

Conservation and Community Development in Nepal: Case Study of a Non-government Organization



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Abstract Approved:

The internship I performed was with Rural Community Development Program (RCDP), a domestic non-governmental organization in the country of Nepal. This organization focuses on community development goals in rural communities, utilizing the efforts of volunteers within the context of environmental conservation ideals. I primarily worked with the associated community plant nursery and a community forest. My goals through this position were to observe and learn first-hand about the processes of community development and environmental conservation agencies in developing countries. These goals were met through a

series of meetings, tours, and duties through RCDP. I spent many days working with the community plant nursery, and learning from the local supervisor. Additionally, I met on numerous occasions with the director of a community forest, and learned about the basic goals and processes of their operation. I was able to subsidize these experiences with tours of natural areas, and communication with community members and businesses. A cultural tour and training were also included. These combined experiences were more than sufficient for meeting my internship goals and obligations of my graduate program. This report completes the requirement of a non-thesis Master of Science degree through the Botany and Plant Pathology Department.

A FINAL REPORT

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APPROVAL:

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I understand that my final report will become part of the permanent collection of Oregon State University. My signature below authorizes release of my final report to any reader upon request.

Joseph R. Cannon

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List of Abbreviations

RCDP	Rural Community Development Program
CF	community forest
NTFP	non-timber forest products

Introduction

This report is for the purpose of describing and interpreting my internship experience toward satisfying the requirement for a non-thesis Master of Science (MS) in applied science. This degree is through the Department of Botany and Plant Pathology. I chose to perform the specific internship of this report required for this MS degree, because it offered experience relevant to a career, not only involving the natural environment, but also with human communities which have had an historic and increasing impact on the natural environment. This MS degree emphasizes the component of communicating science to non-science communities. Therefore, I feel that the internship was practical because it allowed me to be immersed in a variety of such communities, and to gain relevant hands-on experience.

My class curriculum for this degree included courses such as natural resource economics, restoration ecology, natural resources and human values, and a series of botany systematics classes. Such background was relevant and useful for this internship experience. Visiting a country like Nepal, with a variety of climates and high levels of biological diversity presented a great opportunity to observe different natural communities. Experiencing a new atmosphere of human/ botany interface offered the chance to develop wisdom and practical experience toward a career using an interdisciplinary applied science degree.

Internship basis

I chose to work with a non- governmental organization (NGO) called RCDP (Rural Community Development Program) in the country of Nepal for my internship assignment. Most of my duties with RCDP occurred in the rural town of Rampur, which is near the south central border of Nepal. This region is called the “Terai”, and is characterized by moist grassy floodplains. It is also the most productive region, in terms of agriculture, in Nepal. Chitwan is the government administrative district which encompasses Rampur and some of the Terai.

RCDP recruits volunteers using external international staffing organizations. These organizations recruit volunteers and interns to perform community service roles in the Nepalese community with the lure of an international experience. I was contracted by such an agency, Global Crossroads, which connected me to an internship project in Nepal with RCDP. The entire experience cost me approximately \$2200.00, not including the flights. The fee to Global Crossroads and RCDP was \$1800.00. This included housing, meals, and a cultural orientation. All other expenses in Nepal were extremely low, because of the exchange rate. The internship was approximately three months long, from mid June 2008 to mid September 2008. One week in July was spent in Thailand.

My focus was on environmental conservation and community development, and I worked with a village plant nursery located next to an orphanage run by RCDP. Other staff and volunteers worked strictly with the orphanage, teaching and supervising the children. I also worked with the orphanage children, but only on a limited basis. My experience with RCDP included a cultural orientation experience, as well as a brief language course. Afterwards, I was taken to my field location in a rural village where I was introduced to regional RCDP staff and working locations.

This internship was valuable from many aspects, because it included experience for utilizing diverse human resources with a successful international recruitment strategy. It also involved a strategic staffing structure and communication system. Additionally, the experience was typically in the context of strategies to live sustainably with limited natural resources or limited accessibility to these resources. These strategies were developed through a community minded approach.

The botanical experiences were somewhat limited on this assignment, due to safety issues and the difficulty of acquiring a knowledgeable guide to plants. I was advised that most areas were either dangerous because of rhinoceros activity, or because of potential robberies. I was also advised not to hike alone, particularly in jungle areas. Violent crime is rare in most regions, even during times of Maoist rebel activity. But theft is somewhat common. I was ultimately unable to contact a botanist (or have them contact one for me), who could accompany me to target areas. Guided expeditions were possible but expensive, and lacked the experience and information in which I was interested. This in mind, I was aware from the time I

initiated this experience that the internship would be based mostly on the non-botany, applied-science portion of my curriculum; but not entirely.

My duties as an intern with RCDP were minimal, and the structure of the experience consisted of tours of operations and interviews with the personnel and associates. I was able to then do some networking and literature research in the area to build on any relevant knowledge. My goal was to gain perspective from first-hand experience at conservation, sustainability, and community development from an active and successful international organization.

Background

The country of Nepal is one of the poorest in the world, with the average income of approximately \$470 annually (USDS 2009). Additionally, 30% of the country is below the poverty line. As far as social development, Nepal has a noteworthy illiteracy rate, at 51% (Guo 2008). This ranks the country at 15th highest in the world. The capital city is Kathmandu, where the only international airport is located. Nepal is considered a developing country, with tourism as a major industry, but agriculture the largest. Most agriculture is subsistence oriented, so the export market is limited, or at least below potential. Substantial fees are garnished by the government from Mt. Everest expeditions. Nepal is a tiny country, with a population of about 29 million. Health standards are quite low with about a 6.4 percent infant mortality rate, as well as high incidence of AIDs and malnutrition (USDS 2009).

Nepal is a place of great diversity in many aspects, one of which is climate and geography. Its climate, ecosystem diversity, and geographic range are astounding. Nepal has 8 out of 10 of the highest peaks in the world. The highly famed Himalayan range graces the northeast border, with a steady descent in elevation heading southwest toward the Gangetic plains of India. This opposite border has areas near sea level and zones with tropical climate, such as Chitwan (Fig. 2.). The variation across the width of Nepal is extremely dynamic, going from 305m to 8848m above sea level (Jayaswal 2009). Nepal is also very diverse in terms of religion and social perspective. Most Nepalese people of religion are Hindu at 81%, then Buddhist at 11%, Muslim at 4%, while Christian and others are less than 1% (USDS 2009).

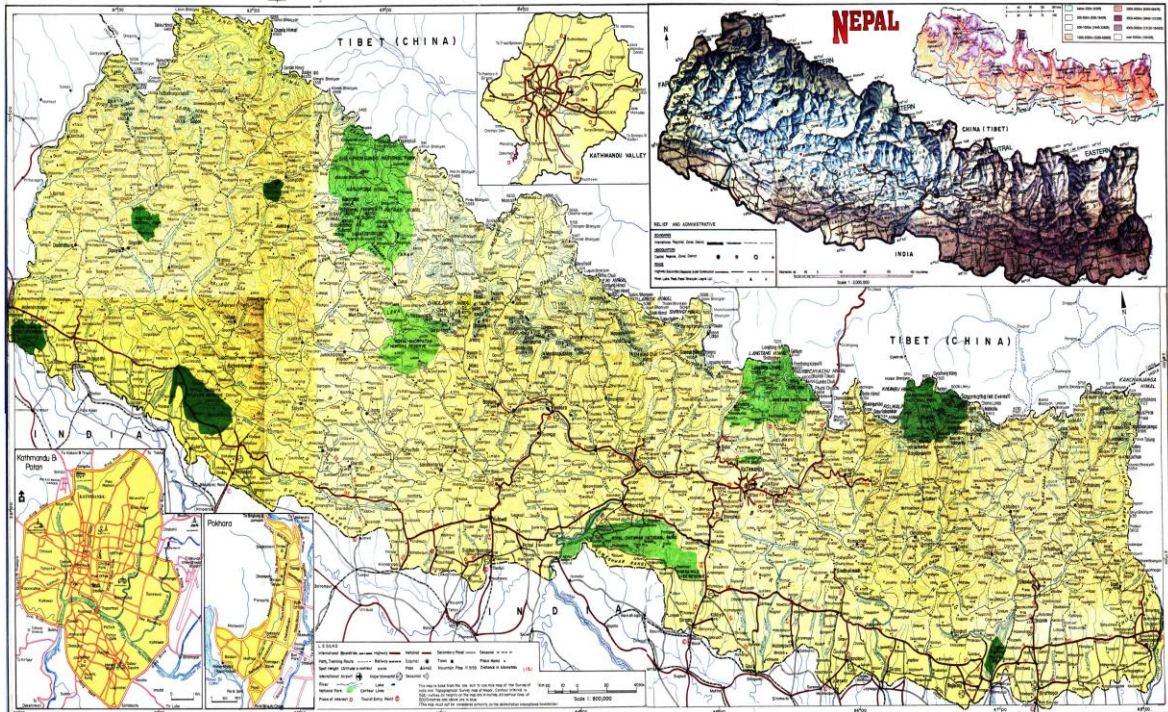


Figure 1. Map of Nepal. southasiarev.wordpress.com



Figure 2. My work location: Chitwan, in the Terai (plains) region of Nepal. southasiarev.wordpress.com

Nepal is also notable in terms of plant life. It is rich in plant biodiversity, having about 7000 species of higher plants with about 700 medicinal herbs, including about 250 indigenous species. Approximately 100 of these plants are commonly cultivated for commercial use (Bhattarai 1998). These medicinal herbs are thought to represent approximately 10% of the known flora of Nepal. Estimates indicate that non-timber forest products (NTFPs) worth up to US \$26.5 million are traded annually (Jayaswal 2009). NTFPs represent the third greatest export from Nepal, usually in the form of raw goods to India (Larsen, Olsen, and Boon 2000).

Ideas of conservation have been historically represented in Nepal in respect to biodiversity and sustainable development. Nepal was one of the first Asian countries to develop national conservation legislation, and develop national conservation strategies (Heinen and Kattel 2007). The country was represented and an active participant at the UN conference on Human environment at Stockholm in 1972 (Bhattarai 1998). Nepal has also been an active member of the United Nations Environmental Program, as an elected member of the governing council as of 1984. By signing the Rio Declaration in 1992, Nepal has expressed its interest and concern for conservation of biodiversity, especially as it relates to living conditions of the poor. However, the tenuous government situation of the past twenty years has made acting on these initiatives difficult and hard to assess. Further, Nepal participated in the World Heritage Convention in the late 1970's (Bhattarai 1998). Fourteen protected areas, including wildlife refuges and national parks have been established, covering about 14 percent of the country's land area. A new constitution in 1991 expressed intent and concern for protecting natural resources, in which the export and collection of several non-timber forest products, is banned.

