.

Muskrat root (Maliseet: kighaswes, *Acorus* spp.) is perhaps the most widely used medicinal plant in northern Maine, and is extensively used by Native American tribes and First Nations throughout the northern United States and Canada. In northern Maine, Maliseet and other Native gatherers rely on a limited number of sites to collect muskrat root; some travel several hours to reach these locations. The primary Maliseet muskrat root collection site was destroyed to build a Wal-Mart parking lot in 1993. Maliseet plant gatherers and tribal natural resource managers want to identify new places to harvest muskrat root, or find suitable locations to establish new populations.

Two species of muskrat root are found in northern Maine: *Acorus calamus* and *Acorus americanus* (see Figure 8). While they appear identical, only the introduced species, *A. calamus*, contains the pro-carcinogen beta-asarone. The effects of beta-asarone are uncertain, and some plant gatherers prefer to use *A. americanus*. We discovered that the most popular muskrat root collection site had only the less-desirable *A. calamus*. Our herbarium research has exposed previously unrecognized habitat preferences between the two species. Working with the Houlton Band of Maliseet Indians, we developed a rule-based model to identify habitat for *A. americanus*.

Habitat modeling is an important tool for many conservation efforts. Our iterative model was initially based on habitat conditions described in the literature and was refined using field data collected from *A. americanus* sites in northern Maine. We validated our model by ground truthing with *A. americanus* sites and found that 40 out of 44 locations were predicted accurately by our model.

Our model incorporates sociocultural parameters in order to contribute to health sovereignty. Community participants told us that they regularly travel over 30 miles from home to gather plants that are important to them. Furthermore, elders want to gather medicines, but are not able to hike long distances from roads. With these parameters in mind, we refined our model to identify ecologically-suitable areas that were less than 30 miles from the Houlton Band of Maliseet's trust land and less than 500 yards from a road.

By combining ecological and sociocultural parameters, we have identified previously unknown populations of *A. americanus* that are accessible to tribal elders. In addition, we have identified areas with suitable habitat to plant muskrat root that could meet tribal members' needs in the future. Increasing the number of potential gathering sites gives communities options, thereby enhancing health sovereignty.

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## A Brief History of the Human Use of Marine Medicines

*Contributed by Nemer E. Narchi*

During the year of 2007 I was walking down the streets of La Paz, Bolivia, as part of a group of anthropology students waiting for some others to arrive and go down to the Bolivian Amazon to learn field methods in anthropology as part of the Tsimane Amazonian Panel Study summer course. Walking on Cerro Cumbre, where the famous *mercado de las brujas* (the witches' market) can be found, I saw something that sparked my curiosity (Figure 1).

La Paz, being the highest administrative capital of the world, is settled at some 12,000 feet above sea level. Bolivia has no marine borders since they lost their coastal territories to Chile back in 1879. These facts pushed me to ask myself: Why were sea stars being sold for medicinal purposes at a city of such an altitude? How old is this practice? Why has no one documented this? Why were my findings not as mesmerizing or important to my companions?

In fact, the sea stars passed unnoticed and the anthropologists were more curious about handmade figurines and lama mummies. Years before seeing these "high-altitude sea stars" being sold in bulk in La Paz, I participated in a research project studying marine-based organisms sold in popular markets around Mexico City (Fernández-Apango et al. 2002), also a high-altitude, landlocked location (7200 ft).

Was that previous experience what made me aware of such a bizarre encounter? I think that I would not have paid much attention to the sea stars if I had not been aware that there is an active use of marine ethnomedicines that extends beyond coastal communities.

I will here expand on the geo-cultural extension of marine medicines throughout history. The first record of aquatic medicine is nearly 5000 years old. The tax records generated in China in the year 2953 BCE, during the rule of emperor Fu Hsi, are proof that the empire was levying fish-derived medicine (Jia et al. 2004). Circa 400 BCE Hippocrates noticed the antibiotic effects of certain sponges, which he recommended to dress soldiers' wounds with (Riddle 1987). In 41 CE, Scribonius Largus, personal doctor of Emperor Claudius, recommended the discharges of electric fish (*Torpedo nobiliana*) to cure migraines and headaches (Kuhfeld 1995).

