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Forest Ecology Research Proposal: UW-SU Exchange on Environmental Issues

Introduction:

In recent years the importance of environmental protection has been brought to the forefront of Chinese policy making. As a result, new policies have been drafted affecting many different aspects of environmental protection in China. China's Natural Forest Conservation Program (NFCP) is one such response directed at forest conservation and has the potential to have huge impacts on the extent and well being of forests in Sichuan. This program has called for a number of features that will help prevent environmental degradation including a ban on logging and massive reforestation programs. In keeping with the spirit of this program we are interested in conducting a series of research projects to better understand forest ecosystems and how this change in policy affects both the ecosystem and the people relying on it. To make this goal attainable we have chosen to limit the area of study to a village in Yanyuan County, and another possible (undetermined) site for comparison.

Location:

The site where we hope to conduct our research is a small village near the city of Baiwu in Yanyuan County, Sichuan. This village is home to people belonging to the Yi (Nuosu) minority group and one reason for choosing this site is our group's strong interest in Professor Steve Harrell's ongoing work in the area. In addition, Professor Harrell has informed us that research on the ecology and use of native plants has not been done for the area, thus our project would be helpful in his research as well as unique.

Time Table: (estimated)

July 1- July 12 Initial trip to Yanyuan.
October or November Second trip
March or April Third trip
May/June Possible wrap up if needed

Project:

With this in mind, our goal for this upcoming year of research is to conduct an investigation of the ecology and species diversity of Yanyuan. We hope to accomplish this by breaking down the overall project into five interconnected subcategories each lead

by a subset of the overall group. In addition, the information we hope to compile will serve to support Diane's fuel wood study and Joanne's investigation of apple economics. Getting back to our group work, we see the five categories being separated as 1) a core study of the vegetation; 2) ethnobotanical survey of local plant uses; 3) natural history and ecological processes; 4) current reforestation practices in the area and; 5) the history and implications of policy on the area. While we recognize that we cannot do a comprehensive study of each category, we feel that dividing this project in this manner is essential in order to understand the overall situation in our study area. A more detailed description of each category is as follows:

Core Group: Biological Inventory

As an entire group we plan to conduct a survey of the area around the village that will identify different land use practices, crop types, and the species composition of the forested areas. We hope to accomplish this by setting up a series of transects and making observations about areas as we move along a transect. In doing this we will establish the basis upon which the four additional subprojects will stand.

Ethnobotany

The ethnobotany portion of the project, lead by Victoria and Marie, begins as we begin to get a feel for the vegetation in the area. Using the larger patterns of vegetation identified in the group survey we will begin to find out which plants and other natural products are an important part of Nuosu life. This will be accomplished through a series of interviews with village elders as well as through directly learning useful plants by accompanying villagers on collecting trips. With this information Victoria and Marie plan to take herbarium samples of plants and identify them with Nuosu, Chinese (Mandarin), and English/Latin if possible. With this information, they plan to develop a curriculum for helping to teach the younger generation of children the knowledge of plants that their parents and grandparents have. Their preliminary plan for teaching this information calls for showing students plant specimens, bringing students along on collecting trips with elders, and involving students in collecting other information such as rainfall and other climate information. One last portion of their project involves additional interviews with elders to see how the environment has changed over time. Some sample questions they have developed include:

- Are plants harder or easier or harder to find now than in the past?
- Are people harvesting these plants today?
- Are some no longer available?
- Are there new plants not there before?
- Has the forest as a whole changed? How?

Natural History and ecological processes

Using information gathered in both the core project and the ethnobotany study, Phil will help organize the group's more in-depth look at natural history and ecological processes. This portion of the project will begin by comparing current forest cover to estimates of previous cover given by villagers as well as comparisons to less disturbed areas such as ones protected due to their association with spirits. In doing this we hope to identify the forest type prevalent in this particular area as well as the pattern of succession that results in the observed vegetation patterns. Much of this process will involve interpreting information from other studies such as Wang's *The Forests of China* based upon local conditions, such as soil type, and observations such as which tree species seedlings establish in shade.

Reforestation

Chris will coordinate the investigation of reforestation practices in the area. Under the NFCP, reforestation is called for as a way to reduce erosion and prevent flooding. However it does not specify how this is to be done. In order to reforestation to be effective and beneficial it must incorporate some design that considers what will grow and what is needed. With this portion of the project we hope to use knowledge gained from studying traditional plant uses as well as the historic species composition to examine reforestation projects in the area. Factors that need to be considered at each project might be species composition, success rate of seedlings, exotic species, growth rate, as well as future economic value. Hopefully this information can be used in conjunction with input from local people to develop a reforestation scheme that will meet their needs while considering the ecological role that such a forest should play. One way to do this is to incorporate incentives to plant native species that would support future forest uses such as medicinal plant gathering.

Policy

Tom's interest in forest policy leads us to consider the important issue of how China's Natural Forest Conservation Program affects the people and environment of Yanyuan. Specifically this aspect of the project would focus on the lack of forest management under the NFCP and how this will express itself later on. In addition, historical forest policy can be compared to the current state as a measure of the effectiveness of the logging ban called for under the NFCP. Accumulating this information will require a number of different methods including interviews with villagers and county officials as well as direct observation of forest areas. An additional source of information would be data gathering and entry using a GPS and GIS software. Data gathered would include, but not be limited to, stand age and species, land features such as streams, roads, and trails, past and present forest boundaries, agricultural boundaries, and human activities inside the forests. One in the computer these

features would allow for easy graphic representation of the effects of forest activities.

Materials:

Here is a list of some materials that would be helpful in conducting our research.

- GPS unit
- Detailed maps of the area
- Plant press
- Mounting supplies- glue, cardboard
- Diameter Tape
- Increment Borers- large and small
- Compass
- Clinometer
- Keyhole Prism
- Saw
- Shovel
- Surveys

Involvement:

The nature and style of our proposal not only welcomes involvement with our counterparts in China but it is almost reliant on it. There will be considerable amount of work to do in order to gather the information we need and due to the location of our study area we will only be able to make 3 or 4 multi-day trips to conduct our research. Added to this the multiple language barriers, and our personal unfamiliarity with local vegetation, we are openly welcoming to anyone wishing to join in our projects. Hopefully what we are attempting to do interests the SU Forestry Groups and will be able to work together.