

A Summary Report of Survey on White-Headed Langur and Francois Langur in Nonggang Nature Reserve

Based on the BP projects (2003), which focus on developing management plans for nature reserves, a project was carried out in Nonggang Nature Reserve by The Institute of Zoology, Chinese Academy of Sciences and the College of Life Science, Guangxi Normal University from August 2003 to July 2004. The objectives of this project are investigating the status, distribution, and habitat requirement of white-headed langur and Francois langur in the reserve, socio-economic condition in the periphery of the reserve, as well as improvement of conservation awareness of local residents. The following is a summary report based on the results from a year field survey and economic survey.

1 The Project Arrangement

Vegetation survey was conducted from August to September 2003, as well as economic survey on the local communities in the buffer-zone areas. From October 2003 to March 2004, population survey of the white-headed langur and Francois langur was carried out. The data on behavior and ecology were collected throughout the survey.

2 Methods and Results

2.1 Local Socio-economic condition

Socio-economic survey was conducted by questionnaire and interview with local government and local residents in 73 villages around the reserve. Information use by local people and local economic development was obtained through informed meeting. In these areas, the population is high and the cultivating land per person is small. The annual net income per family is about 800 RMB, ranging from 450 to 1500RMB. Planting sugar cane, peanut, Lucerne and corn is the main economic source. There are still some villages without electronic power. Rural energy is highly dependent on firewood and biogas is used

uncommonly. Although most children can enter local schools to accept compulsory education, the culture level in general is very low.

2.2 Vegetation

According to the result from analyzing the satellite photo of Nonggang Nature Reserve, there are about 8000 hectares timber-forest and about 2300 hectares brushwood. The forest covering rate reaches 98%. To understand the phenology change of vegetation, we established 21 0.05-hectare belt transects at random locations (Figure 1). All trees with a diameter at breast height (DBH) of ≥ 10 cm were marked with plastic tags and monitored once a month (Figure 2).

2.3 Population and Distribution of white-headed langur

Line transect census and on-site daytime observation were used in population survey, as well as interview with local residents. The determination of population and distribution of both white-headed langurs and Francois langurs was based mainly on the exact number of two species we observed in the survey, the caves and ledges with fresh feces (Figure 3, 4), and the results from interview with local residents. According to the results from 70 routes survey, the white-headed langur is distributed only in the areas of Longsui patch lying in the west of Nonggang Nature Reserve except for two groups who are distributed out of the reserve (Figure 5). The total of about 68 individuals from 8 groups inhabited in this area. The population density is 0.02 individual/hectare. The average group size is 8.5 individuals. Because of dense vegetation, long distance from monkeys and their cryptic behavior, it is not easy to determine the group composition.

2.4 Population and Distribution of Francois langur

100 routes were set up for the Francois langur investigation. According the results of survey, 10 groups and about 75 individuals inhabited in Nonggang patch lying in the middle of Nonggang Nature Reserve (Figure 6). The population density was 0.01 individual/hectare. The average group size was 7.5 individuals, ranging from 4 to 12. There were also some solitary adult males in this area. Of the 10 groups of the Francois langur,

the composition of four groups were determined. Except one group, which consisted of 4 adult males, 5 adult females and 3 infants, others were small cohesive family groups with a single adult male, several adult females and their offspring.

2.5 Behavior and Ecology Research

The data on diet, time budget, ranging behavior and habitat use for the Francois langur has been collected for a year (Figure 7). The articles covering our project are preparing for publication.

2.6 Conservation Education and Publicizing

For conservation education, we invited leaders of local government and students of local schools to our research site so as to make them understand the living environment and habit of langurs, as well as the problems they face (Figure8). A program introducing Nonggang Nature Reserve was finished through the cooperation with the television station of Longzhou county. (Figure 9)