Dioscorides noted in his *Materia Medica*, around 65 CE, the benefits of applying brown algae for treating inflammation. Some years later, Galen also described medicinal uses of algae, noting that the mucilage surrounding the thallus had remarkable properties to dress wounds (Khalilieh and Boulos 2006). Pliny “the elder” also plunged into marine medicine in 77 CE when he suggested stingray spines to alleviate toothaches (Secundus 1603). The contribution of Chinese scholars to this topic is outstanding. Two salient books on the topic are *Shen Nung Pen Ts’ao Ching* (神農本草經) or *The Divine Farmer’s Materia Medica circa 200 CE*, and the *Chinese Materia Medica* published *circa 618 CE* (Halstead 1992).

As far as mentioning the Middle East, Lev-Yadun (2004) offers a comprehensive listing of animal-derived medicines used in Levant from 600 CE into 1700 CE, in which mollusks, fish and corals are included. The Islamic Classical Period was an era full of passionate scholars responsible for safeguarding and improving the early-Greek and late-Roman science. Among these, Bakr Muhammad ibn Zakariyya al-Razi (865-925 CE) and al-Muzaffar al-Rasuli used seaweed therapeutically (Khalilieh and Boulos 2006). Yet, of all these scholars, Abu Ali al-Husayn ibn Abd Allah ibn Sina, better known as Avicenna (980-1037 CE), remained the authoritative figure in Mediterranean medicine for centuries. In his seminal book *al-Qanun fi al-tibb* (Canon of Medicine) he mentions 23 different marine resources used as medicine (Farooqui and Ahmad 1994).

The list expands to include algae, mollusks (e.g., *Cypraea moneta*, *Sepia officinalis*, *Aplysia sp.*), crustaceans (e.g., *Cancer marina*, *Crangon vulgaris*), sponges (e.g., *Spongia officinalis*), echinoderms (*Echinus marinus*), fish (e.g., *Anguilla sp*), reptiles (e.g., *Chelonia mydas*), and mammals (e.g., *Monodon monoceros*). Last, the *Pen Tsao Kang Mu* (本草綱目), written around 1590 CE holds several seaweed-based remedies (Chapman 1952).

Presently, research on marine ethnomedicine, while vibrant, is relatively small in numbers when compared with observations on terrestrial ethnobotanicals. I can think of a number of examples, such as common glasswort, used as diuretic in the Netherlands (Price, 2007); shrimps used to cure asthma in Brazil (Costa-Neto 1999); red mangrove used against myriad ailments in rural Baja California Sur (Encarnación and Contreras 1992) and elsewhere; and more than 24 marine medicinal organisms used by the Seri, hunter-gatherers of Northwestern Mexico (Narchi et al. 2002).

There is no question that Pacific islanders (e.g. Napoleon 2004) and peoples of coastal places in Africa (e.g. Sowunmi 2007) also incorporate marine organisms in their pharmacopoeias. It should not be surprising if every coastal society we know of has developed a marine pharmacopoeia. After all, some 80% of the chemical diversity of the world lies in the oceans.

We ethnobiologists should be engaged in exploring marine ethnomedicine because:

- 1) It is a great chance for building knowledge on human adaptations, cognition, resource management and ethnopharmacology, and
- 2) the oceans are rapidly changing and coastal species are subject to great environmental stress.

Given that we do not know how many people around the world depend on marine medicines to sustain their health, the evolving state of the oceans may imply challenges that go beyond food and into other life-sustaining systems, namely the availability of local medicinal resources. Besides, taking ethnomedicinal research to the beach is one of the few ways (if not the only) in which the discipline can become even more attractive than it already is.

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## Research Reports from the Field

### **In the Talamanca Mountains: A Photo Essay Describing My Experiences Working with Bribri Youth in Costa Rica**

*Contributed by [Olivia Sylvester](#)\**

Why do youth use forest foods and medicines? This is a question I set out to answer during the research associated with my doctoral dissertation. Perhaps the part I enjoyed most was working with young people to create an engaging and inviting environment to do research. In this process, I learned a lot about young people's lives. In this photo essay, I have chronicled my experiences before I began to collect data directly related to my research questions. I felt that the process leading up to data collection was just as informative as the data. Thus, I was motivated to share my experiences planning a research project with young people in the ethnobiology community.

