Chapter 5

Ingano traditional food and health: Phase 1, 2004–2005

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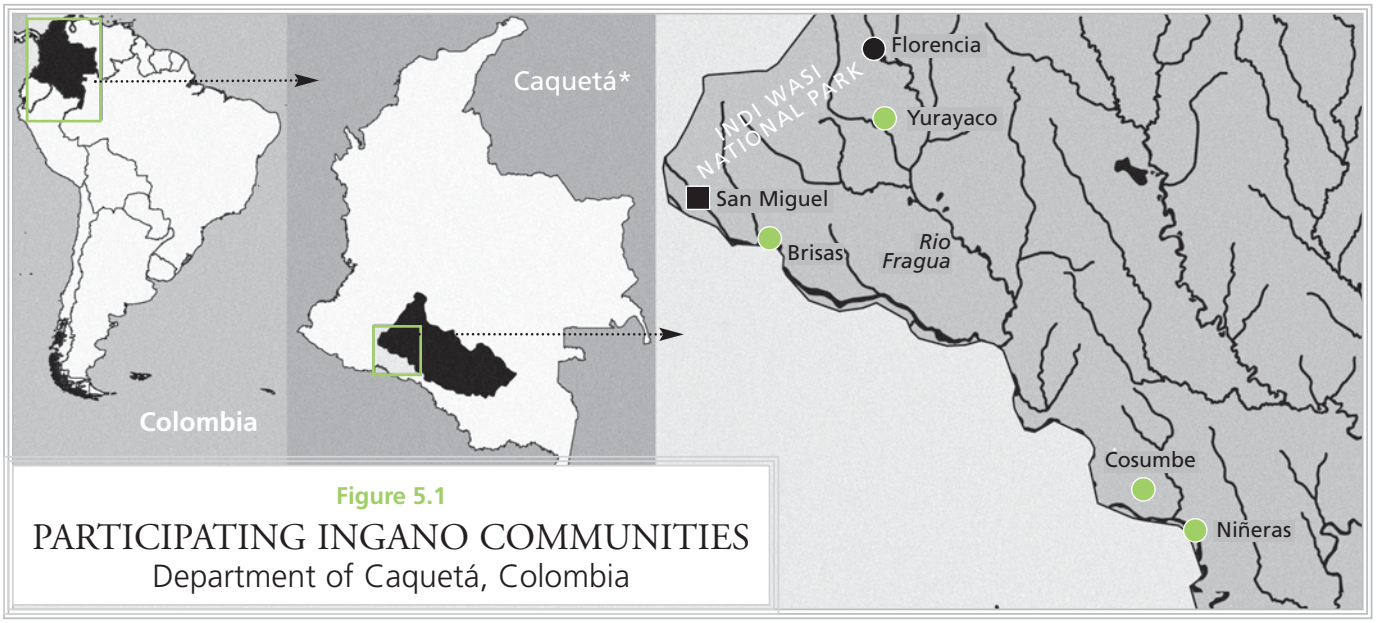

Figure 5.1

PARTICIPATING INGANO COMMUNITIES

Department of Caquetá, Colombia

Data from ESRI Global GIS, 2006.
Walter Hitschfield
Geographic Information Centre,
McGill University Library
**www.maplandia.com/columbia/caqueta*

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"Let's return to our food, our life and our tradition. With our food, we will improve our health, will recover our culture, and will take care of the natural world. We need our plants and our jungle in order to have strength and to live better."

Eva Yela, Ingano community member

Abstract

This chapter presents the results of a study on the ethnonutrition of the Ingano people of the Colombian Amazon. The study was carried out by Colombian, American and Canadian scientists working in close collaboration with the Inganos themselves.

The Inganos are a tribe of Amerindians living in the western-most Colombian Amazon, primarily in the state of Caquetá. Like most Indigenous Peoples, their contact with the outside world has had a serious (and primarily negative) impact on their diet. Particularly serious factors causing the decline in the quality of their nutritional input includes acculturation (particularly with the degradation of local knowledge of, and pride in, traditional agricultural practices) and access to low-quality Western foods (especially carbonated drinks and refined flour) – factors common to many of the indigenous studies carried out by the Center for Indigenous Peoples' Nutrition and Environment (CINE) and presented in this volume. Factors relatively unique to the Colombian example are the degree of deforestation, the ongoing political violence, and the levels of water contamination due to byproducts of the local cocaine trade.

The study focuses at all stages on the process of maximizing community involvement. Representatives of every age group participated, from Elders – born prior to colonial contact – to newborn infants. Prior consultation, consensus decision-making, and human rights issues were integral cornerstones of the study.

The study documented – for the first time ever – the complexity of the original Ingano diet: over 160 types of food, ranging from roots to insects to palm tree products. Pre-contact health status is assumed to have been better than the current situation in terms of diversity of foods, although precise data on health status were not available. Eight items from the traditional diet were deemed necessary for maintaining and improving local health: (1) *milpesos* palm, (2) *yoco liana*, (3) *cayamba* mushroom, (4) bitter cane, (5) beetle larvae, (6) *churo* snail, (7) *cucha* fish and (8) the *cimarron* herb. By using local Ingano knowledge and working closely with Inga communities to better understand traditional diet and current nutritional deficits and needs, this study hopes to contribute positively to Ingano health and well-being.

Introduction

In the western Colombian Amazon, a region of exceptionally high biological diversity, live several indigenous tribes who have expertise in traditional medicine, medicinal plants, and the art of shamanism since pre-conquest times. Their traditional system of resource management entails slash and burn agriculture – primarily based on manioc (a form of cassava), corn and several varieties of fruit trees – hunting, fishing, and harvesting of wild forest products. Their cosmovision, connected intimately with the natural world, is closely aligned with their ceremonies and the consumption of their sacred plant – *yagé*, or *ayahuasca* – that enables them to communicate with their spiritual world and helps determine their

social order, environmental ethics and holistic health management system.

For geographic and historic reasons, these groups (referred to by anthropologists as the "*yagé* culture") have been able to preserve their traditions and their traditional systems of production and nutrition better than many others in lowland Amazonia. Nevertheless, during the last hundred years, the religious missions, the increased presence of the state and the extractive economy of quinine, rubber, gold and petroleum, the indiscriminate felling of the forest, plus the recent expanded cultivation of illicit crops and increased presence of armed forces, have produced a demographic and cultural debacle, with loss of indigenous territories, destruction of environment, and marked changes in Ingano customs. All of this has almost led to their physical and cultural extinction and has given rise to illness and malnutrition, in addition to serious damage to their cosmovision and their traditional medicine.

Among these tribes are the Inganos, fragmented and scattered among three Colombian provinces who, since 1986, have been united within the organization known as the Association of Indigenous Communities (Tandachiridu Inganokuna), and who have written a "Plan de Vida" ("Life Plan") that proposes innovative solutions to the challenges of cultural preservation and the conservation of their territories and environment. With the support of NGOs like the Amazon Conservation Team (Amazon Conservation Team, Washington DC, 2004), these tribespeople have developed successful programmes of ethno-education, territorial recovery, environmental conservation, practice and perpetuation of traditional medicine, and sustainable agricultural production, among others.

Historically, the Inganos have been recognized as a relatively healthy group, with a long life expectancy. Current health problems are derived from recent effects of colonization, the loss of territories, the decrease in protein sources, the acculturation and loss of traditional medicine and the changes in eating habits. The reduction of their territories has resulted in diminished access to wild foods such as meats, fish and fruits. One of their most important medicinal species – *yoco* (*Paullinia yoco*) – is valued as a stimulant, a food and a medicine. *Yoco* has traditionally been used by the Inganos and is now in danger of eminent extinction – leading to increased reliance on non-traditional foodstuffs that cause health problems. Social "development" projects, such as cattle ranching and intense agriculture, have caused more problems than they have solved. The acculturation that comes with schools, health centres and publicity in mass communication media has worsened the eating habits of the youth, who abandon traditional foods to embrace processed food, which is more expensive, less nutritional and often harmful to their health.

This case study in Colombia (Figure 5.1) has become integrated into the Life Plan of the Association of Indigenous Communities in the Amazon district, and has four fundamental pillars: (1) the ethno-education programme of the local Yachaicury School, with the indigenous youths implementing a traditional food recovery programme to improve nutrition and health; (2) a biological resource and food supply security programme which relies on the indigenous agro-ecological promoters who work toward the recovery of traditional seeds and the development of productive farms; (3) the traditional medicine programme in which various shamans from several ethnic groups oversee the protection, defence and recovery of their medicine and the use of medicinal plants; and (4) the environmental conservation programme, essential since the Association partnered with the Colombian government to establish the country's first protected area for biocultural conservation, the Indi Wasi National Park. Therefore, the CINE programme with which we are associated is very much in line with the Indians' stated intention to taking charge of the cultural and environmental destiny based primarily on indigenous wisdom and traditions.

Description of Ingano research site and Indigenous People

Geographic and environmental characteristics

Southern-most Colombia at the eastern slopes of the eastern-most Andean chain is the area inhabited by

the tribes in this study. This region is located between 150 and 500 m above sea level. Because it is located on the equator, there are no significant seasonal differences in solar radiation, which means that the variation in average monthly temperatures is minimal. Seasonality in this region is affected and defined by changes in precipitation periods.

The piedmont region is greatly influenced by pluvial cycle peaks, which have caused serious avalanches over time. Showers of more than 100 mm in 24 hours are actually frequent (Mejía, 1993). Average precipitation varies between 3 500 mm/year and 4 300 mm/year. The months with the highest precipitation levels are April, May, June and July. Those with lower precipitation levels are December, January and February. Moderate precipitation can be observed during March, August, September, October and November. Relative humidity oscillates between 64 percent and 93 percent (Agenda Unitaria del Caquetá, 2002; Lozano *et al.*, 2001).

Soils are quickly eroding because of agricultural exploitation. Another related problem is illicit crop production, involving extensive use of agrochemicals. Generally speaking, there are two types of soils: 1) those found in the high plains of humid or very humid weather (haplorthox and dystropepts); and 2) those found in zones of very humid and pluvial weather, with plain or undulated relief, well or poorly drained (fluvaquents, tropaquepts) (IGAC, 1986).