Nepal has also been a prime location for research on the interface between population growth and natural areas, such as that of Matthews et al. (2000) - especially in respect to agricultural practices. Additionally, Nepal has been an excellent case study toward the relevancy of conservation in subsistence cultures. Such research is presented by Ghimire and Mohai (2005).

Nepal endured a civil war and violent Maoist insurgency from 1996 to 2006, which was resolved by establishing an interim government until elections in 2008. This election established a parliament system or constituent assembly charged with writing a new constitution by November 2010. Also in May 2008, during this process, Nepal ceased to be one of the last

surviving monarchy states, when the king was driven from power. The country was then declared a democratic republic. The Maoists won the majority of power in the government in August of 2008, and declared it to be democratic socialist. However, they remained unable to achieve consensus on vital issues and a constitution. In 2009, instability has once again increased with the Prime Minister stepping down from power due to irreconcilable differences with the other parties.

One of Nepal's greatest challenges is a constant energy crisis. Daily power outages (country wide) are the norm for up to 16 hours of the day. The potential for hydro power remains highly underutilized, estimated at only 1% of potential usage (USDS 2009). Ownership issues, government instability, and policy disputes are the key deterrents to implementing this technology. Much of the technology in terms of power and transportation ownership is controlled by India. This creates tension and obvious disadvantages for Nepal, such as autonomy for regulating the national economy.

Another challenge for Nepal is establishing a system of education which serves to feed and build domestic endeavors. Nepal allocates the lowest percentage of GDP toward research and development of any country (Guo 2008). Most undergraduate degrees in Nepal are only 3 years in scope, compared to a typical 4 year western education. Also, farming families usually require their college age children to break from classes during peak season such as rice planting and harvesting. Colleges seem to consider this to be necessary, and will even wait for a certain percentage of students to return from planting/ harvesting time before continuing with vital portions of the curriculum.

Therefore, children represent a wide range of ages in most grades and college students tend to lag behind- taking more than three or four years to finish. The problem is exacerbated by the trend of college graduates to head to a country with better jobs toward which to apply this education (Guo 2008). These graduates frequently send money back to families and friends in Nepal, but this can contribute to unstable economic conditions- similar to massive fluxes of higher valued currencies during tourist seasons. This process of remittance is difficult to monitor and evaluate in terms of effects on the local economy (Bluffstone 1995) due to the exogenous nature of income sources, the unpredictability of wages of jobs in other countries. India was

once the central player in outsourced labor from Nepal, but globalization has allowed economic powers such as Dubai and Qatar to also take part in importing Nepalese laborers.

Learning basic Nepali language was not essential for my position, but added to the experience and made social interactions more effective as basic courtesy. However, if I was able to learn the language extensively, it would have made learning and communicating complicated ideas more effective. Concepts such as ecology and conservation were often lost in translation, and I had difficulties communicating ideas and questions in this area. I was sometimes assigned a translator, but never one with more than a basic science background. The Nepalese people I worked with usually spoke better English than I spoke Nepali- but not by much. The worst situations in regard to the language barrier were the planning procedures and organizing of meetings and trips to acquire information for my project. For instance, I would explain my plans or needs several times, and they would say they understand and have everything worked out. But the plans would result in chaos, sometimes wasting great amounts of time and energy- and even compromising safety.

That being said, such obstacles added to the experience in a significant way, and enabled me to practice problem-solving skills in a new environment where communication boundaries are common. Such boundaries can occur with either language or culture. Overcoming such obstacles is at the heart of this interdisciplinary degree and my career-communicating and applying science to external communities. Exchanging information for the benefit of both entities is a fundamental goal here.

My main objective in working with RCDP was to experience firsthand how NGOs function, especially in an international context. One of my initial interests was the logistics of American and western agencies when coordinating with NGOs in foreign countries to staff their projects. Another point of curiosity for me is the potential conflict-of-interest situation of having western influence on the cultural identity of domestic endeavors such as community development projects. Some important questions would be: is it detrimental to have foreign influence through NGOs? Is there a healthy mix of science-based and non-science community influence on NGO endeavors? And ultimately, how could improved collaboration between science, social policies, and traditional knowledge enhance the efforts of NGOs? This last question seems particularly salient, because many NGOs strive to implement environmental

conservation education and practices while working through a foreign perspective. This can be tricky when the communities are barely surviving on present levels of natural resources.

With these questions in mind, I originally inquired about conservation projects with NGOs through American- based staffing agencies, such as World Endeavors and Global Crossroads. I performed background checks and sought out former volunteers and interns in hopes of getting a variety of perspectives from experience of the entire operations. The responses were almost entirely positive.

The process of perpetuating conservation practices plays a potential role in promoting the personal wealth and standard of living of individual community members. This process combines elements of free-market economy as well as communal and collective community practices. Thus, the NGO's are theoretically a vital force in developing the standard of living in such communities by an environmentally and economically sustainable fashion. RCDP understands that the backbone of their operation is the contribution of volunteers from countries with higher value currency (such as the United States and the United Kingdom). Volunteers from these countries can feel that they are getting a great value in a vacation, accomplishing a cultural education and experience in the process, if the program is designed effectively. RCDP and other NGOs capitalize off of this concept. They do an excellent job of building on the already thriving tourist industry in Nepal, and in a more practical avenue than flooding the market with random donations. They allocate, what amounts to a relatively small portion, to ecotourism activities. The bulk of the volunteer/ intern funds seem to go to the western staffing agencies, due to the greater value of local currencies. If this agency can be bypassed, the volunteer/ intern can have the same experience (without benefits such as traveling insurance), at approximately two-thirds the cost. I felt more comfortable having an American agency to hold accountable for my experience, in order to avoid cultural disconnects or possible fraudulent activity.

The money from the volunteers goes to RCDP to pay for staff, facilities, investment in growth, promotions, and community development. Ideally, an NGO such as RCDP strives to invest in community development with goals of building positive social capital in perpetuity. Therefore, while external financing funds the nursery and orphanage, these entities should contribute to the community on a feed-back cycle basis. As the economy and standard of living

(health, etc.) of the community increase, the community should potentially no longer be reliant on external sources. Such a community can then independently invest in further developing itself, based on its own world view and values. In essence, this process preserves cultural diversity by empowering the community without stipulations that a government or foreign organization would impose taxes, high interest loans, treaties or contracts with external obligations; such as high- interest loans and promises to develop specific forms of government.

Duties of Internship

The substance of my intern assignments mostly entailed performing stewardship duties while making inquiries and observations in the process. This internship was not specifically structured as a typical western internship would be- training and practicing under a specific position. My experience was primarily based on learning from observing and communicating with those having roles relevant to my areas of interest. I will describe my primary duties in this section, and include other various duties and experiences in other sections of this document as they apply. The RCDP personnel were typically very receptive to my requests for experience, but sometimes the process took awhile. They were eventually able to cater to most of my requests. During any downtime, I would utilize the local university library to cross -reference any information I obtained in person.

My most active duty was simply weeding and propagating plants for the community plant nursery. Here I was able to observe growth and maintenance processes as well as the management procedures, such as distribution to the community. I also joined the volunteers for tree planting assignments around the village, temples, and schools. The entire nursery is chemical free, so weeding is one of the most work intensive tasks. This is done completely by hand- usually by volunteers. My duties (along with volunteers) also included potting up seeds and seedlings, as well as spreading fertilizer (dried chicken manure) over the seed beds. All of the plants in the nursery are grown from seed in this manner. I observed and assisted with transactions for distributing trees and other plants to villagers who would come by on foot, bike, or motorcycle.

The RCDP Community Plant Nursery

The community plant nursery, orchestrated and managed by RCDP, is a vital component to the environmental viability of the rural agricultural area in terms of limiting fragmentation of the natural ecosystems. The purpose of the nursery is to produce seedlings, and to plant and distribute them to the local farmers, partners, and conservation areas. Additionally, the nursery fills at least three major roles. The first is providing a source of perpetual resources (firewood, livestock fodder, food, compost, shade, medicine, barter material, etc for the surrounding villagers -a community of limited means. A second role is as a source of ecological restoration in the village area, which has been cleared and utilized chiefly for farming, and heavily impacted by agricultural usage. A system of “farm forestry” or “agriforestry” is sometimes implemented as a strategy for mitigating these effects. This practice combines various agricultural, economic, and conservation functions (fauna habitat, shade, soil ecology, firewood and other harvesting, wind breaks for crops, soil stabilization, etc...). A third major purpose of the community plant nursery is supplying food for the orphanage. Nutritional food such as Asparagus, as seen in Fig. 3, is grown here. The nursery has a local coordinator who manages the plants and other necessary materials regarding the function. Perhaps an unofficial fourth role would be to create a sense of well-being in the community, by esthetically enhancing the landscape and creating an atmosphere conducive to peaceful community interactions and religious observance.



Figure 3. Asparagus rows after weeding, RCDP plant nursery. Photo by author

The trees and plants are also potentially used as economic stimuli, as commodities to build independent wealth and the rural economy. They are distributed equally amongst the community members (up to 30 per family as an allowance). The trees are also donated to public common areas for shade and spiritual monuments. The spiritual and social significance of trees and plants in Nepal seems at least as important as the nutritional and economic roles which they encompass.

The community garden consists of a variety of plants; multi-purpose tree species like Chinaberry (*Melia azedarach*), Silk Cotton (*Bombax ceiba*), Ipil-ipil (*Leucaena leucocephala*), Bird-of-Paradise tree (*Caesalpinia pulcherrima*), Shisham (*Dalbergia sissoo*), Bamboo, and others. Fruits like Litchi, Mango, Jackfruit (*Artocarpus heterophyllus*), Ashoka (*Saraca indica*) etc., and flowers such as Bougainvillea, Croton, Hibiscus, and Gardenia (see Appendix 1 for tree background). Local associates and farmers are trained and utilized as well through the plant nursery operations.

The workers in the community nursery work with all phases of the institution: planting seeds, transferring seedlings to larger pots and soil plots, weeding and maintaining plants, and distributing plants to community members. Figure 4 shows early stages of seedlings in poly ethylene or “poly bags”.



Figure 4. Seedlings in poly-bags. Photo by author.

The Community Forest

Perhaps the most compelling part of my intern experience was working with and learning about the operations of a community forest (CF). Such a forest system is typically defined when a community representative petitions the District Forest Office (DFO) to allocate a portion of National Forest to be converted and managed according to the discretion and needs of the community represented. If the DFO approves this appeal, it then gives parameters for operation; mainly that the forest not merely be harvested but also strategically managed for

regeneration and sustainability. The DFO must also be convinced that the CF will be adequately managed as a resource for the community. The idea that after 40 years of nationalization efforts, the government would offer forests to local communities for management, gives credence to the idea the resources are best managed at the local level (Chitraker 1996). This policy also serves to relieve the government of excess expenses and responsibilities. Such a role is similar to that of NGOs, although CFs are not technically defined as such.

