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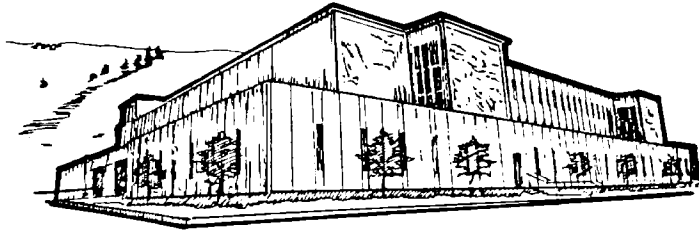
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INTERNATIONAL HUNTING AND THE INVOLVEMENT OF LOCAL PEOPLE,  
DULAN, QINGHAI, PEOPLE'S REPUBLIC OF CHINA

by

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B. S., University of Lanzhou

Gansu, PR China, 1985

Presented in partial fulfillment of the requirements  
for the degree of  
Master of Science  
University of Montana  
1993

Approved by

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International Hunting and the Involvement of Local People, Dulan, Qinghai, People's Republic of China (73pp.)

Advisor: Bart W. O'Gara *gull*

This paper deals with the International Hunting Program in Qinghai Province, the People's Republic of China (PRC), with a special emphasis on the involvement of local people and the social-economic impact on local nomadic communities.

The study was conducted in Dulan International Hunting Area, which is located in central Qinghai Province, specifically, in Haixi Mongolian-Tibetan Autonomous Prefecture at roughly 97'30'E, 35'55'N. Informal surveys, key informant interviews, and direct observations were implemented during Summer 1991 and Autumn 1992. Eleven key informants and 37 nomadic families were interviewed. Data collected included the informants' views and concerns about the Dulan International Hunting Program in promoting wildlife conservation in the Province. General information about the social-economic status of local nomads and their attitudes towards wildlife conservation and especially the Hunting Program also were collected.

During 1985-1991, 78 foreign hunters and tourists visited the Dulan International Hunting Area. These hunters provided significant income for wildlife management organizations as well as for local communities. The major hunted species was blue sheep (*Pseudois nayaur*), which comprised 82% of the animals taken. The Hunting Program generated funds that were mainly used for implementing necessary conservation plans in the province. A gross income of US \$560,000 had been generated from 1985 through 1992, the total investment in the Program was less than \$150,000. Lack of manpower in local wildlife management agencies made the involvement of local residents in wildlife reserves very important. The International Hunting Program in Dulan provided local nomadic residents income and had made them interested in wildlife conservation programs. The majority of nomadic families interviewed thought the Program was a good one either because it had significant economic impact on local communities or it could open their contact with people from other cultures. Non-local poaching was nearly uncontrollable on a provincial scale but data collected indicated signs of improvement within the Hunting Area because of the involvement of local people in wildlife protection activities.

*To the memory of my beloved father*

*and*

*To my mother for her love and support*

## ACKNOWLEDGEMENT

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## INTRODUCTION

The involvement of local people in wildlife conservation programs is gaining more and more attention and interest from wildlife researchers as well as managers. The involvement of local people in management programs is critical because local people possess first-hand knowledge of natural resources. Also, implementation of conservation and management measures at the community level needs local manpower to achieve desired goals. Often, relationships between local people and management organizations is pivotal for successful development and implementation of management and conservation measures. For decades, the importance of involving local people in management and conservation programs was ignored. Many conservation programs were jeopardized by this lack of local involvement.

A good example is Bird Island Waterfowl Refuge, Qinghai Province, PRC. Bird Island Waterfowl Refuge is 1 of the 2 established reserves in the Province. Relationships with local communities played a critical role in operation of the Refuge, which faced serious problems with local people who were moved without careful resettlement programs. Mengda Nature Reserve, officially established in 1980, had financial difficulties and faced serious problems with local

people because their needs were not considered. Conflicts with the local community upset conservation goals in both reserves (Qinghai Forestry Bureau, 1990).

Though local people in the current wildlife-abundant areas often are among the poorest of the poor, they bear the cost of conservation in those areas (McNeely, 1988). When developing and implementing conservation programs in those areas, economic incentives should be seriously considered to provide compensation for local people who bear the cost of conservation. Only by doing so, can their interests in being involved in management programs be stimulated. To implement prudent management of biological resources, assigning some management responsibility to local institutions and local communities is critical. By providing incentives, local people and institutions may respond positively to management systems.

Besides needing more local manpower involved in management programs, lack of funds has been a serious problem for implementation of conservation activities in the Province. In 1982, the Forestry Department in Qinghai proposed establishing 17 nature reserves to conserve wildlife and other natural resources (Qinghai Agricultural and Animal Husbandry Planning Committee, 1982). In 1975, the first nature reserve in Qinghai, the Bird Island Waterfowl Refuge, was established. The second nature reserve, the Mengda Forest Reserve, was established in 1980.



Tourism was introduced to both reserves to improve the difficult financial situation. The rest of the designations were aborted because of lack of financial support.

Sustainable use of wildlife offers 1 of the best opportunities for addressing the socio-economic and environmental plight of much of the drier parts of Africa. Recreational hunting is now the most positive and widespread economic incentive for the conservation of large mammals in Zimbabwe (Child, 1984). Because local people are likely to be the best managers of wildlife on their lands when they recognize that conservation of wildlife pays, the government of Zimbabwe has enacted legislation to give landholders the rights to use wildlife, other than a limited number of specially protected species, while it is on their land. State hunting licenses were abolished in favor of those issued by the landholders who could charge for them as they saw fit, thereby gaining a significant economic incentive for conserving wildlife.

In 1985, the International Hunting Program (IHP) was introduced into Qinghai Province. Since then, income generated from the program has become the core source for wildlife management activities in the Province. Local people have been involved in the program to provide various kinds of services and cooperation.

My study concerns international hunting and the involvement of local people in Qinghai Province, PRC, based

on data collected in Dulan International Hunting Area during 2 field seasons. The first field season inventory was implemented from July 10 through September 11, 1991. The second field season was conducted from July 10 through September 20, 1992.

### **Problem statement**

The degree to which local people are involved in the International Hunting Program and the amount of benefits they can obtain from it determines their willingness to cooperate in various, present and future, wildlife management activities. It is important to understand whether or not the International Hunting Program has benefitted local people, and if it has furthered conservation of wildlife in the area.

### **A Brief History of Dulan International Hunting Area**

During early 1985, the Ministry of Forestry in Beijing informed the director of the Qinghai Wildlife Management and Protection Bureau that 3 American hunters were interested in hunting in Qinghai. At that time, no hunting Area existed in the Province. During the same year in August, representatives of the Ministry of Forestry and Qinghai Wildlife Management and Protection Bureau, together with Mr.

Lit Ng, president of Montemar Management Inc., California, conducted inventories in Balong Township, Dulan County. An International Hunting Area was officially assigned in Balong. In November 1985, the Qinghai Wildlife Management and Protection Bureau brought 3 hunters to Balong, and each shot a blue sheep. The hunters were very satisfied with their first hunting experiences on the world's highest plateau (Dulan Agricultural and Animal Husbandry Bureau, 1987).

Since 1985, 78 foreign hunters visited Dulan International Hunting Area. Hunters were from the United States (>90%), Germany, Australia, and France.

The Hunting Area covered only 1 township, Balong, at its establishment and was named Balong International Hunting Area. Two years later, it was extended to another township, Gouli. The Hunting Area was renamed Dulan International Hunting Area and Dulan Wildlife Conservation Station, though the staff remained the same. The reason for this double name is for convenience in internal and external administration.

## **Objectives**

The goal of this study was to investigate the degree of local involvement in the International Hunting Program in Dulan County, Qinghai Province. Specifically, my study was designed to:

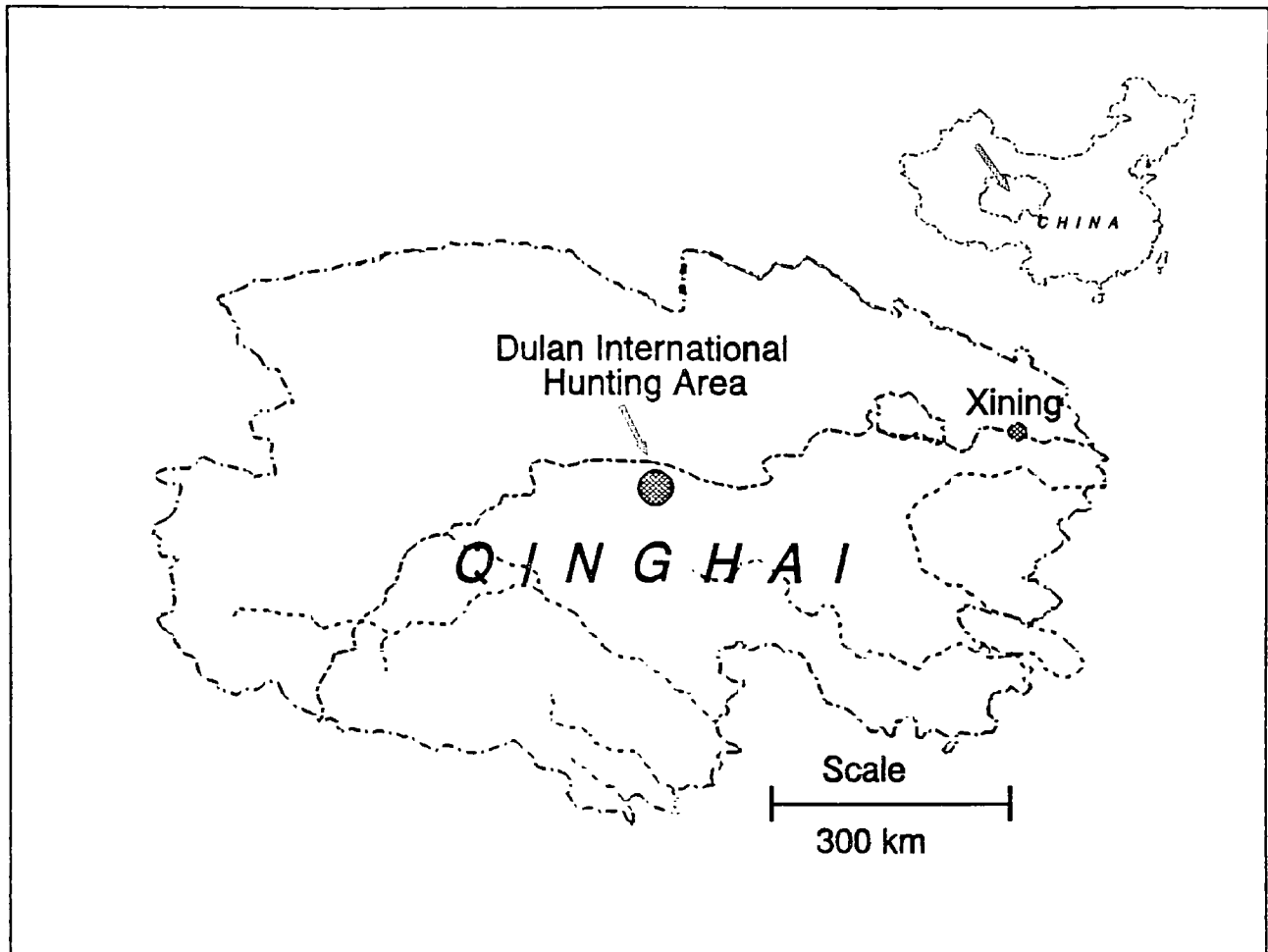
- 1) evaluate the impact (mainly economic) of the Program on the local community,
- 2) obtain a clear understanding of local people's attitudes towards the Program, and
- 3) examine the effectiveness of the Program in promoting wildlife conservation activities.

