

A photograph of an elderly man sitting on a blue plastic chair. He is wearing a white long-sleeved button-down shirt, a white cap, and grey shorts with a green stripe. He is positioned in front of a structure with a thatched roof. Laundry is hanging from a line above him. The scene is brightly lit, suggesting a sunny day.

Final Internship Report

**Traditional Kuna Agriculture in the Face of Occidental Influence:  
Impacts and Responses in Ukupseni**

Written by Heather Elliott & Louis Tanguay

Fundacion Dobba Yala: Urb. Linares, Nvo. Reparto El Carmen, Casa N° 13 -B- (Transistmica, Detrás del Almacén ElectroIndustrial), Apartado Postal N° 0816 - 04014, Zona 3, Panamá, Rep. de Panamá.  
Tele/Fax:(507) 261-7229 / 261-6347. *Personería Jurídica N° 221, 1990.* [dobbo@cablonde.net](mailto:dobbo@cablonde.net)

## Final Internship Report

### **Traditional Kuna Agriculture in the Face of Occidental Influence: Impacts and Responses in Ukupseni**

Written by Heather Elliott & Louis Tanguay

Fundacion Dobba Yala: Urb. Linares, Nvo. Reparto El Carmen, Casa N° 13 -B- (Transistmica, Detrás del Almacén ElectroIndustrial), Apartado Postal N° 0816 - 04014, Zona 3, Panamá, Rep. de Panamá.  
Tele/Fax:(507) 261-7229 / 261-6347. *Personería Jurídica N° 221, 1990.* [dobbo@cableonda.net](mailto:dobbo@cableonda.net)

## **Table of Contents**

Acknowledgements.....	3
Host Institution.....	3
Introduction.....	4
<i>Cultural Context</i> .....	4
<i>Ecological Context</i> .....	5
<i>Agriculture in Kuna Yala</i> .....	5
<i>Land ownership</i> .....	6
<i>Kuna Ethic of the Conservation of Nature</i> .....	7
<i>Social Change in Kuna Yala</i> .....	7
Development Theory and Indigenous Groups.....	9
<i>The Three Security Spheres</i> .....	9
<i>Indigenous People in Latin America</i> .....	10
Objectives.....	13
Methods.....	14
Analysis of Interview Material.....	17
Importance and Purpose of Products.....	17
Changes in Agricultural Techniques and Social Organization.....	19
Formerly: In the time of the <i>Abuelos</i> .....	19
<i>Parcel Layout</i> .....	19
<i>Techniques to Prepare Parcel and Improve the Soil</i> .....	20
<i>Planting and Harvesting Techniques</i> .....	20
<i>Techniques for Pest Control</i> .....	21
<i>Where Techniques are Learnt</i> .....	21
<i>Social Organization</i> .....	22
Currently: Modern-day Ukupseni.....	22
<i>Parcel Layout</i> .....	22
<i>Techniques to Prepare Parcel and Improve the Soil</i> .....	23
<i>Planting and Harvesting Techniques</i> .....	23
<i>Techniques for Pest Control</i> .....	24
<i>Where Techniques are Learnt</i> .....	24
<i>Social Organization</i> .....	24
Reasons for Changes.....	26
<i>Occidental Education</i> .....	27
<i>Importance of Money</i> .....	30
<i>Other Outside Influences</i> .....	31
Consequences of Changes.....	32
<i>Productivity and Abundance of Food</i> .....	32
<i>Health and Nutrition</i> .....	33

<i>Impacts on the Environment</i> .....	34
<i>Migration</i> .....	36
Proposed Solutions.....	37
<i>Strengthen and Expand the Agricultural Commission</i> .....	37
<i>Contextualize the School System</i> .....	38
<i>Creation of an External Market</i> .....	40
<i>Increase Local Opportunities for Professionals</i> .....	41
Conclusion.....	43
Avenues for Future Research.....	43
References.....	44
Appendices.....	45
Executive Summary.....	46
Resumen Ejecutivo.....	48
Limitations Encountered.....	50
Work Schedule.....	51
Thank-you Letters.....	52

## **Acknowledgements**

We would like to thank the people of Ukupseni for the opportunity to work with them over the four weeks that we spent there. They showed us an openness and willingness to share their knowledge and details of their lives that allowed this project to be possible. We owe a great deal to them and will never forget this life-changing experience. In particular, we need to thank Domingo Diaz and Luis Lion for their invaluable help not only in translating for us, but introducing us to the community and to the Kuna culture itself. Lucio Arosemena and Luz Daire Herrera were also great hosts, graciously allowing us to stay with their family during our time in the community.

Additionally, we would like to thank the Fundación Dobbo Yala and our supervisor Heraclio Herrera for making this experience possible for McGill students each year. It is a very valuable addition to the educational program traditionally offered by the university.

## **Host Institution: The Fundación Dobbo Yala**

The Fundación Dobbo Yala is an indigenous, non-governmental and non-profit organization whose goal is to promote the development of indigenous people through environmental conservation in Panama. The group is made of interdisciplinary professionals who are encouraging indigenous initiatives and participation in development and conservation programs, in political and social strengthening of the communities as well as in conservation of traditional culture and promotion of new autonomous economic activities. The role of the foundation is to promote these initiatives with the participation of indigenous people; to coordinate these initiatives to make sure that they are made in respect of environmental conservation; to supply necessary resources to reach the fixed objectives; to promote a good balance of traditional and occidental activities in indigenous territories; to promote the inclusion of indigenous rights in research and in the legal system; as well as to reinforce indigenous rights on their territories for a better conservation of their identities.

## **Introduction**

### *Cultural Context*

Indigenous groups are an important part of the Panamanian population with an estimated 225,000 people living in seven different groups (about 10% of the total Panamanian population). The Kuna are the second biggest group with a population of about 55,000 people (Ventocilla et al. 1995a). Collectively, they hold the Comarca Kuna Yala in the North-East of Panama, created by the law N° 2 of the 16<sup>th</sup> of September, 1938. This area consists of over 320,600 hectares on the mainland, but it is on the over 360 islands that most of the population lives. However, the presence of the Kuna in this area is relatively recent; it is believed that they established themselves there within the past two centuries after having been displaced from the Darién by colonial forces. It is important to note that although they are now largely centered in coastal environments, Kuna culture has developed in the context of mainland forests along rivers. Agriculture thus plays a very important part in subsistence activities and cultural expression (Ventocilla et al. 1995a).



Figure 1: Map of a part of Panama; the area in green represents the Comarca Kuna Yala

Community organization in Kuna Yala is very well defined. There is a head chief, the *sayla*, who holds civil and religious authority over each of the 49 community in the Comarca. He governs, administers and imparts justice to the community. There are two other head positions: the *argar*, who supports the *sayla* as a source of specific knowledge and moral guidance, and the *sualibed*, who is the guardian of order. Although these positions are usually held by men, women have been known to hold them in other communities. At the level of the Comarca, there are three *caciques* which preside over the general congress, which is held in Panama City, and made up of the *saylas* from each community. The general congress debates issues of political, economical, social and administrative importance to the Comarca. Finally, there is a traditional congress where the same 49 *saylas* meet each six months under different *caciques* to discuss matters of religious and cultural importance. (Chiari, 2006).

The community of Ukupseni (also known as Playón Chico in Spanish) is located on an island just off the Atlantic coast near the centre of the Comarca. It has a population of about 1,700 people, although many people have emigrated outside of the community.

Recently a footbridge has been built connecting the island to the mainland, facilitating *finqueros*' passage to their fields and tourist visits. Ships pass regularly to bring imports from Colombia and Colón. Furthermore, on the mainland facing the island there is a small airport with daily flights to and from Panama City, making Ukupseni one of the most accessible islands in the Comarca.

### *Ecological Context*

The ecological situation of Kuna Yala is one much different from that of the rest of the country. Over 90% of the territory is covered by natural vegetation and the forested zone is the largest tract of pristine forest left in Panama. There are a number of types of forests present, including the wet tropical forest, the very wet tropical forest, the very wet pre-mountainous tropical forest and the pre-mountainous rainforest (Castillo & Beer, 1983). Furthermore, the close proximity of the ocean provides marine resources that range from fish and lobster for consumption and sale to coral used to extend the land area of certain islands. In recent times, intense exploitation of lobster and turtles in particular have degraded their populations to dangerous lows.

The agricultural land in Kuna Yala differs in significant ways from other areas in the region. Firstly, the Kuna do not raise cattle, so natural forestland is not converted to pastures. Land is left fallow for four to ten years after which it is worked for two to three. This system is impossible in regions with cattle, because fallow lands are almost always converted to pastures. Secondly, the Asian invasive herbs *paja canalera* (*Saccharum spontaneum*) and *faragua* (*Hyarrhenia rufa*) haven't invaded the Comarca. These grasses impede regeneration of secondary forests, thus making them useless for agriculture.

### *Agriculture in Kuna Yala*

Agriculture has long been the main source of subsistence for the Kuna. Most of the crops are grown for direct consumption on the island, of which plantain or banana (*Musa spp.*), avocados (*Persea americana*), corn (*Zea mays*), and yucca (*Manihot esculenta*) are the most important. Also important to the Kuna diet are coconut milk (*Coco nucifera*), rice (*Oryza sativa*) and sugarcane (*Saccharum officinarum*) (Castillo & Beer, 1983). Furthermore, cacao (*Theobroma cacao*) plays an important cultural role. In addition to these cultivated plants, the Kuna possess important knowledge of wild plants of the forest and their uses. Wood, fruit, seeds and medicines are commonly harvested.

Although agriculture is mainly practiced for the purpose of subsistence, coconut is also an important source of income. In 1967 it represented 70% of total economic income. Production however is decreasing: 50-60 thousand of coconuts were produced in Nudiwar in 1985, while not even 10 thousand were produced in 1999. Exports, mostly going to Colombia, are declining: in 1949, 180 million coconuts were exported to Colombia, while only 50 million were exported in 1964 and since then, the decline has continued (Instituto para el Desarrollo Integral de Kuna Yala [IDIKY], 1999).

Traditional Kuna agriculture is based on a cycle of rotation between different crops and periods of fallow. Mixed cultivation is almost always used, often including fruit trees. Trees are either both mixed into the parcel or on the edges, which is a very popular way to delimitate the parcel while at the same time obtaining fruit. Furthermore, fruit trees are thought to encourage the presence of animals that are hunted, such as the iguana. Mixed annuals grow between the trees with the most common combinations being plantain with rice, plantain with coconut and corn with avocado. Plantain is the most common crop in mixes, then yucca and sugarcane. There are also plantations with just mixed trees, plantain still being the most common in the combinations.

It is generally believed that a mixed parcel is more productive than a monoculture, because you get more variety from a single parcel. Mixed crops are so popular because they make available a large variety of products that are necessary on a daily basis. The ecological advantages are generally unknown among the population (Castillo & Beer, 1983).

The agricultural calendar varies slightly from crop to crop, and among *finqueros* but it generally resembles the following table:

Table 1: General agricultural calendar

<b>Month</b>	<b>Activity</b>
December-January	Cut and clear primary, then younger forests
March	Burn forest to clear underbrush
April-May	Sow seeds at the onset of the rainy season
April-July	Clean out underbrush
May-October (especially August-October)	Harvest

### *Land Ownership*

There are six types of parcel ownership:

- 1) Inherited land: A child is given a parcel at, or just before, his/her marriage. Spouses cannot inherit land, only children. If there are no children, land is passed to other family members.
- 2) Private property: Land can be obtained by converting primary forest to any kind of exploitation i.e. by cutting the trees.
- 3) Family land: In these cases work is combined: each member of the family is responsible at different times to care for and use the land and its products.
- 4) Communal land: This land belongs to the community and is managed by a chief. Work is done by community members and the products are shared by all workers (and some non-workers).
- 5) Associations' lands: Groups or associations can own land and share the products with their members.
- 6) Rented land: Owners of land can rent parcels to *finqueros* who receive a minor portion of the products. This is becoming more common as owners are migrating into city centers.

Private property is the most common type of ownership since it can be obtained by anyone through individual effort. Recently, more and more Kuna owning land on or near the main agricultural strip are moving from the Comarca to the cities of Panama or Colón, thus leaving their lands untended. This has forced younger Kuna to move farther into primary forest near or on mountains with a large slope in order to find lands on which they can work (Castillo & Beer, 1983). There, they are encouraged to practice the more intensive agricultural practices that they have acquired externally with the goal of getting more productivity off of less land.

After private property, family land and communal land are the next most common forms of land ownership. Recently, however communal lands have been shifting to more group or individual forms of ownership, indicating that the trends noted above will likely continue in the near future.