3 The trend of species population change

3.1 The Analysis of white-headed langur Population Change

Some researches have been devoted to the white-headed langur population changes and their distribution in Longrui area of Nonggang Nature Reserve. Based on a survey conducted in 1979, there were about 244 individuals in the area of Longrui, including Xiangshui and Shangjin townships of Longzhou county, Tingliang and Dalong townships of Ningming county, with a total area of 68 km². Before the establishment of Nonggang Nature Reserve, the population of white-headed langur had experienced a severe decrease due to illegal poaching. The bones of white-headed langurs and Francois langurs were used for the production of medicinal wine. The local residents normally use self-made hunt guns or trap binder to catch those langurs. After anti-Vietnamese safeguard war, however, some of military guns were left to locals and were used to poach these species, which caused a severe disaster to the white-headed langur, and its total number in this area became less than 100 individuals. A survey conducted in 1995 by Nonggang Nature Reserve

Administration (NRA) indicated that only about 80 individuals of white-headed langur were left in the 90s of last century. Another survey made by Southwestern Forestry College in 1999 pointed out that there were only 80 white-headed langurs in Longrui patch of Nonggang Nature Reserve with an average group of 9.12 individuals. The our survey indicated that only about 68 individuals are still living in the Nonggang Reserve, which is similar to the results of previous surveys. All the results indicate that the population of white-headed langur in Longrui is steady-going, but in a low density. However, its distribution is increasingly becoming shrinked, mainly concentrating on the less-disturbing areas with good vegetation in the reserve.

3.2 The Analysis of Francois langur Population Change

Less researches and surveys were conducted for Francois langurs in the Nongnag Nature Reserve. And no data are available in the Nonggang Reserve Administration (NRA). The historical change of Francois langur population and its range can only be obtained in the way of interviewing with the staffs from NRA and local residents. Based on our interviews with locals, the Francois langur population experiences a similar changes as white-headed langur mainly because of the illegal poaching. Our result f indicates that about 10 groups and 75 individuals inhabit in the Nonggang Reserve.

4 Problems In Conservation of the white-headed langur and Francois langur

4.1 Poaching and habitat destruction

Illegal poaching is one of the main threats to survival of the white-headed langur and Francois langur. The two species have been hunted for local medicinal purposes because it is believed that their body parts may have aphrodisiac effects. Although local governments have confiscated the hunting guns from local residents in recent years in order to enforce the conservation management, there are still some hunting guns left in local villages. During our survey in the Longrui patch of the Nonggang Nature Reserve, we found the cartridge case of hunting gun in the core area of the reserves (Figure 10). The local guid told us that some of hunters thievishly come into the reserve in the name of hunting wild

boars, it is hard to say they do not hunt the two endemic langur species.

Another reason causing the species population decline is habitat destruction. Because local residents have contracted with local government before the foundation of the reserve, which authorizes them to use lands of the marginal area of reserve for cultivation and grazer, vegetation there, special in flat valleys, is cleared up for cultivation, where is the important habitat providing rich food for the two species in winter. We often saw that the local people burned the brushwood and cornstalk which influence strongly the langur' s life.

4.2 Lack of conservation awareness of people around nature reserves

Although most of people around the nature reserve know the fact that white-headed langurs and Francois langurs are protected by the government, they are not clear about relationship between their own survival and the conservation activities. They do not hunt the species only because of deterring of national wildlife conservation laws and regulations. Few conservation education activities are carried out in most of villages. Meanwhile, there are still some people who live in remote areas around the reserve, where there is no electronic power and less communication with outsides. They have poverty life and less knowledge about wildlife conservation. Therefore, more effort needs to be devoted to conservation education and training, special in those remote areas, so as to make the locals really be benefited from the conservation, and further raise the awareness of local public and create a new phase for langur conservation.

4.3 conflict between the nature reserve and local people

Based on the results of our investigation into local people's income sources, the establishment of the nature reserve severely influences the current income of local residents, and causes the conflict between local people and conservation. On one hand, the establishment of the nature reserve more or less occupies their own cropland and forestry land. On the other hand, they are prohibited to hunting, cutting for firewood and planting crops to the land to which they originally planted. Meanwhile, some animals, for example macacas and squirrels, regarded as pests by local people often steal crops . Therefore, the key challenge for conservation we are facing is how to develop alternatives

for generating income for local people and make them really benefit from conservation.

5 Suggestions

5.1 Strengthening the nature reserve management

The staff in reserve is short of knowledge of conservation and others related theory and skills, which is a big obstacle for conservation of the two species. Therefore, the nature reserve administration is required to attach much emphasis to staff training and formulating necessary regulations in order to make staff be trained regularly.