The DFO operates under the Forestry Department, which is federal in nature. The National Forest is not managed for preservation or restoration, similar to US, only kept aside for harvesting. Therefore, not much is lost in converting to CF- except native/ natural biodiversity to some extent. The CF is given parameters for management by the DFO, where if these are not maintained the CF is reclaimed as NF status. Community forests constitute approximately 1.3 million ha of land in Nepal, while government and other forests take up about 5 million ha (FAO 2009).

Management from within (by the community, for the community) is seen as essential for several reasons. First, external entities tend to either have ulterior motives, profit interests, or set conditions. The World Bank has been known to sponsor some CF endeavors, but with its own set of conditions (Gilmour and Fisher 1992). The downside of managing such a project without external aid is facing obstacles with only existing levels of resources and skills. For example, rather than getting tax money from the government, Gyaneshwar CF is almost entirely funded by the sale of firewood, and occasional contributions. With only these funds, it runs the operation and pays for field workers, security, maintenance, and administrative expenses.

Another character of community forests in regard to utility is the value of non-timber forest products, as opposed to simply managing forests for timber yield efficiency. This aspect of CFs is a reflection of the culture and economic structure of Nepalese communities. Being a largely subsistence based society, the need to commodify products is second to meeting daily short-term needs efficiently. Utilizing NTFPs is one means to this end. However, NTFPs such as medicinal goods, are valuable for direct use and commodities.

Although these NTFP are less likely to be as profitable (at least globally) as timber products, they often serve to provide some income and investment opportunities for

community members. Managed properly, this practice can be a sustainable resource for the community. At least a small amount of money is necessary, even in communities based on bartering. This has proven to be a particularly valuable practice for women in Nepal (Jayaswal 2009), who aren't always given the same income earning opportunities. Women are also frequently left behind with limited resources when the men take labor positions in other countries or regions.

The strategy of empowering women in community forests stems from the premise taken on by CFs that disadvantaged groups must be better off in order for economic development to occur. Ideas of "Empowerment" are vital in community building projects such as CFs, because rural Nepalese societies are not typically homogeneous and egalitarian (Gilmour and Fisher 1992). It is therefore important to acknowledge disadvantaged segments of these societies, while recognizing the many strong points. In these societies it is not too difficult to see how women represent both of these categories. While being seriously disadvantaged members of rural Nepalese communities, women are also a great asset. They are in many instances the most knowledgeable about forest resources, being the ones who are most commonly collecting forest products. This duty necessitates a cultivated knowledge of useful trees and plants, as well as the derived knowledge of ecology and relative habitats of each plant. The women have therefore become increasingly useful as project managers. Additionally, pressures from outside agencies which promote ideas of egalitarianism have led to representation by women in CF administrative roles. This is also a valuable marketing tool for CF products, targeting demographics which promote civil rights and equality.

Non timber forest products also lead to conservation strategies which facilitate cultivation of entire forest ecosystems, rather than monocultures of timber species. This practice can therefore potentially be more ecologically viable, and conducive to preserving historically natural conditions. Such advantages appeal to global conservation strategies, and open doors for possible assistance and benefits from major conservation agencies.

Gyaneshwor Community Forest is in the Chitwan District, across the Narayani River from the Lumbini district. I think these districts are quite large, because Lumbini is approx 4 hours away. The area within the district is the Mangalpur vicinity, where there are 6 member wards, 11,100 people in population, and 2,250 houses. There are 1,750 members in the community, or

“user groups”. The CF area is 224.75 ha in size. The sign at the entrance to the CF (Fig. 5), shows a crude digram of the Chitwan district and the member wards.



Figure 5. Sign at entrance to Gyaneshwar CF. Photo by author.

The CF also has non-forest related functions for contributing to the community. One of these functions includes training and loans of money and material to women for bee-keeping and fishing. The women are trained as bee-keepers, to harvest honey as a commodity, and provided with the equipment. Other crafts and trades for women are common with community forest systems. The local shops in tourist districts frequently sell these items. Usually the items consist of fabrics, sweaters, jackets, gloves, hats, etc. CFs are therefore very active forces for enabling women to be self-sufficient. Women are significant components of the CF, and are often in charge of making important decisions as to forest operations (Gilmour and Fisher 1992).

Gyaneshwar community forest also aids a small fishing village with materials and loans (money for one goat to each user group member). This action also follows the CF trend of giving aid that perpetuates self-reliance, rather than dependency and gifts that expire in substance and worth. Usually, there is significant potential for continuous improvement of living standards, as well as autonomy of resources and self-sustenance. Gyaneshwar CF invests in enhancing cultural

needs, such as providing wood for funerals at a discounted rate- taking additional burdens off of grieving families. They've also created a space by the river for leisure. I sat at that place for a while waiting for the rain to stop, and people were gathered, taking a break from their tasks or spending time with family or friends.

In terms of forest operations, CFs function by different stages of intercropping (as opposed to agriforestry). The director stressed that I make this distinction. Trees are harvested after about 25 years, when a land area of 5ha is cleared, then replanted. Approximately 5000 trees are planted each year, and this is done by hand as in Figure 6. Community forests typically have their own nursery for trees and sometimes herbs (Fig. 7). The harvesting plan excludes land in river impact zones in order to reduce possible land loss from flooding and erosion. Community Forest authorities have constructed a system of stream current diversion levies to prevent erosion from rising flood levels. Otherwise, there is very little landscape alteration by Gyaneshwar CF.



Figure 6. Laborer in Gyaneshwar CF planting nursery trees from poly-bags. Photo by author.



Figure 7. Nursery at Seti Devi CF. Photo by author.

Some community forests practiced agriforestry as well as intercropping- or just intercropping with other methods of managing timber. CFs that used agriforestry were able to cultivate valuable NTFPs, such as medicinal herbs, which could even be used as commodities. This practice was very minimal at Gyaneshwar, but not uncommon in Nepal. The policy at Gyaneshwar CF was to practice very minimal management of understory species. Many of the native plants, and several of them useful as NTFPs, would fill in the understory. However, many invasive species would move in after harvesting trees, such as *Lantana camara*. It seems to me that they could easily seed the desirable native understory crops soon after harvest of timber. Some CFs placed a higher priority on cultivating NTFPs.

Community forests also contribute substantially to education efforts at lower levels. They offer schooling to member groups, making it accessible in each region of the community. These schools are equal or greater quality than urban schools. They offer a well-rounded education, including health and community skills, as seen in Fig. 8. CFs build schools with

resources gained by the CF, and staff the schools with whatever teaching assets are available. This is much more tenable than the alternative of a large commute using unreliable transportation options to schools at remote locations. All stages of education are created by CFs to some extent.



Figure 8. Health education in a school financed by a CF. Photo by author.

An additional important role of community forests is functioning as a source to establish sustainable living methods. One of these methods is to reduce the need for forest fuels by providing the means to alternatives, such as domestic biogas systems. Approximately 90% of all wood used in Nepal is for fuel-wood (Bluffstone, 1995). If alternative uses are created, without new external costs, the impact on forests and related ecosystems can be reduced or used for other valuable purposes. Therefore, the introduction of biogas is a huge asset for natural conservation endeavors in that region, and community forest operations assist the process.

Pagdee, Kim, and Daugherty (2006) make a good summation of general criteria for successful CF operations: *"Variables with significant influence on the success of community forestry are tenure security, clear ownership, congruence between biophysical and*

socioeconomic boundaries of the resources, effective enforcement of rules and regulations, monitoring, sanctioning, strong leadership with capable local organization, expectation of benefits, common interests among community members, and local authority. These variables illustrate community–forest relationships, community ability to organize and continue collective activities, and protection of benefits, rights, and responsibilities in common resource management .” I learned that many of these parameters are achieved at Gyaneshwar CF.

It is of course important to note the limitations by which the CF process is impeded. There are several obstacles that prevent CFs from operating smoothly, and many of them are a result of the culture. For example, CFs are only effective- in essence meeting the needs of all community members- if needs are equally considered and addressed, regardless of the status of individuals. In order to accomplish these ideals, CFs such as Gyaneshwar gather frequently for meetings, as pictured in Fig. 9. Additionally, they send representatives to national and global conferences, to assimilate strategies and philosophies for successful CF operations. CFs can only function effectively if there is adequate communication and cooperation between all structural levels, from bureaucracy down to laborers. Because Nepal has historically operated according to the caste system, these basic functions are often limited by inability to acknowledge equality and cooperate accordingly (Gilmour and Fisher 1992). It is debated that the caste system is becoming increasingly outdated as Nepal becomes more of a developed country, but it is still an issue to a variable extent.

Similarly, a discrepancy in policy and authority with the actual implementation is often an obstacle. Often, the status of funding or lack of power to enforce policies and strategies lead to lack of implementation of CF plans. This was perhaps especially true during the time I was involved. So many resources were bound up during the power struggle for government change that very little was devoted to less important issues. Nepal seems better at making laws and commitments than actually coming up with the resources to enforce them.



Figure 9. Staff meeting at Gyaneshwar CF. Photo by author.

The various CF operations usually make some attempt to maintain the native biodiversity structure. Some strive for this goal more than others. The ultimate objective is meeting the needs of the community, economy, and user-groups. Environmental concerns are secondary in cases where they aren't related to increasing standards of living. The influence of external sources seems to play a large role in persuasion toward accommodating environmentally sound procedures; hence the use of ecotourism as a tool for obtaining funding and exposing detrimental practice.

Another important point to mention about CFs in Nepal is the values inherent in the development, management, and success of the operations. Although there are several types of CFs, the majority seem to be motivated by resource depletion and not by other values which are commonly attributed to natural areas that motivate management initiatives. This motivation will inevitably influence the type of forest and ecological system which is restored, as well as the strategy and degree of enhancement or preservation when applicable. For example, the original forest structure with native species and communities is not necessary or implemented if other species can provide resources on a more practical basis. I would reiterate that it is very difficult to convince a society struggling to feed and clothe itself, to make resource sacrifices for the sake

of esthetics or ecological diversity. It is perhaps more difficult to convince such a community of the global environmental threat presented by the loss of integrity of such ecosystems.

In many areas of Nepal where community forestry has been to some extent successful, there has been a decrease in the rate of forest degradation and an increase in the quality of natural forests. Jackson and Ingles (1994) have reported that the majority of plantations in the community forestry sites can, in the long-term, be converted into natural forests, if the user groups promote the return of naturally regenerating species through appropriate silviculture practices. Under these circumstances, well-managed community forestry can contribute both to the economy and to the enhancement of biodiversity values of these forests.