According to the morphology and relief of the eastern chain's eastern slope, it is possible to divide the region into sectors with respect to the vertical distribution of the slopes. Schematically, it can be said that in high-mountain areas vertical slopes are very cragged, gradually becoming less pronounced towards lower areas. Below are plains with slopes containing desiccated or elevated terraces. The piedmont belongs to the transition area between steep slopes and plains. The transition between the Amazonian lowlands to the east, and the Andes mountain chain at the west, characterizes this region. When grouping the distribution of the slopes according to their altitude, three elevation ranges were established. Flat areas are most common below 400 m above sea level. A transition can be observed between 400 and 900 m, where both gentle and pronounced slopes are found, while steep slopes predominate over 900 m above sea level (Sarmiento and Alzate, 2004). In addition to these precipitation characteristics, there are some erosion problems caused by loss of vegetable layer, high temperatures and precipitation levels that cause accelerated loss of soil nutrients.

As for water quality, contamination is now common. As streams run through populated areas, quality considerably decreases for there is no adequate treatment for domestic and agricultural residues. Many water sources have been diminished or even dried up by erosion, and others disappear during months with low precipitation. For this reason, availability of potable water is a growing problem.

The fumigation of coca crops has also become a serious problem. The sprayed pesticides fall onto grazing pastures or farmlands. When this happens in mature crops – especially manioc and banana – inhabitants harvest and consume them rapidly to avoid their loss, even if that means ingesting toxic chemicals. Another factor that considerably reduces water quality is the way in which cocasa (cocaine processing waste) is discarded – because this is released into the water supply, rivers and streams become toxic.

There are no fixed pollution sources in the area. Agricultural and livestock activities are based on the periodic burning of pastures during low precipitation months. This common activity reaches considerable proportions, although there are no detailed analyses of the phenomenon. The impact of acid rain is considered to be low or null, for cloudy masses are formed in the Amazon where emissions are not toxic enough. However, there are no studies that can offer precise data on the level of rain contamination.

According to the general ecosystem map (Márquez, 2003), this region marks the transition between lowland humid forests, submontane forests and, finally, mountains and high mountains. Below 1 000 m above sea level, lowland humid forests are characterized by high average temperatures and pluvial indexes above 1 500 mm/year, with a high canopy that varies between 20 and 50 m. Between 1 000 and 2 000 m above sea level, the submontane forests include elements of the ecosystems located above and beneath them. This ecosystem is

characterized by both high humidity and pluvial levels, for it is located just where cloudy masses are charged with water and collide with the mountains along their way west through the Amazon. Canopies have an average height of 35 m. According to studies carried out on this region, satellite images can help to establish the increment on deforestation, gracing lands or naked soils rates in these forests (Sarmiento and Alzate, 2004).

Deforestation started during the 1940s when people from other regions in the country began to colonize the area. According to the inhabitants, during that time forests were continuous, but extensive livestock activities during the subsequent decades turned the forests into pastures. Today, plains and savannas have also been turned into pastures. In smaller farms, pastures share the area with banana and manioc crops. Deforestation has also increased near the mountains during the last years because of the arrival of additional peasants seeking land to cultivate coca.

These activities have all but exterminated the wild animals that previously constituted the indigenous communities' main source of proteins. Plant species important for traditional medicine have also been diminished.

Caquetá: Departmental profile

Rural areas in the Department of Caquetá are suffering from overpopulation and low income because of the influx of landless peasants fleeing violence in other parts of the country. This regrettable situation has forced people living in rural areas to become involved in illicit alternatives to generate incomes. Of the 5 million acres surveyed by the Department, 99 percent were used for illicit crops and stockbreeding (Aguirre, 2004).

The main crops of Caquetá are rice, beans, corn, soy, cocoa, *cocona*, *chontaduro*, *lulo*, mandarin oranges, African oil palm, pineapple, manioc, banana and sugarcane. The acre yield for all these crops is relatively low. As for cattle rearing, studies show a considerable deficiency, with low milk and meat production. Deficiencies in roads and telecommunications infrastructure also exacerbate this problem, as they hinder contact and exchange between market centres as well as increasing the inputs and production costs.

Facing this critical situation, there are insufficient financial resources to invest in technology transfer and technical assistance. Some regional and national institutions have developed and disseminated technology for sustainable forestry and agricultural extension. However, because of the lack of resources and adequate agricultural policies, this technology has not yet been consistently developed or applied. This issue has led to depopulation of some rural areas and diminution of the agricultural business profitability, explained by the evident increase of the price of inputs, such as labour. In addition, the social situation of the country strongly affects that of the departmental rural areas, for abandonment of the countryside further aggravates the original problem (Aguirre, 2004).

Caquetá Department is part of the Amazon basin. Virgin forests exist on nearly 60 percent of this territory, mostly placed on the eastern slope of the eastern Andes where the headwaters of the Caquetá river – one of the major tributaries of the Amazon – are located. Nearly 70 percent of Caquetá's territory is governed by laws enforcing protection or special management of its natural resources (Aguirre, 2004), but these are poorly enforced.

The General Social Security Health System seeks to provide social protection to the most vulnerable part of the population and assure that they receive appropriate healthcare and access to basic services. However, this department's healthcare goals have never been met fully. In fact, many reserves and settlements do not have basic health services. Caquetá's inhabitants generally poor health situation is, in general terms, the result of several factors: fast urbanization accelerated by displacement, presence of illicit crops such as coca, and armed conflict. Poverty is severe, and there is low insurance coverage because of scarce economic resources. Therefore, healthcare services are inadequate for the population. The department has additionally identified the following problems: high maternal and infant morbidity rates (one of the highest in the country) resulting from difficulties to access prenatal care; lack of safe delivery programmes and lack of monitoring

Table 5.1 Most common Ingano botanical and faunal resources from the forest

Common name	*Scientific name*	*Family*	*Uses*
Botanical resources			
Palma Guajo	*Attalea* sp.	Palmaceae	Food
Palma mil pesos	*Jessenia bataua*	Palmaceae	Food (edible oil)
Balso	*Ochroma lagopus*	Bombacaceae	Timber
Bilibil	*Guarea Trichiloides*	Meliaceae	Timber
Carbonero	*Albizzia carbonaría*	Mimosaceae	Timber
Fono	*Schweilera* sp.	Lecythidaceae	Timber
Árbol del Pan	*Arthocarpus comunis*	Moraceae	Fruit and timber
Cacao de monte	*Theobroma cacao*	Stherculiaceae	Fruit and timber
Cachimbo	*Eritrina glauca*	Fabaceae	Ornamental and timber
Cobre	*Apuleia* sp.	Caesalpinaceae	Ornamental and timber
Nacedero	*Eufhorbia* sp.	Eufhorbiaceae	Ornamental and living fence
Matarratón	*Glirisida sepium*	Fabaceae	Medicine and fodder
Yarumo	*Cecropia* sp.	Moraceae	Protector
Caucho	*Ficus* sp.	Moraceae	Raw material
Sangre toro	*Virola theidora*	Myristicaceae	–
Faunal resources			
Ayumara	*Hoplias malabaricus*	Erythrinidae	Meat
Bocachico	*Curimata spilura*	Curimatidae	Meat
Hoatzin	*Opisthocomus hoatzin*	Opisthocomidae	Meat
Mojarra o Jacho	*Eaquidens* sp.	Cichlidae	Meat
Peccary	*Tayassu tajacu*	Tayassuidae	Meat
Sardina	*Astyanax* sp.	Characidae	Meat
Spectacled caiman	*Caimán cocodrilus*	Crocodylidae	Meat
Tapir	*Tapirus terrestres*	Tapiridae	Meat
Paca	*Agouti paca*	–	Meat, medicinal
Armadillo	*Dasypsus novemcinctus*	Dasypodidae	Meat, medicinal. Ornamental
Panguana	*Cryptorellus undalutus*	Tinamidae	Pet and meat
Paujil	*Mutum salvini*	–	Pet and meat
Red handed tamarin	*Saguinuisniigrcollis*	–	Pet and meat

– No data.

of children's growth and development; and lack of coordinated policies that ensure suitable food for pregnant women and children under five years of age. In addition, high incidence and presence of pathologies related to poor water quality are aggravated by weather conditions and primitive basic drainage infrastructure. With regard to education, average lower school enrollment and graduation is under 70 percent, while middle school coverage is less than 15 percent (Aguirre, 2004).

Displaced populations caught in the middle of the armed conflict, or whose lands have been affected by fumigation of illicit crops, presents still another challenge. Human rights violations because of the ongoing conflict compound these challenges. The Social Solidarity Network of Caquetá lists almost 7 927 displaced families or 38 000 displaced people (Aguirre, 2004).

Since the creation of the 1991 Constitution, indigenous communities have their own legislation,

which allows them to ensure the existence and proper implementation of their traditional socio-political organization. However, communities are not fully capable of undertaking these processes and therefore protecting their culture and traditions. Lacking effective voice capable of dealing with the government and the outside world in general, these communities continue to be isolated and receive little support for their programmes and activities.

Caquetá is not properly covered by aqueduct or adequate sewer systems, especially in rural areas, and this is one of the most significant causes of morbidity, gastrointestinal and diarrhoeal diseases. Aqueduct distribution networks have a 25 percent deficit in the urban area, and 60 percent in the rural area. "Department municipalities do not have an efficient system that allows them to properly dispose of solid residues. Although most of this work (62.5 percent) is carried out through garbage collection, there are no adequate sanitary dump stations, but dumps with no kind of control or respect for environmental protection laws" (Aguirre, 2004).