Along with strengthening the integrated management of conservation in nature reserve, the priority should be given to patrolling on the hills where the two species distribute, which will effectively prevent the species from hunting. In Nonggang Reserve, the priority for conservation of white-headed langur should be placed on Longrui patch, but Francois langur on Nongfang patch. More importantly, the management of guns should be further strengthened in order to put an end to hunting.

5.2 Diverting more financial input and transferring the property right of forestland to nature reserve

The financial input from national budgetary outlay is quite limited and can't maintain a regular operation of necessary conservation activities in nature reserve. The most important precondition for strengthening conservation of the species is diverting more financial input to the regular operation of reserves from government.

Because local residents have contracted with local government before the foundation of reserve, which authorizes them to use lands of marginal area of reserve for cultivation and grazer, which often results in the conflict between local people and reserve. In order to mitigate or finally stop the destruction caused by human activities to both species and its habitat and carry out more effective management, it is necessary to solve and further clarify the property right issue facing the reserve, develop an effective mechanism for making local residents be benefited from conservation of nature reserve.

5.3 Restructuring the rural energy use and local industries

The Nonggang nature reserve locates in a region where is very poverty and relatively more densely populated. Rural energy is highly dependant upon firewood since local residents cannot afford to use biogas or other energy sources. Currently, only 5% of local householders hold biogas facilities and use biogas for heating, lighting and cooking. The rest have to cut wood on the hills for daily life, which causes a severe destruction to vegetation and habitat. Developing biogas, however, is verified as the most feasible and effective way in this region for mitigating the pressure on habitat from firewood extraction. Therefore, the governments in various level are required to provide subsidies to local residents for developing and using biogas because the locals can not afford to the investment for biogas production due to poverty. Meanwhile, based on their rich experience in improving the economic and life condition of poverty areas, local governments should strengthen further cooperation with national and international NGOs, which will mitigate the contradiction between local economic development and conservation.

Developing ecotourism industry in the nature reserve with good tourist attractions is an effective way for conserving biodiversity since ecotourism not only benefits the local people but also has much less negative influence than agriculture and forest logging on species and their habitat. Tourist activities, however, should be strictly confined to certain areas and properly managed in an environmentally friendly way. It is considered that conservation of white-headed langur will be much benefited from ecotourism development, since ecotourism development is not only an effective alternative for generating income for locals, but also holds great potential in favor of shifting agriculture-used land to self-regenerated non-used land. It is important that the master-plan of ecotourism development must be based on participatory approach, some of income must be returned and used for species conservation, in particular benefit to local people must be guaranteed, and tourist number and activities much be strictly controlled within upper limit of carrying capacity.

5.4 Publicizing the conservation knowledge and enforcing the related laws and regulations

The natural conservation is closely linked with sustainable development of the locals. Publicizing the conservation knowledge, therefore, is necessary for the locals to

consciously protect the species and their habitat. Broadcasting and radiated television is important way to publicize the conservation knowledge. More importantly, through cooperation with nation and international NGOs, more conservation education activities should be carried out in local communities.

Another important measure for intensifying the conservation management is enforcing the related laws and regulations, which is an irreplaceable facilitation to the dissemination of conservation knowledge in conservation of the species. For example, a local farmer captured a senior Francois langur in Nonggang Nature Reserve recently and it was so intimate that it can shake hands with and eat food provided by work staff in Wildlife Rescue Center three days after captured. It is deduced that this Francois langur had been captured and not sold out, but the captor had been overawed by the law and had finally released it. What we conclude from the case is that hunting and illegal logging can only be stopped by both publicizing the conservation knowledge and enforcing the related laws and regulations.

5.5 Calling for further researches and support from BP

Though the detailed population surveys and ecology studies conducted in other reserves, the research in Nonggang Nature Reserve is in the primary stage. And one meaningful question we found is: why is the population density of white-headed langur in Nonggang so low, while the vegetation there is in good condition and human activities are much less. Is there any hope for Nonggang to recover the same population density of the species as Fusui and Chongzuo reserve, where the population density of white-headed langur is high while the vegetation is destroyed severely by human activities, through our research effort? Some of issues about white-headed langur and Francois langur are still scientifically unclear and urgently needed to be researched into and solved in order to better conserve the two species. Therefore, further support from BP is crucial to solve this problem.