## STUDY AREA

The core study area was located in Dulan International Hunting Area, Dulan County, Haixi Mongolian-Tibetan Autonomous Prefecture, Qinghai Province, PRC, at roughly  $95^{\circ}29'-99^{\circ}00'E$  and  $35^{\circ}15'-37^{\circ}27'N$  (Fig. 1). The Hunting Area was administrated by the Dulan Agriculture and Animal Husbandry Bureau. The designated Area consisted of 3 production townships<sup>1</sup>: Balong, Gouli, and Xiangjia. Hunts mostly occurred in Balong and Gouli (Dulan International Hunting Office, 1992). Balong Township ruled 13 villages; 9 indulged in animal husbandry, and 4 were agricultural. The designated Hunting Area covered 3 of the animal husbandry villages: Xiatu, Hatu, and Yikegao. Topography within this camp site was mostly rugged grassland and naked rockslopes. Altitude ranged from 3,000 to 4,500 m above sea level. Total designated area was estimated at 35 km<sup>2</sup> (Dulan Agricultural and Animal Husbandry Bureau, 1987). It was 125 km from the Town of Dulan. Distance to the nearest highway, Qinghai-Tibet Highway, was 29 km.

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<sup>1</sup> A township is an administration division of a county that was previously called a commune, constituting a unit of local government with administrative control of local production, taxes, schools, roads, etc.



**Fig. 1.** Approximate location of the Dulan International Hunting Area in Qinghai Province.

Gouli Township ruled 3 villages. All of them indulged in animal husbandry. The designated Hunting Area covered 1 of the 3 villages: Delong. Topography was very similar to that of Balong Camp Site. Altitude ranged from 3,400 to 5,000 m above sea level. Total designated area was estimated at 40 km<sup>2</sup> (Dulan Agricultural and Animal Husbandry Bureau, 1987). It was 145 km from the Town of Dulan.

Distance to the nearest highway, Qinghai-Tibet Highway, was 90 km.

Informal surveys and direct observations were conducted in Xiatu and Yikegao in Balong, and Delong in Gouli, where more than 95% of the hunts occurred. Total population in these 3 villages was approximately 500. Residents were nomadic Mongolian in the 2 villages in Balong and nomadic Tibetan in the 1 village in Gouli.

Key informant interviews were conducted not only in the 3 villages, but in Dulan, Xining, and Beijing with relevant management officers.

The most abundant wild ungulates in Balong were blue sheep (*Pseudois nayaur*), white-lipped deer (*Cervus albirostris*), and elk (*C. elaphus*). Goitred gazelle (*Procapra subgutturosa*) were common. Musk deer (*Moschus sifanicus*) were rare (Gong, 1987; Zhen and Zhu, 1990).

The most abundant wild ungulates in Gouli were blue sheep, white-lipped deer, elk, and Tibetan gazelle (*P. picticaudata*). Argali (*Ovis ammon*) were seen in the Township. During a field trip in 1992, we saw 45 in 1 group and 16 in another. Tibetan antelopes (*Pantholops hodgsoni*) were seen during Winter. Musk deer were rare (Gong, 1987; Zhen and Zhu, 1990; Cai et al., 1992).

## METHODS

Throughout this document, names and occupations of respondents and key informants will remain anonymous.

The nature of this study and the circumstances in the core study area made highly formal survey methods unapplicable. The goal was to conduct a general investigation concerning attitudes among different social sectors that were involved in the International Hunting Program. Informal surveys, key informant interviews, and direct observations were used. These methods, discussed in detail by Backstrom and Hursh-César (1981), Casley and Lury (1987), Kumar (1987), and Babbie (1989), are applicable in situations where primary information concerning a phenomenon or process is needed. They are the best choice when probability sampling procedures are not applicable. Such methods are quick, inexpensive, and do not require rigid probability sampling procedures. Problems involve uncertainty concerning the quality of the information gathered. Personal biases and prejudices can affect reliability and validity (Kumar, 1987).



## Direct Observations

Direct observation involves intensive and systematic observation of a phenomenon or process in its natural setting. However, it is not as elaborate a method as participant observation, although the 2 could easily be confused with the commonly used ethnographic method of participant observation. Three major differences between the 2 were noted by Kumar (1987). First, participant observation is a long-term process; a researcher observes a phenomenon or process for months, even years. In contrast, studies based on direct observation can be completed within days or weeks. Second, while participant observation focuses primarily on social and cultural phenomena, direct observation can also deal with physical objects. Finally, in participant observation, the observer tries to empathize with the people being studied to gain an insider's perspective. This is not always the case with direct observation.

Direct observation has its limitations by its nature. First, it is more susceptible to observer bias, especially when the focus of the observation is on social and economic phenomena. Second, the results may be distorted and misleading unless the units under observation are fairly representative of the wider population. The third limitation of direct observation is that the very act of

observation can affect the behavior of the units being observed. To overcome these inherited limitations, careful sample selection should be pursued.

In both Balong and Gouli, 1-2 Chinese speaking local residents were hired to translate questions from Chinese to Tibetan or Mongolian and answers from Tibetan or Mongolian to Chinese during interviews. At each camp site, direct observations were conducted to gain information that could not be collected through other means. Information collected through this approach mainly concerns how local nomadic residents interacted with the International Hunting Office.

### **Informal Surveys**

There are a number of differences between sample surveys and informal surveys. Kumar (1987) pointed out 4 differences between them. First, informal surveys focus on a small number of variables. Questionnaires are used, but the numbers of questions asked tend to be fewer than those of sample surveys. Second, sample sizes for informal surveys are small, usually ranging from 30 to 50 units. Third, sample surveys usually are based on probability sampling, while informal surveys do not follow probability sampling procedures. Quota sampling and convenience sampling are the 2 most common sampling forms for informal

surveys. And finally, informal surveys permit more flexibility to interviewers in the field. Enumerators may ask questions that are not mentioned in the questionnaire. Though the differences between sample surveys and informal surveys are vast, these 2 methods have at least 1 critical attribute in common. Data collected from both can be analyzed statistically.

During informal surveys, households were treated as logical units for reporting data relating social-economic and attitudinal variables. Only families within 3 villages (Xiatsu and Yikegao in Balong, Delong in Gouli) were selected for informal interviews. Selection was primarily based on convenience and efforts were made to interview all the families. In Balong, many families lived in the Kunlun Mountains and could not be reached by vehicle. Only families that could be reached within 3 days on horseback were interviewed. In Gouli, approximately half of the families were reached by vehicle, most of the others were within 1 day's ride on horseback. Interviews usually were conducted with the head of each household or another responsible adult. When the family head or other responsible adult of a selected family was absent, the family was skipped or only general household characteristic questions were asked.

The survey questionnaire consisted of 5 sections (see APPENDIX I). Section I concerned key household

characteristics (how many livestock were owned, how much tax in forms of livestock or meat local residents needed to pay to the local government, how much was earned through 'free market' trade, and their pasture patterns) were acquired. Section II involved information concerning the respondents participation in, and attitude towards, the International Hunting Program. Section III dealt with local utilization and valuation of wildlife resources in the 2 townships. Section IV probed information on poaching activities within the Hunting Area. Section V was concerned with general suggestions and comments towards wildlife conservation and management in the region.

During each interview, the pasture pattern of each household was questioned to get a clear understanding of yearly movements. Then, in the Poaching Section of the Questionnaire, each respondent was asked to provide information on where poaching took place within his/her pastures. This was done to understand when and where poaching occurred and anticipate how difficult it would be for game guards to perform their duties.

Prompt on-site results gained through this approach contributed a great deal to modification of the informal-survey questionnaire. In both informal survey and key informant interviews, free atmosphere was pursued during each interview. Topics and questions usually were confined to areas related to the International Hunting Program.

### **Key Informant Interviews**

This type of interview involves in-depth discussions on a topic with knowledgeable persons in order to obtain data, opinions, and perspectives on that specific topic. An interview guide listing the main topics and issues to be covered usually is used to guide the discussion. Key informants included 3 types of people: 1) wildlife management officers involved in the International Hunting Program (officers at different administrative levels in Beijing, Xining, and Dulan); 2) major township and village leaders; and 3) experienced local game guides and guards.

## RESULTS

### Direct Observations

Local involvement took the following forms: 1) renting horses, 2) serving as a hunting guide, 3) working as a game guard, and 4) miscellaneous jobs.

Renting horses was the primary way that local people could be involved in the program. Local nomads generated most of their income from the International Hunting Program through this approach. Usually, ¥15 could be generated for 1 horse-day. Only those who had pastures within the Hunting Area had the privilege of renting their horses to the Program.

Working as a hunting guide was the second lucrative way of local involvement in the Program. But not as many local people could be involved through this approach as through renting horses. Local residents hired as hunting guides had rich hunting experience and knowledge of behavior patterns of local large-mammal populations. The number of hunting guides needed was determined by the number of hunters visiting the Hunting Area during a particular time. The more hunters visiting the Hunting Area at a particular time, the more local nomads could be hired as hunting guides.

Employment as game guards was the third form of local involvement in this program. In Balong, 2-3 local nomads were hired as guards since 1988 to counteract poaching in the Township. There were no permanently hired game guards in Gouli because of low poaching pressure within the Township. I will discuss this further under 'Informal Surveys' and 'Key Informant Interviews'.

Miscellaneous employment refers to other temporary work at the 2 hunting camps, such as cleaning, construction, food service, hotels, etc. At each camp site, 2-4 local residents were involved through this approach.

### **Informal Surveys**

Thirty-seven local nomads were interviewed at 3 villages in Balong and Gouli. In Xiatu Village, 10 families had pastures within the designated Hunting Area, 5 of them were interviewed. In Yikegao village, the number of families that had pastures within the designated Hunting Area is unknown, 4 families in this village were interviewed. In Delong Village, 75 families had pastures within the designated Hunting Area, 28 of them were interviewed (Table 1).

**Table 1.** Number of families interviewed in Balong and Gouli.

Township	Village	No. of families interviewed	No. of families in the Area
Balong	Xiatu	5	10
	Yikegao	4	?
Gouli	Delong	28	75

### Family Characteristics

At the beginning of each interview, name and sex of each eligible respondent was recorded. Among the 37 families interviewed, 78.4% (29) of the respondents were male and 21.6% (8) were female (Table 2).

**Table 2.** Sex and percentage of respondents in Balong and Gouli.

Count Column percent Row percent		Township		Row Total
		Balong	Gouli	
Sex	Female	3 33.3 37.5	5 17.9 62.5	8 21.6
	Male	6 66.7 20.7	23 82.1 79.3	29 78.4
Column Total		9 24.3	28 75.7	37 100.0



Variables involved in this section included: family size, tax or assignment, free market income, and pasture pattern.

### Family Size

All 37 families answered the question concerning family size. The average family size in Balong and Gouli was 6.2 (s.e.= 0.36). The smallest family size was 3 and the largest 14 (Fig. 2).

According to key informant interviews, birth control was enforced within the Hunting Area, and the current government policy is 3 children per family. This policy had been enforced since the late 1970s. Families with more than 5 members consisted of more than 2 generations.