Now, let us take a step into Talamanca, Costa Rica.

When I arrived in the Bribri Indigenous Territory (frequently referred to as Talamanca), the Talamanca mountain range was the first thing I saw. The second sight, as my bus dropped me at the Telire River, was a landscape of boats and trucks full of organic bananas (is it a surprise to know that this is where your breakfast may have come from?). The Talamanca mountain range passes through the Bribri territory; these mountains reach elevations of over 3,000 meters above sea level and are home to a large part of Costa Rica's La Amistad International Park, the country's largest protected area. La Amistad Park, the Bribri and Cabécar Indigenous territories, and some other sites have been collectively designated a UNESCO World Heritage Site. In Talamanca I lived in a community called Bajo Coén, situated on the Telire River about an hour upstream from where I took this photograph.

Although I lived for four years in Costa Rica prior to starting this project, I felt a little intimidated when I arrived to live in Talamanca. I was a novice at the Bribri language and I had no experience working with Bribri youth. I tried to put aside my doubts and started my research with a few key questions: Where will I find youth? How will I establish meaningful relationships with young participants? How will I find inviting and safe spaces to collect data? How will I invite youth to talk? And, when is a good time to talk to youth? I will show my experiences working through these questions with photography (taken from March - November 2012).

#### 1. Where will I meet youth?

I collaborated with two Bribri teachers at the Liceo Rural de Coroma, the Coroma high school. Working at the high school was important for me to meet youth and it was rewarding to be partnered with a team who would help me collaborate with community projects. However, I didn't only work with high school students. Some high school students suggested I invite participants that were not attending

classes too. “What a great idea, why didn’t I think of that?” Interestingly, the further away I got from my office, and the more I got my feet wet in this project, the more frequently I found myself asking this question. To make connections with young people not attending high school, I asked my friends in the *Sebliwak* women’s group to help me make some initial introductions.

## 2. How do I establish meaningful relationships with young participants?

Establishing meaningful and sustained relationships in my research was the most important part of this journey. Although I went into my research thinking that books or educational materials—summarizing my research results—may be important contributions to participants, I quickly learned that my friends had other things in mind. My friends and I agreed that I could make a meaningful contribution to the community by participating in the following activities: 1) a natural medicines project (this meant going to high school classes regularly, being available to help with English translations, meeting with professors), 2) tutoring English (I was available twice a week, to help students with English homework), and 3) teaching English (I became the English teacher at the primary school and taught classes four times per week for eight months).

## 3. How will I find inviting and safe spaces to collect data?

I met some participants at the Coroma high school; the high school administration also kindly offered me a space to hold large meetings or workshops. I was worried that collecting data at the high school would create a situation where some youth would feel pressure to talk to me, even if my activities would not affect their high school evaluations. So, in addition to the high school, I found other, more seemingly neutral places where youth could volunteer to show up to participate in this project. These neutral spots included: 1) a friend’s house (a house also used for Bribri culture classes), 2) forests, where we talked while harvesting plants, and 3) a variety of other meeting places decided on by participants.

## 4. How will I invite youth to talk?

This was a challenge. My young friends were excited to speak English with me, to walk with me to school and to visit me at home. Talking about forest foods and medicines with me, however, was another story. I do not think people were silent because they did not use plants. In fact many young people used forest plants to treat anything from a common cold to more severe ailments, such as dengue or leishmaniasis, yet, there was some resistance in talking to me about medicinal practices. Although this reluctance to share was something I experienced with participants of all ages, it was especially pronounced with youth. Inviting youth to talk, and respecting when they chose to be silent, meant adapting my research methods. One event we held was designed to invite young people to feel comfortable to talk about forest plants; we called this event an interactive workshop.

In the picture above, we are sharing stories about forest foods and medicines both from Canada (where I’m from) and from Talamanca; this workshop was an icebreaker to start an ongoing conversation about forest harvesting.