Agriforestry

A common strategy toward efficient, sustainable use of resources I witnessed in the rural communities of Nepal is what is called “agriforestry”, agro-forestry or farm forestry. Essentially, this is the practice of intermixing trees with other crops whenever feasible. As implied by the name, Agriforestry incorporates the practice of forestry and agriculture. The goals behind agriforestry are multifaceted, and include: increasing production of food, fodder, fuelwood, and improving socio-economic conditions (Young 1989). These goals have led to improvements in land utilization, cropping practices, diminished labor toward fuel wood and fodder, livestock management, and availability of forest resources (Tribhuvan University 1997). This system began significantly in the early 1980’s as an effort to control erosion and improve soil conditions. In recent years, more environmentally minded strategies have been implemented. Agriforestry has a valuable environmental conservation component in the sense that it helps to promote ecological balance by maintaining forest structures and enhancing watersheds by keeping the water-soil equilibrium.

Community- wise, agriforestry practices enhance the lives of villagers by freeing up time, and extending resources. Environmentally speaking, agro-forestry has helped to mitigate the human impact on the environment, by facilitating both ideals. Agriforestry can help generate ecological conditions and processes similar to the regional natural environment. Soil

health, for one example, can be restored, as trees have been shown to build up soil fertility in areas similar to Nepal (Young 1989, p93). There have even been efforts to maintain and implement soil mycorrhiza factors in agriforestry procedures in some countries (Haselwandter and Bowen 1996). As mentioned previously, adding components of the surrounding natural ecosystem to farmland and developed land helps to reduce fragmentation of habitat for local flora and fauna. A good example of this in effect is the numerous Weaver bird nests commonly seen in palm trees throughout the villages (Fig 10).



Figure 10. Weaver birds. <http://www.balmed.ch/images/Weaver%20bird.jpg>

One of the most commonly used practices for intercropping is to utilize tree/crop interactions. This strategy is common because most agriculture in Nepal is by small farmers. Therefore, numerous ways to accomplish maximum utility (yield, etc...) are accomplished with this strategy. For example, tree crops need to be managed for the shade regiment which suits the understory crops. This structure is utilized at the RCDP community garden, as seen in Fig. 11. One strategy is to allow limbs to grow out during the dry season, but then cut during the monsoon season to maximize direct sun when crops grow and when it is most necessary to

obtain fodder (Tribhuvan University 1997). Many variations of this plan are used to achieve maximum potential of the land area and crops.



Figure 11. Small-scale agriforestry at the RCDP community plant nursery. Photo by author.

The common trees used for agro-forestry in Nepal depend on the region. For reference, Table 1 lists trees used by each region nationwide, and the main usage. My experience was confined to the Terai plains region. Species chosen also depend on the preference of the farmer or community member according to their needs. Seemingly, many agro-forestry designs such as TU/IDRC Farm Forestry Project do not prioritize using native trees. The priority is maximizing utility and maximum yield. Therefore, non-natives such as eucalyptus are commonly used. *Dalbergia sissoo* is a native that is commonly used because of its numerous uses and good market value (Tribhuvan University 1997). However, eucalyptus, a non-native, has been incorporated due to its value for straight poles and fast growing for high turnover. Additionally, native *Melia azederach*, and non-native *Leucaena leucocephala* have been utilized for fuelwood

and quality fodder- as well as high quality fiber. Several strategies have been incorporated according to the combination of crops/trees and topography of the property.

Table 1. (Sah and Dutta 1996)

Table 1. Important multipurpose tree species of the plains and hills of Nepal

Tree species	Altitude	Uses
<i>Acacia catechu</i> *	plain-900 m	F, Fo, extractives
<i>Acacia nilotica</i>	plain-500 m	Fo, F, T, tanning
<i>Acer oblongum</i>	1200-2400 m	T, Fo
<i>Adina cordifolia</i>	plain-1800 m	T, Fo
<i>Aesandra butyracea</i>	plain-1800 m	F, Fo, extractives
<i>Ailanthus excelsa</i>	plain	Fo, matches
<i>Albizia chinensis</i>	plain-1500 m	T, veneer, F
<i>Albizia lebbek</i>	plain-1000 m	T, F, Fo
<i>Alnus nepalensis</i> *	900-2700 m	F, Fo, T
<i>Anogeissus latifolius</i>	plain-1700 m	F, T, Fo
<i>Anthocephalus chinensis</i>	plain-1000 m	veneer, pulp, Fo
<i>Artocarpus heterophyllus</i>	plain	fruit, T
<i>Artocarpus lakoocha</i>	plain-1300 m	Fo, fruit
<i>Azadirachta indica</i>	plain-900 m	F, Fo, T, extractives
<i>Bauhinia purpurea</i>	plain-1600 m	Fo, food, F
<i>Betula alnoides</i> *	1200-1300 m	F, Fo, T, veneer
<i>Betula utilis</i>	2700-4300 m	T, Fo, M
<i>Cassia fistula</i>	plain-1400 m	F, T, ornament
<i>Castanopsis tribuloides</i>	450-2300 m	T, Fo, nuts
<i>Cinnamomum camphora</i>	1000-1200 m	T, extractives
<i>Cinnamomum tamala</i>	1000-1200 m	T, extractives
<i>Dalbergia sissoo</i> *	plain-1400 m	T, F, Fo
<i>Daphne bholua</i>	1800-3600 m	paper
<i>Eucalyptus</i> sp.*	plain-1800 m	F, paper, M
<i>Ficus</i> sp.	plain-2000 m	Fo, fruits
<i>Gmelina arborea</i>	plain-1200 m	T, pulp, Fo, F
<i>Grewia</i> sp.	plain-1700 m	Fo, T, F, fruits
<i>Lagerstroemia parviflora</i>	plain-1200 m	T, F, Fo
<i>Litsea</i> sp.	plain-2700 m	F, Fo, fruits
<i>Mangifera indica</i> **	plain	fruits, F
<i>Myrica esculenta</i>	1000-2300 m	fruits, M
<i>Phyllanthus emblica</i>	plain-1500 m	fruit, M, T, Fo
<i>Pinus roxburghii</i>	900-2000 m	T, F, resin
<i>Pinus wallichiana</i>	1800-3600 m	T, F
<i>Prunus cerasoides</i> *	500-2400 m	F, fruit
<i>Pyrus pashia</i>	1300-2500 m	F, fruit
<i>Quercus</i> sp.	450-3800	T, Fo, F
<i>Sapindus mukorossi</i>	600-2200 m	fruit
<i>Schima wallichii</i>	450-2000 m	F, T
<i>Sesbania</i> sp.	plain	Fo, F
<i>Shorea robusta</i>	plain-1500 m	T, F, Fo, oil
<i>Syzygium cumini</i>	plain-1600 m	F, T, Fo
<i>Terminalia</i> sp.	plain-1500 m	T, F, Fo
<i>Zizyphus</i> sp.	plain-1600 m	T, F, Fo, fruit

F = fuelwood, Fo = fodder, M = medicines, T = timber

* fast-growing MPTS used for the farmlands in Nepal

** mainly for fruits in homegarden or marginal lands

The community plant nursery has a major role in facilitating agriforestry throughout Rampur. By providing native trees for free, community members are motivated to implement this resource with their usual subsistence practices. For instance, rather than planting more hydrophilic crops, they can use excess timber products, such as fodder and fuelwood, to barter or sell for additional needs. Traditionally this is done with any surplus crops.



Figure 12. Entrance display at the RCDP community plant nursery. Photo by author.

The NGO- RCDP

Non-governmental organization or “NGO” is a term referring to organizations that are without government affiliation, have legal standing, and usually serve the purpose of addressing social needs and improving the human condition. The Nepali phrase for non-governmental organization is *gair sarkari sanstha*- literally meaning “in the absence of government” (Chitraker 1996). These organizations are nonprofit by nature, and attempt to accomplish their goals

without the influence of government oriented ideals or profit motives. NGOs are also typically good additions to public projects.

NGOs have the potential to contribute positively to a community in several ways. They are necessary, usually because the government doesn't fill the needs of the community due to lack of resources or initiative. Nepal is a particularly good society for incorporating NGOs due to its strong reliance on external agencies such as major lending institutions (International Monetary Fund, World Bank, etc.), charity workers, and other donors. NGOs can take on the role of making sure that these funds are allocated appropriately and efficiently. For instance, the government gives grants directly to each of the approximately 4000 villages in Nepal. The villagers often effectively use NGOs to make sure these funds are adequately spent (Chitraker 1996). An important caveat would be to make sure regional autonomy is not compromised in the process. Additionally, the most effective foreign NGOs would work to eventually make themselves obsolete in the community, in order to establish a sense of self-sufficiency amongst the locals.

As previously stated, I chose to work with an NGO called Rural Community Development Program, or RCDP- Nepal. RCDP- Nepal was created in 1999. It is a non-profit, non-political, and non-religious program which utilizes the services of interns and volunteers for community development activities (RCDP 2009). RCDP also hosts activities in India, Sri Lanka, and Tibet. They engage almost 500 volunteers each year, yet have prices much lower than other legitimate volunteer agencies. Volunteer activities include working in orphanages, teaching English, health work, conservation work, and other community building exercises. RCDP works with international and local organizations to create activities that allow people of privilege to contribute to a higher standard of living in countries which lack effective government or domestic programs and resources. In the process, they provide an international learning and tourism experience.

Finances

RCDP's official statement on financial allocation is that they are nonprofit, and all of the money goes to support the orphanages and to pay employees. A large portion of my fees went

to the staffing agency (Global Crossroads), as a sort of finder's fee. As mentioned previously, the money from volunteer fees is the most valuable asset to NGOs like RCDP. Foreign money is incredibly valuable in Nepal (the exchange rate favors the dollar, Euro and most currencies), while any jobs performed by volunteers could have been just as easily accomplished by members of the local communities. One of my interests is the effect of foreign money that floods economies based on tourism in countries such as in Nepal. Local vendors would accept dollars, but there was rarely a set value. Haggling was commonplace, and a good strategy to not pay much more than necessary. Arranging the experience directly with RCDP would have cost approximately 800 dollars less (about one third). It was difficult to track the finances, but the employees seemed mostly content and stable in their roles.

Staff

The staffing structure of RCDP is cohesive and logistically savvy at facilitating optimal experiences for the volunteers. They each contributed to creating an ideal experience for the volunteers in the context of cultural education, leisure, and service roles. The staff did an excellent job of making the volunteers feel valuable and welcome. Health concerns were the only issue, but difficult to avoid entirely as travel illness is a common part of an international experience in developing countries. The coordinating agency was very upfront about the inevitability of becoming ill in some capacity during the position. The head staff members are located in the U.S., working closely with the recruitment agency, and making frequent visits to Nepal and the NGO locations. They are native to Nepal.