### Livestock Statistics

Livestock statistics sometimes are difficult to acquire because of the dynamic life style of nomadic people and the fluctuation of livestock populations. In this section of the questionnaire, I tried to obtain information concerning livestock statistics because official information on such aspects either was not available or difficult to get. I attempted to obtain a valid comparison of how much economic impact the International Hunting Program had on local

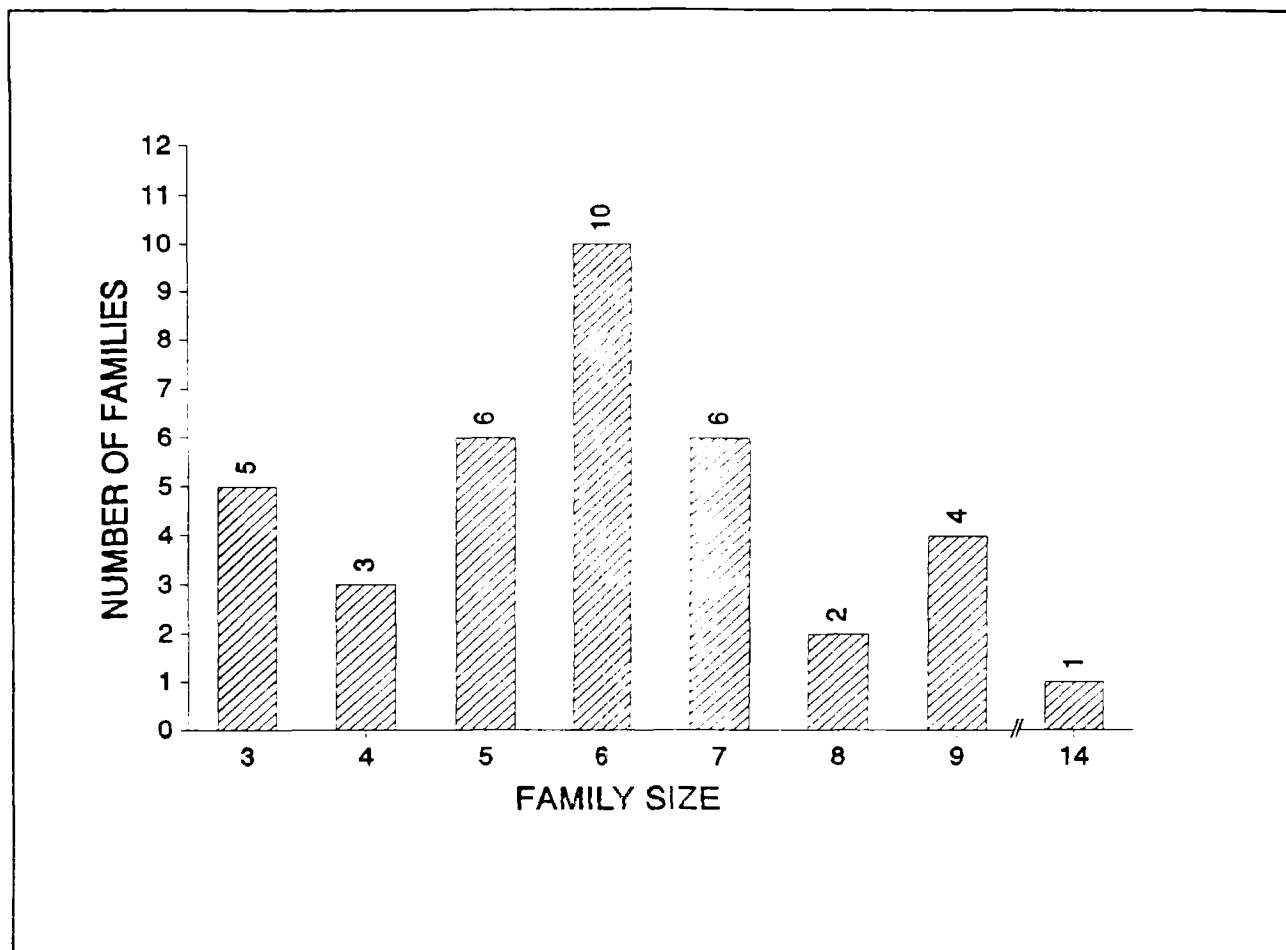


Fig. 2. Frequency of family size in Dulan International Hunting Area (sample size = 37, missing case = 1).

communities.

The average number of sheep possessed by a family was 287 head (s.e.= 27.0). The average for yak, goat, and cattle was 55 (s.e.= 5.1), 48.2 (s.e.= 9.8), and 0.8 (s.e.= 0.6), respectively.

## Annual Assignment

Annual assignment was a special form of tax posted to herders for using the land and other community properties such as sheep, cattle, horses, and common equipment. It could be fulfilled in terms of meat, money, or sometimes labor. Meat was the traditional, agreed-upon form of fulfillment, but when herders did not have enough sheep, they could pay the tax in money or labor. If meat was the form of fulfillment, herders received ¥40-90 for each sheep they donated, which was half of the free market price. If money was the form of fulfillment, herders only paid about ¥10-40 for each sheep of their assignment, which was favorable to herders because it was lower than half of the free market price. Labor occasionally could be the form of fulfillment when there was a need of such labor, or when herders did not have enough meat or money to share.

A typical family needed to submit an annual assignment, in terms of meat, of 872.5 Jin<sup>2</sup> (s.e.= 238.9). In terms of sheep<sup>3</sup>, a typical family needed to submit 24.8 head (s.e.= 1.9) with a minimum of 9 head and a maximum 55 head. A typical family received approximately ¥1860 from the government for fulfillment of the annual assignment in meat.

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<sup>2</sup> Jin is a Chinese unit of weight that equals 1/2 kilogram.

<sup>3</sup> They could also pay in yak, goats, or occasionally cattle. The reported number was converted to sheep by the respondents.

Figure 3 shows a frequency summary of annual assignments for local families in terms of sheep. The most frequent amount was 21-30 sheep; 42.9% (12 of 28 valid cases) of the families interviewed fell within this range. The second most frequent range was 11-20; 35.7% (10 of 28 valid cases) of the families interviewed fell into this range.

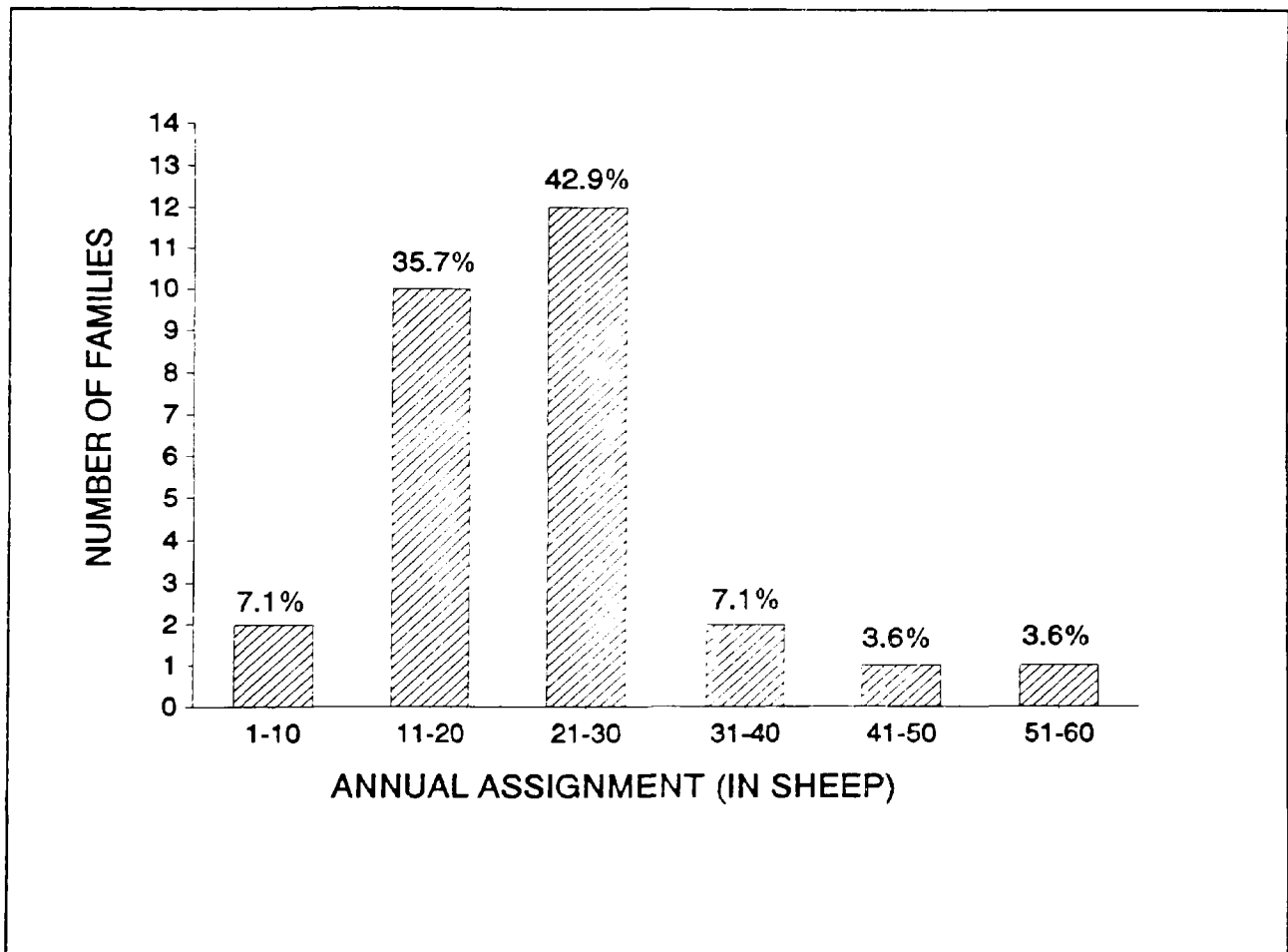


Fig. 3. Annual assignment in terms of sheep versus number and percent of families (valid =28, missing = 9).

### Free-market Income

Since 1978, the market was gradually opened to private trade and commune properties were allocated to individual families. Peasants and nomadic herders now have more free choice concerning what to do with their crops and livestock. Each year, a typical family sold 15-20 sheep at ¥130-150 (approximately ¥1,950-3,000 per family), 3-6 yaks for ¥700-1,000 each (¥2,100-6,000 per family) or an equivalent combination of sheep and yak. Also, approximately ¥2,000-4,000 were earned through selling wool. The average family income from free-market trading was ¥3661 (s.e.= 417).

The most frequent amount earned was between ¥2,500 and ¥5,000, with 51.6% the families interviewed falling into this range (Fig. 4). The second most frequent range was below ¥2,500, with 38.7% of the families interviewed falling into this range.

### Pasture Patterns

Poaching activities and yearly movement patterns of local herders were highly associated. Poaching mostly occurred in some 'vacant' areas when there were periodically no grazing activities. These 'vacant' places were dynamic because of the yearly movement of local herders. I will describe this further under poaching on page 42.

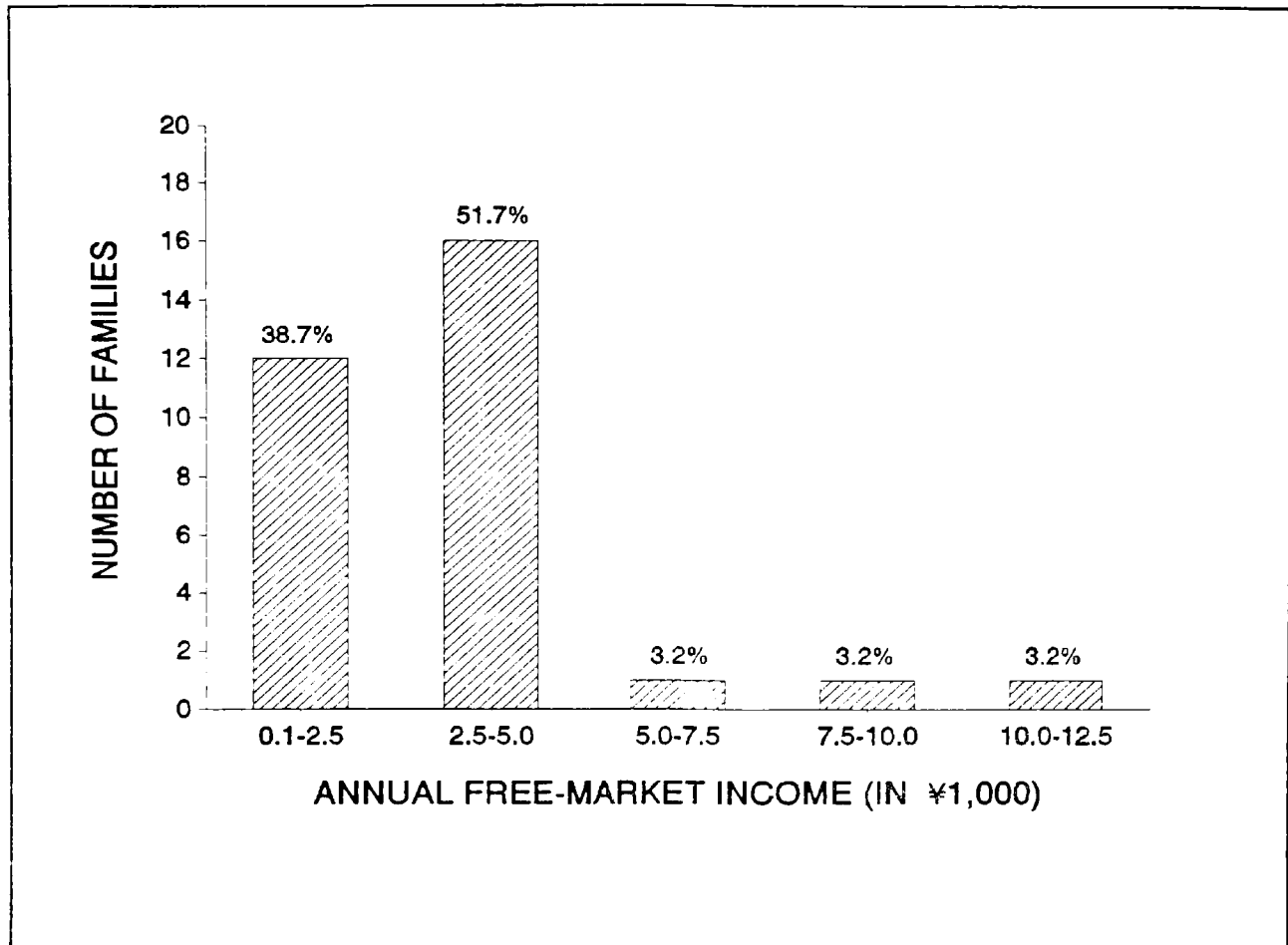


Fig. 4. Annual free-market family income versus number and percent of families (valid cases = 31 families).