The San Jose del Fragua Municipality traditionally belongs to the Ingano people, who arrived from Puerto Limon and Mocoa escaping Catholic missions and colonization. The municipality was officially created in 1985, although it had been established as a town as early as 1959 (Parra, 2004). The municipality is located in eastern Caquetá, 37.28 miles south of Florencia. It covers 76 367 square miles, 540 m above sea level. Its average temperature is 27 °C, with relative humidity of 87 percent. Average precipitation is 3 500 mm a year. Yurayaco is located at 297 m above sea level. The most important agricultural products are banana, sugarcane, pineapple and corn. Other significant products are rubber, cocoa, *araza*, *cocona*, *copoazu*, *chontaduro*, *caimarona* grape, coffee and *borojo* (Parra, 2004).

The most common botanical and faunal resources from the forest (Parra, 2004) are shown in Table 5.1.

Seven watersheds are found within the municipality's territory, most originating in the mountains. These rivers all flow into the Amazon. They are rich in sediment and vegetable material. Deforestation also contributes to sediments entering the rivers. Because of the steepness of slopes, these rivers have a strong current (Parra, 2004).

As for health care, traditional indigenous medicine is widely accepted and practised. However, only 42 percent of Ingano families receive healthcare aid. Typically, rural areas have the lowest access to western healthcare. Common diseases in Caquetá include malaria, dengue, yellow fever, trypanosomiasis, schistosomiasis, oncocercosis and leishmaniasis. Diarrhoeal diseases and respiratory infections also present especially high rates. Unfortunately, tuberculosis and some diseases that could be forestalled through immunization are present. Chronic non-transmissible diseases are not among the most critical contributors to morbidity or mortality rates, but their incidence has been increasing lately (PAHO, 1994).

Besides medical and dental assistance, the Departmental government provides some promotion and prevention activities, including the Extended Immunization Plan as required by national law. However, the indigenous populations receive even less of this attention than other inhabitants of Caquetá.

Ingano people

Ingano indigenous communities in Caquetá are organized into cabildos – the community's maximum authority – that elect a governor as well as a mayor, sheriff or constable, secretary, treasurers and other necessary officers. These posts are elected by popular vote at indigenous assemblies:

> The Ingano come from several indigenous ethnos: the migratory groups living in the Colombian Amazonian piedmont come from the Peruvian and Ecuadorean Amazon; those inhabiting the lower Putumayo, known as Mocoas; and some are the last survivors of the Andakies, fighting people that never surrendered to the Spanish conquerors.
>
> The most important settlement is located in Sibundoy Valley, located near the upper Putumayo River at 2 200 m over sea level. They also inhabit some rural territories in the Departments of Putumayo, Caquetá and Cauca. However, their

migratory spirit has led them to some of the big cities of Colombia and neighboring countries. Over the last few years, they have experienced a great demographic recovery, and up to this moment 35 000 Ingano people are estimated to live throughout the country.

The Ingano people speak the Inga language, a linguistic form of Quechua. There is no exact information about their Mocoas and Andakies ancestors' original dialect. With the latest colonization movement at the beginning of the last century and the presence of Capuchin missionaries, Ingano people were isolated and fragmented into five groups: a) those inhabiting at Sibundoy Valley, b) those at the neighboring regions of Mocoa, Bajo Putumayo, c) those living in the Bota Caucana, d) those at the region of el Fragua in Caquetá, and e) those who have migrated to villages in Nariño, Valle, Amazon, or to the big cities. This is the reason why the Ingano people are represented by several political organizations: Musu Runacua, OZIP and the Asociación de Cabildos del Valle de Sibundoy in Putumayo, Zonal de la Baja Bota Caucana in Cauca Department, and Tanda Chiridu Inganokuna in Caquetá.

Besides their demographic recovery, the Inganos have managed to consolidate more than 18 reservations properly acknowledged by the state. Although these territories are relatively small, they are distributed throughout the immense geography of the Amazon piedmont.

There are two main groups of Ingano people: the largest group, inhabiting the highlands, which incorrectly led them to be anthropologically classified as "High Andes" people; the other group inhabits the lowlands. The geographic diversity has also made the cultural variety extremely significant, although both groups share language, traditions, and especially traditional medicine like the use of medicinal plants.

(UMIYAC, 1999)

Geographically, these communities are located at the western part of the Department. The territory is close to Cauca and Putumayo Departments, only divided by the Caquetá and Fragua River that runs through the lower part of the Bota Caucana:

The territorial occupation of the indigenous settlements exemplifies how the community uses their land, for the Ingano people need the entire territory for their sustenance and recreation. Each family daily uses basic elements of the surroundings to survive and satisfy their needs. Each year, these communities occupy around 4.94 acres for cultivation, using a rotating cropping system in permanent crop areas.

One of the most important cultural expressions of the Inganos is the "Calusturinda", carnival or party in honour of the rainbow. This carnival takes place during mid-February or beginnings of March, and it is considered the most important popular event of the year. It is also called Atun Puncha, or "big day", and represents for the Ingano people the beginning of the year, joy, reconciliation, and the return of those who had left. Special dancing events take place during this festivity. People drink chicha [corn beer] and sing. Typical costumes are colourful and there are lots of games and music. As for religious traditions, the most important rite is drinking Ambi Huasca or Yagé. This drink is obtained from the plant called [ayahuasca], and it is sacred and medicinal for the Ingano people.

(Parra, 2004)

Colombian nutritional condition

According to statistics presented by UNICEF-Colombia, in terms of global malnutrition (weight/age), 10 percent of the country's population suffered from severe malnutrition or was below two standard deviations during 1990. This percentage went down to 8.4 percent in 1995 and to 6.7 percent in 2000. On the other hand, 21 percent of the population was found to suffer from chronic malnutrition (height/age) during 1990, 15 percent in 1995 and 13.5 percent in 2000. As for acute malnutrition (weight/age), there are no records for 1990, but 1.4 percent was reported for 1995, and 0.8 percent for 2000.

UNICEF also declared Colombia free of iodine deficiencies in 1998, after establishing the presence of

iodated salt in 91 percent of families, and just 7 percent of level I goitre, representing a very low risk for school-going age children. In Colombia, all wheat flour produced within the country must be fortified with iron, vitamin B_1, vitamin B_2, niacin and folic acid. With regard to anaemia, 25 percent of children under five years presented less than 11 g/dl haemoglobin in 1995, with those under two years of age being the most affected. The same percentage was recorded for groups of women of reproductive age, with the percentage increasing to 43 percent in gestating women (UNICEF-Colombia, n.d.).

These figures show an improvement in nutrition. However, rural areas located far from municipality administrative centres, such as in Caquetá where many Inganos live, do not receive adequate attention or services generally present the lowest of all health and nutrition indexes.

Many of the positive changes observed in nutrition indexes are attributed to the National Nutrition Plan developed in Colombia for the period 1999 to 2005. Nevertheless, the important gap between different areas of the country cannot be ignored. The Caquetá Department, for example, has the second highest malnutrition figures in the country (UNICEF-Colombia, n.d.).

According to UNICEF:

> ... death risk among children under five is extremely high, as well as the possibility that their adequate development suffers serious limitations. Many of today's undernourished children did not receive the benefits of breast milk, or belong to families who have been displaced by the armed conflict. Women in these families are often undernourished, incapable of hygienically caring for their babies, or otherwise attending to their children. The Pacific Coast region has the highest figures of children under five suffering from chronic malnutrition. In this region, for the year 2000, only 12 percent of women were exclusively breastfeeding their children during the first six months. This fact reveals that cultural practices established by industries producing baby food products during the 1960s or 1970s are very hard to change.
>
> *(UNICEF-Colombia, 2007)*

Methodology

We discussed, modified and signed with the indigenous leaders the collective consent that was drafted by the Centre for Indigenous Peoples' Nutrition and Environment (CINE): prior consultation, consensus decision-making and the protection of their rights as indigenous communities were guaranteed. For the Inganos, the project was not considered research, but rather an instrument to improve and implement their Life Plan and to help them move towards cultural, environmental, productive, and community health recovery. Because of the civil conflict in Colombia that has its epicentre in Caquetá and Putumayo, the project strategy must be one of gradual extension and replication on the part of the indigenous groups. On the other hand, the Inganos do not recognize divisions between shamanism, health, diet, plants and nature. Therefore, the project was viewed as integrating all these issues in a holistic manner.

Given the prior instances of exploitation and of abuse of intellectual property, the Inganos do not approve of the collection of blood samples and subsequent medical laboratory analysis. It is the opinion of the indigenous leaders that these types of projects should result in better conditions for access to food and food availability than in diagnoses and documents. Initially, the expected project's development was hindered by the occasional political difficulties that took place in the area, obstructing access to the Ingano region.

An interdisciplinary research team was created for the project, Nutrición y Alimentos Tradicionales (Traditional Foods and Nutrition), which began its activities on 1 May 2004. The project was developed with the communities belonging to the Asociación de Cabildos Tandachiridu Inganokuna (Tandachiridu Inganokuna Indigenous Cabildos Association). Participating reservations included Yurayaco, Brisas, San Miguel, Niñeras and Cosumbe, all in the Department of Caquetá. The participating communities with which the group had established a previous relationship signed a collaboration letter at the beginning of the project. The participation of each member was subsequently established, presented and discussed.