### *Kuna Ethic of the Conservation of Nature*

The Kuna are an animistic society, where the physical world is inseparable from the spiritual. They believe that the Earth is sustained and animated by the spiritual kingdom and that the Earth is both a living being and a source of life. This understanding of the world creates an intrinsic ethic for the conservation of nature. Whereas occidental societies tend to view the environment as a distinct entity, something separate from human culture, for the Kuna it is very linked to their history and their present. Often the words *medio ambiente* are not used in favour of the more personable *Madre Tierra*. The linking element between humans and this physical/spiritual world around them is respect for the Earth and for the natural legacy that is here for human benefit. Plants, animals, rocks, rivers, are all manifestations of the spiritual and must therefore be given as much respect as to human beings. An example of this in practice is found in the actions of *botánicos*, practitioners of traditional medicine. Before cutting medicinal plants, the *botánico* must explain his purpose to the plant, and then must follow strict rules as to how to cut, wrap and transport it.

Despite a strong cultural basis for the sustainable use of nature, the stereotype of the 'noble savage' clearly glosses over the actual situation. As noted above, recent exploitation of lobster and turtles has had tremendous impacts on their populations, to the point where both have reached dangerous lows. This recent surge of unsustainable harvests could be linked to the increased importance of money in the economy over the last several decades. The cash economy might encourage a transition to quick sources of income that come from the capture of these marine animals, instead of the slow investment of months and years needed with the traditional agriculture. These trends will be further investigated in this project.

### *Social Change in Kuna Yala*

As with many indigenous groups around the world, Kuna society is inundated with Occidental influences. Throughout the history of their interactions with the Spanish colonialists, the Kuna have been very resistant to pressures to assimilate and have been

able to maintain a strong and independent culture. Slowly, though, ideas are changing. Taboos and activities of respect towards the natural world are being replaced by the idea that everything can be made a commodity. Commercialization is affecting the relationship between the Kuna and their environment. While in the past, excesses were shared within the community, now they are usually sold externally. This creates an incentive produce further excesses to increase one's profits.

More intensive agriculture also has impacts on the environment, as periods of fallow are used less and less and the soil becomes degraded. Provisional studies by the FAO indicate that the only soils appropriate for intense agriculture and permanent cultivation are located in the soft hills and plains near Gangandi and Mandinga, a long cry from the steep slopes of the mountain range onto which young Kuna are being forced to work. Furthermore, this shift away from traditional Kuna agriculture has had impacts on Kuna health as malnutrition and tuberculosis have increased (IDIKY 1999).

Although in 1995, 80% of the Kuna lived within the Comarca of Kuna Yala, there is increasing migration to Panama City, Colón and the banana plantation of Changuinola in recent years. The motivation for this is largely for work as wage laborers and is mostly done by men (Ventocilla et al. 1995b).

## **Development Theory and Indigenous Groups**

### *The Three Security Spheres*

Globalization and interdependence are key features in emerging international relationships. Although some may perceive extended communication and trade as positive sides to this new trend, “environmental degradation, extreme poverty, sudden population shifts and massive human rights violations” are all negative consequences (UN Agenda for Development, 1997). These problems must be assessed with development plans that seek to re-establish the three important security types needed for human well-being: food security, environmental security and social security (Nebel & Wright, 2001).

Food security has been described by Nebel & Wright (2001) as the fundamental right for human beings: the right to have access to enough food for a healthy life. Food security, however, is not only about producing a sufficient amount of food for a certain amount of people in a given region, it is also about providing access to quality nutritious food and to clean drinking water. Social security refers to social equity as well as economic, political and personal security (Westing, 1991). It implies respect of human rights and protection from abuse, conflict and corruption in the political system, education for children, empowerment for women as well as employment security and stability (UN Agenda for Development, 1997). Environmental security is described by Westing (1991) as having an environment that can sustain the healthy livelihoods of the people living in this environment over time. It refers to rational and sustainable use of resources, to safe waste disposal and to protection of the environment in its integrity, which includes avoidance of pollution and abuse of the environment and conservation of biodiversity.

Nebel & Wright (2001) argue that these three security spheres are inextricably interrelated, and that the improvement in one of these security spheres eventually leads to an improvement in all three spheres. Nebel & Wright (2001) describe the problem as follows (Figure 2). An area with intense exploitation of natural resources will lead to increasing environmental insecurity by degrading lands and thus undermines agricultural production, bringing food insecurity in the area. Food insecurity becomes the basis for political conflicts because of a scarcity of resources, and leads to social insecurity, which can in turn result in politics that may reinforce food insecurity and poverty. Thus, poor people, in an attempt to survive, may try to further exploit natural resources out of the necessity for food and as a source of money, thereby closing the circle in a positive feedback loop.

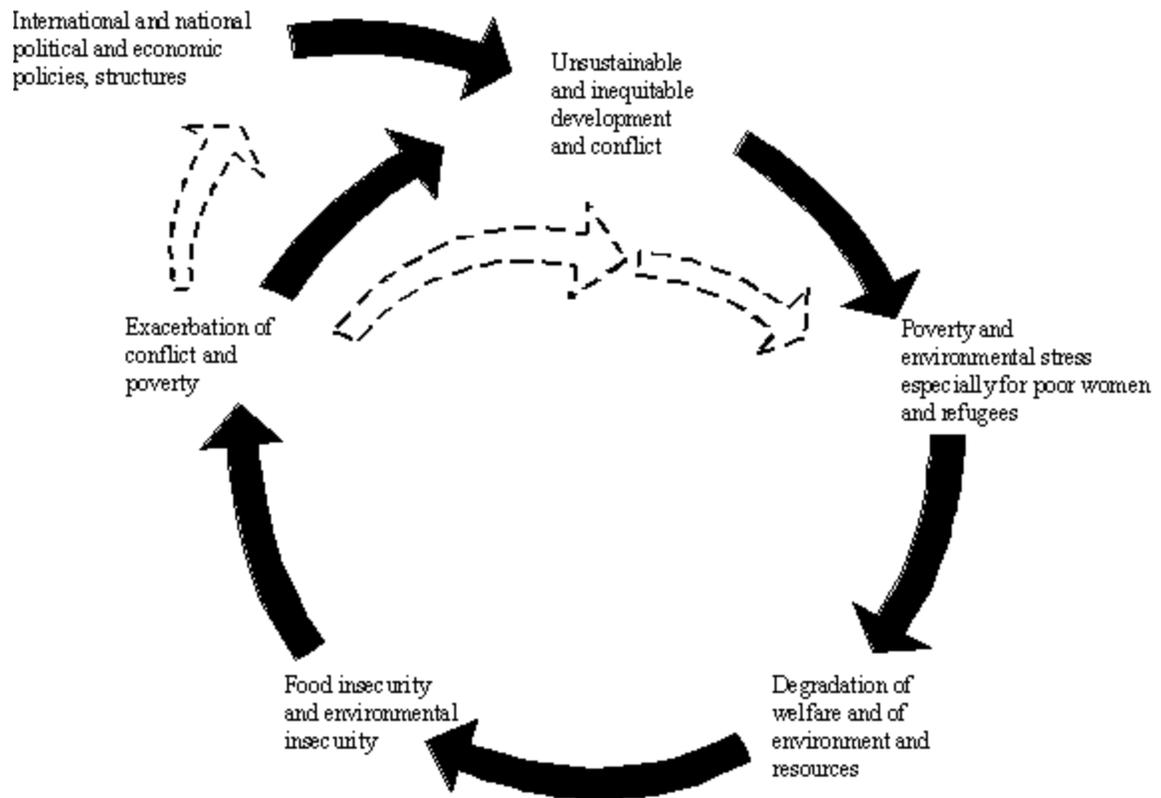


Figure 2: Roots of food-environmental insecurity (Nebel & Wright 2001).

Nebel & Wright (2001) have also argued that improving any of these security spheres would lead to improvement in the two other spheres. For instance, increasing environmental security would lead to higher agricultural production and to an increase in food security. This would in turn reduce conflicts for food, leading to higher social security and political stability. These changes would result in increased environmental security.

### *Indigenous People in Latin America*

Although indigenous groups are generally widely dispersed among natural habitat and have thus developed profoundly diverse cultures, traditional respect for nature is common to most groups. This has allowed many of them to make a sustainable use of natural resources over a long period of time (Keipi *et al.*, 1999). Within the occidental system of governance, different countries have chosen to adopt different legislations in order to define the rights and obligations of indigenous groups with respect to these resources. Indigenous groups themselves have often been influential on these policies. Thanks in part to their small populations and to their morality of sustainable use of natural resources, most native groups have been able to keep their management practices consistent with the land tenure system. Also, the activities of these groups are traditionally subsistence-based; most had no use for amassing wealth before contact with European colonists.

In the last 45 years, the situation of indigenous people in Latin America has significantly changed. Deforestation has been identified as the main exogenous factor responsible for this change (Keipi *et al.*, 1999). It has destroyed the basis of subsistence activities of many indigenous groups, with the highest rate of deforestation being found in Mexico and in Central America. In this last region, deforestation has been mainly caused by expansion of agricultural frontiers – mainly pastures – through new road infrastructure. Other causes of deforestation are mining, fossil fuel exploration and production, and logging. These activities are often done in indigenous territories without any environmental impact studies and without consulting local owners of the land. In some cases, indigenous people themselves participate in these activities because of a growing importance of money. For example, logging is practiced by indigenous groups in the Darién National Park in Panama as a source of quick income.

When poorly managed, eco-tourism can be another threat to forests in Latin America. In several cases, such as the Yaguas case in Iquitos, tourist operators have also violated indigenous rights to the land. However, in other cases, locally managed systems of eco-tourism have become successful sources of income. This is the case of the two tourist hotels recently opened in Ukupseni, Kuna Yala. In general, the consequence of deforestation on indigenous territories is high insecurity in the environmental sphere.

The influence of Occidental culture on indigenous groups has also led to endogenous factors causing change (Keipi *et al.*, 1999). Population growth is significantly higher in these communities than on national levels, with fertility rates as high as 7.9 in the Peruvian Amazon. In many cases, environmental stress created by population growth is mitigated by migration out of the communities, but often this, combined with changes in agricultural techniques, has lowered the ability to produce enough food for all. The resulting malnutrition has created insecurity in the food sphere. To counterbalance this low productivity, some indigenous groups have become involved in the cash economy to buy chemical fertilizers or to find other job opportunities. The use of fertilizers has led to further environmental degradation while the involvement into other occupations has led to cultural erosion.

One of the major ways by which occidental influences are brought to native groups is through the school system. Usually, classes were taught by religious missionaries who were uninformed about and disrespectful to the traditional knowledge in their communities. Quality, contextualized education for natives is rarely a governmental priority, and in many cases, the illiteracy rate in these communities is high. The options for economic alternatives to farming are thereby very limited; an increasing number of indigenous people are migrating to cities in search for such alternatives but usually end up among the urban poor. This lack of economic alternative ultimately leads to insecurity in the social sphere.

Another problem in the social sphere of indigenous groups in Latin America is disorganization in interactions with occidental societies. For many indigenous people, decisions were traditionally made within extended family, the basic unit of production. The political and administrative entities and institutions imposed upon them by national

governments are unfamiliar to these groups, which often means that the management plans they come up are ultimately inappropriate to the context.

As illustrated by the common problems described above, insecurity in the three spheres is unfortunately relatively common in indigenous communities in Latin America in general, and is likely important with the Kuna in Ukupseni. When insecurity does exist in one or more sphere, it is important that the situation be addressed holistically: development and improvement efforts should not be directed on a single security sphere, but on the synergistic solutions that exist between all three. We will thus take a broad approach in our analysis of the situation by looking at every sphere as well as the relationships that exist between them. The solutions proposed will seek to address several spheres at once in order to be most effective.

## **Objectives**

In this study, we attempt to compare the agricultural knowledge and practices of different groups (elders, adults, young adults, youth, etc.) within the community of Ukupseni with the goal of understanding how changes in these are affecting the Kuna culture. Practical, theoretical, and cultural aspects have been included. We have also considered the source of these beliefs and behaviours and how they are transmitted throughout the community and among different generations. With these comparisons we hope to gain an understanding of the causes and consequences of the 'crisis of agricultural production' in Kuna Yala.

The purpose of this research is to provide a tool that can be used by the Fundación Dobba Yala and the congress of the community of Ukupseni, as well as others in similar situations, in order to understand and respond to the challenges emerging from the conflict between traditional agriculture and occidental culture. This product will serve as a guide to practical ways by which strong traditional practices and values can be maintained, while addressing the modern concerns of the community in a way that conserves their environment.

## **Methods**

After introducing ourselves and our project to the community, our methods for gathering information were based on interviews as well as personal observations of habits and practices in Ukupseni. In total, 53 people were interviewed individually in addition to the several groups with whom we met.