#### International Hunting Program

All 37 respondents interviewed had at least heard of the International Hunting Program. Two respondents were not questioned further about the Program because 1 had been present during a former interview with a household. In another situation, the head of the family was absent and the female housekeeper was reluctant to answer further

questions. Only household information was collected for these 2 cases.

### General Attitude towards the Program

All the respondents interviewed indicated that, in general, the Program was a good one because they gained monetary benefit or community-shared benefits.

### Extent of Involvement

Among the 37 families, 21 (valid percent is 60%) had rented horses to the International Hunting Program, 8 (valid percent is 23.5%) had worked as hunting guides, 2 (valid percent is 5.9%) were hired as game guards, and only 3 (valid percent is 8.8%) were involved in miscellaneous jobs (Table 3).

The 8 families that had worked as hunting guides also had rented horses to Dulan International Hunting Office. The 2 families who were hired as game guards not only had rented horses but had served as hunting guides as well. All the 3 families involved in miscellaneous jobs had rented horses to the Dulan International Hunting Office, 1 of them was involved as hunting guide, but none of them were hired as game guards.

**Table 3.** Employment of local nomadic residents in Dulan International Hunting Program.

Activity	Category	Frequency	Percent	Valid percent
Renting horses	Yes	21	56.8	60.0
	Not involved	14	37.8	40.0
		2	5.4	Missing
		-----	-----	-----
	Total	37	100.0	100.0
Hunting guides	No	12	32.4	35.3
	Yes	8	21.6	23.5
	Not involved	14	37.8	41.2
		3	8.2	Missing
		-----	-----	-----
Total	37	100.0	100.0	
Game guards	No	18	48.6	52.9
	Yes	2	5.4	5.9
	Not involved	14	37.8	41.2
		3	8.2	Missing
		-----	-----	-----
Total	37	100.0	100.0	
Misc. Jobs	No	17	45.8	50.0
	Yes	3	8.2	8.8
	Not involved	14	37.8	41.2
		3	8.2	Missing
		-----	-----	-----
Total	37	100.0	100.0	

#### Income from the Program

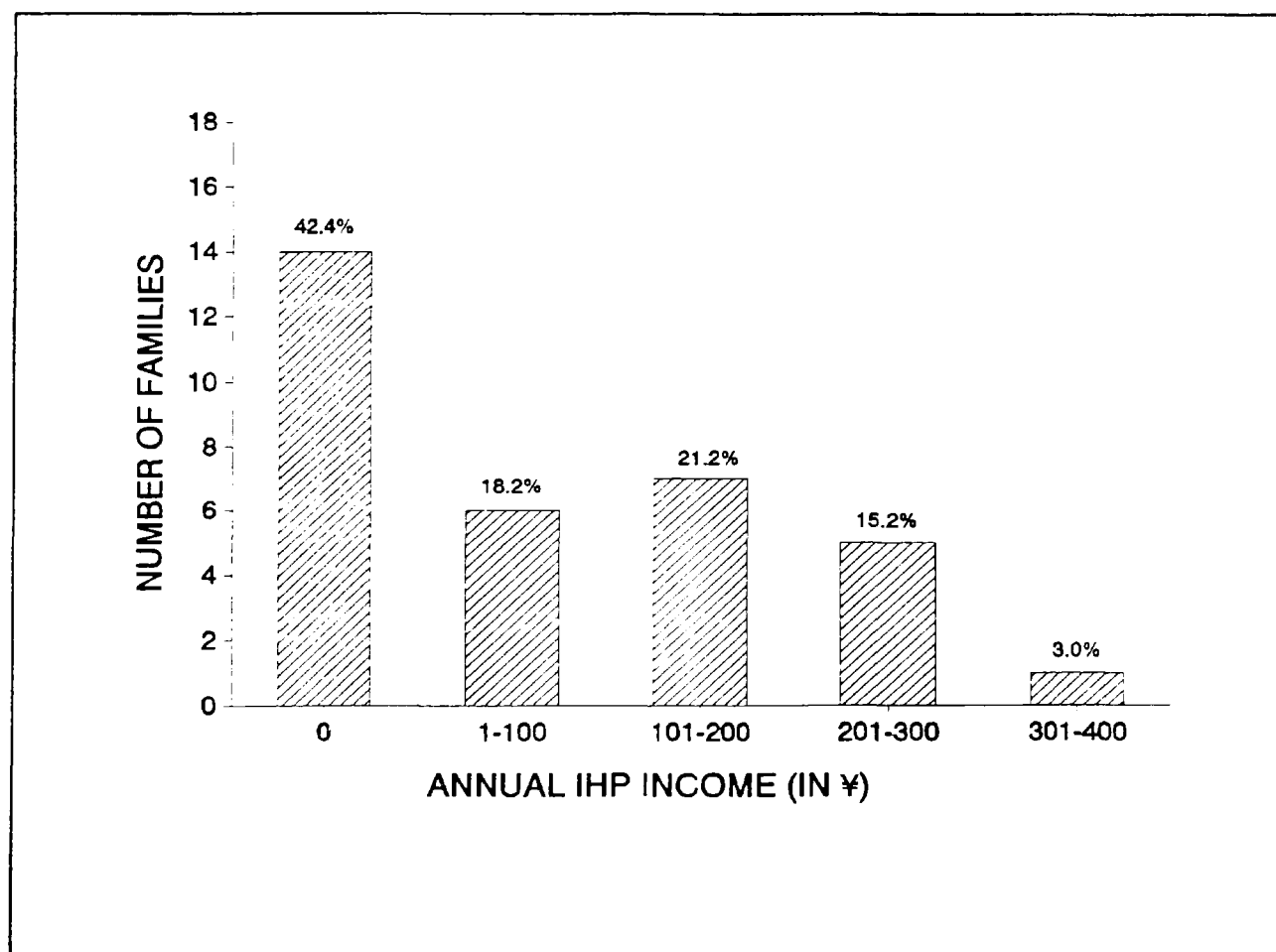
Fourteen of the 35 families were not involved in the International Hunting Program, and thus gained no direct monetary benefit from it. This comprised 42.4% of the 33 total valid cases.

Of the 21 families involved, total yearly family income from the International Hunting Program fell between ¥80 and



¥350 (valid cases = 19 families). Most frequent yearly income fell between ¥101 and ¥200 (7 of the 19 valid cases). The mean total yearly income from the Program for the 21 families involved was ¥181.6 (s.e.= 19.7, valid cases = 19 families) (Fig. 5).

The mean income from renting horses was ¥131 (s.e.= 15.0, valid cases = 11), with a minimum of ¥80 and a maximum



**Fig. 5** Annual family income through involvement in the International Hunting Program versus number of families (valid cases = 33 families).

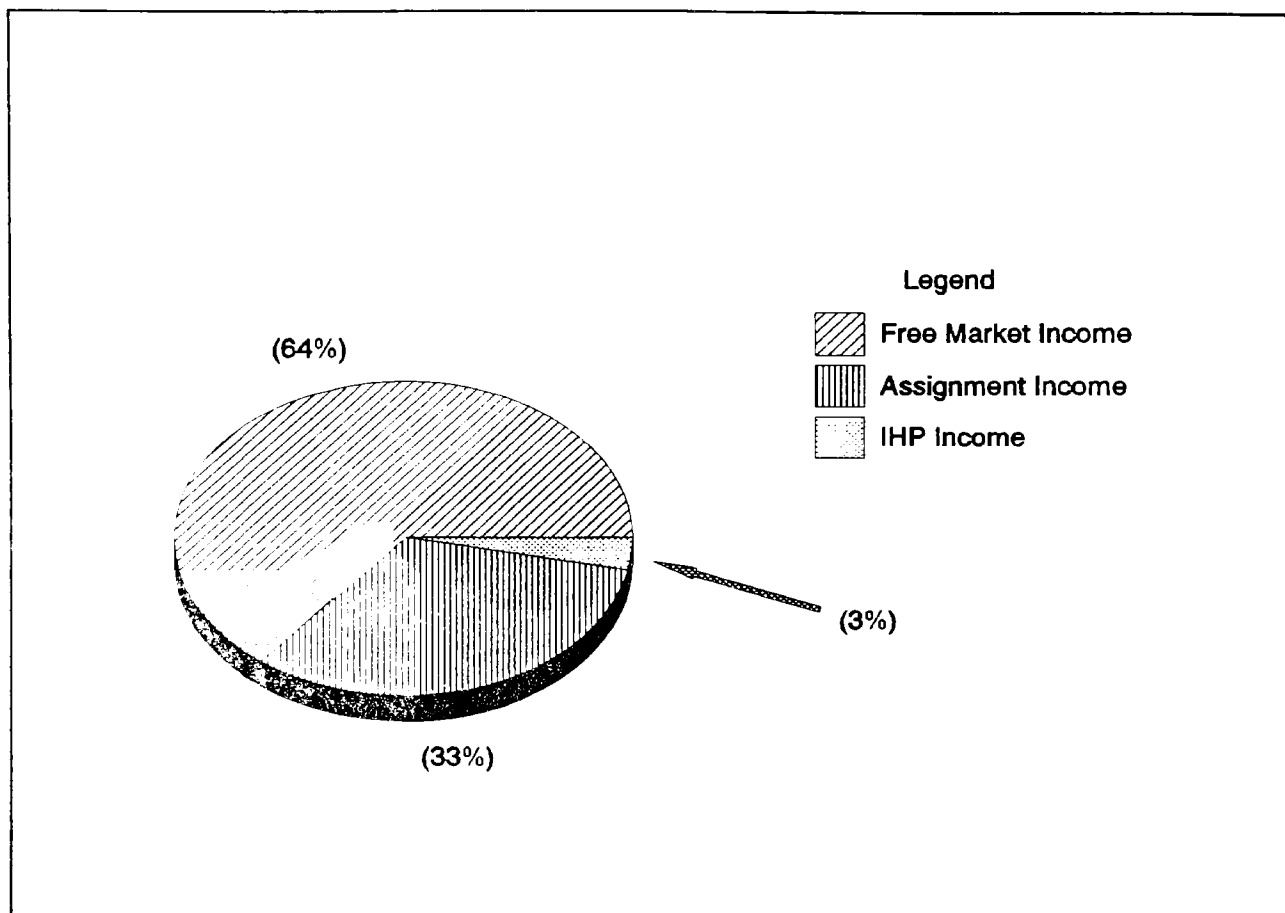
of ¥200. Data for income from guiding hunters were not sufficient to present. There were indications that those who were hired as hunting guides made handsome income from tips (¥100-300 per guiding). Salary rate was ¥14 per day.

Annual family income from the International Hunting Program comprised only 3% percent of a typical family's total annual income (Fig. 6). Although this percentage seems low, considering the limited job opportunities that local herders had, this still can be considered significant in practice.