Table 5.2 **Ingano traditional food list** *(160 species/varieties)*

	Scientific name	*English/common name*	*Local name*	*Spanish name*
	Vegetables, Tubers and Tree			
1	*Allium* sp.	Onion	cebolla	–
2	*Begonia plebeja*	–	caña (caña agria)	singo
3	*Capsicum annuum*	Chili pepper	cjí	aji
4	*Carludovica palmata*	Palm tree greens	cogollo de iraca	–
5	*Carludovica palmata*	Panama hat plant	cogollo de bombona (bombona)	–
6	*Chrysophyllum mexicanum*	Star apple	–	
7	*Cucumis sativus*	Cucumber	pepino	–
8	*Dioscorea alata*	Yam	name	–
9	*Eryngium foetidum*	Cilantro	cilantro cimarrón	–
10	*Guilielma gasipaes* (2 var.)	Peach palm	chontadura, chotaduro	chontadura bagre, chontaduro
11	*Ipomoea batatas*	Sweet potato	batata	–
12	*Lycopersicon esculentum*	Tomato	tomate	–
13	*Manihot esculenta*	Yucca greens	cogollo de yuca	cogollo de rumo
14	*Manihot esculenta*	Cassava, Yucca, Manioc	yuca	
15	*Oenocarpus bataua*	Ungurahui (Fruit and Palm tree)	milpes (palma de milpes- seje)	milpes
16	*Oenocarpus bataua*	Milpes milk	leche de milpes	milpes
17	*Paullinia yoco*	Yoco vigne	yoco	–
18	*Phaseolus vulgaris*	Kidney bean	fríjol	fríjol
19	*Pouteria* sp.	Palm tree variety	caimo	–
20	*Sechium edule*	Chayote	yota	yota
21	*Zea mays*	Corn	maíz	sara
22	–	–	nina waska	–
23	–	–	bore	bore
24	–	–	guansoco	–
25	–	–	tintero	–
26	–	–	mereñe	–
	Fruits			
1	*Allium sativum*	Garlic	ajo	ajo
2	*Ananas comosus*	Pineapple	piña	piña
3	*Annona cherimolia*	Custard apple	chirimoya	custard apple
4	*Annona muricata*	Soursop	guanábana	guanábana
5	*Pachira aquatica*	Brazil nut	castaño	–
6	*Carica papaya*	Papaya	papaya	papaya
7	*Pourouma cecropiifolia*	Amazon tree-grape	uva caimarona	caimarona
8	*Citrus sinensis*	Orange	naranja	naranja
9	*Citrus limon*	Lemon	limón	limón
10	*Cocos nucifera*	Coconut	coco	coco
11	*Syagrus* sp.	Coconut (Wild)	coco silvestre	syagrus

Continued

Table 5.2 *(continued)* **Ingano traditional food list** *(160 species/varieties)*

	Scientific name	*English/common name*	*Local name*	*Spanish name*
12	*Eugenia stipitata*	Araza	arazá	arazá (wild guava)
13	*Inga feuillei*	Pacay	–	–
14	*Matisia cordata*	Sapote	zapote	zapote chupa chupa
15	*Musa regia*	Plantain	plátano	plátano
16	*Musa sapientum*	Banana	banano	bando
17	*Musa* sp. (4 var.)	Plantain variety	chiro, pilipita, pildoro, guineo real	platano pilipita
18	*Psidium guajava*	Guava	guayaba	guayaba
19	*Passiflora multiflora*	Giant granadilla	badea	–
20	*Passiflora edulis, Passiflora edulis f. flavicarpa* if yellow	Passion fruit, purple, yellow	maracuyá	maracuyá
21	*Persea Americana*	Avocado	aguacate	aguacate
22	*Rheedia madruno*	Madrono	madroña	–
23	*Theobroma bicolor*	Peruvian cacao, Tiger cocoa, Wild cacao`	cacao maraco	–
24	*Theobroma cacao*	Cacao	cacao	–
25	*Theobroma subincanum*	Wild cacao	cacao silvestre	–
26	–	–	pomo	pomo
	Animals			
1	*Alouatta seniculus*	Red howler monkey	cotudo, koto	mono cotudo, mono bombo
2	*Cabassous unicintus*	Armadillo	matiguaja, chichico, gurre	armadillo rabo de trapo
3	*Cabassous unicintus* and *Geochelone carbonaria*	Armadillo and red-footed tortoise blood	sangre de gurre y morrocoy	sangre o claros
4	*Cebuella pygmaea*	Pygmy marmoset	chichico	mico titi - leoncito
5	*Cebus albifrons*	With-fronted capuchin	yura chichikú	mico blanco
6	*Cebus apella*	Brown capuchin	comendero	mico maicero
7	*Chiropotes satanas*	Black bearded saki	viraño	cucus conejo
8	*Crocodilus fuscus*	Spectacled caiman	babilla	babilla
9	*Cuniculus paca*	Spotted cavy	yulo	boruga
10	*Dasyprocta fuliginosa*	Black agouti	guara	atun conejo
11	*Didelphis albiventris*	White-eared opossum	raposa	chucha
12	*Geochelone carbonaria*	Red-foot tortoise	sacha testuja	morrocoy
13	*Iguana iguana*	Iguana	iguana	iguana
14	*Lagothrix logothricha*	Wooly monkey	churuco	mono
15	*Lagothrix* sp.	Big monkey	churuco grande	mono atun
16	*Mazama americana*	Red brocket	atun taruka	venado grande
17	*Mazama rufina*	Little red brocket	uchipa taruka	venado pequeño
18	*Mazama* sp.	Deer	taruka	venado
19	*Myoprocta pratti*	Green acouchy	tintin	titie
20	*Myrmecophaga tridactyla*	Giant anteater	oso caballuno	oso caballuno
21	*Nasua brasiliensis*	Coatimundi	cusumbe	cusumbe

Continued

Table 5.2 *(continued)* **Ingano traditional food list** *(160 species/varieties)*

	Scientific name	*English/common name*	*Local name*	*Spanish name*
22	*Pitechia monachus*	Monk saki	oso mono	mico volador
23	*Podocnemis expansa*	Side neck turtle	charapa	tortuga
24	*Potos flavus*	Kinkajou	tuta mono	perro de monte
25	*Saguinus inustus*	Mottled-faced tamarin	yana chichikú	mico negro
26	*Saimiri sciureus*	Squirrel monkey	caspi cara chichico	mico pielroja - mono ardilla
27	*Sciuridae*	Squirrel	callambero	ardilla
28	*Sciurus igniventris*	Northern Amazonian red squirrel	ardita	ardilla colorada amazónica
29	*Spermophilus adocetus*	Tropical ground squirrel	sirindango	sirindango
30	*Tamandua tetradactyla*	Anteater	chucha jueniko	oso hormiguero
31	*Tapirus terrestris*	Tapir	danta	Dant
32	*Tayassu tajacu*	Collared peccary	boruga cerrillo	cerrillo
33	–	Animal viscera	menudencia	visceras
34	–	–	maisero	comendero
35	–	–	marimba	blas
36	–	–	sicse	–
	Fish			
1	*Aequidens latifrons*	Ray-finned fish	mojarra	contacuro
2	*Alectis ciliaris*	Ray-finned fish variety	zapatero	–
3	*Brachyplatystoma flavicans*	Long whiskered catfish	dorada	–
4	*Brycon* spp.	Sábalo	sábalo	sasidina
5	*Cetopsis coecutiens*	Ray-finned fish variety	pege ciego	puño ñave
6	*Gasterosteus aculeatus*	Three-spined stickleback	espinoso	–
7	*Geophagus steindachneri*	Redhump eartheater	jachos	–
8	*Harengula thrissina*	Pacific flatiron herring	sardina	–
9	*Hoplias malabaricus*	Trahira	denton, mojoso	kirosapa
10	*Megalonema platycephalum*	Long whiskered catfish	barbudo	wira barbudo
11	*Menticirrhus panamensis*	Ray finned fish	botello	
12	*Panaque nigrolineatus*	–	cucha real	caraguaja
13	*Prochilodus nigricans*	Black prochilodus	bocachico	chalua
14	*Pseudancistrus* sp.	–	cucha pequeña	chiki caqui
15	*Pseudoplatystoma fasciatum* (2 var.)	Barred sorubim, Tiger catfish	pintadillo	Pintadillo, pintadillo bagre
16	*Pseudoplatystoma filamentosum*	–	cheo	pintadillo chalua (pintadillo rayado)
17	*Pseudoplatystoma tigrinum*	Long-whiskered catfish	tigre bagre	tigre bagre
18	*Sardinella aurita*	Round sardinella	sabala dorada grande	sardina dorada atun
19	–	–	cucha	caraguaja
20	–	–	corbao	corcobao
21	–	–	cucha burro	caraguaja
22	–	–	cuchineja	–

Continued

Table 5.2 *(continued)* **Ingano traditional food list** *(160 species/varieties)*

	Scientific name	*English/common name*	*Local name*	*Spanish name*
23	–	–	dentun real	pita chalua
24	–	–	fauton	hachacabo
25	–	–	pescado	chaiwa
26	–	–	saino	sacha kuchi
27	–	–	sambica	chalua sambica
28	–	–	tusa	karauaja
29	–	–	domesalla	–
30	–	–	guaraja	rina ñagui
31	–	–	mojiño	–
32	–	–	puka chupa	–
33	–	–	puño	latiran
34	–	–	rabicolorado	puca chupa
35	–	–	rabinegra	–
36	–	–	sabaleta	–
37	–	–	corbao	corcobao
	Birds			
1	*Anseranatidae* (general)	Duck	pato	pato
2	*Brosimum utile*	Sande	panguana	panguana
3	*Cheirodon axelrodi*	Cardinal	cardenal	yabuar pisco
4	*Columba* spp.	Pigeon	torcasa	puca tostolita
5	*Cracidae* (4 var.)	Guan	pava cuyuya, pava taro, pajuil colorado, pajuil negro	yura pava, puka pava, resador, pajuil yana
6	*Icteridae*	–	muchilero	muchilero
7	*Melleagris* sp.	Turkey	pavo	puca pavo
8	*Penelope purpurascens*	Crested guan	pava	pava
9	*Phasianidae*	Large partridge	gallineta, Gallineta de monte	atún perdiz, atun pisdez
10	*Psittaciformes*	Parrot	loro	orito
11	*Ramphastus ambiguus*	Crimpson rumped tucanet	picon	tucan
12	*Thraupis* sp.	Blue bird	azulejo	pali piso
13	*Psaricolius angustifrons*	Blood of black-billed oropendola	sangre de muchilero	oropéndola
14	–	Parakeet	perico	koleguiro, colejero
15	–	–	rapiño	pisco gavilán
16	–	–	chilanga	–
17	–	Bird	pisco	–
18	–	–	pitojai	sillo picho
	Insects			
1	*Atta* spp.	Leaf cutting ant	hormiga arriera	–
2	*Atta* sp.	Ant	hormiga	arriera
3	*Coleoptera*	Beetle	mojojoy	kuru
4	*Pomacea maculate*	Snail	caracol	churo

Continued

Table 5.2 *(continued)* **Ingano traditional food list** *(160 species/varieties)*

	Scientific name	*English/common name*	*Local name*	*Spanish name*
	Drinks			
1		Fermented banana/plantain drink	chicha ó anduche	–
	Miscellaneous			
1	*Auricularia auricula*	Ear fungus (mushroom)	cayamba	oreja de palo
2	–	Edible mushroom	cayamba	oreja de palo
3	–	Mushroom	callamba	–
4	–	Frog	guanvoy	–

– No data.