In addition, the researches conducted by scientists not only can arouse and raise the conservation awareness of local people, but also can find the illegal hunting activities and flaws in the management through on-the-spot survey which will further serve for the improvement of management. Most importantly, findings from their research activities are very much helpful for improving background knowledge of work staff in nature reserves.



Francois langur



White-headed langur



Figure 1. Vegetation survey in reserve



Figure 2. Plastic tag for Phenology monitoring

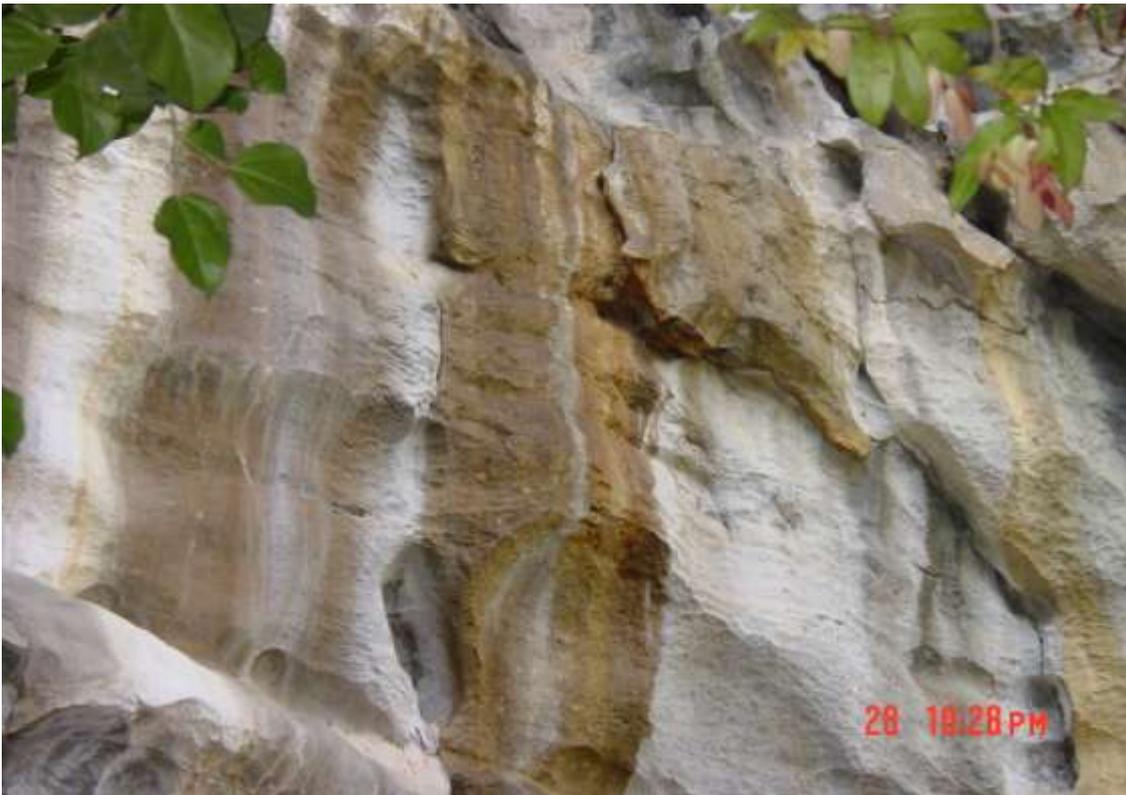


Figure 3. Sleeping site with fresh feces of white-headed langur



Figure 4. Sleeping site with fresh feces of Francois langur



Figure 5. Distribution of white-headed langur in Longrui and Shangjin patches of reserve



Figure 6. Distribution of Francois langur in Nonggang patch of reserve



Figure 7. Behavior and ecology research of Francois langur



Figure 8. Inviting students of local school to our research site



Figure 9. A program introducing Nonggang Nature Reserve



Figure 10. The used cartridge case by illegal poachers
in the core area of Nonggang Nature Reserve