### 1- General introductions of ourselves and our project:

The first important part of our fieldwork was to meet with community authorities and to introduce ourselves and our project. The purpose of these meetings was to make our presence as student researchers, and not as tourists, known and accepted in the community. We first met with the *saylas*, and then with several agricultural groups at their weekly meetings, including the *cacaociferos*, the *botanicos* and the presidents and members of women organizations. We also had preliminary meetings with several individuals for a similar introduction. This work was mostly done with the help of Domingo Diaz during the first week of our first stay in the community, who introduced us to people that we would not have had the chance to meet on our own. Domingo also served as a valuable translator from Kuna language to Spanish.

### 2- Formal Interviews

We collected our data through two kinds of interviews. The first type, formal interviews, was done in pre-determined meetings in people's houses or in offices of organizations. Some of them also took place in the *fincas* with *finqueros*. These types of interviews were structured around general themes to guide discussions and notes were taken. Most of the formal interviews were done with individuals, although a few were done with small groups of people. We were helped by Domingo Diaz and by Luis Lion for translation and to find interviewees. Later, we were also able to do interviews on our own once we knew the community, and the people, better. It is also important to note that, according to Dobba Yala, permission forms for interviews were not required once the congress had approved our presence in the community.

### 3- Informal Interviews

The other type of interview performed were informal. They consisted of casual discussions without a fixed meeting or a fixed subject. Notes were not taken during the discussions but only afterwards. These interviews took place with acquaintances, both in the field, in the streets of the community, or on surrounding islands.

#### General Information Expected from Interviews:

##### *Elders and Adults:*

- 1) The traditional importance of agricultural products for the community.

- 2) The traditional uses (spiritual, social, and medical) of the plants.
- 3) The traditional methods of growing the plants.
- 4) How the three preceding points have been changing throughout their lifetime.
- 5) The reasons for these changes.
- 6) Perceived effects of these changes on the community, the environment, etc.
- 7) How the community should address these changes.
- 8) The importance of traditional knowledge for them.
- 9) The importance of Occidental scientific knowledge for them and its place in the community.
- 10) The importance of money in the Kuna economy.
- 11) The importance of the environment for them.

*Adults and Young Adults:*

- 1) How experiences outside of the community may have affected their cultural values.
- 2) If they know and practice the traditional uses and agricultural techniques.
- 3) The importance of traditional knowledge for them.
- 4) The importance of Occidental scientific knowledge for them and its place in the community.
- 5) The importance of money in the Kuna economy.
- 6) The importance of the environment for them.

*Women:*

- 1) To what extent they are involved in agriculture.
- 2) How their involvement differs from that of other groups.
- 3) How their involvement has changed over time.
- 4) The importance of traditional knowledge for them.
- 5) The importance of Occidental scientific knowledge for them and its place in the community.
- 6) The importance of money in the Kuna economy.
- 7) The importance of the environment for them.

*Youth:*

- 1) What they know about agriculture. Traditional or occidental knowledge?
- 2) What they know about the environment.
- 3) What they know about the traditional importance of agricultural products for their culture.
- 4) Where their knowledge comes from. Grandparents, parents, school, etc.
- 5) If they participate at all in agriculture (with father, mother?)
- 6) Future goals: are they interested in participating in the community's agriculture?

4- In the field observations

The last technique used was our own observations and analysis made in the field. These observations were made in the *fincas*, in the experimental plots of the IPT, and in the community, focussing on the behaviour and habits of people.

## **Analysis of Interview Material**

Our results were mostly in the form of written notes taken during our time in the community. We have analysed the answers to the questions asked during formal and informal interviews for similarities and differences over different periods of time; and this analyse was combined with that of our own observations in the field. Stories of past habits and techniques were used as a base from which current practices could be compared. This revealed the trends occurring in both the social organization of agricultural and the techniques used. This section summarizes these trends.

## **Importance and Purpose of Products**

Most food harvested is for consumption within the household. Often, a small portion is sold within the community. Plantains, sugarcane, yucca, and rice make up the basis of the Kuna diet and are eaten daily, with plantains being the most important.

There is no outside market for either cacao or coffee, and these are produced at a very small scale for family consumption. More often than not, coffee is bought from Columbians because it is less work than producing it oneself. The rare horticultural products that are grown by *finqueros* are often sold outside the community, since these products are foreign to the Kuna diet. The IPT, however, sells most of its *hortalizas* that are not consumed by students in the cafeteria to the community with increasing demand. Bananas, too, are grown for outside sale.

A group of *botanicos* also makes products for sale. Medicinal plants have been traditionally collected from the wild, but are now also grown in a demonstration garden. *Botanicos* transform these plants into soaps, tinctures and creams to be sold within and outside of the community, as well as to visiting tourists. The income generated allows them to buy tools and other needed materials and create a small system of social security for members.

Cacao was often mentioned as being central to Kuna culture and frequently being used as medicine and in different ceremonies. In the past, cacao and plantain mixes were drunk each morning to give strength to work in the *fincas*. It was also important for pregnancy: after four months the *parterra* obliged the mother to consume a cacao drink two times a day to reduce the pain of childbirth. Cacao was important throughout all stages of life: infants were bathed in cacao at birth and the spirit of the deceased was guided out of the grave and onto a safe path to heaven with cacao smoke. Cacao is also used for mental cleansing ceremonies. These consist of 8 days of singing in the presence of a *botanico*, his apprentices and many *parterras*. During the entire time, cacao seeds are burnt, which produces a rich smoke that fills the house. Despite its centrality to Kuna ceremonies, cacao is now planted much less than before; at times, ceremonies can not be performed because of a lack of this product. To some, a decline in cacao production means a decline in the entire Kuna culture.

Coconut is also an important product, but in a very different way. Since the Dutch first became interested in trading coconuts for imported goods, it has been the basis of the Kuna economy. Coconut milk is also used as a drink and in cooking.

Pineapples also have a special place in the Kuna heart. Before, it was custom to give a gift of pineapple to your love interest. This showed the importance of owning land: if you could not produce a pineapple, you were not worthy of your love. Table 2 summarizes the specific uses of a variety of plants, both domesticated and wild.

Table 2: Traditional uses of several plants

Plant name in Spanish ( <i>Kuna</i> name)	Use	Preparation	Planted or Wild	Comments
<i>Pawa</i>	Improve blood circulation	Seeds are eaten with plantain	Wild	Now only used by elder
Noni	Cure-all medicine	Make chicha	Planted	
Marañon	Food	Fruit eaten fresh; seed not used	Planted	
Culandro	Condiment	Fresh or in soups	Planted and wild	
Caña blanca	Building material for walls and fences	Stem is cut	Planted and wild	
Calabaso <i>Naigua</i>	Maracas, bowls, plates, cups	Fruit is emptied and dried	Planted	
Tingu	Trunks used for <i>piraguas</i>	Carved out in <i>finca</i> , refined in community	Wild	
Pinlu	Trunks used for <i>cayucos</i> , seats, tables or construction		Planted	For personal use, but sold when requested
Espave	Trunks used for <i>cayucos</i> and other building materials	Carved out in <i>finca</i> , refined in community	Planted	
<i>Signugar</i>	Fire-resistant wood used to remove items from hearth	Branches and twigs are carved	Wild	
Guarumo <i>Nilo</i>	Collects water on leaves which irrigates soil slowly		Planted	

A wide range of food products were important, not only for household consumption, but for ceremonies and celebrations. The *chicha fuerte* ceremony was and continues to be, central to the culture. It is through the consumption of this drink, a gift from god, that Kuna are able to give him thanks. Since often these ceremonies would continue for three or four days at a time, members of the community would each bring food to share. Plantains, yucca and coconut were the most common and firewood was also contributed. Now, with significantly lowered levels of production, it is very difficult to organize a ceremony. Because of the general scarcity of food, people are unable to contribute the food products as they did before. It thus often falls on the family hosting the ceremony to buy everything needed. One informant estimated that a single *chicha fuerte* ceremony could cost up to \$1,500. Several people have observed that there are

now many fewer ceremonies than before. Also, when *saylas* from other communities would visit, or when the community's own *sayla* would return from another village, everyone would give him food such as squash and corn. This practice, too, has declined with increasing food scarcity.

### **Changes in Agricultural Techniques and Social Organization**

A striking observation can be made when flying into the Comarca of Kuna Yala: as soon as the frontier is passed, the landscape quickly shifts from cleared fields to forest. From above, the forest cover appears largely untouched by human tool, which is far from the truth, but is nonetheless indicative of the type of agriculture practiced by the Kuna. Traditional Kuna agriculture is based on a system of agro-forestry, where crops are integrated into the forest ecosystem. Although this basic arrangement has experienced very few changes in recent times, new techniques are being learnt and incorporated with traditional practices. More importantly, changes to social organization have affected the number of people involved in agricultural work, with a general trend of a diversification of livelihood activities in the community. A sketch of agricultural techniques and social organization in times gone by, what is generally described as the time of the *abuelos* (grand-parents), will be followed by a description of those currently used.

#### *Formerly: In the time of the abuelos*

##### *Parcel Layout*

In the time of the *abuelos*, *fincas* were large and located near the biggest rivers. Crops were always grown together, mixed within a single *fincas* (parcel of land used for agriculture). Mixed crops were favoured because they provided a wide variety of products for consumption in the home, as well as being considered more productive. Monocultures were never used, with the exception of coconut *fincas* which were most commonly located on islands, but also on the coast and farther inland. Coconut trees were usually grown separate from other crops because their big roots would interfere with other plants trying to grow around them. At times sugarcane or *cuatrofilo* would be mixed in and often a variety of species would be planted around the edge of the *fincas*. Pineapple in particular worked well by attracting insects away from the more valued coconuts with their sweet fruit.

The products grown on a single *fincas* were alternated through the years in a system of rotation with cycles ranging anywhere from three to fifteen years. The perennials, mostly plantain, *guineo* and coconut trees, were maintained for many years (from 6 to up to 30 for plantain and *guineo*, depending on the soil; up to 60 years for coconut), while the annual crops that were planted between them changed from year to year. These annuals included: rice, corn, yucca, squash, *yame*, *otoe*, *yampi cobado*, potato and pineapple. Often rice would be planted for several years in a row on wet soils and at times other annuals would also be maintained for several years. Yucca, for example, is said to be very resistant, and can grow on the same soil for five or six years. Furthermore, the parts of the land were left fallow during occasional growing seasons,

after which they would be much more productive. Other plants, such as cacao, coffee, and fruit trees, such as mango, avocado, *marañon* (cashew fruit), *pifa*, guava beans, oranges and lemons were present in small numbers, planted individually throughout the *finca* or along the edge. Lemon grass was planted around the *finca* because its sharp leaves would be a deterrent to predators. In addition, medicinal plants were interspersed throughout the *finca*, both allowed to grow wildy, and planted with seeds collected from the wild.

### *Techniques to Prepare Parcel and to Improve the Soil*

The preparation of a parcel was accomplished through several steps: clearing, burning and fertilizing, but first, the *finqueros* had to prepare themselves. The month of December was filled with celebrations and training to strengthen to workers before land preparation began. They bathed in rivers with medicinal plants and drank medicinal drinks. Rich drinks of cacao and plantain were especially important.

The clearing began with the dry season and involved cutting small bushes and trees. Larger trees that were either unproductive or inconveniently located were cut later on; they were also cut because they took up a lot of water. Others insist that no trees were cleared, that the original density of trees in the forest was maintained. Tools used for this clearing were simple and manual: machetes and axes. Cut vegetation was left to dry out on the *finca* before it was burnt immediately preceding the onset of the rainy season. This burning was thought to not only remove unwanted brush and create a cleaner looking *finca*, but also to improve the soil's fertility.

Other methods to improve the quality of the soil involved the addition of organic fertilizers. Sand from ant nests was applied around the seeding holes. A mixture of dried plantains, sardines and corn, ground up together was also added to the soil to increase its richness. *Jagua* fruit were also mixed with water and spread over the field as a fertilizer. Artificial chemical fertilizers were never used and organic composts were often made. The system of rotation of crops on the *fincas* was also seen as a way to return organic material to the soil and not drain the nutrients with continual use each year. In general, though, the soils were considered to be of very high quality, since they had only recently been cleared from virgin forest.

### *Planting and Harvesting Techniques*

Planting was done at the end of April or beginning of May, just after the *fincas* had been burnt, at the onset of the rains. This was the time when the soils were believed to be the most fertile, thanks to the nutrients added from the burning. Seeds were planted by eye; strict measurements of spacing between plants were not used. However, an elder explained that plantains were generally a few feet apart while rice plants and corn stalks were very close to their co-species, about 20 cm and 30 cm respectively. Holes were made using a long stick with one end sharpened to a point and the seed was dropped in the hole. Seeds were saved from previous years' crops and seed beds were not used. For plantain, seeds of young plants of about 2 years were used. For tubers such as yucca and

*otoe*, the roots could simply be cut off and the stalk reinserted directly into the soil. Attention was given to the orientation of coconut seeds when they were planted, since they often grow at an angle and could cut onto neighbouring *fincas*.