The collaboration agreement and general consent were adjusted to the communities' expectations and signed. A training workshop followed, which focused on the development and management of survey instruments: data format, surveys, anthropometric analysis and community workshops.

Research in the community was conducted as outlined in the methodology from CINE (www.mcgill.ca/cine/research/global.pdf). Research activities comprised focus groups to determine species in the traditional food list, and the ways that the Ingano foods are perceived and used. In addition, interviews with 34 women and 8 men, including several shamans, were completed. Twenty-four hour diet recalls were conducted with adults. Anthropometry was conducted on 116 individuals – 43 children (0–12 years) and 73 adolescents/adults (>12 years) – with standard scales and tape measures used in health clinics in the region. Several discussions were held with an additional 20–25 adult Ingano community leaders and health personnel, and existing reports on traditional medicines were reviewed.

Excel formats were used to enter a list of traditional foods to make the information easy to handle and process. Individual interviews with people belonging to the Ingano culture elaborated the food information. Food classification according to traditional attributes or categories was derived from personal interviews. Particularly emphasized were the hot and cold foods, the irritating and soothing foods, and the tonic and purgative foods.

Results

Over 160 types of food were described. Some were varieties of the same species, and, in some cases, parts of the same species were referred to separately. The research on traditional food confirmed the loss of many traditional resources, especially game animals and fish, insects and tubers, roots, seeds and leaves of indigenous plants. These foods have been divided according to the suggestion of focus groups in the following categories: small animals, big animals, traditional animals, traditional furry animals, monkeys, insects, birds, small fish, big fish, traditional fish, palm trees, platanos (varieties of banana), fruits, root foods, other plants, carbohydrates and cereals. This division allowed clarification of some characteristics of the classified species. The availability calendar of most of these foods was not especially significant. Since the communities are located in tropical areas, weather variations are not drastic enough to be distinctive. However, wild species do appear in specific seasons, while those that are grown are available depending on where they are planted. This provides food year round. Table 5.2 records a list of Ingano traditional food, containing 160 species.

Generally, the reason that certain traditional foods remained in the diet has been availability rather than demand, although some traditional Inga foods were also highly appreciated for their nutritional value. Since in many cases foods were wild, information on their

Table 5.3 Nutrient composition of selected Ingano traditional food

Food Items	Energy kcal	Energy kJ	Protein g	CHO g	Fat g	Ash g	Vitamin A RE	Vitamin C mg	Iron mg	Phosphorous mg
Vegetables, Tubers, Trees and Herbs										
Chontaduro[1]	185	773	3.3	–	4.6	–	730	20	0.7	–
Ñame[1]	105	439	2.4	–	0.2	–	0	6	2.4	–
Palma de milpes or Seje[2]	55	230	7.4	37.3	–	–	–	–	–	–
Fruits										
Araza[3]	15	63	0.4	–	0.2	–		20.0	0.60	–
Papaya[1]	30	125	0.5	–	0.1	–	70	75.0	0.30	–
Pina[1]	51	213	0.4	–	0.1	–	0	12.0	0.40	–
Platano[1]	140	585	1.2	–	0.1	–	100	20.0	0.50	–
Zapote[1]	49	205	1.1	–	0.1	–	1 200	20.0	1.40	–
Insects										
Churo[4]	74	309	16.2	–	–	–	–	–	–	112
Hormiga[4]	393	1 643	20.4	4.00	33.0	10.0	–	–	–	–

– No data.
1 Instituto Colombiano de Bienestar Familiar, 2000.
2 Diaz and Ávila, 2002.
3 Corporacion Red Pais Rural, 2007.
4 Edible LTDA, 2007.

Nutrient composition of selected Ingano traditional food – dry matter basis*

Food Items	Crude protein	Neutral detergent fiber	Acid detergent fiber	Ash (Ethereal extract)	Fat	Calcium	Phosphorous	Magnesium	Zinc	Copper	Iron
	Per 100g basis								Parts per million		
Caña agria	8.5	53.1	41.3	6.2	–	0.22	0.28	0.31	9	5	340
Caracol	65.6	–	–	13.9	3.7	5.31	0.47	0.17	1 270	45	1 833
Cilantro cimarrón	13.5	63.8	65.9	39.1	–	0.50	0.43	0.21	25	28	9 304
Cucha	52.1	–	–	31.0	12.8	2.34	0.47	0.13	269	6	1 792
Milpes	4.0	–	–	6.8	11.4	0.03	0.06	0.03	1	2	61
Mojojoy	28.7	–	–	1.8	64.4	0.02	0.25	0.07	266	9	76
Yoco	8.4	71.5	69.2	3.1	2.0	0.50	0.36	0.12	14	5	389

* Laboratorio de Nutricion, Departmento de Ciencias de la Produccion Animal, Faculted de Medicina Veterinaria Yde Zootecnia, Universidad Nacional de Colombia 2005.
– No data.

Table 5.4 Literature values for nutrients in selected Ingano traditional food per 100 g edible portion

Common name
chontaduro / peach palm
Scientific name
***Guilielma gasipaes* Bailey**

General characteristics
Chontaduro is a neotropical palm fruit.

Nutritional characteristics
In 100 g of cooked pulp:
Energy: 185 Kcal
Protein: 3.3 g
Fat: 4.6 g
Iron: 0.7 mg
Vitamin A: 730 RE
Vitamin C: 20 mg

> **Instituto Colombiano de Bienestar Familiar (ICBF).** 2000. *Tabla de composición de alimentos Colombianos.* Bogota, ICBF.

Common name
mojojoy / palm grub
Scientific name
Rynchophorus palmarum
(Wilson, 1999)

General characteristics
For indigenous groups, insect gathering is one of the most important activities for food acquisition. The most desired species are the larva, or mojojoy, of the seje palm, and the mojojoy of the chontaduro. The lunar cycle determines the gathering of this species, along with the "hand" of the one that brings down the palm.

Nutritional characteristics
In 100g edible portion, smoke dried (Dufour, 1987):
Energy: 661 g
Protein: 24.3 g
Fat: 55.0 g
Ash: 1.0 g

> **Dufour, D.L.** 1987. Insects as food: a case study from the Northwest Amazon. *American Anthropologist*, New Series. 89(2): 383–397.
> **Wilson, D.J.** 1999. *Indigenous South Americans of the past and present: an ecological perspective.* Boulder, Westview Press.

Common name
milpes / bataua
Scientific name
Oenocarpus bataua

General characteristics
Seje palm is of great importance in the traditional food system of many Indigenous Peoples in Colombia and South America because its fruits can be harvested all year long. Among these communities this species is used as raw material to create or prepare multiple products: medicines, oil, chichi and milk (Balick and Anderson, 1986).

Nutritional characteristics
Oil extracted from this palm is similar to olive oil. The main difference between these two is that this palm oil has three times less linoleic acid than olive oil.
In the Amazonian region, milk obtained through a maceration process of the flesh of the palm is consumed very widely. The milk's protein content is comparable to that from an animal as well as to the majority of the grains and leguminous; the biological value of this protein is similar to that of the casein. The "milk" of the seje is comparable to the human one in its content of fat, proteins and carbohydrates – its caloric content provides 55.3 % of calories of the oils, 7.41 % of protein and 37.3 % of carbohydrates (Dìaz y Ávila, 2002).
The nutritional value of this milk is (Dìaz y Ávila, 2002):
Calories: 55.3%
Protein: 7.41%
Carbohydrates: 37.3%
The nutritional value in 100 g of fruit is (1):
Protein: 8 g
Fat: 12 g
Fiber: 15
And in pulp – husk:
Protein: 4 g
Fat: 28 g
Fiber: 3 g

> **Balick, M.J. & Anderson, A.B.** 1986. *Dry matter allocation in* Jessenia bataua *(*Palmae*). Acta Amazonica.* 16(17): 135. Cali, Centro Internacional de Agricultura Tropical.
> **Diaz, J.A. & Avila, L.M.** 2002. *Sondeo del mercado mundial de Aceite de Seje (Oenocarpus bataua).* Bogota, Instituto de Investigación de Recursos Biológicos Alexander von Humboldt. 18 pp (available at www.minambiente.gov.co/viceministerios/ambiente/mercados_verdes/INFO%20SECTORIAL/Sondeo%20del%20Mercado%20de%20Seje.pdf).
> **Rios, H.A.** 1997. *Proceso de Germinación, transplante y características del Fruto de la Palma de Milpesos Jessenia Batua*. Cartilla No. 2. Quibdo, Ministerio de Agricultura-Universidad Tecnológica del Choco.

Common name
zapote
Scientific name
Matisia cordata

General characteristics
Fruit belonging to the third group of food according to the alimentary guides for Colombian population. It is fleshy, with little pulp, accompanied by a seed that occupies most of its weight. It is produced in warm areas and is harvested twice a year.

Nutritional characteristics
In 100 g of pulp without seeds:
Energy: 49 Kcal
Protein: 1.1 g
Fat: 0.1 g
Iron: 1.4 mg
Vitamin A: 1200 RE
Vitamin C: 20 mg

> **Instituto Colombiano de Bienestar Familiar (ICBF)**. 2000. *Tabla de composición de alimentos Colombianos.* Bogota, ICBF.

Common name
papaya
Scientific name
Carica papaya L.

General characteristics
Fruit belonging to the third group of foods, according to the alimentary guides of the Colombian population. Considered an excellent laxative, rich in vitamins and fiber.