## 5. When would be the best time to talk with youth?

Young people are busy. In Bajo Coén young people had families, young children and homework to attend to. Many young people also had jobs in the field, such as harvesting organic bananas, as well as jobs at home. In my work, I found that I would either wait for a day when someone was free, which was rare, or I would talk with people while we cooked, carried babies to the doctor, carried baskets of bananas on our heads, swung machetes to clear thick grass, or after we finished working on an English homework assignment. Looking back, I left Talamanca with more practical skills than when I arrived, and this unique training was a well-received change of pace.

*\*This work was carried out with the aid of a grant from the International Development Research Centre, Ottawa, Canada. Information on the Centre is available on the web at [www.idrc.ca](http://www.idrc.ca); I was also supported by the Social Sciences and Humanities Research Council of Canada through a grant rewarded to Dr. Iain Davidson-Hunt.*

## **A Special Note on Prior Informed Consent (PIC)**

*Contributed by Ranjay K. Singh\**

This article presents practical guidelines for healthy and ethical collaborative research with traditional knowledge holders (TKHs) and local/traditional communities. Experience indicates that, in a majority of cases, research on indigenous knowledge or traditional knowledge systems (TKSs) in India and elsewhere also is pursued with very least follow-up of ethical guidelines and prior informed consent (PIC) of community partners and knowledge holders. Although, in the last 20 years, there has been considerable exploration of TK and grassroots innovations through applying PIC by SRISTI and NIF-India, Ahmedabad. However, there is a general lack of awareness and skills among Indian researchers regarding use of proper ethical protocols in conducting research with TKHs. Here, an attempt was made to provide some guidelines on important aspects of ethics in TKS research, which may be helpful to raise awareness around ethical issues and educate researchers working on various dimensions of TKSs. Most of the information and ideas presented here are based on field experiences and use of PIC practically with TKHs and local communities in many parts of India. In addition to discussing the ethical dimensions, the processes and methods of obtaining PIC from TKHs are presented in order to facilitate ethical research on TKSs. Processes for engaging a community in research, helping build capacity and how to obtain PIC are discussed. It is hoped that the information presented will be helpful for researchers, and ultimately, it will contribute to respect and recognize the TKHs for their knowledge and wisdom, for which they hold rights.

Ranjay K. Singh, KP Singh & Nancy J. Turner. A Special note on Prior Informed Consent (PIC). *Why are you asking our gyan (knowledge) and padhati (practice)?: Ethics and prior informed consent for research on traditional knowledge systems*. Indian Journal of Traditional Knowledge Vol. 12 (3), July 2013, pp. 547-562.

\*Dr. Ranjay K. Singh, whose most recent work is featured in this newsletter and can be viewed in full [here](#), was recently awarded with the designation of Associate (Agricultural Rural Sociology) of the National Academy of Agricultural Sciences (NAAS), New Delhi, for work on biocultural knowledge systems and community-based biodiversity conservation in the eastern Himalayas. He is a long-time ISE member who has contributed regularly to the ISE Ethics Program. This article is shared with his permission.

## Getting to Know Bhutan before the 2014 ISE Congress

*Contributed by [Jigme Dorji](#), [Olivia Sylvester](#), [Anna Varga](#)*

Bhutan has a rich biocultural heritage, but information about this country may be challenging to find. To help you prepare for your travels in 2014 to attend the 14th International Society of Ethnobiology Congress in Bhutan, we have provided you with some important facts.

### 1. Where is Bhutan?

Bhutan is a Himalayan country, landlocked between the Tibetan Autonomous Council of China in the North and the Indian state of Assam, West Bengal and Arunachal Pradesh in the South. Bhutan has a rich natural environment where about 70.46% of its geographical area is under forest cover and 2.93% under agriculture.

### 2. What is Bhutan's capital?

Thimphu is the capital of Bhutan. Thimphu is 84 kilometres from Paro, Bhutan's International Airport.

### 3. What is the government structure in Bhutan?

The government of Bhutan is a constitutional monarchy. King Jigme Khesar Namgyel Wangchuck is the head of state and the head of the government is elected by the people.

### 4. What languages are commonly spoken in Bhutan?

Dzongkha is Bhutan's national language and is commonly spoken in the West. Other common languages include: Sharchop in the East, Khengkha in Central Bhutan and Nepali in the South. English is also used in many places in Bhutan, such as in universities and other institutions.