#### Non-monetary Benefits

Information about non-monetary benefits also were investigated. Perceived non-monetary benefits can be categorized as: 1) improvement of local transportation, 2) medical access during hunting seasons, and 3) opportunity of being able to contact foreigners.

The roads to Gouli and Balong were very rocky and often cut off by floods. Generally speaking, people living in these 2 townships were eager to have road conditions improved. Because of financial problems, peoples' expectations were not fulfilled until the opening of the International Hunting Program. Because each hunting group was granted only 7-8 days of hunting time, road conditions needed to be improved. Dulan International Hunting Office



**Fig. 6.** Percent of different forms of annual family income.

spent some income generated from the Program to improve road conditions to the 2 townships each year after opening of the Hunting Area. This benefitted local herders. In Balong, some herders own their own tractors to transport hay for their livestock. In Gouli, herders rent tractors from the Township to transport hay. Improved road conditions made their work easier.

Among the families interviewed, 57.1% of the valid families perceived that the road condition had been improved

to some extent. However, 28.6% answered 'NO' and 14.3% had 'NO OPINION' (Table 4).

**Table 4.** Local residents' perception of whether transportation improved since the opening of Dulan International Hunting Area.

Category	Frequency	Percent	Valid percent
Not improved	10	27.0	28.6
No opinion	5	13.5	14.3
Improved	20	54.1	57.1
	2	5.4	Missing
	-----	-----	-----
<b>Total</b>	37	100.0	100.0

Medical facilities in remote areas like Gouli and Balong were poor. There was a small clinic in each township but they could only provide simple, and most often delayed, medical services. The International Hunting Program was staffed with 1 well-trained doctor or nurse throughout each hunting season to secure the safety of foreign hunters and working personnel. This temporary medical facility was available to local herders. During hunting seasons, those who were adjacent to the hunting camps could get access to medical services if needed. Among the families interviewed, 14.3% of the valid families (35) perceived that they could get instant medical access during hunting seasons, while 48.6% did not and 37.1% had 'NO OPINION' (Table 5). Though the absolute percent value is low (14.3%), I view this as

significant because only those who were sick would try to use the medical facilities provided and then could perceive the medical access.

**Table 5.** Local residents' perception of whether medical access improved since the opening of Dulan International Hunting Area.

Category	Frequency	Percent	Valid percent
Not improved	17	45.9	48.6
No opinion	13	35.1	37.1
Improved	5	13.5	14.3
	2	5.4	Missing
<b>Total</b>	37	100.0	100.0

Being able to interact with a foreigner was highly valued by local herders. This curiosity could be considered as a special form of cultural incentive to promote wildlife conservation measures. Table 6 gives the perception of local herders on this aspect. Among the families interviewed, 37.1% of the valid families (35) reported that they were happy and excited to see foreign visitors in the Hunting Area. However, 20.0% answered 'NO' and 42.9% had 'NO OPINION'.

**Table 6.** Local residents' enthusiasm to see and contact foreign hunters in Dulan International Hunting Area.

Category	Frequency	Percent	Valid percent
No	7	18.9	20.0
No opinion	15	40.5	42.9
Yes	13	35.1	37.1
	2	5.4	Missing
<b>Total</b>	37	100.0	100.0

### Impacts on Wildlife Populations

The majority of the respondents (80% of the 35 valid families) thought there was no significant increase in local wild ungulate populations. Only 20% of the respondents thought wild ungulate populations had increased since the opening of Dulan International Hunting Area (Table 7). No significant difference can be concluded in opinions concerning changes in ungulate populations between residents of the 2 townships because only 9 cases were drawn in Balong (in Chi-square test, more than 20% of cells with expected frequency less than 5). No respondents perceived any negative impact of the International Hunting Program on wildlife populations (Table 8). The percent of families with no opinion is high. This may be due to a couple of reasons. First, some of the respondents were reluctant to

say bad things concerning the program. Second, those who were not involved in the International Hunting Program tended to have no opinions.

**Table 7.** Local residents' perception of whether wildlife population increased since the opening of the International Hunting Area.

Category	Frequency	Percent	Valid percent
Not increased	11	29.7	31.4
No opinion	17	45.9	48.6
Increased	7	18.9	20.0
	2	5.4	Missing
<b>Total</b>	37	100.0	100.0

**Table 8.** Opinion of local residents concerning negative impacts of the International Hunting Program on wildlife.

Category	Frequency	Percent	Valid percent
None	19	51.4	54.3
No opinion	16	43.2	45.7
Yes	0	0.0	0.0
	2	5.4	Missing
<b>Total</b>	37	100.0	100.0

### Negative Impacts on Local Communities

No respondent perceived any negative impact of the International Hunting Program on local communities; 37.1% held 'NO OPINION' and 62.9% said 'NO' (Table 9).

**Table 9.** Frequency of responses to the question 'Do you or don't you think the IHP has negative impacts on the local community?'

Category	Frequency	Percent	Valid percent
No negative impact	22	59.5	62.9
No opinion	13	35.1	37.1
Negative impact	0	0.0	0.0
	2	5.4	Missing
<b>Total</b>	37	100.0	100.0

### General Comments and Suggestions by Local Residents

General comments on the International Hunting Program may be categorized as:

- 1). we like the program because individuals, the community, and higher level organizations can generate income from it;
- 2). so far, we are satisfied with what we have received from the Program, but we hope more money can be spent on hiring local people to work for the Program; and



- 3). the Program, in the long run, would do wildlife good if it could be sustained (at least, during hunting seasons, poaching around the Hunting Area has declined).

General suggestions concerning The International Hunting Program included:

- 1). game guards should be permanently hired and salary for them should be secured with income generated from the International Hunting Program;
- 2). income allocation at village and township levels should be increased to enhance the interest of local leaders and herders (currently, approximately 5-8% of total income was allocated to village and township levels); and
- 3). payment should be more prompt to insure the credibility of Dulan International Hunting Office and future cooperation.

Local Utilization Of Wildlife Resources

#### View of Wildlife Resources

The majority of the respondents valued wildlife resources. Among the 35 valid respondents, 24 (68.6%)

thought wildlife was a valuable resource to them. This was primary because of strong religious beliefs most of the respondents held. Mongolians and Tibetans have the same religious beliefs. Buddhists view wildlife, especially wild ungulates, as auspicious creatures and omens of good fortune. Four of the 35 respondents (11.4%) did not view wildlife valuable because of competition for grass with livestock. These people suffered considerable forage loss from overpopulations of wildlife. Seven respondents (20%) held 'NO OPINION' (Table 10).

**Table 10.** Frequency of responses to the question "Do you or don't you think wildlife resources are valuable for local people?"

Category	Frequency	Percent	Valid percent
Not valuable	4	10.8	11.4
No opinion	7	18.9	20.0
Valuable	24	64.9	68.6
	2	5.4	Missing
	-----	-----	-----
<b>Total</b>	37	100.0	100.0

#### Benefits from Wildlife Resources

There were a number of ways that local herders could economically benefit from wildlife resources. Besides income from the International Hunting Program, antler

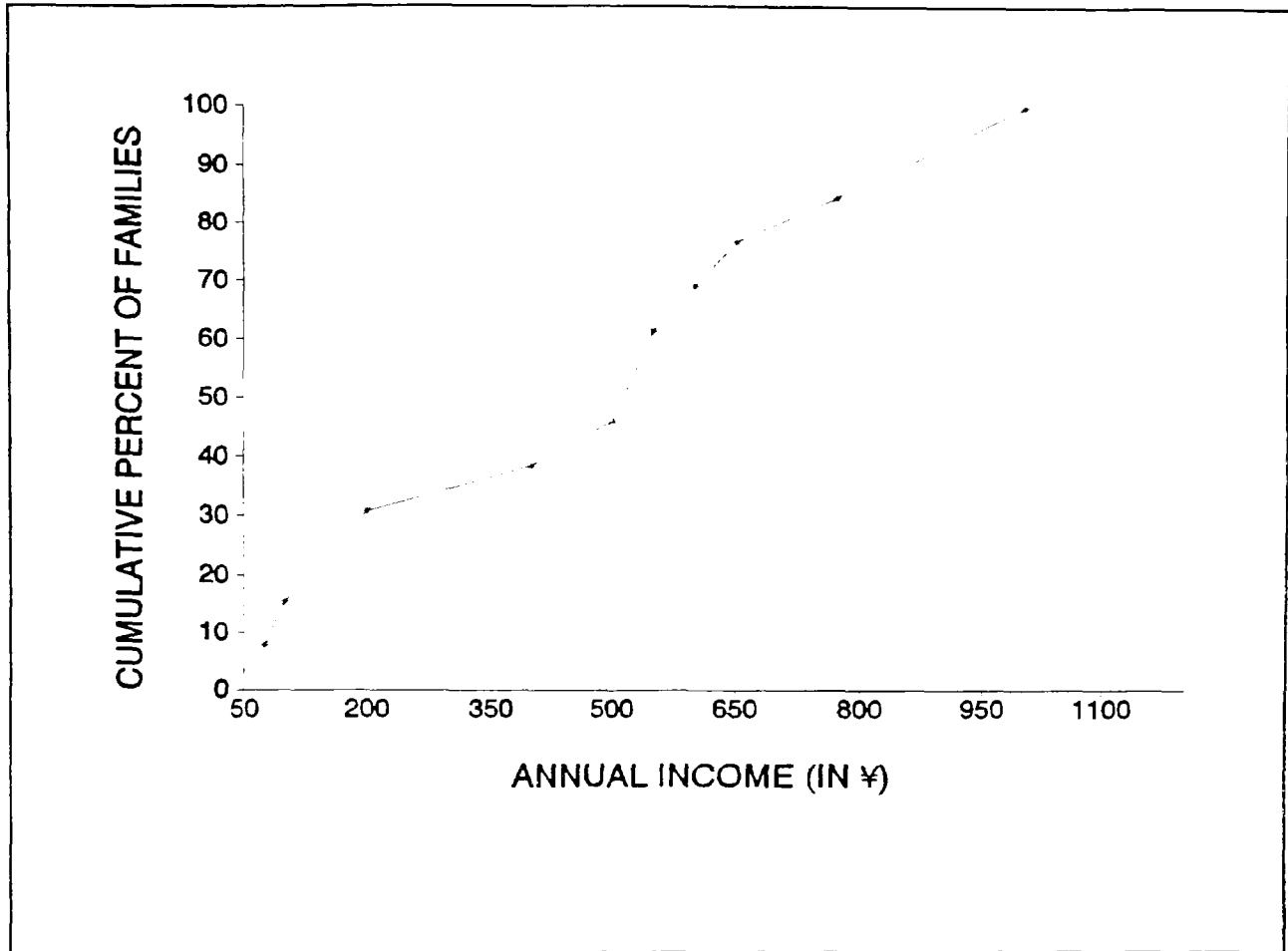
collection was a way in which local nomadic herders could generate considerable income. Dry antler is a raw material for a Chinese traditional medicine--antler glue. The official price for dry antlers had soared during the past few years. Currently, 1 kilogram of dry antler may sell for ¥80-100.

More than two fifths (42.9%) of the families interviewed collected dry antlers during the past few years. Those who did not collect dry antlers (57.1%) either lacked sufficient laborers or antler dropping spots were at a distance from their Spring pasture (Table 11). The mean income for families collecting antlers was ¥507 (s.e.= 85.5, valid cases = 13 families), with a minimum of ¥75 and a maximum of ¥1000. More than 50% of the valid families could generate an income exceeding ¥500 (Fig. 7).