The harvest season generally stretched from August to November, although different crops were available at different periods outside of this season. Two to three months after having planted rice and corn, they could be harvested. To determine when the corn was ready, a few cobs would be brought home and, with the all the neighbours would help to grind them into a sweet corn drink, whose taste would only be right at the time of harvest. Shelters were built on the *finca* where the biggest cobs of corn would be left while the smallest cobs were brought home to be immediately consumed. Plantains could be harvested every seven months, sugarcane every five, and pineapple every 14-17 months. Coconuts couldn't be harvested until six or seven years after the seeds were planted, but from then on they would continue to provide about a fruit each day of the year for up to 60 years. These were collected by throwing rocks or using long bamboo sticks to knock them down. Table 3 shows that the agricultural calendar during this time is very similar to the one found in the literature (table 1).

Table 3: Agricultural calendar in the time of the *abuelos*

<b>Month</b>	<b>Activity</b>
December	Preparation of <i>finqueros</i> with celebrations and drinks
January-February	Clear land of weeds, shrubs and small trees
March-April	Cut large trees, let dry 15-20 days Burn over 2-3 days, starting with weeds Plant plantains with either corn, rice squash or yucca
May	Plant perennials and annuals with start of the rain
August-November	Harvest products

### *Techniques for Pest Control*

It was noted on several occasions that there were previously very few pest attacks or plant diseases. Ants attacked the roots of yucca. Sand from ants' nests was not only used to increase the fertility of the soil, but it was also thought to prevent insect attacks when spread over the *finca*. Some interviewees observed, however, that ant attacks only increased in frequency and severity with this technique. Another techniques involved planting pineapple around the circumference of a *finca* to attract insects away from the more valued crops with their sweet fruit.

### *Where Techniques Were Learnt*

In the past, formal education didn't exist in Kuna Yala. Children learned through their parents and grandparents by accompanying them to their *fincas*. Learning was hands on and techniques were passed through the generations. In the congress, *saylas*

would also sing songs explaining the importance of agriculture and the role that boys and girls each had to play. These forms of education will be further explored in a later section.

### *Social Organization*

In the past, agriculture was the main livelihood activity. In fact, many have claimed it was the only such activity: everyone worked in *fincas* all of the time. It is claimed that people would start working as early as 2 am and continue until 7 or 8 pm. Men, women and children of all ages worked in the *fincas*, even the grand-parents would work well into their eighties and nineties. One interviewee disputed the participation of women, however, saying they had never worked in the *fincas* during his 70 year lifetime. This work was almost never done alone, but was well organized at the community level and at the level of the family. The community functioned as a single well-designed unit, with strong cooperation and frequent sharing. Everyone would contribute food to ceremonies and celebrations, as well as to the *sayla* and to visiting officials. The congress would organize workgroups and provide tools and *cayucos* (dugout canoes) to those who needed them. Co-operations of 5-10 people would divide up a communal parcel to each work a part. Associations for specific crops were organized and worked on a communal *finca*. It was also said that fines were given out to those who did not participate.

Kuna society was matrilocal: when a couple married, they would move in with the wife's family. Sons-in-law could work on wife's family plots, his own parents' plots or one that he himself owned, but all products harvested were for the wife's family, with whom he lived in great communal houses. If someone lived alone, he would join up with friends or other family members to help them on their parcels. Everything was well organized. Surpluses were shared with neighbours.

### *Currently: Modern-day Ukupseni*

#### *Parcel Layout*

While *fincas* are still maintained near the rivers, forestland has been converted to agro-forestry farther inland, on the hills, as recently as 20-30 years ago. The majority of crops seem to be mixed, with rotation done at times, because of the desire for variety in the diet. Monocultures, however, are increasingly present, especially in the *fincas* of the younger members of the community and in these cases rotation is usually not done. While some informants, mostly elders (above 60 years old) believed that there were very few monocultures being done outside of the school's experimental plots, many interviewees, mostly between the approximate ages of 20 and 60, attested to using this layout on their *fincas*. One man believed that monocultures would be more productive and that mixing plants with plantains disturbs their roots. Finally, a small number of people said that they used to do monocultures, after having studied this system in school, but has now returned to the traditional agro-forestry polycultures, which were deemed more productive. There seems to be a lack of clear consensus among *finqueros* as to

which system, monoculture or polyculture, is the most productive; however it is clear that the variety of products offered by polycultures remains one of the main reasons for its continued use.

The variety of products grown is very similar to what was grown formerly. The majority of products are still present, although there is an increased focus on plantains and *guineo* for sale and familial consumption. *Hortalizas*, (horticultural products, mostly vegetables) are new additions to several *fincas*, including tomatoes, peppers, cucumbers, and celery. These new products are also occasionally grown around the home, since they require daily care and many people go to their *fincas* only 2-3 days a week. Certain products, however, have become much less common, such as potato, *otoe*, *yampi*, *yame*, cacao and many fruits. Red rice and *yampi cobado* have virtually disappeared from the community in the last four years. These products are simply not being cultivated and the seeds have been lost. Medicinal plants are still present on many *fincas* and are grown as small monocultures in the botanical garden.

#### *Techniques to Prepare Parcel and to Improve the Soil*

The general calendar of agricultural activities has not been significantly altered since the time of the *abuelos*. Lands are still cleaned and cleared during the summer season and planting begins with the rain in April or May. Tools are still manual, despite the machines used in the schools: machetes are used to aerate the land. A new trend, however, seems to be that while the majority of people, young and old continue to burn their *fincas*, several young adults and adults have stopped. They oppose the traditional belief that burning improves the quality of the soil, insisting that it is better to simply leave cut vegetation to decompose on the field. According to them, these dried leaves and decomposing organic matter serve as rich compost and a very effective fertilizer.

While several people admitted to applying the artificial chemical fertilizers that they had learned to use in school, most people, even those who attended these schools, rely on organic inputs similar to those used by previous generations. Where rotation has been discontinued, more fertilizers may be necessary and several informants considered traditional organic methods much more work than simply applying artificial chemicals. It is generally believed that these artificial fertilizers are damaging to the soil, but their rarity may also be related to their relatively high cost. Sand from ants' nests is still very common, although one man believed that this was becoming rare as the knowledge was being lost, and *jagua* is still used, although many people are simply planting the tree throughout the *finca*, not spreading the diluted fruit mixture directly on the soil. Several people have also mention planting legumes in their *fincas* to bring in more nutrients to the soil.

#### *Planting and Harvesting Techniques*

Despite several changes in planting techniques, most people use the same methods that have been used for generations. The major difference is that before planting was done mainly by eye, now specific measurements are very often used to separate plants

from one another. Seedbeds for the newly added horticultural products have been used and at times seedlings are started off near the home before being transferred to the *finca*. Also, it has been said that people pay less attention to the orientation of coconut seeds when they are planted. Lastly, a *finca* with irrigation ditches has been observed, although this practice seems to be very uncommon.

The schedule and techniques used for harvesting have remained largely unchanged. A major problem, however, seems to be that many people are forced to harvest their products before they are completely ripe because of the frequency of robberies from unguarded *fincas*. The corn huts made in past generations have been discontinued, since corn left unguarded would be very likely be stolen.

### *Techniques for Pest Control*

It has been observed that monocultures often have more insect attacks and plant sickness than the agro-forestry previously practiced. Nowadays most *finqueros* rely on traditional organic techniques to avoid pest attacks, but several young adults and adults have begun to incorporate artificial pesticides into their plans. When yucca plants are young, Asian long-horned beetles attack its roots and ants eat their leaves; these same insects attack cacao trees. Artificial pesticides are sometimes used in these cases, even if organic methods are relied upon the rest of the time. These organic pesticides were touted as ‘free, abundant, and as good as those artificial ones.’ The price of the artificial methods may have a lot to do with the infrequency of their use: a group of women workers relied on these since they were provided for free from the school. Other people, however, have mentioned that these chemicals harm the environment and so refuse to use them. One young adult mentioned using motor oil to prevent insect attacks on cacao trees. Venom was also used to fight ant attacks. Another young adult believed that thoroughly cleaning the *finca* was enough to limit pest outbreaks and plant diseases: if this was done no pesticides, natural or otherwise, were needed.

### *Where Techniques are Learnt*

While in the past learning was entirely done informally through family members and the congress, now the main sources of training are schools and other workshops. The school organization and curriculum will be explored in a later section. Many outside groups provide workshops, with the Peace Corps having been especially present in the past couple of decades. These focus on specific technical training, such as compost production, organic fertilizers, soil conservation and working with horticultural plants. While these workshops are generally well-received, the volunteer trainers don’t maintain a long-term presence, so when problems arise, these techniques are often abandoned.

### *Social Organization*

Currently, people participate in a wide range of livelihood activities. Since the time of the *abuelos* there has been a large diversification of work within the community of Ukupseni. While in the past literally everyone worked in the *fincas*, people now work

in the two hotels, in the health centre, at ANAM, at the bank, at the two airline offices or at the airport. Other ways to earn a living include working as teachers, carpenters, lobster hunters, fishers, loading ships, selling *molas*, or working in the approximately 15 stores. Women often form groups to sell small meals on the street and many people do temporary or sporadic work on others' *fincas*.

A huge shift has occurred from work in the *fincas* to work in the sea. A large portion of the community's main livelihood activity involves harvesting marine resources such as lobster, crab, squid and fish. A ban was created by the General Congress on the harvesting of lobster and squid from March 1 to May 31. This has encouraged some people to return to their *fincas* during this period, but, as will be discussed later, many simply steal during this period.

Not only has the number of people working in the *fincas* decreased, but so has their organization. Many people consulted worked alone most of the time. Congress no longer organizes agriculture work or provides tools: its priority is to repair schools, the airport and other infrastructure. Some have gone as far as saying the *saylas* themselves are lazy, no longer obliging people to work.

Groups do still exist within the community, such as the coconut growers' association (Asociación de los 93- with 63 members), the yucca association (with 32 members) and the association of cacao growers, but all have declining membership and most exist only for technical advice and workshops, not daily communal work or shared harvests. While before they worked together on a shared *finca*, now they mainly work separately on their own land. Celebrations and ceremonies, too, suffer since people do not coordinate themselves to contribute the products necessary, such as food, drinks and firewood.

Families, too, are less organized. Many extended families no longer live together in large communal houses, but each family functions as its own nucleus. Harvests are therefore not shared by all. There are certainly exceptions to this trend, however, and even if families no longer live all together, the harvest is still sometimes shared. Children occasionally go with their parents to the *finca*, but often are unable to, since they spend their weekdays in school. Although some parents ensure that their children help in the *fincas* during vacation and weekends, many do not.

A major concern of many people is that the youth and young adults actually work very little. Not only do they no longer go to work in the *fincas* on a regular basis, but they are not helping their families in any other ways either. Instead, many of them dedicate their time to sports, often waking at 6am to train. The excuse is used that there is not enough land for everyone to work, but many, especially adults and elders, have refuted this. Other people also seem to work less on their *fincas*, with many, but not all, going only 1-3 days a week while it is said that the *abuelos* went daily.

Another big difference in the organization of work is that women very rarely go to work in the *fincas*. Instead they care for children and cook in their homes or earn money

by working at one of the jobs mentioned above. Some also participate in the collection of lobsters. When they are part of groups, such as the association of coconut growers, they do fundraising and organization, but almost never go to the *fincas*. Other groups of women volunteers exist: there are about 25 different groups each with their own tasks such as cleaning roads, maintaining schools, and make sure living conditions are good. A separate group of about 18 young women alternate between working in a *finca* three days and then having three days off. They also work on their own *fincas* and with their families. The harvest is shared among members and they also offer products to the *sayla* to give to visiting officials. But here too, organization has declined. The president of the group has moved to Panama, and the group is slowly falling apart. Despite this trend, now many women are being trained as *botanicos*, a position that was once reserved only for men.

Another important element in the changing social organization is the exponential expansion of the population, which began about 20 years ago. This has a lot to do with changing cultural norms, many of which are due to the declining importance of agriculture. Before, a man had to prove he was hardworking to the father of his love interest if he wanted to get married. He needed a hard, calloused palm, which meant that he spent a lot of time working and had a *finca* full of plantains. In these times, people were getting married close to the age of 30 years old and rarely had more than 2 or 3 children in their lifetime.

Today, people are getting married as young as twelve years old, when they are still dependent on their parents and inexperienced in the *fincas*. These youth do not know how to work and therefore often turn to stealing instead of working hard in the *fincas* when at once they are expected to support themselves and their new families. These young couples often have up to 5 or 6 children. It has been suggested to us that these early weddings may be due to the tendency to listen to young people only once they are married. Youth might thus be encouraged to marry young to become a fully respected member of society. These changes lead to the huge increase in the number of people living on an island of limited size. As in all societies, this increased population amplifies the stress on environmental resources, and presents added challenges to community organization, which was based on a much smaller population.