### 5. How big is Bhutan?

Bhutan is 38,394 km<sup>2</sup>; it is similar to the size of Switzerland.

### 6. What are some common foods in Bhutan?

Rice and maize are staple foods in Bhutan. Bhutanese farmers practice traditional farming and most crops are grown organically. Typical Bhutanese dishes include: Ema Datsi (made from chili peppers and cheese), Kangchung, Sujha, Momo, Phaksha sikam, and Norsha Paa; tasting these dishes for the first time will be an exciting adventure for congress attendees.

### 7. What is the Happiness Index?

Bhutan is well known for its use of a Gross National Happiness Index, used similarly to an indicator for progress. A study done by representatives from the University of Leicester ranked Bhutan eighth out

of 178 countries in a metric they used called "subjective well-being".

#### **8. What does the name Bhutan mean?**

In Sanskrit, the name Bhutan means End of Tibet. Bhutan is also called Druk Yul, or Land of the Thunder Dragon.

#### **9. Where can you find butter tea?**

Butter tea is common in almost all Bhutanese homes and restaurants. A special form of butter tea made with Yak butter is available only in nomad communities.

#### **10. What can you expect to see in Bhutan?**

In Bhutan, expect to see many breathtaking landscapes, adorned with Dzongs (fortresses/monasteries), tracks of traditional farming and many typical villages. About 70% of Bhutan's area is under forest cover and home to wildlife, including the following mammals and birds: royal Bengal tigers, Asian elephants, snow leopards, clouded leopards, hornbills, nuthatches, white-bellied herons and black-necked cranes (a winter visitor). More than 60% of Bhutan's total geographical area is declared as protected. This area includes: five national parks, four wildlife sanctuaries and one strict nature reserve. The Royal Manas National Park has been recognized as a hotspot for felids, such as the common and clouded leopards.

#### **11. What is the currency of Bhutan?**

The Ngultrum is the Bhutanese currency and the value is equal to that of the Indian Rupee.

#### **12. What is the population of Bhutan?**

According to the World Bank in 2011, Bhutan had 738,267 inhabitants.

#### **13. What is the national dress?**

Men wear Gho and women wear Kira. When entering into a Dzong (a fortress), both men and women need to wear a scarf. The scarves for men are called Kabney and for women are called Rachu.

#### **14. What commodities does Bhutan export?**

Bhutan exports minerals, hydroelectricity, cash crops (oranges, apples, potatoes) and agro-products.

#### **15. What is the weather like in Bhutan?**

Bhutan has four seasons: Winter (December-February), Spring (March-May), Summer (June-August) and Autumn (September-November). Winter is extremely cold in most parts of Bhutan and snow falls in the areas 3000 meters above sea level. The 2014 ISE Congress will be in June, so expect pleasant weather.

#### **16. What are the highest and lowest elevations of Bhutan?**

The highest peak of Bhutan is Gangkar Puensum with an elevation of 7570 meters above sea level (24,836 ft). The lowest point is located in the Drangme Chhu, a river system in central and eastern Bhutan, at 97 meters above sea level (318 ft).

#### **17. What Bhutan's main national sport?**

Archery.

Want to learn more about Bhutan?

Visit the Emerging Ethnobiologists Blog Series: [Getting to Know Bhutan](#).

## Conference and Workshop Reports

### **ISE Round Table on “Ethics, Ethnobiology, and Participatory Research” at the 3rd Latin American Conference of Ethnobiology in La Paz, Bolivia**

*Contributed by* [Armando Medinaceli](#)

In the framework of the collaboration that exists between ISE and SOLAE (Sociedad Latinoamericana de Etnobiología), and as a follow up to a first joint session on ethics in 2010, a round table on “ethics, ethnobiology, and participatory research” was held at the III Latin American Society of Ethnobiology congress in La Paz, Bolivia (12 October 2012).

The session was organized primarily by Sarah-Ian Mathez as a board member of the ISE, and moderated by Armando Medinaceli (Bolivia) and Erendira Cano (Mexico).