**Table 11.** Frequency and percent of families collecting dry antlers.

Category	Frequency	Percent	Valid percent
No	20	54.1	57.1
Yes	15	40.5	42.9
	2	5.4	Missing
	-----	-----	-----
<b>Total</b>	37	100.0	100.0

Blue sheep hunting is prohibited by the provincial wildlife protection law. This sheep is listed as a Class II



**Fig. 7.** Cumulative percent of families earning annual income from collection of dry antlers (valid cases = 13 families).

species in the Qinghai Wildlife Management and Protection Regulations (Qinghai Wildlife Management and Conservation Office, 1988). Taking of any Class II species requires permits from the provincial authority--Qinghai Wildlife Management and Conservation Office. However, hunting of blue sheep by local herders is allowed by all levels of wildlife management agencies. The same situation could be applied to other Class II species such as Tibetan gazelle

and goitred gazelle but hunting of these 2 species was not as intense as of blue sheep. Among the 35 valid families, 11 (32.4%) admitted that they hunted blue sheep for extra meat in Autumn, when the meat was most edible. The other 23 (67.6%) families said they never hunted blue sheep for meat (Table 12). For those families taking blue sheep annually, the mean number of blue sheep reportedly taken annually was 2.2 (s.e.= 0.2), with a minimum of 1 and a maximum of 4.

**Table 12.** Frequency and percent of families taking blue sheep annually.

Category	Frequency	Percent	Valid percent
No	23	62.2	67.6
Yes	11	29.7	32.4
	3	8.1	Missing
	-----	-----	-----
<b>Total</b>	37	100.0	100.0

I think the percent of families who took blue sheep on an annual basis is higher than reported. Though I repeatedly announced that their answers would remain anonymous, some of them probably did not trust me. During each interview, I also paid attention to the presence of rifles in the respondent's house. Though not all rifles would have been seen, in 14 of the 37 families, I noted rifles. About two thirds of the 14 families said they took blue sheep annually.

Prohibition of local hunting of Class I species such as argali, white-lipped deer, and elk is practically enforced and taking of these species requires a permit from the Ministry of Forestry. Information on utilization of species other than blue sheep also was probed. None of the respondents replied that they had taken any species other than blue sheep

#### Negative Impact of Wildlife

Questions were asked concerning 2 aspects of negative wildlife impacts. First, perception of intensity of forage competition between wildlife and livestock was asked. Second, predator loss information was collected. In addition, other possible negative impacts were probed.

The majority of the respondents did not perceive much forage competition between wildlife and livestock. Among the 35 valid families, 40.0% thought there was not any competition, 37.1% answered 'NOT SEVERE', about 8.6% said the competition was 'SEVERE' and 2.9% 'VERY SEVERE'; the rest (11.4%) answered 'NO OPINION' (Fig. 8).

Losses to predators were mainly caused by wolves (*Canis lupus*), but birds of prey (*Aquila chrysaetos*, *A. heliaca*, *Gypaetus barbatus*, and *Haliaetus leucoryphus*) caused much of the loss during lambing seasons. Other species like snow leopard (*Panthera uncia*), brown bears (*Ursus arctos*), and

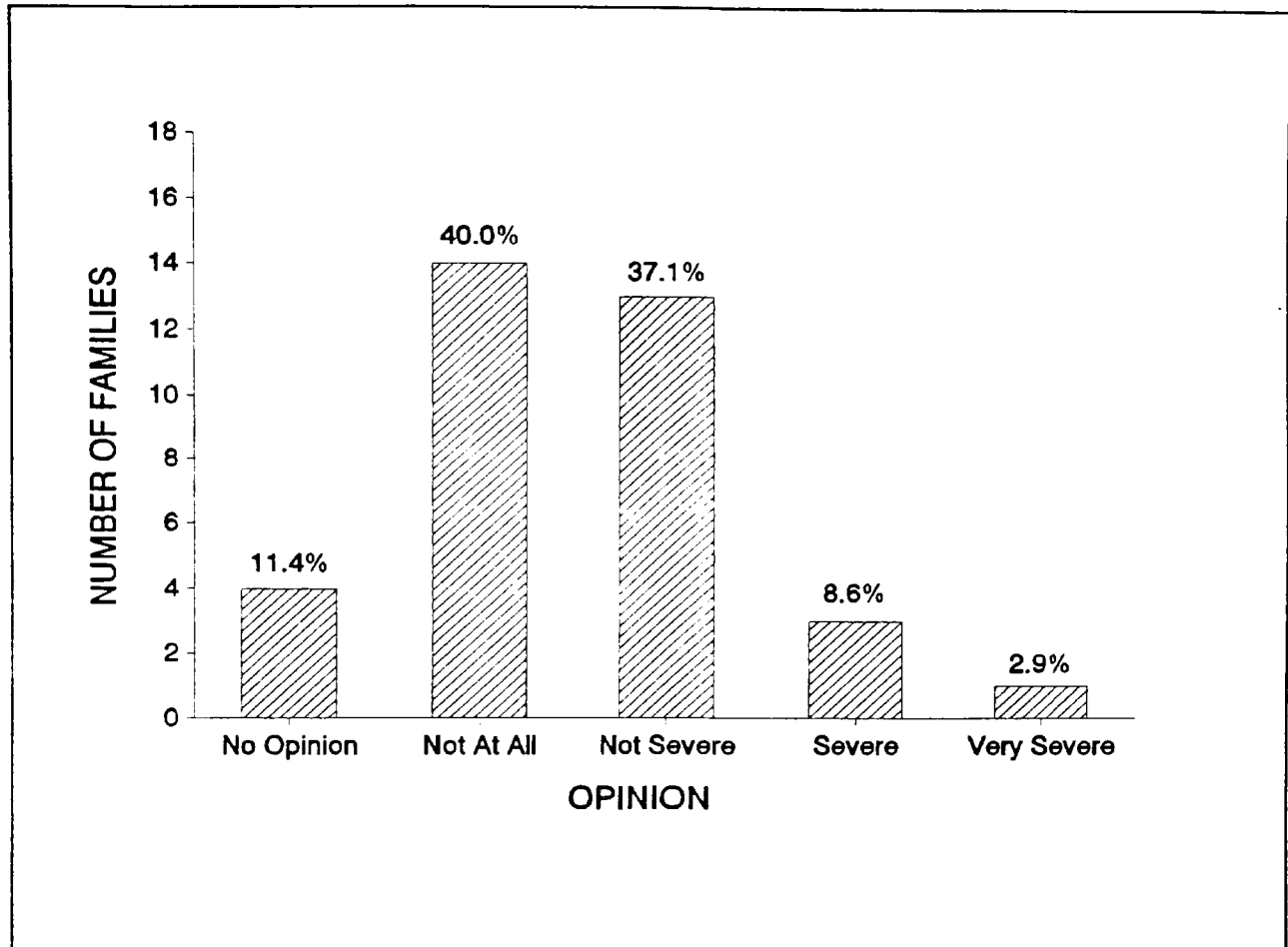


Fig. 8. Percentage of responses to the question "How severe is the competition for grasses between livestock and wildlife within your pasture?" (valid cases = 35).

foxes (*Vulpes ferrilata* and *V. corsac*) were not blamed for much of the harm.

About 83% of the families suffered from predator losses (Table 13). Seventeen of the 29 families who suffered losses annually quantified their losses. The mean number of losses was 8.7 sheep (s.e.= 1.3) for these families, with a minimum of 2 sheep and a maximum of 20 sheep.

**Table 13.** Frequency and percent of families suffering predator losses.

Category	Frequency	Percent	Valid percent
No	6	16.2	17.1
Yes	29	78.4	82.9
	2	5.4	Missing
	-----	-----	-----
<b>Total</b>	37	100.0	100.0

Almost half of the respondents (42.9%) killed wolves to protect livestock, using rifles or snares (Table 14). Approximately 2-6 wolves could be killed by a skillful local herder annually, though many families did not have the equipment or skills to do so. Birds of prey were sacred to Mongolian and Tibetan people, so high tolerance was given to them.

**Table 14.** Frequency and percent of families killing predators (mainly wolves) annually.

Category	Frequency	Percent	Valid percent
No	20	54.1	57.1
Yes	15	40.5	42.9
	2	5.4	Missing
	-----	-----	-----
<b>Total</b>	37	100.0	100.0



## Poaching within the Hunting Area

Three factors contributed to poaching intensity within Dulan International Hunting Area. First, closeness to the main road. The easier road access to an area, the more frequently poaching will occur. Second, presence of agricultural villages. Most of the peasants in Dulan are Hui or Han people, and some of them poach in the Hunting Area. Third, religious beliefs of different ethnic groups. Mongolian people have a long tradition of hunting, while most Tibetans hold strong religious beliefs and are less inclined to hunt.

Balong is only 30 km from the Xining-Tibet Highway. Four of the 13 villages are agricultural. Most of the residents in Balong are Mongolian. Gouli is 200 km from the Xining-Gelmud Highway, and all the 9 villages indulge in animal husbandry. Residents in Gouli are almost 100% Tibetan. Poaching intensity is higher in Balong than in Gouli.

At each camp site, there was at least 1 vacant time frame with no grazing activities. Poaching most often occurred within this/these vacant time frame(s). In Balong, there were 2 vacant periods (June and July, November and December). In Gouli, there was 1 (June to October).

### Perception of Poaching Intensity

Almost half (45.7%) of the respondents perceived poaching not to be serious within their pastures, while 34.3% of the respondents thought poaching was a serious problem within their pastures. The rest of the respondents (20.0%) held 'NO OPINION' (Table 15).

**Table 15.** Frequency of responses to the question "Is poaching a serious problem or not in this area?"

Category	Frequency	Percent	Valid percent
Not severe	16	43.2	45.7
No opinion	7	18.9	20.0
Severe	12	32.4	34.3
	2	5.4	Missing
	-----	-----	-----
<b>Total</b>	37	100.0	100.0

In Balong, 87.5% of the respondents thought poaching a serious problem around the Hunting Camp, while in Gouli, only 18.5% of the respondents thought poaching serious around the Hunting Camp. Respondents in Balong perceived poaching as more serious than in Gouli (Table 16).

In Gouli, poachers were Hui, Sala, and Han people from the Xining area (Huang Yuan County and Huang Zhong County) who came to Gouli to seek temporary construction jobs. In Balong, poachers were peasants from agricultural villages.

**Table 16.** Perception of poaching intensity around Balong and Gouli Hunting Camps.

Count Column Percent Row Percent		Township		Row Total
		Balong	Gouli	
Poaching	No	0 0 0	16 59.3 100.0	16 45.7
	No Opinion	1 12.5 14.3	6 22.2 85.7	7 20.0
	Yes	7 87.5 58.3	5 18.5 41.7	12 34.3
Column Total		8 22.9	27 77.1	35 100.0

Has Poaching Decreased?

At least during hunting seasons, poaching was reduced. Eighteen respondents reported no poaching cases during the hunting seasons since 1988, the rest of the respondents had no opinion.

### Key Informant Interviews

Eleven key informants were interviewed. Among them, 6 were local game guards, township or village leaders, and 5 were officials in wildlife management organizations at various administrative levels.

#### Summary of Key Informants' Opinions

Generally speaking, all the key informants interviewed believed that the International Hunting Program had a positive impact in promoting wildlife protection and conservation in the Hunting Area, and in the whole Province. The Program also had significant impact on local nomadic communities, economically and socially. It not only generated funds for conservation, but also opened a channel for cultural interaction between local nomadic herders and people from the outside world. Wildlife conservation in Dulan, like many other regions in the Province, had been given hardly any emphasis before. Opening of Dulan International Hunting Area drew conservation emphasis to the region from management agencies. The conservation awareness of local residents also was stimulated through economic incentives and cultural interactions with people from the outside world.

### Positive Aspects

*Opinion 1 -- Great success has been achieved in generating conservation funds.*

Qinghai, Xinjiang, and Gansu were the 3 major provinces in China that have international hunting programs. Qinghai is the No.1 province of the 3, its total gross income from the International Hunting Program was US\$560,000 from 1985 through 1991 (not including airline and gift expenses), comprising 74.7% of the national gross income from international hunting. The national total gross income was \$750,000 (China Wildlife Conservation Society, 1992). The total investment in the Program was less than \$150,000.

According to key informants, the money generated from the International Hunting Program was reserved as a fund for implementing necessary conservation activities in the Province. As a matter of fact, it has become the major financial resource for wildlife conservation activities in Qinghai Province. During the past 6 years, the Qinghai Wildlife Management and Protection Bureau has established a special fund for wildlife programs from the income of the International Hunting Program. This has helped the managers and staff in this office significantly because funding from the Ministry of Forestry and other funding agencies is scarce. The office has been spending money from this

special account on wildlife inventories, poaching surveys, etc.