### **Reasons for Changes**

The changes in agriculture and organization listed above have been observed with growing concern. Throughout our interviews, the reasons for these changes were generally attributed three main factors: occidental education, influences from outside of the Comarca and an increasing dependence on money. Each of these factors is related to the others, and all affect different people in different ways. The major impacts of each factor upon the community in general will be described.

### *Occidental Education*

In the time of the *abuelos*, the Kuna controlled education in their communities. Kuna teachers taught children what was relevant and important for them: everything from Kuna history and culture to traditional agricultural techniques. Children learnt about their environment and how to manage the ecosystem of which they were a part. They were brought to *fincas* to learn and work with their parents as young as 6 or 7 years old. The congress was also an important source of education since its main subject of concern was agriculture. *Saylas* taught agricultural consciousness and morality as well as agricultural techniques. Tools and *cayucos* were also provided to those who could not afford them.

In the early 20<sup>th</sup> century, the first generation of Kuna children entered occidental schools outside of Kuna Yala, which at the time were run by missionaries. As a consequence, children no longer learned to work with their parents in the *fincas*. Missionaries gave the Kuna a new, occidental vision of the world and a different set of values concerning work and nutrition, with an emphasis on a more varied diet. When this first generation returned to Kuna Yala, their beliefs entered in conflict with the traditional Kuna culture. Some of them returned with new families. In these cases, often children had not been taught to speak the Kuna language since in the city, speaking Kuna meant being part of a minority. The Kuna language was thus prohibited by parents at home in order save their children from the same discrimination that they themselves had suffered. For the first time, a group of Kuna found themselves split between two cultures: their traditional culture and the occidental culture that had been taught to them in school.

Around the middle of the century, occidental schools were established directly in the community. A second generation of Kuna children attended these schools and would often move to the city after graduation in order to continue their studies. These people were trained as professionals, such as teachers or doctors. This second wave was followed by a third generation studying in Panama, this time with the focus on business and management. As the emphasis of education shifted, many seemed to forget or abandon their traditional knowledge and become more interested in simply earning money.

All three groups of educated Kuna brought back new ideas to the community as well interest in new jobs. Often, these new ideas were in conflict with the older generations. Even today, many in the community are resistant to the new ideas brought by occidental education and culture, so that youth are unable to apply what they learn and are not easily listened to by the community chiefs.

Today, the occidental school system continues to be the main source of formal education in the community. Many children do not learn to work in the *fincas* with their parents because their studies consume their time and energy. Also, the congress has many more concerns that simply agriculture and training children for life in the *finca* is no longer a priority. The occidental school system is therefore the only remaining option for childhood education.

The schools in Ukupseni are part of the national education system and provide the same general education as in the rest of Panama. The cultural, social and environmental context of Kuna Yala is not included in the curriculum. Although some Kuna people have started to teach in occidental schools around the 1960s, most of the teachers today come from Panama. They do not know the native language and are unfamiliar with the culture. Classes are therefore almost exclusively in Spanish, from pre-kindergarten to the graduation, although some classes are taught in Kuna during the first 2 grades in other communities, and this is planned in Ukupseni for the first grade as soon as 2007. Spanish instruction significantly lowers the quality of education, since many children don't understand the language, especially when they first enter these schools. Because of the limitations imposed by the lack of context and native language, youth graduate ignorant about their own environment and community.

In Kuna Yala, children start school at the age of 4 in the pre-kindergarten. They then go to kindergarten, to 6 years of primary school, and then to media school for another 6 years. Pre-kindergarten, kindergarten and primary schools are present in most communities in Kuna Yala. Schools in six communities offer the first half of the media school (years 1 to 3), but only three communities have schools for the second half. These three last schools are situated in Ukupseni for *bachillera de ciencias* with a focus on agriculture; in Nargana for a *bachillera de ciencias* with a focus on tourism; and in Ustupu, where the focus is on agriculture. The school located in Ukupseni is the *Instituto Profesional Tecnico* (IPT). It was founded in 1978, although the curriculum has been altered several times since its opening. There are three main types of classes offered: humanistic (ethics, English, art, Spanish, social sciences); agriculture (soils, economics, animal husbandry, nutrition); and sciences (mathematics, chemistry, biology, physics, physical education). The main focus, however, is on agricultural, which consists of 70% of the classtime. Students also have three hours of practical work every day, from 6 am to 9 am, after which classes are given. Since there are no universities or colleges, in Kuna Yala, students who want to continue their studies past secondary have no option but to leave the Comarca.

About 50% of children continue their studies after primary school, and about 50% of these students continue after the 3<sup>rd</sup> grade of the media school. The main reasons for this relatively low percentage are economical. It is simply too expensive for a lot of students to leave their family's home and pay to live in another community. Many students who would like to continue must instead turn to the land or to the sea to begin to earn their living.

Many students at the IPT come from other communities and live with families in Ukupseni. Some have to pay, some have to help out in *fincas*, and others stay free of charge. This transition to a new home isn't easy, and many problems can arise for students who have to pay or work during the school year, resulting in some students abandoning their studies. After graduation, about 10% of students go on to university, mostly in Panama city, although a much greater percentage said that they would like to go but do not have enough money. About 40% of them leave to work in Panama, while about 50% stay in Kuna Yala and work in agriculture or find different jobs.

The techniques taught at IPT have been reported by students to be somewhat different than those used in the field by their parents. Slashing, burning and levelling of fields are used to prepare the *fincas*, after which a tractor is used to plow the soil. Seeds are placed in the soil at a measured distance from one another. Cultivated crops include the traditional roots (yam, yucca), fruit trees (oranges, *maracuya*, *guineo*, plantain, avocado), and *hortalizas* (tomatoes, cucumbers, peppers), as well as trees for wood. Since many of these crops, especially the *hortalizas*, have not traditionally been grown, seeds have to be bought outside of the community.

Only monocultures are used in the *fincas*, and a crop rotation system is used to avoid insect and other pest attacks as well as to distribute the benefits of nitrogen fixing (leguminous) plants. Plantains and yucca, however, are not rotated. Drip irrigation is used, although hand watering is needed when there is low water pressure in the aqueduct system. The IPT emphasizes organic agriculture with compost preparation and application, but chemicals are used when needed. For example, chemical pesticides are necessary for tomato crops because of the high vulnerability these plants to pests.

Apart from agriculture, animal farming is also taught. Ducks, hogs and chickens are raised, and students are also starting to work with crabs. Cattle raising is another subject taught although there are no cows in the community. In fact, cattle ranching has been banned for the whole Comarca by the General Congress. Most students do not continue to work with animals after graduation partly because animals are not part of their tradition, but also because animals require daily care as opposed to plants, which can be left for several days or even weeks at a time.

Once a year, the community is invited to the school to observe and learn the techniques that the youth are taught. However, despite the efforts of IPT staff, the school's reputation is not completely positive in the community. Experimental *fincas* are often vandalised and crops are often stolen before they can be harvested by students. Additionally, some members of the community, especially older adults and elders, are generally reluctant towards occidental schools.

Occidental education has brought obvious changes to the community. On one side, children are learning to write, to read and to speak different languages. More work opportunities are available to them and they have the chance to learn new agricultural techniques unknown to their parents. However, this school system monopolizes the children's education, which in many cases, pushes them to find work outside the *finca*. This is one of the major causes of the decline in agricultural production in the community. Furthermore, childhood education no longer includes their culture, language or the agricultural consciousness that comes with this knowledge.

### *Importance of Money*

The contact with the occidental world has changed Ukupseni from an almost completely self-sufficient community, where coins used to be worn as jewellery, to a place where money and external markets are taking an increasingly important place in the local economy. Produce that used to be only for sharing is now being sold. *Botanicos* that used to give their medicinal plants to people in need are now selling them. Formerly, no externally processed products were needed or desired, so there was absolutely no motivation to possess money.

This began to change in the 1800s, when the Danes arrived in Kuna Yala. They opened up the trade of coconuts for machetes, which were soon replaced by money and a rapid increase in price. To protect the island from too much corrupting influence of money, *saylas* prohibited the planting of any new coconut trees. Despite their best efforts, the planting was impossible to control and more and more coconuts were sold. Later, the Danes started to buy turtle shells, as did Germans. Kunas would remove the shell of the turtle and release the turtle back in the ocean (where its certain death seems to have been ignored). Lobster, too, was commercialized in its turn and is now an important part of the Kuna market with significant exports to Panama by plane.

From the Danes' first arrival, the Kuna started to rely on imports for their survival. Today, Columbians are among the more important external agent in the Kuna market. A serious problem exists in that an increasing amount of money is invested outside of the community through markets with Panama city, Colón and Columbia, instead of being reinvested in the community.

Due to the rising importance of money, many people began to fish or hunt lobster instead of working in *fincas*. Marine resources provide a very quick source of money since efforts are paid off immediately, instead of having to wait for crops to grow. They also have a high monetary value compared to field produce. Because of this shift from land to sea, a lot of people now rely on internal and external markets for their food. All sorts of products – particularly plantains and bananas – from the field can now be bought in the community. This exchange of goods is accompanied by an exchange of ideas through which Kuna have developed new desires and new needs, furthering the reliance upon money. A range of new products have entered the community over the past 15 years, such as televisions and newspapers, which bring in even more foreign ideas. Some people now prefer food from the city to traditional foods, such as cream of corn with milk, bread or coca-cola; while some other simply prefer to buy products to Columbians – such as sugar, coffee, rice or cacao – even though these products can be grown in their own *fincas* and are generally more expensive than local products. However, there are still many people who continue to work hard enough in the field to feed themselves and their family without needing to buy anything.

Money is needed not only to buy food and new occidental-style commodities, but also to send children to school, which is obligatory at least at the primary level. Parents must pay for notebooks, pencils, uniforms, and other school supplies required by the

occidental schools. Sometimes, parents even have to sell their own food because they do not have enough money to pay. It has been suggested that women may possibly have stopped working in the *fincas* to earn the cash needed to be able to provide the education they want their children to have. Some women may feel it is more important to sew and sell *molas* or to earn money in another way than to work in the field.

Additionally, tourism is becoming increasingly important as a source of monetary income, and some may stop working in their *fincas* to participate in these endeavours. Tourists pay for the hotels, for guides, for use of the airport and to enter the community. They also buy arts and crafts, such as *molas* and bracelets, which generates a reasonable amount of income.

### *Other Outside Influences*

Apart from education and money, several additional influences from outside of the community brought about changes in Ukupseni. One major development has been the increase in theft. This is thought to be a trend brought back to Kuna Yala by those returning from the city. Before, when the community was smaller and external contacts were less frequent, there was no robbery in the community. Informants believed that it started when people first stopped working in the *fincas* and began to work for other people, charging and discharging boats for external market. People doing this work did not earn enough money to support their families, and had to start stealing food from others' *fincas* in order to survive. This habit spread throughout Ukupseni and has become more common. Today, many lobster hunters, but not all, who are forced to stop working during the *veda* (ban on hunting some marine animals) are suspected thieves, since they have little source of income during this period of the year. A lot of people are also reported to be stealing simply because of the lack of food in the community, with most of these robbers aged between 10 and 15 years old. This is indicative of the severity of malnutrition existing in the community.

Drugs are another big issue in the community. Marijuana is used by several individuals and is sometimes exchanged with American tourists. Cocaine has been collected several times from floating boxes in the sea coming from Columbians boats. Drugs are blamed for distracting youth from their work in the *fincas* and causing laziness. The drug trade also presents itself as an easy way to earn quick money, thus discouraging those involved from agricultural work. The last time a lot of cocaine was collected was two years ago, when the fisher who found it sold it all for \$1,000. However, since he was not used to managing such a large sum of money, he spent it all within a year on unneeded commodities.

Exchanges of goods and products in the external market also brought with them diseases and pests. People in Ukupseni now suffer from diseases that before existed only in the city, such as AIDS. New diseases and pests are also affecting agriculture. The Asian long-horned beetle was brought by Columbians to Ukupseni, which attacks cacao trees and has become a real problem for *finqueros*, many of whom have stopped cultivating these trees. Columbians also brought rats and cockroaches to the region.

Finally, although local organizations have been in decline, groups from outside of the community are increasing their influence on the community. During the first quarter of the 20<sup>th</sup> century, colonial police imposed new ideas and behaviour on the community. People were obliged to dress a certain way and to dance for them. Additionally, the police took half of local products for themselves, which contributed to the decline in food availability. New religions have also brought new ideas to the community, with some which enter in conflict with traditional Kuna beliefs. Kuna spirituality is based on the importance of *Madre Tierra* and on environmental respect through agricultural practices. The six different religious groups that have established themselves in the community have all been shifting the focus away from this base. A last group of influence in the community is the *Autoridad Nacional del Ambiente* (ANAM), the national body responsible for the environment. ANAM is not generally well perceived in the community since many believe that it does little more than act as an environmental police force, imposing laws without working with the community for sustainable solutions.