Some of the questions that guided the session were: How does the guidance offered by the ISE Code of Ethics compare with the lived experience of ethnobiologists in Latin America? What does and doesn't work “on the ground”? and What insights from Latin-American colleagues can be offered on ethical research practices in the future? It began with an introductory presentation on current ethical standards for ethnobiological research that draws on the ISE Code of Ethics and was followed by a presentation and discussion of the following illustrative examples and shared experiences for what it means to conduct ethical action research in ethnobiology today:

1. The implementation of the Nagoya Protocol - Rainer Bussmann (USA)
2. A Critique of the ISE Code of Ethics – Nicolás Seoane (Argentina)
3. Free Prior Informed Consent: a tool or a necessity? Armando Medinaceli (Bolivia)

The session generated a lot of interest, with the participation of over 40 people, including representatives and board members from the national ethnobiological societies of Mexico, Colombia and Brazil; representatives from the Latin American Society of Ethnobiology; and several other ethnobiologists from Ecuador, Bolivia, Argentina, Uruguay, Peru, Venezuela, Colombia, Mexico, Chile, USA and France.

The presentations were followed by a rich and extensive discussion, that concluded with the following points:

1. The framework of the ISE Code of Ethics does not fully reflect the Latin American reality, and as a region we should work on the incorporation of local norms and local/regional ethics to make it more appropriate for Latin America.

2. Publications in ethnobiology are mostly written with a western perspective, with the topic of participation by local communities receiving minimal attention. We should encourage writing that acknowledges the importance and responsibility of the information and the informants.
3. The region must establish new networks and strengthen existing ones so that ethnobiologists can disseminate their research more effectively and gain support in decision-making processes. Since knowledge does not have borders, we should work to avoid the misuse of knowledge by not allowing patents and other biopiracy by private agencies and/or outsiders.
4. The time taken to reach a research agreement by free prior informed consent (FPIC) must be taken into account in the planning and development of projects, studies, etc.
5. The topic of payments and/or reciprocity in research agreements with local people should be very carefully considered to weigh the pros and cons of such an arrangement for the local people involved.
6. We should work to sensitize and inform all levels of academia about the ethics of working with indigenous peoples and local communities, and it should become mandatory to put it into practice.
7. Topics such as symbolism, religion, ceremonial topics, deities and beliefs must be taken into account when working with indigenous peoples and local communities, and researchers should acknowledge and request permission when working with these topics.
8. FPIC agreements should be created following traditional customs and norms to avoid breaking local structures or introducing western views. This includes taking into account that, in some cases, agreements could be verbal or with other locally accepted mechanisms.
9. Anticipate and try to minimize the expectations generated in communities when research takes place, understanding that those expectations can be positive or negative for both sides.
10. It is important to clearly state to funding agencies that well-developed agreements with communities require time, and research results may not entirely reflect what was initially proposed, since they are dependent on the communal and local context.
11. The researcher has an ethical responsibility to take into account local interests when planning the research, and to reflect these interests in the FPIC agreement.
12. Codes of ethics should be introduced at the universities as an important component of formal projects, and perhaps become a requirement to the implementation and completion of projects.
13. Researchers should incorporate reflection into the research process, both at the time of action, and when developing new codes of ethics.
14. Ethical implications should be considered at the moment of applying for and receiving funds from outside sources (i.e. transnationals).

Finalizing the session, Dr. Arturo Argueta, as newly elected president of SOLAE, proposed the elaboration of a code of ethics adapted to the Latin American reality and to develop it based on the ISE Code of Ethics. This new code of ethics should highlight the subjects, objects and context, and also include the political situation. This proposal was unanimously accepted, with the suggestion that this new code of ethics should include different realities at distinct levels, allowing for structuring at a national, regional and if possible, at a continental level.

It was proposed and accepted that, Armando Medinaceli (Bolivia) and Erendira Cano (Mexico) initiate the process for the new code of ethics of SOLAE in coordination with SOLAE board and members, national societies, institutions, researchers, and local and indigenous communities. A first (or second) draft of this code of ethics is expected for the next SOLAE conference in Colombia 2015.