*Opinion 2 -- More political support is possible because the Program generates foreign currency.*

Due to economic realities in China, foreign- currency-generating projects easily gain political support from high administrative levels. The International Hunting Program, after 8 years of operation, had proven successful in generating foreign currency, thus conservation related projects in the Hunting Area could get political support from high levels much more easily than before.

*Opinion 3 -- The Program is effective in stimulating conservation awareness at the local level.*

The money from the program stimulated conservation awareness at local levels. First, conservation projects at local levels could get financial assistance from income generated from the International Hunting Program. Second, local people became more enthusiastic and active because they received income from the program. Because many of the management agencies at local levels lacked manpower, involvement of local people was very important.

*Opinion 4 -- New job opportunities are possible.*

Dulan International Hunting Office had 7 permanent employees. These included 1 director, 1 vice director, 3 technical assistants, 1 driver, and 1 cook.

Besides these official permanent employees, the International Hunting Program also opened some job opportunities to local herders. During hunting seasons, local people in Balong and Gouli were hired as hunting guides. Since 1988, game guards were hired in Balong to patrol the Hunting Area.

The Dulan Agricultural and Animal Husbandry Bureau proposed to hire at least 1-2 person at each village as a game guard(s), the Bureau was willing to cover 50-60% of salaries for these jobs, the rest would be volunteer work. The money would come from the International Hunting Program. If this happens, it will open 120-150 jobs for the County.

*Opinion 5 -- Poaching has declined.*

The key informants felt that poaching had declined within the Dulan International Hunting Area since its opening. White-lipped deer and red deer populations were recovering, especially in Balong where poaching once was common because of easy road access and the presence of peasants in the Township.

Since 1988, 2-3 local residents were hired as game guards. Hiring of game guards apparently was not the only factor preventing poaching in the region. Establishment of the Hunting Area itself intimidated poachers.

### Negative Aspects

None of the key informants expressed concerns about any negative aspects the Program might have. Generally speaking, there was an overwhelming belief that the Program had all positive aspects so far.

### Problems and Difficulties

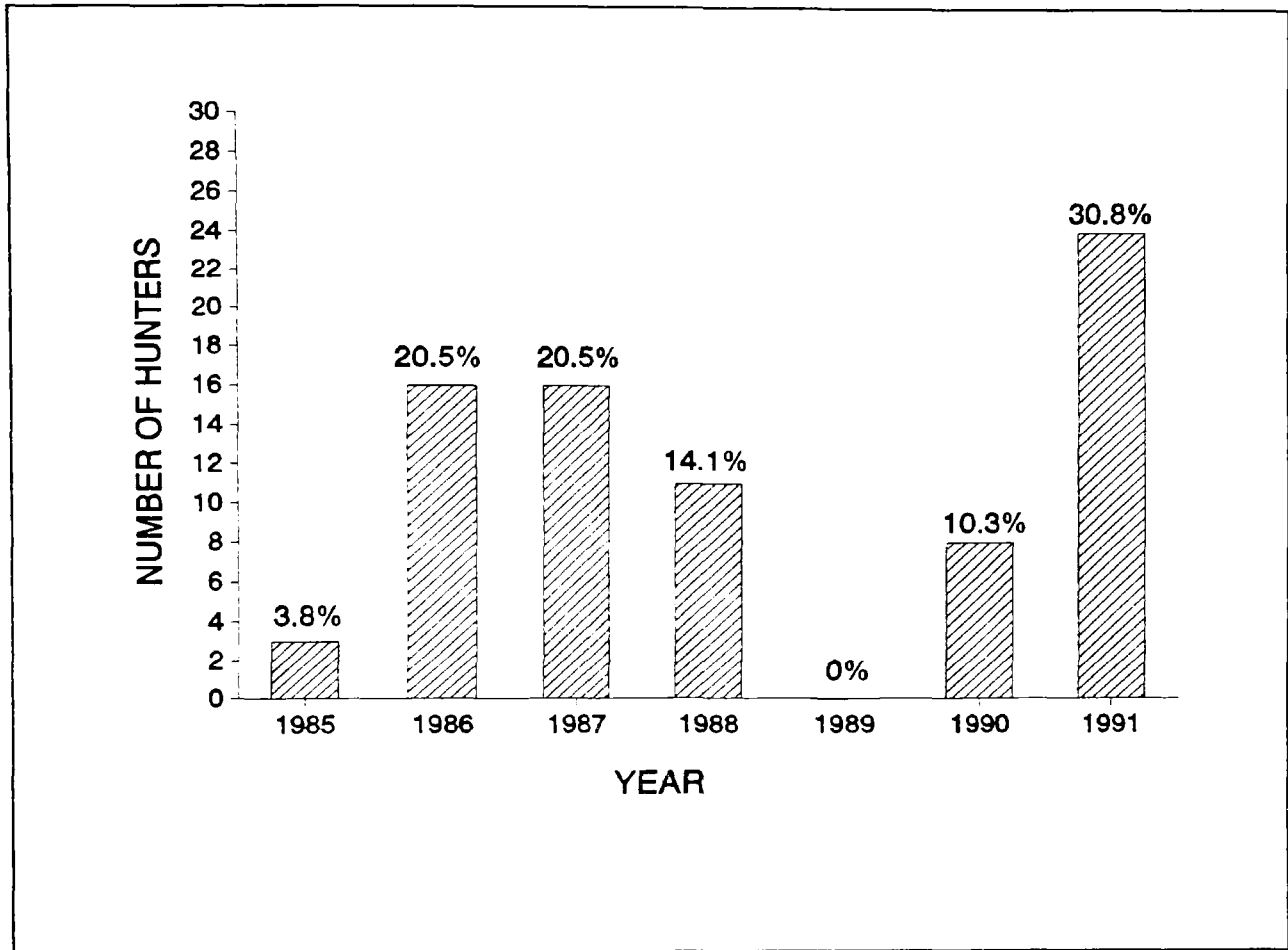
*Opinion 1 -- There were not enough hunters.*

Altogether, 78 hunters visited the Hunting Area from 1985 through 1991 (Fig. 9). To generate more income, most of the key informants wished for more hunters. Various approaches were explored to induce more hunters to come, such as reducing the price and improving service.

*Opinion 2 -- The management staff needs more training.*

To improve the quality of service and efficiency of management, working personnel need to be trained. So far,





**Fig. 9.** Number of hunters that visited Dulan International Hunting Area from 1985 through 1991.

none of the working staff in Dulan International Hunting Office have college degrees in relevant fields such as wildlife conservation or recreation.

*Opinion 3 -- Hunting of argali and white-lipped deer could greatly improve the conservation situation.*

The key informants stated that argali and white-lipped deer are the 2 potential species that could attract more hunters if hunts were allowed. No argali hunts have been allowed since the opening of Dulan International Hunting Area. White-lipped deer hunts were stopped in 1990 because of the high protection classification of the species. All the 11 key informants interviewed believed the population status of these 2 species was high enough to support international hunting. When interviewed, many officials in wildlife agencies expressed a strong feeling of a need for research on the status of ungulate populations in the Hunting Area. This feeling was stimulated by the prohibition of argali hunting by the Ministry of Forestry in Dulan International Hunting Area because of the uncertainty concerning taxonomy of the argali in Qinghai.

*Opinion 4 -- Roads to hunting areas should be improved.*

Transportation to the 2 hunting camps was rough. Though hunting plans were very well organized, rough transportation often slowed down the whole process.

## Division of Income Among Agencies

The Ministry of Forestry and the provincial wildlife agencies achieved a general agreement for division of the income generated from the International Hunting Program. Under the Agreement, the agency who benefits the most is the Dulan International Hunting Office, which is a branch of the Dulan Agriculture and Animal Husbandry Bureau. According to this Agreement, the Dulan International Hunting Office receives 45% of the gross hunting income (Fig. 10). Second

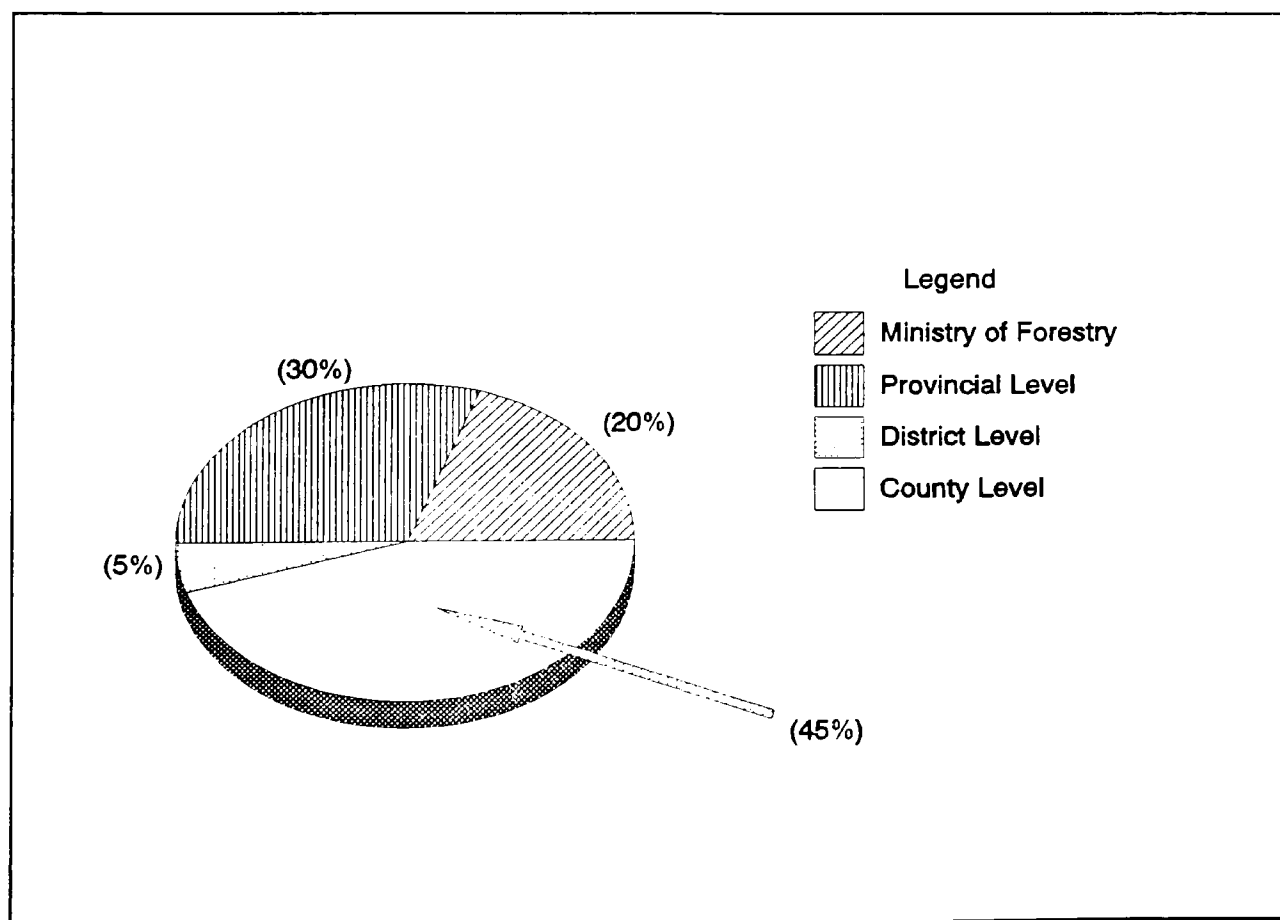


Fig. 10. Division of income among government agencies.