Nutritional characteristics
This fruit, known to be laxative, has seeds with medicinal properties.
In 100 g of pulp:
Energy: 30 Kcal
Protein: 0.5 g
Fat: 0.1 g
Iron: 0.3 g
Vitamin A: 70 RE
Vitamin C: 75 mg

> **Instituto Colombiano de Bienestar Familiar (ICBF).** 2000. *Tabla de composición de alimentos Colombianos*. Bogota, ICBF.

Common name
ñame / yam
Scientific name
Dioscorea alata L.

General characteristics
Tuber belonging to the first group of foods, according to the alimentary guides of the Colombian population. A rich source of carbohydrates.

Nutritional characteristics
In 100 g:
Energy: 105 Kcal
Protein: 2.4 g
Fat: 0.2 g
Iron: 2.4 g
Vitamin A: 0 RE
Vitamin C: 6 mg

> **Instituto Colombiano de Bienestar Familiar (ICBF)**. 2000. *Tabla de composición de alimentos Colombianos.* Bogota, ICBF.

Continued

Table 5.4 *(continued)* **Literature values for nutrients in selected Ingano traditional food per 100 g edible portion**

Common name
piña / pineapple
Scientific name
***Ananas comosus* L. Merril**

General characteristics
Fruit belonging to the third group of foods according to the alimentary guides of the Colombian population. Pineapple aids digestion and has laxative properties as well.

Nutritional characteristics
In 100 g of pulp:
Energy: 51 Kcal
Protein: 0.4 g
Fat: 0.1 g
Iron: 0.4 g
Vitamin A: 0 RE
Vitamin C: 12 mg

> **Instituto Colombiano de Bienestar Familiar (ICBF).** 2000. *Tabla de composición de alimentos Colombianos*. Bogota, ICBF.

Common name
platano / plantain
Scientific name
Musa regia L.

General characteristics
Tuber belonging to the first group of foods according to the alimentary guides of the Colombian population. Especially used for child nourishment through products made of plantain flour.

Nutritional characteristics
In 100 g of pulp:
Energy: 140 Kcal
Protein: 1.2 g
Fat: 0.1 g
Iron: 0.5 g
Vitamin A: 100 RE
Vitamin C: 20 mg

> **Instituto Colombiano de Bienestar Familiar (ICBF).** 2000. *Tabla de composición de alimentos Colombianos.* Bogota, ICBF.

Common name
caña agria
Scientific name
***Begonia plebeja* Liebm.**

General characteristics
This plant has an edible stem. It is consumed fresh; in some cases with nothing but salt. The caña agria is an herb with its stem covered in down. Its leaves are large, measuring from 7 cm (2.76 in) to 20 cm (7.87 in) long. Its flowers are white or pale rose, and the fruit is an elongated capsule of about 12 mm (0.47 in), with uneven wings. One is wider and longer than the other.

> **Instituto Nacional de Ecología.** *VII. Tallo-Kuyé o Pistá.* México (available at www.ine.gob.mx/ueajei/publicaciones/libros/274/vll.html).
> **Eulàlia Garcia Franquesa (AAMZB) & Jordi Pascual Sala (MUSAS).** *Llistat de plantes autoctones I els seus usos medicinals* (available at www.bcn.es/museuciencies_fitxers/imatges/ImatgeNoticia187.pdf).
> **Chavarría, F., Espinoza, R., Guadamuz, A., Perez, D. y Masís, A.** 1998. *Species page de Begonia plebeja* (Begoniaceae).
> **Area de Conservación Guanacaste, Costa Rica.** *Species Home Pages* (available at www.acguanacaste.ac.cr).

Common name
araza / wild guava
Scientific name
***Eugenia stipitata* Mc Vaugh**

General characteristics
One of the most distinctive Amazonian wild fruits is the araza, noted for its exquisite aroma and bitter taste. The araza is used to prepare juices, sweets, marmalades, yogurts, and cakes. It can also be used for perfume production due to its scent.
The plant's yield and pulp percentage is high – 34 934 Kg (77 000 lb approx.) of fruit /Ha; 81% compared to others such as caimito – 204 kg (450 lb) – of fruit /Ha; 59%, and camu-camu 933 kg (2056 lb) of fruit/Ha; 62%, respectively. Most part of the production grows wild.

Nutritional characteristics
In 100 g of pulp:
Energy: 15 Kcal
Protein: 0.4 g
Fiber: 0.3 g
Fat: 0.2 g
Vitamin C: 20 mg
Iron: 0.6 mg

> **Escobar, A., C.J. & Zuluaga, P., J.J.** 1998. *El Cultivo de Arazá.* Servicio Nacional de Aprendizaje (SENA), Regional Amazonía, Florencia-Caqueta, Corporación Colombiana de Investigaciones Agropecuarias (CORPOICA).

Common name
yoco
Scientific name
***Paullinia yoco* Schultes**

General characteristics
This plant is native to the northwest Amazon and is valued as both a stimulant and a medicine Traditionally, it has been valued as a stimulant by the Indigenous Peoples at the southeast of Colombia, Ecuador and Peru. The stem, mixed with cold water, produces a mixture of chocolate-like colour. The Putumayo Indians consume this at dawn, and usually eat nothing more until noon. After consuming just one or two cups, representing approximately 100g of the extracted material, hunger disappears for at least 3 hours, while muscles continue to be stimulated.
Reported to be antipyretic, purgative, stimulant and tonic, yoco is used by villagers to treat dysentery, fever, malaria and stomach ache. Among the Putumayo people, this plant is also used in higher doses to treat malaria fever and biliary disorders.

Etnobotanic and etnomedical information:
In the western Amazon of Colombia, in Ecuador and northern Peru, many tribes use yoco daily as stimulant and occasionally to treat fever. Although it is not food, this is a plant that makes op part of the indigenous diet. Because it is known only from the wild, deforestation and over-harvesting are endangering the plant.
The Kofans, Sionas, Ingano, Koreguajes and Secoyas scrape the bark of the stems and macerate them in cold water to ease hunger and fatigue. According to García-Barriga (1992), the traditional preparation entails taking well-formed stems and cutting them into pieces from 40 cm to 50 cm long (approximately 15 to 16 in). They clean the external bark and then scrape it, obtaining shavings equivalent to approximately 10 cm (4 in) of the liana. This amount corresponds to an approximate dose of 5g of bark. They then place the shavings in cold water and, using their hands, rub them together until the water turns milky. After straining out the bark, the beverage is then ready to be consumed. This drink has a milky reddish color and is astringent and sour.
Indigenous Peoples of the Ingano-Kamsá community in Colombia believe that yoco can also be used to treat sexual impotence, weakness and "mala hora" (the "bad hour"). (Urrea and Barreras, 1989). Among the Sionas and Kofans of the Ecuadorian Amazon, this plant is used as a stimulant, to treat malaria, and to treat most fevers in general (Lescure, 1987). Amazon peoples employ several different emetic plants including the ***Paullinia emetica***. This effect is due to the saponin content of the plant (Schultes, 1987).

Nutritional characteristics
There is no available data on its nutritional structure, but its components classify it as a medicinal plant, since the main component is caffeine (12%), mineral matter and diverse alkaloids.

> **EcoAldea**. (available at www.ecoaldea.com/).

Continued

Table 5.4 *(continued)* **Literature values for nutrients in selected Ingano traditional food per 100 g edible portion**

> **Siamazonia** (Sistema de Información de la Biológica y Ambiental de la Amazonía Peruana). (available at www.siamazonia.org.pe/archivos/publicaciones/amazonia/libros/44/texto04.htm).

> **García-Barriga, H.** 1992. *Flora medicinal de Colombia: botánica médica.* Santafé de Bogotá: Tercer Mundo Vol II, p. 149.

> **Lescure, J.P., Balslev, H., & Gallegos, R.A.** 1987. *Plantas útiles de la Amazonia ecuatoriana: un inventario crítico de los datos disponibles en Quito.* Quito, Office de la Recherché Scientifique et Technique Outre-Mer en la Pontificia Universidad Católica del Ecuador.

> **Schultes, R.E., & Hofmann, A.** 1987. *Plants of the Gods: origins of hallucinogenic use.* New York, Van der Marck Editions.

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Common name
hormiga / ant
Scientific name
Atta* sp. *sexdens/cephalotes

General characteristics
Collected year round, *Atta* sp. are leaf-cutting ants of great importance in the North West Amazonia diet. The winged reproductives or alates, and large-headed soldiers are the largest of the species and some of the largest ants known (Dufour, 1987; Ruddle, 1973).

Nutritional caracteristics
In 100 g edible portion (Durfour, 1987; Durfour, 1988):

Atta sexdens:
Protein: 39.7 g
Fat: 34.7 g
Ash: 1.6 g
Fiber: 7.4 g
Water: 6.1 g
Energy: 628 kcal
Atta cephalotes:
Protein: 48.1 g
Fat: 25.8 g
Ash: 2.3 g
Energy: 580 kcal
Water: 6.9 g

> **Dufour, D.L.** 1987. Insects as food: a case study from the Northwest Amazon. *American Anthropologist, New Series* 89(2): 383–397

> **Dufour, D.L.** 1988. The composition of some foods used in Northwest Amazonia. *Interciencia.* 13(2): 85.

> **Ruddle, K.** 1973. The human use of insects: examples from Yukpa. *Biotropica*. 5(2): 94–101

Common name
churo
Scientific name
Pomacea maculata

Nutritional characteristics
The edible percentage of churo is approximately 50%.
Nutritional composition in 100 g of edible portion:
Energy: 74.3 Kcal
Protein: 16.2 g
Calcium: 36 mg
Phosphorus: 112 mg

> **Siamazonia** (Sistema de Información de la Biológica y Ambiental de la Amazonía Peruana). (available at www.siamazonia.org.pe/archivos/publicaciones/amazonia/libros/44/texto04.htm).

nutritional value was difficult to acquire. It appears reasonable to consider that the good health attributed to these indigenous populations prior to contact has to (in part, at least) be strongly related to traditional diet, which has been disrupted by contact with the outside world.