After closing the session and thanking everyone for their participation, we encouraged participants to continue the discussion in their own countries and workplaces.

## ISE Announcements

### Call for Nominations and Applications - Darrell Posey Fellowship

The Call for Nominations and Applications for the 2013 – 2015 [ISE Darrell Posey Fellowship for Ethnoecology and Traditional Resource Rights](#) awards is open!

In 2013 we will award one [Field Fellowship](#), two [Small Grants](#), two [PhD Fellowships](#), and two [Masters Fellowships](#).

All seven awards include additional funds to support the recipients' participation at the 2014 ISE Congress in Bhutan.

**The due date for nominations and applications is 27 September 2013.**

### Update on the 2014 ISE Congress – 1-7 June 2014, Bhutan

The biennial congress is the official meeting of the ISE, providing a time and place to formally gather our diverse membership for ethnobiology exchanges and to conduct Society business. It is the embodiment of the ISE's core mandate to facilitate an "ethical space" where different worldviews can interact and share information across geographical and cultural boundaries, creating an interactive forum for respectful cross-cultural exchanges.

The upcoming 2014 Congress is hosted by the *Ugyen Wangchuck Institute for Conservation and Environment* (UWICE), a Government-based research and training institute that strives to foster better stewardship of Bhutanese natural heritage —land, water, air and species therein— through rigorous science-based research and transmission of cutting-edge scientific results to field practitioners, environmental leaders and policy makers.

[Learn more about UWICE](#)

The ISE would like to announce the new Chair for the 2014 Organizing Committee, [Sangay Wangchuk](#),

and welcome him to the ISE Board. Sangay is the Head of the Sustainable Forestry Department and Program Director of Madanjeet Singh Centre for South Asia Forestry Studies at UWICE. In addition to teaching forest ecology, field botany and forest management, Sangay conducts research on ethnoecology and is currently studying the contribution of Cordyceps to the livelihood of alpine communities of Bhutan and the impact of Cordyceps collectors on the ‘pristine’ alpine ecosystem. He also has a deep passion for understanding historical climatic patterns and how they change through the use of dendro-climatology techniques.

We ask ISE members to join us in wishing the previous Chair, Thinley Wangdi, all the best in his PhD studies in Australia.

### **Congress Logistics**

ISE congresses are held in different geographic regions so that all ISE members have easier access to attend the congresses in person on a rotating basis. Hosting the congresses in different countries also offers unique opportunities to vary the “cultural flavor” of each congress, making them truly unique events— an aspect that ISE members have come to value as an inherent part of the congress experience. These distinct experiences also often bring different logistical challenges.

***Deadlines associated with the 2014 Congress are earlier than what you might be used to from past ISE congresses. Really.***

Some of the logistic challenges of hosting a congress in Bhutan were discussed in 2010 when the initial proposal was presented and then again during the 2012 Congress— including the long bus ride from the airport to the venue (details below) and the visa process which drives the need for early deadlines.

UWICE will be organizing the visa applications and the required route permits. More information will be provided once participant registration opens on 1 September 2013.

***If you are attending the Congress, please do not apply for the visa on your own.***

**Many have also noted the extended length of the Bhutan Congress program**

(see [Important Congress Dates](#)).

The logistical reality is that (international) congress participants will most likely need to spend a night in Paro, the main arrival point in Bhutan, on either side of the congress. The congress venue is a 12-hour bus ride from Paro and most flights arrive late-morning to mid-afternoon —too late to make this journey all in one day.

The congress program has been set to allow a night and the better part of the following day in Lamai Gumpa for participants to adjust to altitude, and recover from jet lag and the extended travel before the opening of the congress.

UWICE is working with DrukAir to coordinate options for Congress-specific group flights from specific entry points, and chartering buses for travel from Paro to Lamai Gumpa (and return). More information about DrukAir flight options, in-country transportation and accommodations in Lamai Gumpa will be posted on the Congress website soon.

## Congress Registration

Registration for attending the congress will both open—and close— during the 2013 calendar year. Another logistical reality is that the congress venue has capacity for a maximum of 500 participants.

As we are anticipating between 100-150 Bhutanese participants, **registration for international participants will be capped at 350** and will be available on a first-come, first-serve basis once registration opens in September 2013. Once this fills, we will maintain a waiting list and add people in as we are able.