### **Consequences of Changes**

The sum of these changes has had definite impacts upon the agricultural techniques and organization in Ukupseni. More than anything else, the time dedicated to working in the *fincas* has been reduced, which is the major cause of the agricultural crisis with which the Kuna are now faced. The consequences of these changes on Kuna health, environment and society will be analyzed here.

#### *Productivity and Abundance of Food*

Perhaps the biggest concern that was voiced during interviews was regarding the availability of food. Stories of abundance during the time of the *abuelos* were told during almost every interview. At that time, there was more than enough food grown to feed everyone and nothing had to be bought. In fact, Ukupseni had the reputation as being one of the top producers in Kuna Yala. So much rice and corn was harvested that they would overflow from the cooking houses. Excesses of all kinds were shared reciprocally between neighbours and friends and everyone would contribute what they grew to ceremonies and celebrations.

Formerly, there was also a huge variety of foods available locally. There were many types of tubers and roots, fruits and fish. Hunting animals was easy, since they were all around. Lobster, for example, could be caught all around the island. A few would be collected early in the morning and brought to the finca for consumption during the day

Now, however, circumstances do not seem as bright. The word scarcity in reference to the current food situation was mentioned almost as frequently as abundance in reference to the past. Although some reported that they have as much food now as they had in the past and that medicinal plants are still common, the vast majority complained of not having enough food or as much variety. Fruit, such as oranges, lemons, pineapples and mango have become harder to obtain. Tubers such as *yampi*,

yucca and yam are especially lacking and red rice is virtually non-existent. While before the focus was on planting a large variety for familial consumption, now people concentrate on coconuts and plantains, which can be sold. While in the past *cuatrofilo* was considered suitable only for hogs, it is now commonly consumed by humans.

The abundance of the past is attributed to the fact that people spent much more time in the *finca*: both men and woman worked long days every day. Now, as people are finding new ways to earn their living, and woman and children rarely participate, Ukupseni is far from being the top producer; it is now unable even to meet its own needs. The food security sphere (as introduced by Nebel & Wright, 2001) in Ukupseni has thus been greatly compromised by the changes described above. The sphere of environmental security is correspondingly threatened, since the reduced availability of locally grown agricultural products may encourage overexploitation of marine resources in an effort to earn extra income to purchase imported foods.

Some people believe that the soil is becoming less productive because of the use of chemicals and the shortening of fallow periods. Also people may no longer be collecting seeds. Most, however believe that the decline is not so much due to changes in agricultural techniques, but that people are simply no longer working as much as they used to. People are more interested in earning money than growing their food. As there is a lack of market available for the food that is grown, people are working less and less in their *fincas*.

### *Health and Nutrition*

Due to this abundance of food, people ate well, were healthy and were strong. As recently as 70 years ago, people apparently lived well past 100 years. With the large variety of fresh foods, especially fruit, nutrition in the community was high. Hearty drinks made of cacao, plantain and corn were drunk throughout the day and this was considered the central source of nutrition and energy.

As food has become less available, malnutrition has become a major problem in the community, especially for children. Often, there is simply not enough food produced to satisfy the family. In other cases, the food that is produced, especially plantain and coconut, are sold for money rather than being consumed locally. This leads to a weakening of the body and higher susceptibility to disease. Furthermore, underfed people are less able to work, therefore compounding the problem of the lack of food.

The decline in variety, especially of fruit, and the almost complete lack of vegetables, means that most people are missing important vitamins and minerals. More and more products are imported from the city, such as milk products, chicken, rice, cream of corn and bread while sugary drinks such as Kool-Aid and Coca-Cola have almost completely replaced the healthy drinks of the past. It is believed by some that despite the short stature that is common to most Kuna, they would actually be taller with improved nutrition. In fact, Kuna living in Panama are often taller than their relatives in Kuna Yala

because they have more food, and enriched cereals and milk, giving them more vitamins. All urban food is not considered better, however, since often it has a higher content of pesticides and preservatives.

In addition to the nutritious foods consumed in the past, good health came with the large amounts of medicinal plants that were used on a daily basis. Women, and sometimes men, would gather together in the river to bathe in medicines each morning. This gave them the strength to work hard all day. This practice was mostly abandoned after the installation of the aqueduct. Furthermore, before, the medicinal properties of plants were common knowledge; everyone could and did collect the needed plants for free. When *botanicos* were needed, they wouldn't charge for their services because the belief was that they would be paid in heaven. Now people complain that money has replaced religion and medicines are now too expensive to use.

Other health problems related to the changes in agricultural practices are skin rashes and some degree of poisoning. These are believed to be a result of the chemicals used at IPT. Although the connection is supposedly well-known, little is done to either prevent or treat these problems.

#### *Impacts on the Environment*

Agricultural organization and techniques used in the community of Ukupseni have both positive and negative impacts on the environment, both known and unknown to the community. On the positive side, people are working less than before in the field, leaving room for natural reforestation of the agricultural lands and leaving time for the soil to regenerate its nutrients. Overuse of the land around the community is therefore not an issue. Nevertheless, if everybody who is currently involved in other kinds of occupations were to go back in the field to work on their *fincas*, the environmental impact on the forest and on the soil fertility should not be overlooked.

On the negative side, several agricultural techniques, both traditional and new, have negative impacts on the environment. The traditional use of slash-and-burn is definitely a threat to soil fertility, destroying valuable organic matter and rendering nutrients vulnerable to runoff and volatilization. Some individuals in the community are becoming aware of this problem and are starting to use new methods of green fertilizers (compost, *bokashi*) and leaving cut plants on the *finsa*. But techniques introduced by IPT are also degrading the soil and water systems. Monocultures combined with reduced fallow times strain nutrient uptake, reducing the fertility of soil with time. Also, the use of chemical fertilizers contaminate both the soil and water, reducing the growing capacity of plants, which in turn mean that more and more fertilizers need to be added every year. This cycle continually increases both the environmental and economic costs of agriculture. Some *finqueros* who are using chemicals are aware of the damage done to the soil, but, having no instrument to test water quality, argue that no damage is done to the rivers, which must be too far away from the *fincas* to be damaged. However, observations made at the IPT confirmed that the ground, the rivers and the wildlife are

being damaged by the use of chemicals. Indeed, less iguanas, butterflies, birds and mammals are now observed near these areas.

In addition to the direct impacts that agriculture has on the environment, many indirect impacts are observed in Ukupseni. The increasing population is creating new stresses on trees used for firewood and for crafts, obliging people to go farther and farther in the forest to find big trees. The same is true of game animals which are becoming harder and harder to find near the community. One of the biggest problems, however, is the overexploitation of marine resources and the resulting threat to coral reefs.

The Kuna are traditionally people from the land and their culture is not adapted to the use of marine resources, although several species of algae have become a part of their medicine. The ocean used to be considered a garbage dump where all waste produced could be thrown. This may have been acceptable when all waste was organic, however, since the imported products have become much more common in the community, the kinds of waste have changed significantly. Plastics, soaps, batteries and other toxic wastes are now commonly thrown into the sea and are greatly affecting marine life. Coral reefs need oligotrophic water to proliferate, clear water through which sunrays can pass. Toxic waste thrown into the ocean can often add too many nutrients, encouraging rapid algae growth. Algae populations thus explode, and these enter in competition for sunlight with coral. Since algae can grow much faster than coral, it is they who eventually win out, leading to coral bleaching. Furthermore, since the opening of the market for marine resources with Panama in the 1970s, overexploitation of the fish, lobsters and crabs that feed on these algae has decreased the stress put by these herbivores on algae populations. This has led to even greater proliferation of algae and further reduction of coral reefs. Marine deforestation is the other great threat to coral reefs by the Kuna. Starting from around 1915, people in Ukupseni started to harvest coral to enlarge the island in response to the rise in population.

The overexploitation of marine animals is directly related to the decline in agricultural participation. It is not only a serious problem for corals reefs but for the populations of these very animals themselves. These organisms are becoming scarcer and the individuals are fished younger and younger because of a lack of big adults near the community. Big fish are now hunted farther out in the ocean. Squid and lobster populations are also declining, and a measure to prevent extinction has already been taken. The measure is called the *veda*, a period from March to the end of May when fishers are prohibited from hunting either lobster or squid. However, many Kuna do not respect this law because they perceive the abundance in the sea to be limitless. For many, the only real difference that occurs during the *veda* is that prices fall in the community since fishers cannot sell their products externally. No real measures are taken against people who do not respect the *veda* other than confiscation of their products. Moreover, some commercial fishers use toxic chemicals such as chlorine to hunt squid more easily, which damages coral reefs.

Another animal at risk is the sea turtle. Populations of turtles have been severely depleted since the market for their shells opened with Danes. This animal used to be considered a sacred grandmother that should not be hurt but has rapidly become one of

the favourite meats of the Kuna. Turtles hunters who used to hunt in a relatively sustainable way are now killing turtles of 10 years old, before they are able to reproduce. Furthermore, the entire pile of turtle eggs is now being harvested from beaches, leading to complete depletion of the turtle populations in the region. Indeed, turtles naturally return to lay their eggs on the very beach where they were born. If all eggs are harvested, no population remains to return in the future.

Although there are positive consequences of the reduction in agricultural work on the condition of the terrestrial ecosystem, more generally, the environmental security sphere has been in decline due to the overexploitation of marine resources. This has threatened the sustainability of what is becoming a major livelihood activity in the community. Populations of marine species are declining at the same time as pressures for their use are growing, which could have serious effects on the social well-being of the community. Furthermore, since the increased marine exploitation is largely for external sale and not for local consumption, any threat to this resource base has the potential to jeopardize food security.

### *Migration*

The decreased agricultural production, combined with an increasing population brought about an important wave of migration out of Ukupseni to Panama City. The first people to leave were male heads of families who did not have sufficient agricultural production or economic resources to support their families. They went to Panama to earn money, which they initially intended to send back to their families in Kuna Yala. Soon enough, however, the families of these first migrants generally joined them in the city. These Kuna were hoping for a better and easier life in the city, but more often than not, they ended up caught in still another cycle of poverty. They suffered discrimination for their race and for their informal education and were given the worst jobs with the lowest salaries. However, as these low salaries were still higher than what could have been earned in their native community, many thought at first that their life would still be better in the city. They had overlooked the correspondingly much greater costs involved with living in the city. Moreover, many of the migrants were young and had many children, which increasingly strained their economical resources and worsened their situation. Many Kuna migrants ended up living in marginal communities, such as Veracruz, Tocumen or Las Nubes, because of their low income. There, the Kuna formed their own communities, encouraging others to migrate to these same areas.

Today, the situation is still the same for at least a part of the new Kuna migrants. Many of them, especially men, get easy, low-income jobs as cooks in restaurants or as caretakers. This trend is a particularly large step away from tradition since women in their native communities usually did these tasks; men were to do the more physically demanding work in the *fincas*.

The other important reason for migration out of the communities is to study. Some of these migrants get married in the city and stay there, while others graduate as professionals. Although many of these professionals go back in their home community

for vacation, most of them permanently establish themselves in Panama because of a lack of opportunity to exploit their new skills and to have a good salary in their community.

The agricultural crisis occurring in Ukupseni clearly has important impacts on many areas of Kuna life. With reduced agricultural participation, productivity has significantly dropped, and less food is available for local consumption. This has had very negative affects upon health in the community. The environmental impacts have been mixed: as *fincas* are abandoned the forest is allowed to grow back, yet the shift from land to sea has severely threatened marine life. Finally, due in part to the sum of these effects and to the greater opportunities presented for many in the city, migration out of Kuna Yala has increased greatly. All of these consequences are related, either directly or indirectly, to the local decline in agriculture. The degree to which this predicament has affected the well-being of the Kuna shows not only the importance that agriculture once held, but proves also that it continues to be a central part of their society.

### **Proposed Solutions**

Faced with the repercussions of the agricultural crisis on the community of Ukupseni, a serious effort needs to be made in order to circumvent the worsening of the situation and to begin to remedy the causes of the problem. The key for the success of any solution lies with the participation of the community. Our consultation with the community has shown that most people feel very strongly about these issues and have varied ideas as to how they should be resolved. Based upon the suggestions of many members of the community as well as upon our analysis of the situation, a list of four main propositions has been created. This list should serve as a guideline for community action, while still leaving room for adaptation to better suit local priorities and capacities.

#### *Strengthen and Expand the Agricultural Commission*

By far the most frequent suggestion made during interviews has been to improve the community organization of agriculture. In the past, the *saylas* have held a major role in planning and arranging agricultural work at the community level, although now the focus is centred on other activities. Currently there is an agricultural commission established by the Ukupseni administration, which could potentially serve as a very effective means of organizing and promoting agriculture in the community.