The RCDP headquarters are in the Kalanki district of Kathmandu. They are housed in a hostel where the office and classroom take up the bottom floor. The volunteers and interns are first brought here for orientation and briefing, before embarking on cultural orientation and given assignments. The staff at this location consisted of the local operations director, a driver, orientation teachers, and cooking staff. The driver was often shuttling volunteers to and from the airport in a minivan. He was skilled in finding ways around frequent protests and transportation strikes. However, one of my first experiences in the country was getting stopped by one of these strikes on the way to the hostel from the airport, and having to explain our way out of a violent situation. Such strikes were common during my time in Nepal, because the country was going through a change in government power structure.

Another RCDP staff member was located in Lamatar, which is a Kathmandu valley location. He hosted a cultural orientation experience at a resident. We spent about 3 days at this location, where the volunteers learn about the local cooking and dancing, and toured the local farms and foothill forests as in Fig. 13. Here, the volunteers can become engaged in conversation with the guide and host family about current events and functions of RCDP.



Figure 13. Agriculture in middle-hills region of Kathmandu valley. Photo by author.

A third RCDP staff member and assistants were stationed in Chitwan National Park, where volunteers are treated to a jungle walk, a tour of elephant training facilities, and local tribal rituals. This experience gave volunteers the opportunity to ask questions and learn about local ecosystems, as well as policies of conservation and maintenance. The jungle walk was good for exposure to traditional knowledge of the ecosystems, and offered just enough of a sense of danger to keep people involved but reasonably safe. The rhinos were a legitimate threat, and recent tiger tracks were observed. However, botanical information was lacking. We were fortunate to encounter a large group of Rhinos from a close but safe distance (Fig. 15).



Figure 14. Rhinos at Chitwan National Park. Photo by fellow hiker, Paul Chien

Finally, RCDP staff were also stationed near Chitwan in the farming village of Rampur. Here is where I was stationed and performed my duties with other interns and volunteers. Most of the volunteers worked at the Orphanage in Rampur, where the regional office and representative is located. This representative was in constant contact with the headquarters in Kathmandu, and coordinated logistics of housing, work duties, auxiliary experiences, and any other concerns. He arranged each of my duties according to my requests to provide the experience I desired as closely as possible. I usually worked with a more direct supervisor, who guided the volunteers in the specific techniques of each task. His main role was running the community plant nursery, as well as growing and distributing the plants to members of the village.

Associates

There were several organizations, which utilized volunteers, as well as benefitted and associated with RCDP. These organizations represented a mutualistic relationship, and allowed RCDP to expand opportunities for community work, while also helping the organizations. Some examples are the orphanages not associated with RCDP, which were located in various areas.

Many of these were situated in regions such as Pokorah, which is the one of the most charismatic tourist towns. This gave RCDP the opportunity to expand its services and opportunities to another area.

An additional partner group was the AIDS assistance unit. A few interns and volunteers were given responsibilities here, and were able to receive college credit for this experience abroad. There were also other health related opportunities for service.

Another group working loosely with RCDP is the Institute for Social and Environmental Research (ESRI). This organization coordinates local and international endeavors to research and document efforts toward establishing better living conditions in Nepal. Their main focus is on rural/ urban interface with historic, natural ecosystems. They host international research endeavors, collaborating with local ecologists and sociologists.

The associate group I worked with most directly is the Gyaneshwar Community Forest, mentioned above. It is one of several forests that sometimes utilize labor and financial contributions from NGO's such as RCDP. Additional community forests also collaborate with RCDP to get support and recognition, such as the Seti Devi community forest. The CFs didn't receive resources from RCDP, only occasional services of volunteers, and valuable exposure. The agriculture college in Rampur also provided occasional assistance, resources, and service for RCDP.

A good example of legitimate steps taken by NGOs and community development efforts such as RCDP, and Gyaneshwar CF is seen in Fig. 15. This model seems close to the ideal of community consensus and implementation of protocols. But every organization I witnessed seemed to vary these steps according to their specific interests and resources.

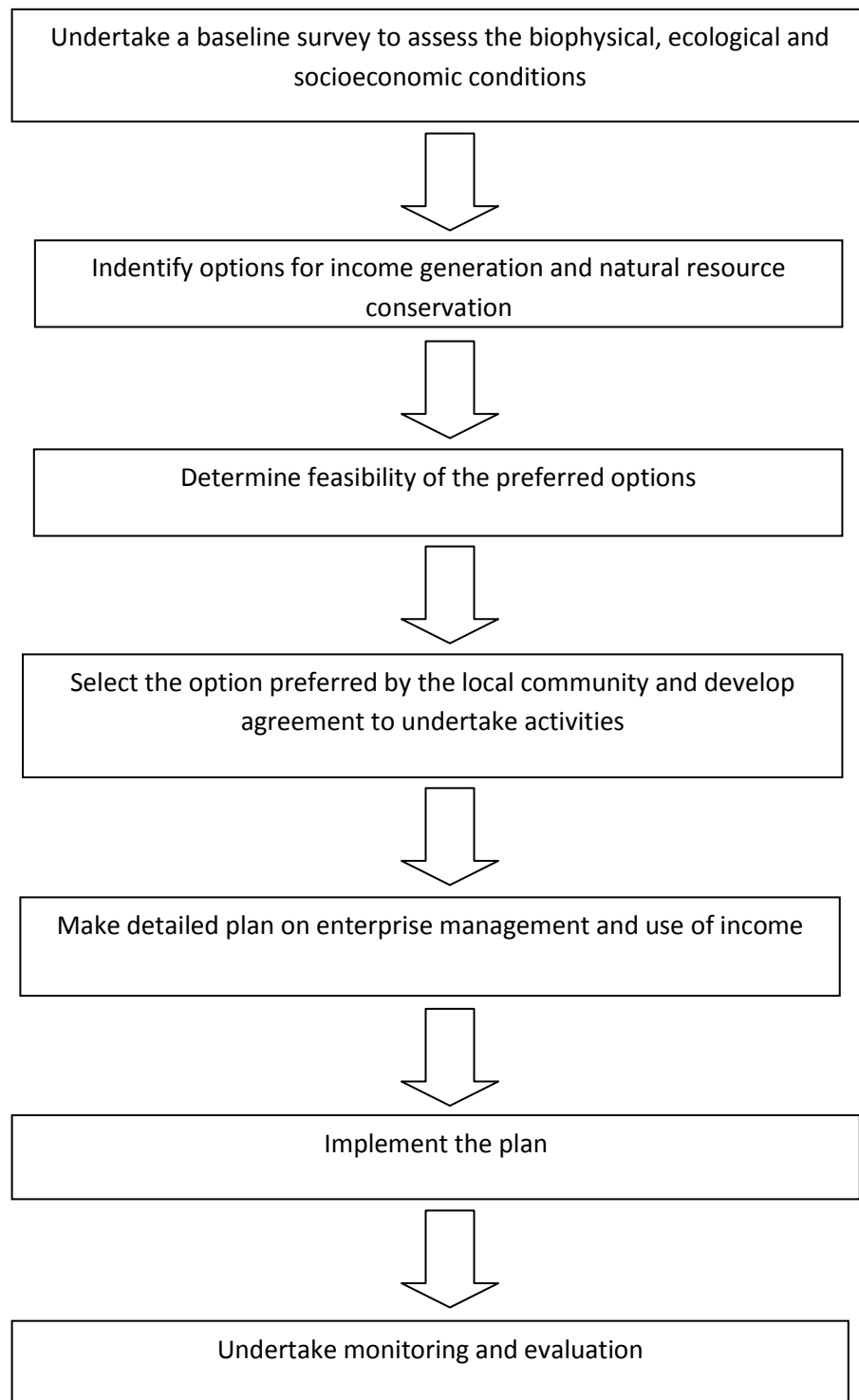


Figure 15. Protocol of community development organizations. (Sah and Dutta 1996)

The Orphanage

Orphanages are actually the main subject of RCDP's work, as well as the main draw for volunteers. I was not very involved with the RCDP orphanages, but I established a good sense of how they operate. Essentially, they are places for children whose parents simply could not afford them. Unplanned pregnancies are common in Nepal, and it is also common to be unable to support even a modest family, especially urban families. None of the children at RCDP orphanages are up for adoption. These children all live together as a sort of family with a permanent host mom, and a steady stream of international volunteers serving as teachers, playmates and authorities. Therefore, they know an impressive amount of English- which is important for the future in the Nepalese business sector and international work. Life in an orphanage, such as with RCDP, can offer a much higher standard of living than that available to typical children in Nepal. This is one reason parents send them to orphanages. The orphans are taught lessons in the morning (by the volunteers), and have playtime in the afternoon.

The orphanages are used as a very effective tool toward recruiting funding and volunteers in places like Nepal. Good or bad, I'm convinced this strategy is used in many developing countries. Volunteers are compelled by the idea of working with cute children, and feeling a sense of validity at the same time by contributing to a noble endeavor. RCDP orients its recruitment strategies around the orphanages, where most of the volunteers and donations go. However, a large amount of this money is allocated to their other operations for community building. Therefore, this is a well implemented strategy for funding and maintaining a non-profit organization. Observing this process first-hand was enlightening.



Figure 16. Orphanage in Lamatar. Photo by author- seen on far left.

Conclusion

Through this internship experience, perhaps the most overriding factor amongst all of the organizations I observed, was the idea of overcoming obstacles related to a growing human presence in a way that is sustainable and appropriate for human needs. Agriculturally speaking, it is becoming established that the best strategy is finding a compromise between efforts which perform natural ecological functions, while also accomplishing necessary yields. This strategy will establish a system of sustainability inherent with historically natural ecosystems or the area (Gliessman 2001). Sustainability in this sense refers to something self-perpetuating, and requiring less (or no) energy and inputs on a regular basis. This idea has come either as a result of pressure and influence from external entities (ecoforestry, for example), or from the observations of success of these strategies.

This experience was particularly valuable for observing how conservation ideologies can take on different meanings across cultural boundaries. The Nepalese people have a more direct

attachment to ancestral practices involving natural resources and standards of living than do westerners. Therefore, traditional ecological knowledge and religion play a greater role in attributing value in these domains. In order to establish political viability and meet the needs of the people, these cultural parameters need to be taken into account in conservation and natural resource management.

As mentioned earlier, the caste system still has an influence in community structure and policy, as well as daily events. Therefore, external guidance and policies which are successful elsewhere will fall under the constraints of this system to some extent. Policies of diplomacy and cross-cultural ethics will need to be taken seriously if strategies at global conservation and development are to be achieved equitably, successfully, and appropriately.

Shaping the operations of a successful NGO or community development project must reflect these needs. When designing the operations of a community plant nursery the local interests need to be evaluated, rather than assuming universal priorities for a “developing” community. For example, maximum crop yield for dietary concerns might be the main agenda projected by an outsider on impoverished communities. However, religious significance is attributed to much of the flora, and this factor might be the priority when deciding which plants to cultivate.