Primary meat processing and storage techniques were salting and smoking. Many of the listed foods were only eaten fresh; food gathering among the Inganos was carried out on a daily basis, and most of these foods were consumed relatively quickly.

For food-analysis sampling, priority was given to those with potentially high nutritional value. Of the 19 foods chosen for additional analysis, we learned both from the literature and the lab that the following species are nutritionally important and need to be a part of the current and future diet:

1 *Caña agria*: bitter cane employed in the preparation of refreshing drinks.
2 *Cayamba*: large and tasty edible mushroom.
3 *Churo*: edible riverside snail.
4 *Cimarrón*: edible and medicinal herb.
5 *Cucha*: edible fish.
6 *Milpesos*: Palm tree fruit used for consumption and for edible oil.
7 *Mojojoy*: edible beetle larva from fallen palm trunks.
8 *Yoco*: liana used to prepare stimulating beverage.

Some elements of important traditional foods are presented in Table 5.3. Samples were sought for laboratory analysis of nutrients of *yoco*, *cucha*, *caracol*, *mojojoy*, *cilantro*, *cimarron*, *caña agria* and *milpes*. Samples were gathered at San Miguel del Fragua, at a height of 540 metres above sea level, by Fabio Quevedo in February 2005, following all the technical specifications suggested by the laboratory. Table 5.3 presents laboratory results in dry weight of these food items.

A literature search of nutrient values of selected key Ingano food species was conducted, and results are presented in Table 5.4. The need for further work on nutrient composition of Ingano food samples is evident from the lack of published data.

Qualitative aspects of Ingano traditional food importance

The characteristics of traditional foods were agreed in the groups. Following the selection of attributes, the same foods were used to derive a taste-appreciation score for children and adults on a 5-point scale. Table 5.5 reports the average scores for each food. With this information it was then possible to summarize attributes of each of the foods (Table 5.6).

It is clear that these foods were well accepted and that both children and adults enjoyed them. In some cases, the taste of certain items may not have been very pleasant, but their importance to the community was considerable.

Nutrition of infants, children and adults

Interviews conducted with mothers about the nutrition history of infants revealed that breastfeeding was prevalent with cessation from 3–24 months. Complementary food was given early in life. Many children were already taking complementary foods after the first month, and almost all of them had these foods after the fourth month. Milk formula and supplements were used rarely. Complementary food in the infant diet was initiated gradually, generally well accepted and did not produce any health problems.

In the 24-hour dietary surveys, it was found that food diversity was good but somewhat limited because of the scarcity of food resources (including traditional foods) obtained from the surroundings. Also important were the financial difficulties limiting access to other high-quality foods from markets. Using dietary recalls to understand the significance of market food sources, the percentage of dietary energy from both traditional food and market sources was calculated (Table 5.7). Of total daily dietary energy, 58 percent of children's diets and 47 percent of women's diets comprised traditional Ingano food.

Results of the anthropometry assessment of Inganos are given in Table 5.8. It can be seen that the population represented the early stages of the nutrition transition where most children are normal in their height and weight, but that underweight (low weight-for-height) and stunting (low height-for-age) are present, and there was little childhood overweight or obesity. At the same time, the incidence of overweight and obese adults was evident.

Table 5.5 Mean taste scores for selected Ingano traditional foods *(Range of possible scores: 1–5)*

Traditional food name	*Child score (n=25)*	*Adult score (n=21)*
Ají	3.0	4.8
Arazá	4.8	4.9
Bombona	4.2	4.3
Caña agria	2.7	3.8
Cayamba	4.1	4.3
Churo	3.7	4.3
Cimarrón	5.0	5.0
Cucha	5.0	5.0
Hormiga	4.7	5.0
Milpes	5.0	5.0
Mojojoy	3.8	4.2
Ñame	4.6	4.8
Nina waska	2.9	4.1
Papaya	5.0	5.0
Piña	5.0	5.0
Plátano	5.0	5.0
Yoco	2.0	3.4
Zapote	4.6	4.8

Summary of the current situation

The research has shown that at the time of the research an impressive diversity of traditional food resources from the local environment were known and consumed by Ingano families. While commercial food was encroaching, the majority of dietary energy was still derived from traditional Ingano food. These local resources were highly regarded by adults and children alike for their many attributes. Environmental concerns for the local food-producing areas are significant.

A meeting was held with project personnel to evaluate the project's development, executed activities and participation of the work group, as well as to establish the expectations for the future. During this

Table 5.6 Summary of attributes by Inganos for key Ingano traditional foods

Traditional food name	*Attributes*
Ají	Its use is a tradition. It's good and improves food taste. It is also used as a medicine.
Arazá	Provides vitamins. It's very nutritious and healthy and prevents diseases.
Bombona	Very nutritious, has vitamins, improves growth and is very filling.
Caña Agria	Medicinal. Used as purge and to treat diarrhea and stomach sourness. Very refreshing.
Cayamba	Nutritious. Improves growth. Provides vitamins, proteins and energy and fills up.
Chontaduro	Provides proteins and vitamins. Refreshing. Improves digestion because of its fiber. Fills up and satisfies. Improves health and digestion, is nutritious and tasty.
Churo	Nutritious. Improves growth and body support. Has proteins.
Cimarrón	Used to treat hepatitis. Improves food taste. Very nutritious, strengthens immune defenses.
Cucha	Nutritious, improves growth. Provides phosphorus, vitamins, proteins and calcium, therefore strengthening teeth and bones. Used to treat malnutrition.
Hormiga	Nutritious. Improves growth. Very popular. Strengthens immune defenses, provides proteins, vitamins and minerals.
Milpés	Has vitamins, proteins, fiber and phosphorus. Its milk is very nutritious. It's energetic, improves growth and fattens. It improves health and is used to treat cough.
Mojojoy	Medicine for pulmonary affections. Nutritious, improves growth. Its fat helps preventing pulmonary problems. It has proteins, vitamins and minerals.
Ñame	Very filling and satisfies. Generates energy, improves growth and good physical development and fattens. Provides calories, energies and strength.
Ninan Waska	Medicinal. Used to treat fever. Very refreshing.
Papaya	Improves digestion, prevents constipation. Has vitamins, calories and minerals. Very nutritious.
Piña	Provides vitamins, minerals and fiber. Is very nutritious and refreshing and tasty.
Plátano	Very nutritious. Provides calories, proteins and potassium. It fattens, improves growth, and it's satisfying. Staple food.
Yoco	Medicinal. Used as purge, laxative, and to treat cough. Generates energy.
Zapote	Very nutritious provides vitamin and is very filling.

meeting, the group commented on several matters of the investigation conducted and concluded that the community had gained awareness about the loss of certain cultural aspects and people were starting to give importance to the products included in the diet. Generally speaking, the support offered by the Inganos to this project in the first months of work was good. The visits carried out were well received by the community. For members of the community, the experience of just remembering the traditional names of their food products was extremely enriching, and allowed them to learn and exchange knowledge. Since the topic was interesting, the work was easily done, especially because Elders like to share this information, although they are always cautious when doing so to protect their traditional knowledge. Indigenous authorities were also supportive and made it easy to access the communities and to carry out individual and group activities.

Table 5.7 Percentage of energy from traditional and market foods

Food groups	*Children*	*Women*
Traditional	58	47
Market (imported)	42	53

Problems the group encountered were also discussed during the meeting. One topic was the rejection and wariness that domiciliary visits and surveys sometimes caused. The reason for this reaction was that many members of the community were not aware of the overall purpose of the research and the benefits it

Table 5.8 Nutritional status by age group

Age groups	*Prevalence (percentage)*
3–6 years old (n = 13)	
Underweight	19.1
Stunted	21.8
Wasted	2.2
Overweight	0.0
Obese	4.3
7–12 years old (n = 16)	
Underweight	21.3
Stunted	38.4
Wasted	1.6
Overweight	0.0
Obese	1.6
Women BMI (n = 39)	
< 25 (normal)	89.2
25–29.9 (overweight)	8.1
≥ 30 (obese)	2.7
Men BMI (n = 34)	
< 25 (normal)	96.6
25–29.9 (overweight)	3.4
≥ 30 (obese)	0.0

would potentially mean to them. Some didn't want to participate because they believed the project was only trying to obtain information that depreciated indigenous groups.

The community work group as a whole considered that this project had gathered information that is of great importance if the traditional elements are to be rescued, in order to make the community more independent from external markets, when it comes to health and nutrition.

Looking to the future of the project

Project participants involved in evaluation meetings suggested that all activities should be carried out with the support of community leaders. In this way, acceptance and understanding of this project and its objectives can be assured. Another suggestion was to share project methods with all Ingano communities in the region.

Community work must try to involve everyone: Elders, women, adults, young people and children. It is also necessary to create campaigns designed to promote the protection of the resources the community already has, as well as trying to recover what has been lost or damaged. This is only possible by creating awareness (especially among young people) and improving technical management of crops and wild species.

Nineteen Ingano traditional foods were chosen for promotion and recovery for the following reasons:

- Traditional: foods that were part of the traditional diet.
- Nutritive: foods known for their nutritive value (protein, polyunsaturated fats and important micronutrients).
- Necessary: foods that have not been replaced or that serve a fundamental role in the cosmovision of the culture.
- Available: foods that are easy to obtain.
- Enjoyable: foods that will be eaten and enjoyed by the communities.
- Affordable: foods that are inexpensive to obtain.

Ingano representatives who attended planning sessions requested that: (1) crops of the ancestral foods be cultivated, (2) an environmental protection plan for the ecosystems required to maintain these food resources be designed, (3) support or subsidy be offered toward the acquisition of the crops obtained from the gardens maintained in the traditional agriculture programme, (4) a Nutritional and Epidemiological Monitoring System to monitor the condition of the participating population, and (5) a programme be established to promote the consumption of traditional food. These measures should be included in the education offered to the indigenous persons in the Yachaicury School so that they may serve as "multipliers" of this information, beyond the activity in community workshops carried out by the promoters and the professional team.