One of their major initiatives is to organize up to 3 or 4 obligatory workdays when men would be obliged to go to the *fincas*. If some do not participate, they would be placed in a jail cell as punishment. Fines would be less effective, since often they could simply not be paid. This would certainly increase the work done in *fincas*, although it is additionally important to encourage agriculture and not simply oblige it.

The commission has also proposed a promotional 'Year of Agriculture' campaign. This could be very successful if encouragement of agriculture in the congress through discussion and song was accompanied by other actions. In the past, the community has been very receptive to workshops offered by outside groups (such as the Peace Corps)

and we suggest that these be continued, both with outside specialists and local *finqueros*. Techniques could be demonstrated that might lessen the impact of agriculture on the environment, such as presenting organic inputs as an alternative to burning. Appropriate ideas and practices taught at the IPT should also be shared to improve community acceptance and allow the benefits of these to be shared by all.

Tied into the theme of workshops is our suggestion for a nutritional campaign to encourage a varied consumption of local products, including *hortalizas*. Seminars and group meals would need to be organized to promote the consumption and cultivation of vegetables that are not traditional to the Kuna diet.

Another initiative proposed by numerous members of the community is to improve the organization of ceremonies, such as rituals involving *chicha fuerte*. The agricultural commission could be an appropriate body to do this, since a major part of this job is to coordinate the contributions of food by different people. This fits their mandate, because these ceremonies make explicit the link between agriculture and Kuna culture. Reviving the declining ceremonies is therefore an important way to revive agriculture.

Throughout all of these initiatives, we feel that it is important to emphasize the participation of women. Their participation in agriculture was high during the past, and so their renewed involvement is not an idea foreign to the Kuna. As the major cause of declining productivity is due to not enough work being done in the *fincas*, the potential of the contribution of women to the labour force must not be overlooked. Additionally, they hold knowledge of how the hearty cacao and plantain drinks are traditionally prepared, giving them an important role in ceremonies and community health.

The benefits of these few initiatives to the community, all organized under the umbrella of the agricultural commission, are many. The general support given to agriculture could discourage the trend of shifting work from the land to the sea and thus limit the negative effects on marine resources, thus improving the environmental security sphere. The increased participation in agriculture, including that of women, to be achieved through the congress and workshops, would increase the production of food in the community. Ukupseni would thereby be less dependent upon expensive, imported and often unhealthy foods. Expanding the role of the agricultural commission would allow the Kuna to better meet the food needs of their families, which would reduce the problem of malnutrition in the community. The encouragement of the production and consumption of *hortalizas* would also address the issue of nutrient deficiency. This solution therefore also serves to improve the food security sphere. The improved organization of ceremonies would contribute to cultural expression. The agricultural commission, therefore, should serve as an umbrella organization through which these different initiatives could be arranged.

### *Contextualize the School System*

The school system in Kuna Yala presents the same curriculum that is taught in all of Panama, which is often inappropriate for the situation in Kuna Yala. As a result, these

schools have tended to contribute to cultural erosion and to conflicts between different generations of Kuna. The top administration at both the Ministry of Education (MEDUCA) and IPT are well aware of the situation and are promoting significant adaptation in the curriculum of both the primary and media schools to better fit to the Kuna reality.

First, teachers should be more familiar with the Kuna culture and environment. They should know the beliefs traditionally held by the Kuna, such as agricultural morality and ethics, and should be able to transmit this knowledge to Kuna children. Teachers should therefore be mainly from the Kuna community, since they would already be familiar with these things and thus be more fully prepared to address the local context. As a result, most classes, if not all, would be taught in the Kuna language, which should be the principle language in schools, to be learned both orally and in written form. This is already the case in several other communities, where Kuna is the principal language of instruction in the first and second grades of primary schools. This is planned for the first grade in Ukupseni by 2007. However, other languages such as Spanish and English do have a place and should be taught although possibly limited to oral form only.

Second, the focus of the curriculum of the IPT should be on the environment of the community. Youth should learn to work with what is available in the Comarca, such as fish and crabs, and not about foreign animals, such as cows, which are unavailable to them. The form of agriculture taught should be based on traditional techniques already adapted to the environment, instead of bringing in many occidental techniques to which the environment itself has to be adapted. However, it is clear that some occidental techniques are appropriate and useful in the *fincas*, thus the curriculum should be a balance between techniques of both types.

For example, the cultivation of *hortalizas* is a technique that could be beneficial to the Kuna by encouraging the growth of a greater diversity of products. This would in turn encourage the consumption of more variety and healthier foods. Another useful technique is the use of green fertilizers without cleaning and burning the land, which would improve the productivity of the soil without damaging it. On the other hand, classes on how to grow pasture and raise cattle are judged to be totally inappropriate to Kuna Yala, where the General Congress has banned cows. The focus in animal farming should be on local animals, like iguanas, or crabs, in which case a small farming initiative has already been set up. Other techniques that are harmful to the environment should be avoided, such as the use of chemical fertilizers and pesticides as well as monocultures.

In addition to new occidental techniques, we propose that a portion of the curriculum of the IPT should include identifying and understanding medicinal plants. The deep understanding of their environment has always been an important part of the Kuna culture, but this knowledge is being eroded in young Kuna. Classes on wild and cultivated medicinal plants and on their use would certainly reinforce cultural knowledge and preserve it for future generations of Kuna.

We also propose that the community become more involved in the education of youth, as they were in the past. An obligatory day of work for students on the *finca* of their family, or in small groups with voluntary *finqueros*, could be part of the IPT program. In this way, young people would not only learn to work on experimental *fincas* but also in the real *fincas*, where they will continue to work after graduation. Written reports signed by the *finqueros* with whom students worked could be required to ensure full participation.

With a curriculum updated to fit the context of Kuna Yala, graduates would certainly feel better prepared to begin work in the *finca* and would likely be encouraged to remain in Kuna Yala. They would have a better knowledge of their environment and the techniques suited to it. Also, the balance between traditional and occidental techniques would allow the continuation of traditional culture that can respond to modern pressure and needs. Moreover, the participation of the community in the education of the youth could improve the receptivity of the older generations to the new knowledge and techniques learnt by their children. This sharing of knowledge and intergenerational cooperation could support the diffusion of those new techniques deemed beneficial within the community, while at the same time ensuring that youth learn the traditional ways.

Recently, steps in this direction have been made. This year, the national government came out with a plan to transform education in a way to make it more suitable to local conditions. This is to be done through a more appropriate curriculum that is regionally based, and by better preparing the teachers to the context in which they will work. This project is still in its very early stages and has not yet been implemented in Kuna Yala, yet the willingness of the national authorities, which set the curriculum, to adapt is encouraging.

In addition to the curriculum, several organizational improvements to the school system could be made. The cost of school supplies needs to be addressed, since it seems to be of concern to many people in the community. The costs need to be lower to make schooling accessible to more people. Financial help could be provided by the national government or even by the local administration or congress to help people in need with education-related fees. Also, the important role played by the *Padres de la Familia* should be emphasized in providing meals to school children. Unfortunately, the food supply seems to be rather undependable. Often shipping problems mean that the food, imported by boat from Colón, does not arrive when expected, so students are left without a meal. This problem could be addressed if local producers supplied the food, instead of depending upon the unstable external market.

#### *Creation of an External Market*

The role of money in the economy of Ukupseni is now undeniable and will continue to be so in the future. People can no longer live solely from their own subsistence activities because of the local unavailability of certain food staples (such as rice and oil) as well as the new costs associated with schooling. Therefore, if people are

to be encouraged to work more in the field instead of in the sea, a market needs to be created for agricultural products. It is in the search for money that people have stopped working in the field in favour of the quick market for sea products. It is therefore reasonable to expect that a more dynamic market for agricultural products would incite many to work in the field.

An external market could be created through the cooperation of local authorities and of Kuna living in the Panama, maybe through the General Congress. *Finqueros* from Ukupseni could send their products to the Kuna established in Panama to be sold in cities, in supermarkets or in open markets. Of course, a good study of the market options and the possibilities these could provide needs to be done before investing in such an operation. Of issue would be the means by which products could be transported to the city. One interviewee suggested the construction of a highway leading directly to Colón from Ukupseni. This would certainly open up possibilities for the external sale of goods from the community. However, it is likely that the environmental and social costs would more than offset the potential benefits to the community. Fragmentation of the forest, erosion of the landscape and air and sound pollution could all be environmental impacts related to the construction of such a highway. Negative social impacts also exist, including increased external influences, robberies and access to the drug trade. Therefore, we do not recommend the construction of a highway as a viable way to develop the market. Two other means of transportation are available: boat and plane. Here, too, further study of the costs and benefits of each is necessary.

Even though it is too early to propose specific recommendations as to how the external market of agricultural products should be created, the benefits associated with this are obvious. People would be more able to meet their economic needs in the community based on traditional work in the field. There would be higher income for the community, which could be used to help people in need and to develop new projects. Money would move inward to the community from the outside instead of the constant loss of investment that is happening now. Finally, the support for resources from the land instead of from the sea has the potential to significantly reduce the great threat to marine animals. This third solution, then, has the potential to significantly improve both the spheres of food security and of environmental security.

#### *Increase Local Opportunities for Professionals*

To address the issue of increased migration out of Kuna Yala, real opportunities need to be created in the community. Different interviewees have suggested many small initiatives. One man proposed to build a tourist cabin on his finca. Another sought to create a sugar refinery where sugarcane could be more easily processed communally by machine instead of individually by hand. This would encourage the local production of sugarcane, which could then be sold throughout the Comarca.

Another idea was to produce coconut oil locally. This would be cheaper than the oil currently imported from Columbians and could also be exported to France and England, where there is a high demand. Despite the presentation of viable business plans

and the project approval by the General Congress for both the sugar and oil production initiatives, the local congress refused to financially support the initiative.

A large initiative currently being discussed in the General Congress is to found a university in either Ukupseni or Ustupu, possibly an extension of one in Panama. This would allow students to remain in the Comarca and pursue their studies at a lower cost. Post-secondary education would therefore become available for more students. Researchers and academics would also be able to continue their work locally, which might encourage more focus on local issues and concerns.

All of these initiatives, both large and small, would have the positive effect of increasing the investment in the community and creating a more dynamic living environment. People would be encouraged to stay in the Comarca, which would generate a lot more income, much of which would be invested directly back into the community. Local *finqueros* would benefit from the local demand from their products and thus the traditional agricultural way of life would be supported.

## **Conclusion**

The community of Ukupseni, and Kuna Yala as a whole, has experienced rapid changes over the past century. Due to the combined pressure from the occidental school system, the growing cash economy, as well as from other influences from outside of the Comarca, the centre of Kuna life has shifted away from its traditional agricultural base. The social organization of this work has declined as many people are participating in different forms of work, and the techniques used have expanded to include several practices foreign to Kuna tradition. These changes have had important consequences on the well being of the community as well as of the environment. Food has become scarcer as productivity has declined. Many are migrating to outside of the Comarca and although the condition of the land may be recovering, the health of the sea is facing severe threats. Generally, it can be seen that the challenges faced by the Kuna are a result of the conflict between tradition and Occidental influences. People are caught between two worlds and as a result community cohesion is suffering. The solutions that have been proposed seek to address this conflict by combining beneficial elements of Occidental origin with Kuna tradition in a way that could allow the community to take advantage of the potential offered by each. But this is not a new idea; the history of the Ukupseni health centre shows Kuna have already seen the advantages that are offered by the incorporation of both traditional and occidental knowledge.

The health centre in Ukupseni has been operating since 1972, when it offered only Occidental medicine. Over time, however, it has begun to accept the inclusion of traditional practices alongside Occidental services. *Botanicos* and *parterras* now participate in certain treatments, especially at births and deaths, bringing with them the medicinal plants that have been collected specifically for this purpose. This example shows the ability of Kuna culture to adapt to new influences in a way that most benefits the community. No cultures are fixed in time or in custom; all are dynamic, constantly adapting to the changing social and environmental conditions with which they are faced. The Kuna of Ukupseni are no different and have the capacity of maintain a strong cultural base even in an increasingly Occidentalised world.

## **Avenues for Further Research**

Due to time constraints, this project was necessarily limited in scope. However, this left clear directions for the future research to complement this work. Firstly, our proposition to create an external market for local agricultural products opens the door for further study as to the benefits of such an endeavour and to the best ways that this can be accomplished. This would be an interesting opportunity for investigators to examine the economic situation of communities in Kuna Yala, as well as those in Panama.

A second theme to be developed is the impacts of marine exploitation on the viability of marine animal populations and on the health of the coral reefs. Although this has become an important part of the Kuna economy, resource extraction is currently unsustainable and needs to be addressed immediately.