Ever since opening its borders to influence from foreign agencies in the early 1950's, Nepal has been barraged with input and assistance from foreign entities. This usually does not go without at least some minor foreign influence. I would agree that Nepal's identity and cultural integrity depend on creating its economic base, environmental policy fed locally by its own culture and practices, as stated by Chapagain (2008). RCDP and regional community forests encompass this idea, and are cultivating success.

An important process that I perceived to still be developing in Nepal is the integrating of socio-economic and ecological aspects of environmental conservation, and resource use. However, the agencies with which I worked were both aware of this challenge, and making strides toward it. Some examples would be the CF's ideas of incorporating ecotourism, and thus creating a means of support that depends on keeping environmental quality intact to some

degree. Another example would be the determination to avoid use of chemicals at the community plant nursery.

Perhaps the most critical of decisions in this regard is quickly approaching, and that is how to solve issues of water resources and power shortages. By having such enormous potential for hydropower, and lacking consistent means of electricity and utilities in large portions of the country, plans for dams and reservoirs are economically attractive alternatives. Feasible irrigation is also a limitation for farmers in most regions, who are still reliant on monsoon conditions. Limitations to these conditions include any climate changes and historic shifting weather patterns. This threat is amplified by the trend of populations migrating away from areas most suitable for growing crops requiring high precipitation rates, and consistent inundation. I observed this dilemma directly, as my host family used expensive generators to pump water from the water table in order to inundate rice crops. The host father and farmer claimed that this was due to drought conditions; this, in spite of several inches of rain per week.

While Nepal has become rightfully leery of foreign interference and influence toward development and environmental policy, it appears that desperate conditions will lead Nepal to compromise or yield to unwise strategies in order to solve its most desperate issues and achieve a sense of solidarity. The Nepalese people have a lot of pride in their culture and individuality, but this is counterbalanced by weariness at attaining the most modest means of survival, combined with respect and envy of economic and social success in western and developed countries. However, if Nepal is able to establish a stable representative government in a timely manner, they retain the possibility of self-sustainability and growth from within.

Because of these issues, I felt it was necessary to learn about and keep track of politics while in Nepal, as much as possible. I believe that this is a necessary practice at home and abroad, because successfully implementing policies and strategies is reliant on the validity of premises guiding policies, and the political viability of such policies. Therefore, I made a strong effort to acquire input from each level of society and community in Nepal. Such efforts included consulting local and international media, federal and local government statements, NGOs, urban culture, students, research authorities, rural commoners and authorities, and even (and especially) children of each community.

If nothing else, I was in a great position to receive such input, being a visitor from such a western culture receiving high regard in Nepal; not to mention being under the role of community service. Most people seemed eager to express their opinions of how they would like their society to be perceived and developed. Additionally, my visit was timely for this advantage, due to being at the time of the Olympics, where global status is on the line for each country, as many would perceive it. Nepal seems to be one of the last remaining global sources of natural resources which hasn't been extensively developed and commodified. Therefore, it represents a unique opportunity for learning and establishing sound conservation policies, and the possibility of developing an equitable society in the midst of rich cultural heritage and persisting ancient wisdom.

Appendix 1- Relevant plant species from community nursery and CFs.

Ashoka tree (*Saraca indica*) Fabaceae

This tree is native to India and Nepal, and is the most commonly used tree for community plantings by RCDP. Supposedly, the reason for this is mainly esthetic reasons, and cultural ambience. Such a reason is initially counterintuitive, yet indicative of the priorities and values of the communities in Nepal and the Terai region. The name “asoka” in Sanskrit means absence of sorrow, or feeling of well-being (Seminar of Indian Studies 2009). Also, our plantings were primarily in social places (schools, temples), and not forest projects or agriculture. Traditionally, *Saraca* has been used as an astringent, and for uterine illnesses (Ambasta et al. 1986). But this seems to be the only significant medicinal use. Additionally, the pods are useful as forage, and wood is used for ploughs and staffs.

Bird-of-Paradise tree (*Caesalpinia pulcherrima*) Fabaceae

This tree has a very colorful bloom, and is useful for ornamental purposes. The flowers can be used to produce a dye. Infusion of the flowers can produce a febrifuge and a pectoral, as well as to remedy malarial fevers, asthma, and bronchitis. The bark has been used as an abortifacient (Ambasta et al. 1986). The leaves have been used as a purgative, tonic, and emmenagogue. The young fruits and seeds are sometimes eaten, and the leaves are used as fodder (Mahashwari and Singh 1965).

Cutch tree (*Acacia catechu*) Fabaceae

The cutch tree is another timber species of Nepal and India, but not one of the highest in quality (Dangol 2002). It is usually used for non building items, such as tools and furniture. This tree

has also been used as a source of catechu which is used to make cutch, a substance used for printing and dyeing (Ambasta et al. 1986). It is also the source of a product called kheersal in older trees, which is used to treat sore throats and coughs. The cutch tree also yields a substance called Kair Gum, which is a seed substitute of gum Arabic.

Chinaberry (*Melia azedarach*), Meliaceae

In my observation areas, this is the most widely used tree. It is native to Nepal, but occurs in most of the warmer regions of the world (WAC 2009). A deciduous tree, up to 45m tall. Leaves alternate, bipinnate, and sometimes tripinnate. Inflorescence a long axillary panicle. The fruit is a small, yellow drupe. The natural habitat is seasonal forest, such as bamboo thickets. It's known as being highly adaptable and tolerates a wide range of conditions. Chinaberry is a fast growing tree in optimal conditions (WAC 2009). It is valued and commonly used for fuelwood, and the leaves are highly nutritious for fodder. The wood is also valuable for furniture and tools. This tree has been proven useful for intercropping techniques, and is frequently planted with wheat and sugarcane.

Eucalyptus spp. Myrtaceae (several species have been used; all are exotic and mostly native to Australia)

The various species of *Eucalyptus* have been used extensively in Nepal and India, and are valuable as multiuse trees. It is cultivated successfully in the plains and hills. Most are fast growing, and originally introduced for the straight growing trunks which are useful for timber and poles (Ambasta et al. 1986). The timber is often used for heavy framing, such as for carriages and bridges. Also used for agricultural machinery and ship-building. Kino from some trees have high concentrations of tannin. Essential oils are also used from leaves, producing citronellal. They are used to repel insects and, to repel rheumatism, for upper respiratory tract infections, and skin diseases (Jain and DeFilipps 1991). Wood is resistant to termites and rot.

Ipil-Ipil (*Leucaena leucocephala*) Fabaceae, native to middle and S. America.

Ipil- Ipil is, like most of these trees, useful as fodder for cattle. As such, it is a good source of protein and carotene. It has additionally been used to supplement alfalfa leaf meal in the poultry industry (Ambasta et al. 1986). All parts of this plant are toxic to monogastric animals in large portions, because it has a way of absorbing and concentrating selenium from the soil into its parts- mostly the seeds. The wood is a good source of pulp, but not useful for timber or woodwork. Bark and leaves contain tannins. It has also been eaten to relieve pain (Jain and DeFilipps 1991). Oils are used from the seeds.

Jack Tree (*Artocarpus hirsuta* and *A. heterophyllus*) Moraceae

The wood of *A. hirsuta* is one of the finest teak substitutes in the region (Ambasta et al. 1986). The fruits of *A. heterophyllus* are 30 to 40cm long and commonly eaten. In which are a large number of large seeds covered by yellowish juicy sheaths. Seeds are also eaten, as they are rich in starch. The wood is also valuable for general usage such as furniture and small scale carpentry. It has a resonant quality useful for musical instruments. The fruit can be heated upon which it exudes a milky juice with a deposit that is insoluble in water. This substance is used as a cement for broken articles such as China and pottery (Seminar of Indian Studies 2009).

Neem (*Azadirachta indica*) Meliaceae

Neem is a multiuse tree and Native to Burma and surrounding areas (Mahashwari and Singh 1965). Therefore this plant has ecological, as well as economic significance. Its multifaceted attributes make neem perhaps the most valuable plant overall to Nepalese communities. The utility of neem has been noted scientifically as well as imbibed in traditional ecological knowledge. It is valued for human health purposes, agriculture enhancement, ornamentation, fodder, and other roles of significance. Medicinally the bark is used as a febrifuge, and the juice

from which is used for treating fever, thirst, cough, urinary discomfort, and blood discharges (Manandhar 2002). One of my supervisors at the plant nursery described personally using neem oil as a treatment for flu-like symptoms (along with other ingredients such as buffalo urine). He swore to the effectiveness of this treatment.

Peepal, Ashwattha tree (*Ficus religiosa*), Moraceae

The Peepal tree is native to Nepal, India, and other Asian countries. Also known as the “sacred fig” tree, and as the name indicates, this tree has great religious significance to eastern religions such as Hinduism, Jainism, and Buddhism (Seminar of Indian Studies 2009). It has been regarded as the species under which Siddhartha Guatama was sitting which he became enlightened as Buddha. It is also said that a Peepal tree sprouted at the center of the universe when the Buddha was born. Peepal is also celebrated in a religious ceremony of “the thread”, where it is married to the Durva plant (*Cynodon dactylon*). Numerous religious tools are constructed from its wood such as spoons and bowls, and medicines from its sap and fibers and chemical attributes. The fruits are ingested for various religious purposes. They are also used as a laxative, or eaten in times of scarcity (Ambasta et al. 1986). The solidified latex is sometimes used to fill cavities in hollow ornaments.

Sal (*Shorea robusta*) Dipterocarpaceae

Sal is another major timber species in Nepal, India and other countries of that region. It is a relatively slow or moderate growing species in forests where it occurs naturally, and usually dominant in forest structure. Sal is a member of the Dipterocarpaceae, which is the dominant family of lowland rainforests, as well as dry deciduous forest of North India, Nepal, and Bangladesh (Corlett 1910). The wood of Sal is similar in quality to teak and deodar in being one of the best sleeper woods in India (Ambasta et al. 1986). It is also ideal for other typical wood uses, such as beams rafters and floors for buildings. Additionally, the bark and leaves of this species is useful for tanning. It contains an oleoresin called Dammar, used for incense, paints

and varnishes. It is also used medicinally as an astringent in diarrhea and dysentery. Cake from the oil can be used as a feed for livestock. The flowers are said to be a good source of honey.

Silk Cotton tree (*Bombax ceiba*) Malvaceae

This tree is characterized by large red cup-shaped flowers, which appear at the end of the cold season before the leaves. The stem is also covered with stout, hard, conical prickles. The fruits are green and egg shaped filled with brown seeds, and covered with fine silky cotton. The Silk Cotton tree has religious significance, in that the Hindu god Pitāmāha is said to have rested under it after creating the world (Seminar of Indian Studies 2009). Its medicinal usages include aphrodisiac properties, diuretic properties, and treatments for syphilis, scabies, cholera, oedema, dysentery, fever, sunstroke, leprosy, ulcers, and snake/spider bites (Jain and DeFilipps 1991). The fruit, bark, leaves, flowers, and resin are all utilized for these purposes. The silk or “floss” is used for various stuffing items such as mattresses, pillows, quilts, life-belts, and packing material (Ambasta et al. 1986). The wood is used most widely in the match industry. Additionally, the seeds yield a fatty oil which is edible, and also used for making soap.