For most of us, the opportunity to visit Bhutan is special. As with all ISE Congresses, the 2014 Congress will offer a unique experience for participants. While waiting for registration to open, we recommend that people maintain a flexible and open mind about Bhutan and what this Congress will be like, resting assured that it will be a full and engaging program and an amazing opportunity for all who attend.

## Information about the Congress program:

UWICE and the ISE have been very pleased with the number and variety of proposals received for contributions to the Congress program. There will be pre-congress workshops, the in-Congress Program, and field trip options that will be held post-congress.

The main components of the in-Congress Program (1-7 June 2014) include:

- Congress Opening (late afternoon Sunday 1 June)
- Plenary sessions (two ISE general assemblies, a poster session, and a session for reports from the inaugural Biocultural Diversity High School Exchange project)
- A maximum of four (4) concurrent scientific streams (oral presentations)
- One (1) concurrent alternative format stream (called *Sung* [in-page link below?]),
- Biocultural Knowledge Exchange Festival (Friday afternoon – Saturday, 6-7 June [in-page link below?])
- Closing ceremony (Saturday evening, 7 June)

Established at the Cusco Congress in 2008, an *Indigenous Forum* has become an integral part of ISE congresses. While the manifestation of this Forum has evolved at each of the congresses since then, the initial intent remains: to provide an alternative space during the congress in which to address topics and themes of specific concern to the host community, as well as a different tempo of exchange which is less structured and slower paced.

**At the 2014 Congress, the “Indigenous Forum” is being called *Sung***, the Dzongkha word for their tradition of storytelling and oral transmission of knowledge, often associated with the knowledge that is passed from elders to younger generations. Bhutan’s culture is built on oral traditions, Dzongkha is just one of some two-dozen languages spoken in the country, and there is concern within Bhutan about the diminishing perceived value in maintaining their oral traditions.

The program for *Sung* stream will feature story telling, talking circles, poetry reading, music and films.

### ***Biocultural Knowledge Exchange Fair***

A Biocultural Knowledge Exchange Fair is planned for the last day and a half of the Congress. Modeled after typical festivals in Bhutan, where local community members sell their handicrafts and food products, we are furthering this idea by adding a dynamic hands-on knowledge exchange (through demonstrations and direct participation).

We anticipate activities including:

- demonstrations on food preparation (preparation, cooking, tasting, discussion about the importance of certain crops);
- music, song and dance (making instruments, playing, sharing different beats, dancing, talking about cultural and spiritual events related to different dance and music);
- handicrafts (pottery, carving, weaving, etc. and discussion about the materials are collected and used, how the products are used, and how the artists learned their crafts);
- and more!

While we anticipate that the majority of the stalls will be for Bhutanese, some stalls will also be made available to other congress participants. In this way, the Fair becomes even more dynamic and cross-cultural. For example, musicians from many countries will share their knowledge with the larger public as well as fellow musicians— who may use different techniques, tunes, and rhythms, and the weavers will see how weavers from other countries utilize different materials, dyes and tools.

While part of the larger ISE Congress, this Fair will be open to the full community of Lamai Goempa, Bumthang.

***We recommend that participants:***

- Arrive on Friday 30 May 2014 in Paro
- Travel from Paro to Lamai Gumpa on Saturday 31 May 2014

The opening ceremony for the Congress will begin in the late afternoon of Sunday 1 June 2014, with the program beginning on Monday 2 June 2014.

**The International Society of Ethnobiology (ISE)** is a global network of individuals and organizations working to preserve vital links between human societies and the natural world. For over two decades we have brought together people interested in preserving the planet's biocultural diversity by providing a unique platform for meaningful and respectful dialogue. The ISE community includes researchers, academics, students, lawyers, policy makers, community leaders and others who come together to share their diverse perspectives on the fields of ethnobiology, biocultural diversity, conservation, resilience, resource rights and applied ethics.

As a (USA) 501(c)3 scientific and educational association [we rely on your support](#) to remain a thriving resource for biocultural diversity.

## **The 2012-2014 ISE Board**

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