Discussion

One of the characteristics of the crisis the world is currently undergoing is the loss of diversity, both biological and cultural. With this loss, threats to shamanism

– a belief system central to the well-being of many indigenous groups – can be seen. This is important for a world that seems to have lost the way in its effort to maintain health and respect the natural world.

The problems our societies are currently facing result from a tendency to homogenize culture (underestimating the traditional values of peasant groups and Indigenous Peoples). We face crises in health services management, serious contamination problems and dramatic loss of biodiversity. Also damaging is the reductionist perspective of scientific thought, and in ethical terms, the secularization of human culture.

To overcome these problems, a long-term social transformation is required. First of all, it is important to strengthen the scientific and technological advances accomplished during the twenty-first century, the creation of new paradigms, and incorporation of new scientific perspectives regarding the world and humans who live in it. The growing awareness on the "environmental problem" has encouraged a search for urgent solutions. After its timid appearance with the ecologic movements of the 1970s, this awareness first evolved into an "ecodevelopment" proposal (UNEP, 1972) and finally into the concept of "sustainable development", which is understood as the development that satisfies the needs of the present generation without compromising the capacity of future generations to satisfy their own needs (United Nations, 2002). This concept is still in force, despite the conceptual divergences and conflicts of interests that surround it.

Sustainable development policies have followed four main lines: 1) preservation and/or recovery of ecosystems and flora and fauna diversity in several regions of the world; 2) application of economic models that encourage a decrease on the economic growth; 3) creation of new technologies considered as soft, clear or less contaminant; and 4) control of demographic growth.

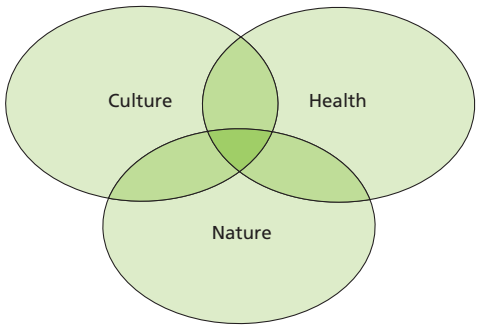
Thus, the following question arises: would Indigenous Peoples prefer to disappear as a culture if they lose the sense of collective property and/or their shamanic systems? Shamanism cannot be strictly defined as medicine, although healing is its main objective. Strange ceremonies and rituals, chants and dances, colourful outfits, perfuming with incense and invocations are part of the shamanic world. The shamanic functions are characterized by a deep sense of the sacred, great wisdom regarding nature, utilization of trance-inducing techniques, and a strong belief in other worlds; it also implies consumption of plants that are regarded as sacred (wrongly called hallucinogenic), and a vast knowledge on the medicinal properties of plants. For the Western world, the shamanic universe remains strange and mysterious (UMIYAC, 1999).

The pillar of the indigenous culture and its productive systems is shamanism. In those groups where the shaman disappears or loses his authority, and the traditional medicine man loses validity, extinction and acculturation are more serious and immediate. That is why any social, environmental, cultural, economic or politic development project should start by strengthening the shamanic institution and the traditional medicine system. The indigenous culture highly depends upon the survival of shamanism. Therefore, – and this should be considered by all bioprospecting programmes – strengthening of the shamanic institution is paramount to the conservation of cultural diversity. Actions that seek to preserve traditional societies are crucial:

> It is necessary to value and protect cultural diversity, because of the alarming current diminishment of the little adaptative social forms still existing. To lose and destroy civilizing systems implies losing unique models of social, political, economic, and linguistic organization, as well as intellectual, scientific, artistic and philosophic expressions… Cultural diversity is as important as biologic diversity: they both guarantee the wealth of life forms… Cultural pluralism is paramount to a biosocial evolution that optimizes all life forms and cultural creativity… Cultural diversity increases all human creativities in order to achieve different forms of collective coexistence.
>
> *(Barón* et al.*, 1995)*

Environmental conservation policies face the conflict of focusing either on biologic or cultural conservation. There are very few experiences that integrate both concepts. For indigenous traditional medicine, health implies harmony or equilibrium of reality. The human

Figure 5.2 Relationship between culture, nature and health



being is not just a body, but also thoughts, memories, emotions and spirituality. This harmony also refers to social relationships: family, neighbourhood, community; and finally, it also means harmony between and within nature, harmony among vegetables, animals, the invisible beings and sacred places. It could be stated then that the concept of health within the indigenous traditional medicine focuses on the triad *person-society-nature* that greatly exceeds the current definition of modern medicine.

The Western perspective typically refers only to the extrinsic values, while the indigenous perspective refers to intrinsic values. Both the orthodox approach of modern economics and the environmentalist discourse refer to the concept of development. Progressive economic growth or sustainable development always implies "development". The modern economic model seeks to measure development through an indicator known as Unsatisfied Basic Needs (UBN),[2] which – through a series of complex calculations – includes categories of material character: housing, access to public services, transportation, formal education level, consumption capacity (electrical household appliances and luxury goods), among others (UNDP, 1996). But the UBN does not consider other "unsatisfied basic needs" that might be intangible but not because of that, less important. We're talking about health, joy, production methods, access to formal and informal education systems, capacity to develop the need of transcendence and finding the meaning of life.

The Indigenous Peoples have managed to remember that "life" is not just about consumption, welfare and acquisition of material goods. Their cosmovision, their way of life with a collective property perspective, and their easy access to other awareness levels that bring a transcendence feeling are lessons that should not be forgotten at the moment of negotiating or establishing the concept of development.

Culture, nature and health

To understand the indigenous analysis of reality, the perspective Culture-Nature-Health can be utilized (Figure 5.2) (Zuluaga, 1998).

Culture here refers to cosmovisions, production methods, form of social relationships and the interpretation of daily reality. Nature refers to natural resources, defined as the vegetable, animal and mineral kingdom by the western culture, and as "mother earth" – a more global concept – by the Indigenous Peoples. However, to understand the interrelationship between the three concepts, one cannot fragment the analysis into independent categories.

In this perspective, culture is studied by social sciences, nature by biological sciences, and health by health sciences. There is still missing an interdisciplinary science that considers these aspects as a whole and not as the arithmetic sum of each discipline, not only when dealing with the indigenous reality, but with reality at any level.

There are four interstices among the three circles. It is precisely in those spaces where new reflection and work strategies for environmental, social and health projects can be found:

1. **Relationship health-nature:** This firstly refers to nature's health or health of the ecosystems, meaning the state of biologic resources. It secondly refers to the important role that environment plays on the matter of human health. Water and air quality, availability of fertile soils to guarantee food security,

[2] The UBN is used by entities as the World Bank, the International Monetary Fund and the Ministries of Treasury and National Planning in most countries of the Third World.

accumulation of rubbish and toxic residues, contamination with nuclear radiation, etc., are factors that directly affect health conditions. Recent World Health Organization (WHO) documents have justly concluded "the planet is sick", and the opening to new health policies state: "Our planet, our health" (WHO Commission on Health and Environment, 1992). Finally, there is a close relationship between health and nature, established through more reliance on traditional medicinal plants. Indigenous shamans and traditional medicine men and women are masters of these medicinal plants. And these sacred plants play an essential role in cultural maintenance and well-being.

2. **Relationship nature-culture:** Although biology also refers to culture when talking about animal behaviour – well known by shamans – this category must be considered with respect to nature and human culture. This is how cultural ecology starts to discover the important role of environment and resource availability in the development of cultural, ethic and power manifestations of human societies. It is surprising to examine the origin rites of many tribal peoples, who consider the domestication of a plant the genesis of their society; that is the case of the Maya people, who consider themselves to be "sons of corn", or of several Amazon peoples that call themselves "sons of yuca", etc. Ethnobiology is precisely the discipline which seeks to study the interrelationship between nature and human culture in its different branches (ethnobotanics, ethnoecology, etc.),
3. **Relationship culture-health:** Traditional medicine is understood as the medicine system used by indigenous or peasant communities to manage health and sickness. Contrary to modern medicine and psychiatry, traditional medicine considers illnesses to be more than body or mind problems; they also include work or marital difficulties, bad luck in hunting and fishing activities, or bad relationships with others.
4. **Relationship health-nature-culture:** Western scientific thinking and its several disciplines still lack a science able to approach the integrality of the three relationships, but authentic shamanic systems can teach us about this integration of concepts. We have to accept our condition of listeners and apprentices of the indigenous Elders' wisdom, and listen to what they have to explain about a reality that does not admit differences between culture, nature and health.

For centuries, Indigenous Peoples have managed to obtain from the forests satisfaction for all of their needs – including culture and spirituality – without destroying these ecosystems. This type of intervention has been called "anthropogenic forest" or "humanized forest" (Correa, 1993). The process of "humanization" of the forest has been led by the Elders of communities. Availability of sacred, stimulant and medicinal plants, the overlapping of natural resources with "invisible people", the establishment of annual calendars based on ecologic events characteristic of the forest, the ethic codes for fishing, hunting and gathering of wild fruits, and a frugal use that guarantees resource sustainability – among others – are characteristic elements of shamanism for territorial ordering and sustainable use of resources.

> Each culture, within its process of historic development, has identified different ways to face fundamental problems… As for the specific problem of sickness, we can identify very particular categories, models, ideas, practices, etc., that depend on the cosmovision, social and economic history and geographic conditions – nature – of each culture. That's why the answer to those problems is not necessarily identical or valid for every culture.
>
> *(PAHO, 1995)*

On the other hand, it is also evident that younger indigenous generations, due to their more frequent contact with modern society, are leaving aside or failing to learn many of their traditions and production systems. Acculturation, as a result of governments' influences and classic models of western development, is a common phenomenon among all Indigenous Peoples.

It is necessary to recover, cultivate and protect the food and medicinal resources: germplasm banks, botanic gardens, house gardens and greenhouses can be used

to reinforce species propagation. At the same time, we need to protect cultural memory that strengthens traditional medicine. Dialogue is necessary among medicine men and women, midwives, and herbalists in order to transmit traditional values and techniques to younger generations ●

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