Sissoo/ shisham (*Dalbergia sissoo*) Fabaceae

Sissoo is another of the most commonly used trees in community forests in Nepal. It is used for timber and non-timber products, which makes sissoo one of the more valuable trees. It is extensively planted for agriforestry operations, and pruned for fodder as early as 3 years after planting (Tribhuvan University 1997). Sissoo is valuable for timber, but only for small scale, high quality wood products. Therefore, it is more useful as a commodity than for extensive building projects or fuel wood. It has a slower biomass production rate than other regional timber species, but is valuable as fuel, fodder, as well as medicinal and esthetic purposes (Sheikh 1989). Community forests could potentially utilize sissoo as a commodity, due to its high quality wood for furniture and ornamental items, and consistent with CFs role of developing community skills for individual empowerment. Sissoo is valuable as fodder due to its relatively high protein and

fiber content- perhaps only digestible by livestock and other animals. It is useful for fuel, having a high calorie per mass concentration. Sissoo also has minor medicinal value, where its bark and leaves are sometimes used as a stimulant.

Wormwood (*Artemisia spp.*) Asteraceae

Artemisia is one of my favorites, due to its potential as a leech deterrent. But I never found this documented specifically. However, *A. maritime* is documented as a treatment for expelling worms (Jain and DeFilipps 1991), which may indicate the name origins. My hiking may have been much less endurable without it. It has been locally used as a pesticide, diuretic, and fodder (Manandhar 2002). *A. annua* contains the chemical “artemisinin”, which has been used traditionally to treat symptoms such as malaria, fever reducer, and more. It has also been shown to have anti-cancer properties. *A. dubia* is used in nepal as an insect repellent, mainly for crop management (Dangol 2002).

Appendix II- Journal entries

Tuesday 6/19

Arrived in Nepal. Was greeted by contact and taken to RCDP headquarters- stopped by violent protest on the way! Almost lost my wallet. Met with staff, settled into temp living quarters, and met volunteers.

Saturday 6/21

Began cultural orientation. First day was a trip to Lamatar

Sunday 6/22

Started three day/ two night stay in Lamatar (a Kathmandu lower hills village)

Monday 6/23

Today we hiked the hills, and saw Mt. Everest for the first time. Terrestrial leaches were voracious. Had a great conversation with some of the international volunteers about concepts of conservation, and ideas about Nepal. I was able to get a good perspective of forests with urban interface. Most notably were the pine forests that had been overgrazed and overharvested for firewood. The stand of trees was basically one age.

Tuesday 6/24

Did more rural hiking; saw farms and small towns. I was able to observe terrace gardens and land use strategies for forage purposes. Marijuana grew readily along the roads, and aggressively took over the ruderal areas. I heard there were only male plants, and other such rumors. The next jaunt of our trip was hindered by more transportation strikes.

Wednesday 6/25

This was our last day in Lamatar, and we returned to the hostel in Kalanki to regroup for another trip tomorrow. Then we will go to jungle areas to see Rhinos and crocodiles, and possibly tigers or other jungle cats- hopefully some plants.

Thursday 6/26

This day was spent as a travel day to Chitwan, where I stayed and toured with another group of volunteers. The lodgings are still primitive, but nice. The bugs are crazy and the monsoon rains are kicking in really strong.

Friday 6/27

Today we did a jungle walk with one of the most experienced guide in the region and his assistant. They knew exactly what to look for to find Rhinos and signs of tigers. We saw three to five Rhinos cooling off in a wetland area near large fields of elephant grass. The guide said they rarely see that many at once at an ideal viewing distance. The guides behaved urgently when one of the Rhinos started to rise up out of the water and head towards us. Supposedly people are commonly trampled by Rhinos.

Saturday 6/28

Today was spent getting a tour of the town of Chitwan. I went with some of the NGO reps, and learned about conservation practices with the National park and ecotourism. Sometimes the ideals seem to clash, and conservation is compromised for the sake of income from tourism. We visited the elephant breeding center and saw what most of us agreed was harsh treatment for getting a submission response. They claim that the elephants are necessary for a safe way to observe tigers (human riders on top), and to monitor for poaching. All other efforts spook the wildlife and poachers, and damage the landscape. They offered a free ride for each of us, but I declined and was sick anyway.

Sunday 6/29

Today we started a four day language orientation, and other cultural tips.

Monday 6/30

Met with Kalanki contact and started organizing contacts for my project.

Tuesday 7/1

Learned more language, and started the ball rolling contacting project coordinators such as for community forest, and ecology/ sociology community center. Visited orphanages, and learned customary interactions. Started reading local articles on politics and conservation policies/ history

Tuesday 7/8

Bus ride to new location, and got a wretched illness.

Wednesday 7/9

Sleeping all day; hope not be nauseous and feverish anymore. .

Thursday 7/10

My first day working after illness. I met Melissa (two month volunteer), and worked with her and Paul from Taiwan- but knew Paul from Kalanki. We discussed the NGO, and learned about her experience and outlook.

Friday 7/11

Today we visited the community forest where I am negotiating to do my intern work. This forest is where the seedlings raised in the nursery are planted and used as resources for the community. Some of the forest plants and seeds are given to the community to plant on their property. Others are used as commodities. I hope to learn the difference eventually.

Saturday 7/12

Today is the day of rest for the Nepalese people- I think regardless of religion. They work six day weeks, including Sunday. We went to Narayangarh, the closest major town to Rampur. Very bustling, hot and filthy. We packed into a Tuk Tuk which is a moderately sized three wheeled transport vehicle with a cargo-like rear region. It broke down on the way back. I reserved a airline ticket at the office on this visit in the connecting town of Barahtpur.

Sunday 7/13/08

Today is my main coworker Melissa's last day, and we had a short farewell ceremony for her. Paul's last day will be on Tuesday. Then maybe other volunteers will arrive. I'm reading today about how the caste system is slightly ambiguous in regards to the peasants vs. agrarian

laborers. This ambiguous in-between class is called the “Sukumbasis”. They only have a tenuous ownership of land acknowledged by the community but not legally recognized by the government. Learned about import labor market of Dubai. Many Nepalese and citizens from other countries go there to work. Dubai is quickly developing due originally to oil money, and now investment in other industries. Most jobs are in construction. They also construct some novel looking islands in the form of the globe or earth. Tourism is also a market. I read where inflation is enormous, and creating an unstable economy.

Monday 7/14/2008

The other Americans are leaving early tomorrow, because they were looking for more of a vacation. We (NGO workers) planted a marigold garden at the orphanage today, and weeded a huge section of the community garden. The kids were very sociable and good natured. Yesterday a maoist attacked the head of the community forest at Laxmi. No one here knows where that is. It sounded as if he was demanding timber, but didn't have money to pay. This isn't allowed anymore, according to promises made by the Maoists in charge of the new government. There is a problem with ending the maoist insurgent violence...seems they don't know how to stop this type of violence. The suspect is held for investigation, but who knows. I'm still trying to figure out who the good guys are. Similar to our government I guess. I'm having a hard time learning the plants without a guide to flora. This is on my list for the next trip to Kathmandu.

Tuesday 7/15

Today all of the volunteers left except me, including 4 Americans, three of which only came here for a vacation, and two Taiwanese girls showed up as new volunteers. They also seem to have no idea that the duties are not glamorous, but have great spirits. I'm a little worried that many of the volunteers aren't getting the same information that I did. They are repulsed by the leeches, and willing to cancel everything – specifically their trek in response. We filled tiny bags with soil today. We discussed biogas from human waste. Methane from human feces is utilized in the Terai; and not for compost, according to some sources. But there

seem to be discrepancies on this subject. Only animal feces is used for compost here, according to Bairab. But I'm not sure about that.

Wednesday 7/16

A group of volunteers showed up today as an expedition crew, led by my friend Colin from a previous week in Kalanke. We did quite a bit of weeding today in the village nursery, and discussed the project.

Thursdays 7/17

Filled more pots with soil and did weeding. This could get old if I wasn't supposed to take on a new assignment in a couple weeks. I thought of a great idea for the project today

Friday 7/18

I saw two scurrying mongooses today for the first time. They were undulating acrossing a fallow corn field. I worked in the community nursery with Bairab, and asked some questions about the community and their horticulture practices.

Saturday 7/19

Today was a wonderfully restful day, and the official day of rest for Nepal- maybe for Hindus. I had milk coffee and learned more of the political situation. I did drawings, read a big chunk of my Nepal history book, and wrote some more of my short story. Government nominations were today- for President, vice pres, and Prime Minister (?). I spent some hours at the University library, and on the internet until the power went out. Power is a huge problem here, and outages are forced each day to account for shortages.

Sunday 7/20

This day a large group of us went to a temple in the village to plant trees from the community garden. I'm feeling low today because I lost sleep last night due to nightmares or something. The new volunteers, mostly from England are intolerable, giving the RCDP people a hard time and not wanting to work.

Monday 7/21

Weekend day was good and productive. Internet place closed for some reason; probably for the best. I feel sluggish today and don't know why -maybe because a lack of iron or something. We did a long day of seedling potting with the English volunteer crew. I'm wishing volunteers would show up again that had an interest in discussing the conservation and community issues. I enjoyed talking with students today at the coffee shop near the university.

Tuesday 7/22

We worked at a public school today to plant trees in their landscaping. The way I understand it, these will help with making the jungle ecosystem less fragmented by incorporating the flora into the developed landscape. The trees can contribute to watershed functions, and shade. I saw a large snake today. I left the door to my living space open while I napped, because it was excruciatingly hot, and woke up in a foggy slumber and saw it uncoiling on the concrete outside my door. It was about 5 to 6 feet long, fairly fat, and grey. My host dad just walked by, stomped and clapped a little bit, and went on with his business without really breaking stride. The host mom told me to tuck my bug net under my mattress to keep them from climbing into the bed at night and striking me. This, after I've already been here a few weeks.

Wednesday 7/23

Today we planted trees for a school built using RCDP funds. It was much more modern and sturdy than that they rejected my request to work with someone at the community forest. I don't know why. He's checking with some other authorities to see if he can come up with

something else. Transportation protests are intensifying for students wanting discounts on fares. I hope this doesn't affect my trip on Friday.

Thursday 7/24

We planted more trees for village schools and RCDP

Friday 7/25

Today I headed to Thamel to prepare for my trip to Thailand tomorrow. I met a guy working in a Kashmir scarf shop who's father helps run a community forest in the middle hill area of Nepal. We had a long discussion about it, and he invited me to dinner when I get back.