**References:**

- Castillo G & Beer J. (1983). *Utilización des bosque y de sistemas en la region de Gardi, Kuna Yala (San Blas, Panama)*. Centro Agronomico Tropical de Investigación y enseñanza. Departamento de Recursos Naturales Renovables. Turrialba, Costa Rica.
- Chiari A. (2006). *Gobierno de los pueblos indígenas y sus características culturales*. Taller de Conocimientos Indígena y Medio Ambiente. Fundación Dobba Yala.
- Instituto para el Desarrollo Integral de Kuna Yala (IDIKY). (1999). *Taller de analisis y elaboración de estrategia para enfentar la crisis de producción agrícola en Kuna Yala*. Ailigandi, Comarca Kuna Yala.
- Keipi K, Laarman JG, Lopez R, Haltia O, Dourojeanni MJ, De Camino R, Jaramillo CF, Kelly T, Tresierra JC, Hardner JJ, Rice R & Simula M. (1999). *Forest resource policy in Latin America*. Edited by Kari Keipi. Published by the Inter-American Development Bank.
- Nebel BJ & Wright RT. (2001). *Environmental science: The way the world works* (7<sup>th</sup> ed.). *Companion Website*. Prentice-Hall, Inc. Retrieved January 26<sup>th</sup>, 2006, from <http://cwx.prenhall.com/bookbind/pubbooks/nebel2/>
- UN Agenda for Development, 1997. New York: United Nations, Department of Public Information.
- Ventocilla J., Herrera H., Nunez V, 1995a. Plants and animals in the life of the Kuna. *University of Texas Press, Austin*. Pp. 9-29.
- Ventocilla J, Nunez V, Herrera F, Herrera H, & Chapin M, 1995b. Los indígenas Kunas y la conservación ambiental. *Mesoamerica*: 29.
- Westing, AH, 1991. Environmental security and its relation to Ethiopia and Sudan. *Ambio* 20: 168-171.

APPENDICES

## APPENDIX 1

### **Executive Summary**

Heather Elliott & Louis Tanguay

#### **Traditional Kuna Agriculture in the Face of Occidental Influence: Impacts and Responses in Ukupseni**

Our internship took place in the Comarca Kuna Yala, a province of Panama held by the Kuna, which is the second largest indigenous group in the country. We worked in the community of Ukupseni, which is situated just off the Atlantic coast near the centre of the Comarca. Agricultural production is the traditional source of subsistence, although now marine resources are becoming increasingly important, and caring for the environment has always been central to Kuna culture. The purpose of our work was to document the changes in agricultural techniques and organization among different groups in the community and to explain how these changes have affected well being and cultural expression in Ukupseni.

In order to understand the situation in Ukupseni, we spent four weeks in the community over three trips: Jan. 31<sup>th</sup> to Feb. 11<sup>th</sup>; March 19<sup>th</sup> to 25<sup>th</sup>; and April 17<sup>th</sup> to 21<sup>nd</sup>. During these visits, we performed both formal and informal interviews in homes and in *fincas* with the help of local interpreters and visited local organizations such as the schools and the health centre. People interviewed ranged from children to elders, from field workers to administrators, and were both men and women to have the greatest diversity of opinions possible. Internship days in Panama were used to compile and analyse the interview material.

In these interviews, we found general agreement on the existence of a serious agricultural crisis in the community. Although techniques used in the field are changing to include occidental techniques learnt in school (such as monocultures and chemical inputs), the main problem is that people are working less in the *fincas*. The social organization of agriculture has declined, and jobs are diversifying, especially towards the sea. This has been accompanied by a huge population growth and consecutive migration from the Comarca. Additionally, the rising importance of money and more lucrative market for marine animals has pushed many people to fish or hunt lobsters, squid and sea turtles, whose populations are now threatened.

These changes have had many consequences on the community, the most profound being lack of food caused by the decrease in agricultural production. This has impacted the culture by decreasing the consumption of traditional drinks and participation in ceremonies. The growing problem of malnutrition has led to thefts in order to support hungry families. Outside influences, including the occidental school system have brought new ideas that are often at conflict with tradition, causing intergenerational strife.

The conclusions drawn from this study show that the problems of malnutrition, environmental degradation and social decline that are emerging in Ukupseni are a direct result of the difficulty of incorporating outside influences while struggling to maintain a traditional society. As a first step in resolving this cultural clash, we have created a list of several propositions aiming to combine these two types of knowledge. First, efforts should be made to contextualize the school system. Second, an agricultural commission should be charged with encouraging agricultural work. Third, research should be done into the possibility of opening up agricultural products to an external market and lastly, educational and job opportunities should be created for professionals within the Comarca. These propositions attempt to balance beneficial aspects of Occidental knowledge with the profoundness of the Kuna culture to address modern concern while maintaining strong traditions.

Foundacion Dobba Yala: Urb. Linares, Nvo. Reparto El Carmen, Casa N° 13 -B- (Transistmica, Detrás del Almacén ElectroIndustrial), Apartado Postal N° 0816 - 04014, Zona 3, Panamá, Rep. de Panamá.  
Tele/Fax:(507) 261-7229 / 261-6347. *Personería Jurídica N° 221, 1990.* [dobbo@cableonda.net](mailto:dobbo@cableonda.net)

## APPENDIX 2

### **Resumen Ejecutivo**

Heather Elliott & Louis Tanguay

#### **La Agricultura Tradicional Kuna Confrontada con las Influencias Occidentales: Impactos y Respuestas en Ukupseni**

Nuestra pasantía fue realizada en la Comarca Kuna Yala, Territorio Panameño posesionado por los Kuna, el segundo grupo de indígenas, más grande en el país. Trabajamos en la comunidad de Ukupseni que se encuentra situada cerca del centro de la Comarca sobre la costa atlántica. La Agricultura es la actividad principal de subsistencia, pero la importancia de los recursos marinos se está incrementando. La conservación de la naturaleza siempre fue al centro de la cultura Kuna. El objetivo de nuestro trabajo fue documentar los cambios en las técnicas agrícolas y en la organización de diferentes grupos, para analizar cómo los mismos han afectados el bienestar y la expresión cultural de la comunidad.

Estuvimos en Ukupseni tres veces, sumando cuatro semanas en total para tratar de comprender la situación: 31 de enero a 11 de febrero; del 19 al 26 de marzo, y del 17 al 21 de abril. Durante este tiempo, hicimos entrevistas formales e informales en casas y fincas de la gente con la ayuda de interpretes locales, además realizamos entrevistas en diferentes organizaciones locales, como las escuelas y el centro de salud. Entrevistamos tanto niños como señores mayores, campesinos, administradores y tanto hombres como mujeres para obtener una gran diversidad de opiniones como fuese posible. Cuando estábamos en la ciudad, compilábamos y analizábamos la información obtenida durante las entrevistas.

Encontramos en las entrevistas un consentimiento general sobre la existencia de una crisis agrícola en la comunidad. Aunque las técnicas agrícolas están cambiando, para incluir ideas más occidentales enseñadas en las escuelas (como el uso de monocultivos o de productos químicos), la razón principal de esta crisis es la disminución de la gente que trabaja en el campo a diferencia de antes. La organización de la agricultura ha declinado y los empleos se están diversificando, específicamente se han direccionado hacia la extracción de los recursos marinos. La importancia del dinero y del mercado de productos marinos se ha incrementado, dando como resultado una gran cantidad de pescadores y en consecuencia, las poblaciones de peces, langosta, pulpo y de tortuga se encuentran amenazadas en peligro de desaparecer.

Estos cambios han resultado en varias consecuencias para la comunidad. La consecuencia más grave es la falta de comida originada de la disminución en la producción agrícola. Esto también, ha afectado la cultura Kuna debido a un decremento de las ceremonias y del consumo de las bebidas tradicionales. El problema de la malnutrición que se incrementa, ha resultado en muchos robos para mantener a las familias pobres. Otras influencias occidentales como las escuelas, han traído consigo

nuevas ideas, las cuales entran en conflicto con frecuencia con las ideas tradicionales y con las ideas de las generaciones mayores.

Como resultado de este estudio, concluimos que los problemas de malnutrición, de degradación ambiental y de pérdida de cultura son un resultado directo de la dificultad de incorporar nuevas ideas de la sociedad occidental y conservar la profundidad de la cultura Kuna. Creamos una lista de proposiciones que combina los dos tipos de conocimiento, como etapa primera para atenuar este conflicto cultural. Primero, el sistema educativo debería reflejar el contexto local; segundo, una comisión agrícola debería fomentar el trabajo en el campo; tercero, debería buscarse la posibilidad de abrir un mercado externo para los productos agrícolas, y finalmente, oportunidades para una mejor educación y facilidades para que los profesionales Kunas puedan ofrecer sus servicios a la Comarca. Estas proposiciones están hechas con la finalidad de establecer un balance entre los aspectos beneficiosos del conocimiento occidental y la profundidad de la cultura Kuna para responder a las presiones modernas y conciliarlas con el mantenimiento fuertes tradiciones.

Foundation Dobba Yala: Urb. Linares, Nvo. Reparto El Carmen, Casa N° 13 -B- (Transistmica, Detrás del Almacén ElectroIndustrial), Apartado Postal N° 0816 - 04014, Zona 3, Panamá, Rep. de Panamá.  
Tele/Fax:(507) 261-7229 / 261-6347. *Personería Jurídica N° 221, 1990.* [dobbo@cableonda.net](mailto:dobbo@cableonda.net)

## APPENDIX 3

### **Limitations Encountered**

A first limitation encountered was when we first arrived in the community with our initial project in mind. Our project was originally supposed to focus on the environmental degradation caused by new agricultural techniques being used. However, the community believed that the terrestrial environment was healthier than ever. We thus shifted the focus of our project to more social and cultural issues, while still keeping in mind the environmental impacts of these concerns.

Few other limitations were encountered during our time spent in Ukupseni. However, we did have some problems with translation during interviews. First, we felt that in several interviews, we were not perfectly understood by our translators, and even less by the interviewee. When this happened, it was hard to get the exact information we hoped to learn. Second, even when we felt that translation was well done, the original information was translated so many times, from Kuna to Spanish and from Spanish to English in our notebooks as well as being reorganized from our notebooks to our actual final work means that accurate interpretation of the original meaning might have been compromised. The information would likely be more reliable had there been only one intermediary.

Finally, the fact that Ukupseni is far away and expensive to get to has limited the number of our visits to the community to three, although each were of considerable length. This limited our analysis to more general trends, since the time needed to focus on more specific details was unavailable to us.

## APPENDIX 4

### **Work Scheduling**

Although we were limited to just three trips to Ukupseni by both travel distance and costs, each was of considerable length. It was important to spread our visits over the entire three months in order to be able to observe different periods in the agricultural season. When we were not in the field, we were concentrated our efforts on analyzing the information gathered during the visits and on preparing for following visits.

<u>Date</u>	<u>Activity</u>
January 10	Meeting with supervisor Heraclio Herrera for outline of the project at the Dobba Yala office <i>2 hours of work</i>
January 19 & 20	Background research and development of initial research proposal at the Dobba Yala office Meeting with Domingo Diaz, coordinator of our stay in Ukupseni <i>14 hours of work</i>
January 26 & 27	Final preparations for first visit to Ukupseni Refining research proposal and plan <i>10 hours of work</i>
January 31 – February 11	General introduction of ourselves and the project in Kuna Yala Beginning of interviews, especially with elders and women <i>11 days of field work</i>
February 16 & 17	Analysis of interviews <i>5 hours of work</i>
February 23 & 24	Analysis of interviews <i>5 hours of work</i>
March 9	Preparation for informal presentation <i>5 hours of work</i>
March 19-26	Continuing interviews and observations in Kuna Yala, especially with youth and local groups and organizations <i>7 days of field work</i>
March 30 & 31	Analysis of interview material and writing final report <i>10 hours of work</i>
April 13 & 14	Writing final report <i>22 hours</i>
April 17-21	Completing interviews and observations in Kuna Yala Preparing presentation and presenting it to the community <i>4 days of field work</i>
April 21 - 23	Finalizing presentation and final report: 15 hours

*Total numbers of full days spent in Panama: 11 per student*

*Total numbers of field days: 22 per student*

## APPENDIX 5

### **Thank-you Letters**

Thank you letters should be sent to:

Heraclio Herrera: [heraclioherrera@hotmail.com](mailto:heraclioherrera@hotmail.com)

*The supervisor for our internship. He presented the project to us, gave us the opportunity to work with the foundation and introduced us to other members of Dobbo Yala. He helped us to focus on our topic and provided us the basic tools and literature to start our project.*

Domingo Diaz: [domingodiaz50@hotmail.com](mailto:domingodiaz50@hotmail.com)

*Our first translator and guide in the community of Ukupseni, working with us for the first half of our first trip in Ukupseni. He introduced us to the community and to the Kuna culture, with an open and friendly spirit.*

Luis Lion:     Playón Chico  
                  Comarca Kuna Yala  
                  Republica de Panamá

*Our second translator in the community. He helped us with translation for the second half of our first trip in the community and for the two following. He introduced us to work in the field and gave us opportunities to meet with different people.*