Saturday 7/26

Successfully headed to Bangkok today. The flight on Thai air is the best. Greatest food. The airlines here are cheaper, and almost always about half empty.

Tuesday 8/5

Returned from Thailand today. Fuel prices are up because of protests on main routes leaving the country, so cab prices were discouraging. They weren't interested in bargaining. I've gotten a lot of great opinions from cab drivers about government and policy. They seem to feel the most open about expressing opinions and answering questions. They are typically huge fans of B. Obama, and in favor of Maoist Prime minister in Nepal, but with only partial power in the constituent assembly.

Thursday 8/7

I visited the community forest today with Lila. He introduced me to some of the people in charge that could possibly lead me around and get an idea of how the program works. I was reading an article in the paper today where a professor from MIT was petitioning a community to make independent conservation land somehow. An editorial by a Nepali person was very

critical in response- questioning the idea of trusting outsiders with natural resource management. The critique was aimed at preventing relinquishing of local control.

Friday 8/8

Today I had my first active intern day at the community forest. They agreed to let me visit and ask numerous questions about the whole dynamics of the operation. Communication was very frustrating, and important not to get things wrong. I feel that I can achieve most of my agenda here within a week or two now, and develop my project. The weather here has become less consistently cloudy, and absolutely sweltering. ... like Florida. It's just as hot at night as most of the day, with no relief except heavy rain.

Monday 8/11

I spent most of the day working in the community nursery, and had a meeting with Lila to discuss my progress and status. I later witnessed Lila subtly crash his motorcycle into some cycling pedestrians on his dusky ride home. He had just passed me, when I heard a crunch and looked behind me to see the second half of the incident. As is custom, he had to pay for the hospitalization of the "victims"; not sure it was his fault. There doesn't seem to be much concern for consequences in the driving habits here. Taxi drivers lose their license after two crashes.

Tuesday 8/12

Today I met with Sur from the community forest, and the accountant, who showed me around the plantation and some erosion control methods. I also asked them several questions and established more records. There is of course always a heap of confusion and inefficiency, but dealing with this is my weakness, so I'm glad to get the practice. In any case, it takes forever to get anything done in Nepal for this reason and others. I'm glad to be pioneering this effort, and hope to be able to contribute if I continue to think it's a worthwhile objective.

Wednesday 8/13

Today I met with the executive director of the Institute for social and environmental research (ISER). An ideal organization for the circumstances in Nepal. This organization was originated by the University of Michigan; with researchers participating from there, as well as University of Penn and Florida. They collaborate research efforts concerning environmental issues and community development.

The bike they have loaned me here is agonizing to ride, as it has a spring that pokes up into my back side. Anyway, on my way home a young boy hopped on the tiny rack on the back of my bike and rode all the way as far as my house. He was chatting with me the whole way, going over cobblestone potholes and grassy burms. This is how they typically bikepool, by sitting on that tiny rack- even the adults. Ladies in saris just casually sit side-saddle on the back of motorcycle seats, even at top speeds. It is not unusual to see a motorcycle speed through a group of meandering children, who don't even step aside, going 30-45mph without even slowing down, missing the closest child by a foot or less. I'm not exaggerating. They will even swerve straight at you to miss a puddle or pass something, all with a vacant stare. If you're lucky, they'll give you a honk of the horn. Again, the word "safety" has a slightly different meaning here.

Friday, I plan to go on a short overnight trip to Suraha again, and stay in a nice hotel-hopefully with a television, on a quest to find dental floss. I hate to say it, but I don't think floss is sold anywhere in Nepal. They have good brushing habits- but never flossing. There is a popular brand of toothpaste that boasts of having extensive whitening capabilities, and I notice people with really white teeth. I hope to have another look at the conservation center in Suraha, and check out some literature.

The person in charge that has been touring and informing me of the CF is named Sur Bir Pakareh. The language barrier is a slight problem for us, but eventually I think ideas are communicated. Our meeting time was confounded yesterday however, and I became one of the few people in Nepal to be reprimanded for not being somewhere at the appropriate time. That is- reprimanded the way someone with donation intents is reprimanded. He is sometimes

as much as an hour late, so this seems slightly humorous. Being late is a common practice in Nepal. The CF under analysis is named Gyaneshwar Community Forest. It is in the Chitwan District, across the Trisuli River from the Lumbini district. These districts are quite large, I think, because Lumbini is approx 4 hours away Nepali time. The vicinity within the district is the Mangalpur vicinity. There are 6 member wards within this vicinity, 11,100 people in population, 2,250 houses, and there are 1,750 card carrying members in the community- or user groups. The CF area is 224.75 in size.

The CF also has non-forest related functions for contributing to the community. the CF follows the trend of giving aid that perpetuates self-reliance, rather than gifts that expire in substance and worth. Usually, there is significant potential for perpetual improvement of quality of life and autonomy of resources and self-sustenance.

Thursday 8/14

Today I worked all day in the plant nursery, and took a long computer coffee break, while reading references at the library in between. I searched for an early flight home today, with some success at finding affordability. Tomorrow I will likely purchase the ticket and know the date on which I arrive back in the states.

Friday 8/15

Today I helped the host family plant rice. The system of irrigation is amazing! Each field needs to be slightly lower than some of the others, so that water levels can be adjusted by merely making a small rupture in partition embankments. Evidently the water level should be about perfect in order for the rice to grow well, and out-compete weeds. The men drive a tractor to till the mud. Then village women plant the rice plants in rows. I helped bring the plants to them, and dig the irrigation canals. Also of interest is that they needed consistent rain to keep water levels appropriate, otherwise they pumped water out of the aquifer- which is really

expensive to them. They considered this monsoon season closer to a drought, even though we seemed to get an inch or so of rain every day!

Saturday 8/16

Helped with rice planting again. Then worked with plant nursery and helped with the orphanage.

Monday 8/18

Today we started weeding the asparagus in the village nursery, and filling polyethylene bags with soil and seeds for propagation. I discussed the political situation with Bairab. It's up for debate whether the new government systems will be better for the conservation areas than under the Royalists. What is clear, is that there will be very little incentive or resources for a while to enforce whatever is decided.

Tuesday 8/19

I was supposed to meet with a Botany professor from the local Ag university, but some signals got crossed and he ended up leaving to visit the University of Michigan yesterday, oddly enough. I need to get more info on conservation ecology from someone that is an expert in the field. The CF folks don't seem to have an awareness of the significance of preserving ecosystem at all. I would like more to have more discussions about this. Lila introduced me to the university library yesterday, which has a wealth of references for my project. I've already been though, and intend to do much more reading there. Most of the books will be difficult to find in the states, and by grassroots or government publishers.

Wednesday 8/20

There seems to be a discipline problem in the orphanage. I can't really tell if it is a result of being an orphanage or being exposed to the foreigners. The children are given demands, if ignored then yelled at, then the authority figure seems to just give up. My only guess so far is

that this is to avoid hitting the children in front of the money-wielding volunteers. However, the children usually seem quite responsive to commands, and they follow their regiment to a significant extent daily. They are taught lessons in the morning (by the volunteers), and they have playtime in the afternoon. They have been known to walk out of lesson time if they want to. They also seem to have a tendency toward violence, and are often seen smacking each other; I've noticed this of many Nepali children. They are into WWF, where you will see these American t-shirts, and it's televised in Nepal. What a horrible thing to cross cultural boundaries- of all things.

Friday 8/21

In reading the forest policy; fodder and cooking fuel are large determinations of forest vegetation exploitation. Issues such as raising cattle for fecal fuel seem silly (because of trophic levels) but occurs. Also, manure needs to be used as compost, this creates a dilemma. Vegetation (forbs/grasses) can also be used, and are used by our nursery. In the summer there is a wealth of these. I walked through a beautiful meadow of mixed forbs this afternoon. I'm curious about this. Just started the forest/ag policy paper from ten years ago today. At this point, my first priority would be to fund birth control education. At least then, unwanted pregnancies would be reduced. The orphanages here are exploding. -and single parent moms are common, even in rural homes. Would this solution cascade to families that have more children to increase labor for increasing yield on farms.

Sat 8/22

I'm realizing lately how much discrepancy there is in what I'm being told and what I'm observing. I'm benefitting a lot from researching published articles in the university library both locally and from foreigners. For one thing, I hear a lot about the empowerment of women, but I haven't encountered many women who are in positions of power or even obliged to speak to me about occurrences in Nepal. Any encounters I've had are with women as clerks or occasionally walking through the village. The men seem to treat the women very well, though,

or I would have noticed at least a random instance of abuse. But I haven't witnessed women actively in charge of anything other than lower management roles in orphanages. This seems to me to be possibly, at least for the most part, a marketing tool for local products sold abroad or to tourists.

Sunday 8/23

I mostly rested this day, and spent time in the village reading and drinking coffee.

Monday 8/24

Left for Pokorah to do a trek in the Himalaya foothills.

Tuesday 8/25

Spent the day in Pokorah. Leave for trek tomorrow. Very rainy here! Supposedly the most precipitation in all of Nepal.

Wednesday 8/26

Started trek after some logistical confusion between Lila and my guide.

Thursday 8/27

The trek is awesome, but very wet and mudslides everywhere! That's why this really isn't trekking season. Not to mention the swarming terrestrial leeches; again terrorizing tourists. I'm amazed at how the guides always seem surprised at the outrage. I was able to avoid any major attacks by rubbing *Artemisia* over my shoes and lower garments. I noticed one of the guides doing the same, and followed suit. I did manage to attract a few, but the ladies hiking with us (from NY) were swarmed with them. I think *Artemisia* is used sometimes as an insecticide or poison.

Saturday 8/29

The trek has been great, but not as much botany opportunity as I expected. The guides needed to stay on schedule, due to the need to end our hikes by early afternoon because of the heavy rains. Some other hikers told stories of seeing massive landslides removing portions of the trail right in front of them. Fortunately, I finally got to see some of the hill area conifer stands. These are mostly native pine (*Pinus roxburghii*) and deodar cedar (*Cedrus deodara*).

8/30

I met and chatted with a guy in Thamel who worked in a clothing booth. We had tea together and a conversation about commercializing synthetic pharmaceuticals, as opposed to harvesting and utilizing traditional herbal remedies grown in the forest. The latter might require more of a sense of whole ecosystem conservation, and make medicinal drugs cheaper and readily available. I told him how in the U.S. many or most of our herbal medicines aren't even evaluated by the government for effectiveness, even though they are medicines traditionally used for hundreds of years or more by indigenous groups.

9/1-9/8

More work with the nursery and orphanage. Closing interviews with RCDP and Sur Bir from Gyaneshwar CF.

9/8- 9/19

Preparations for travel, and time in Kathmandu for meetings with community members. One last attempt to meet with Dr. Danghol.

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