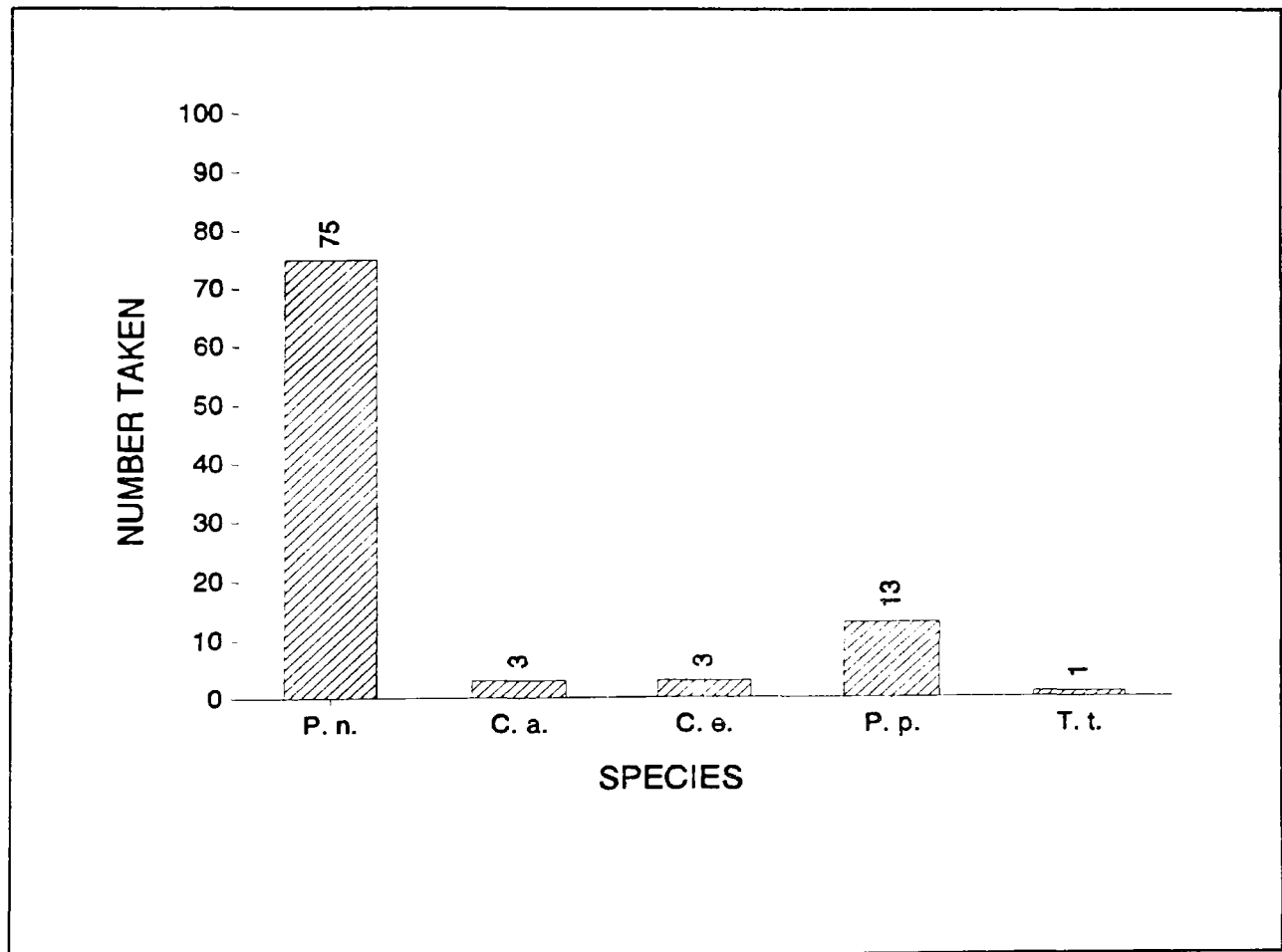
is Qinghai Wildlife Management and Protection Bureau, which receives 30% of the income.

The legal responsibility each agency assumes is proportional and reasonable to their income from this program. In general, the Ministry of Forestry establishes contact between hunters and local wildlife agencies, defrays expenses of accommodations and transportation while hunters stay in Beijing, and purchases the roundtrip plane or train tickets between Beijing and Lanzhou. The Qinghai Wildlife Management and Protection Bureau provides transportation and accommodation for hunters in Lanzhou and Xining. The Dulan Agriculture and Animal Husbandry Bureau provides transportation, field, and hotel facilities to the hunters. In Dulan, the Dulan Agriculture and Animal Husbandry Bureau has put income from the International Hunting Program to broad use. Basically, the income is spent on activities that are wildlife related. The Bureau has submitted a portion of the income to the county's revenue. The Bureau also donates a small amount of its income to 2 local elementary schools. This is of great political and social importance for future wildlife management programs.

#### Gross Income from the Program

Hunted species in Dulan International Hunting Area included blue sheep, Tibetan gazelle, white-lipped deer

(stopped in 1990), and snow cocks. Argali were relatively abundant in the Hunting Area according to Zhen and Zhu (1990), but hunting of argali was prohibited by the Ministry of Forestry because of the uncertainty concerning taxonomy of the argali in Qinghai. The most abundant species in the Hunting Area was blue sheep, which comprised 82% of the animals taken. Since the opening of Dulan International Hunting Area, 75 blue sheep were shot by hunters (Fig. 11).



**Fig. 11.** Numbers of animals taken from 1985 through 1991 (where P.n.= *Pseudois nayaur*, C.a.= *Cervus albirostris*, C.e.= *C. elaphus*, P.p.= *Procapra picticaudata*, and T.t.= *Tetraogallus tibetanus*).

Fees paid by hunters for their trophies are relatively large. A service fee (transportation, lodging, food, etc.) of approximately US\$2,800 was charged for each hunter. The license fee usually cost a hunter US\$300. Trophy fees for different species vary and were adjustable according to the number of hunters during the previous year. A trophy fee of US\$2,400 was paid for a blue sheep. Trophy fees in the PRC range from \$10 for ducks and \$18,000 for argali. Profits from the income were high, most key informants interviewed indicated that great profit were made from the Program. For more information concerning fees applied in the International Hunting Program , refer to APPENDIX II on page 73.

## DISCUSSION

Pastoral economies developed in open arid regions unsuitable for agriculture. Traditional pastoralism, often associated with hunting and gathering, has for a long time been a stable and sustainable means of subsistence. Nomad herders drove their livestock over large territories, the boundaries of which usually were determined by custom. Herds supplied most needs, and essential products such as salt were obtained by exchange or barter. Hunting sometimes provided game meat, especially in times of scarcity. As long as the carrying capacity of the ecosystem was not exceeded, a situation of equilibrium with the environment prevailed. However, along with market reform and human population growth, nomadic pastoral systems are being threatened by overstocking and consequent desertification. The consequence is detrimental to wildlife.

The introduction of trophy hunting programs has provided the nomadic people economic incentives. Consequently, local people are becoming aware of the advantages of conserving wildlife. The international hunting programs also provided local people opportunities to interact with people from the outside world. This is a special form of incentive because many of the local herders

were eager to see outsiders, especially foreigners. This kind of interaction may have long-term impacts on local communities if it can be sustained. The Hunting Program also opened a channel for management officials to contact local people and share and exchange ideas for promoting wildlife conservation and management in the Hunting Area.

The status of argali on the Tibetan Plateau has been argued for almost a decade. So far, no detailed study has been conducted to address this argument. If the argali in the Hunting Area could be hunted legally, the income from the International Hunting Program could be increased considerably. The investigation by Zhen and Zhu (1990) in 1986 indicates that the argali population in the Hunting Area is relatively high. There were concerns that the Chinese wildlife management agencies would lose needed funds with the lack of American hunters because of the prohibition of argali hunts by American hunters due to a U.S. Fish and Wildlife Service Rule in 1992 (U.S. Fish and Wildlife Service, 1992).

There is evidence that both Gouli and Balong hunting camps have been successful since the experimental hunt in 1985. Blue sheep populations at both camp sites are high enough to meet the needs of trophy hunters. Local hunting of blue sheep should be allowed if necessary management regulations can be formed. Absolute prohibition of utilization of such abundant species may result in the



discredibility of related wildlife protection laws. Mongolians and Tibetans have lived in the Hunting Area for thousands of years. Though hunting is a sideline for local Mongolians, hunting by the local people has never been the reason for a serious decline of any species. In contrast, non-local human activities, such as gold mining and marmot hunting, have provided non-local poachers opportunities to poach musk deer, red deer, white-lipped deer, and brown bear.

In Qinghai, extinction of musk deer, snow leopard, and brown bear in most of their habitat has been caused by non-local harvests. In Dulan International Hunting Area, musk deer have been shot to the brink of extinction by the non-locals during the past 20 years. Brown bears were common 30 years ago, but seldom have been seen during the last 5 years (Northwest Plateau Institute of Biology (CAS), 1989; Qinghai-Gansu Survey Team of the Chinese Academy of Sciences, 1964; Qinghai Wildlife Management and Conservation Office, 1992). The cash income often outweighs the disincentive of fines for the poacher. Poachers are mostly gold miners. Since the opening of the International Hunting Area, local nomads in the Hunting Area have served as game guards and patrolled regularly between hunting seasons. Though poaching has not been completely eliminated, the potential and the value of local involvement in wildlife management programs has become evident.

As the Director of the Dulan Agriculture and Animal Husbandry Bureau said when I interviewed him: "In the long run, conservation will bring every one of us benefits, but local people are realistic. If they can not get direct benefit from a program, they usually will not be interested in it...in Balong and in Gouli, we find it very easy to get support from the local nomads in our anti-poaching programs..."

Wildlife protection is better in Dulan International Hunting Area than anywhere else in Qinghai Province (Dulan International Hunting Office, 1992; Gong, 1987). Most of the managers in the wildlife agencies pointed out that this is the direct consequence of economic incentives provided to the local people. Local people receive considerable income directly from the International Hunting Area. Indirectly, they receive benefits such as road paving, pasture construction, and support for local elementary education. Attitudes of local people tend to be positive and supportive of the International Hunting Program in Dulan.

Certain factors may cause biased results. Generally speaking, there is a gender bias because, in both Tibetan and Mongolian cultures, women are not considered the head of a family. If a respondent happened to be a female, most of the answers tended to be 'no-opinion'.

Casley et al. (1987) maintained that the livestock of nomadic people are difficult to census; however, they were

not difficult to enumerate because the herders knew just how many they had. Finding the respondents, rather than their livestock was difficult. If the respondents were located, their livestock were with them. Clearly, a survey of nomadic people--any survey--requires a tailor-made sample design, survey methodology, and enumeration technique.

The results generated by my study have their implications in the PRC. In any natural resource conservation program, provision of economic incentives to local residents can secure, or at least can cultivate, their interest in positive participation. Equally important, provision of non-monetary incentives can play a role in strengthening conservation programs.

### **Suggestions for Further Research**

In other provinces with international hunting programs, duplicate studies need to be conducted to confirm the findings of this study.

Although biological studies are urgently needed to evaluate wildlife population status in Dulan International Hunting Area, more sociological studies are needed to further investigate the potentials and alternatives for better management and conservation of wildlife resources. The rapid low-cost data collection methods used in my study enabled a general understanding of the International Hunting

Program and the involvement of local people. Highly formal survey methods should be applied in the future, whenever circumstances allow further exploration of potentials and alternatives concerning local involvement in wildlife conservation activities.

## LITERATURE CITED

- Babbie, E. 1989. The practice of social research. Fifth ed. Wadsworth Publishing Co., Belmont, California. 501pp.
- Backstrom, C. H., and G. Hursh-César. 1981. Survey research. Second ed. Macmillan Publishing Company, New York. 436pp.
- Cai, G. Q., Y. S. Liu, Z. J. Feng, and others. 1992. Report of investigation on mammals in the typical habitat in Qinghai Province--results of Sino-American zoological survey in Qinghai Plateau Part III. *Acta Biologica Plateau Sinica* 11:63-90. (In Chinese with abstract in both Chinese and English)
- Casley, D. J., and D. A. Lury. 1987. Data collection in developing countries. Second ed. Oxford Univ. Press, New York. 225pp.
- Child, G. 1984. Managing wildlife for people in Zimbabwe. Pages 118-123 in J. A. McNeely, and K. R. Miller, ed. National parks, conservation and development: the role of protected areas in sustaining society. Smithsonian Institute Press, Washington D. C.
- China Wildlife Conservation Society. 1992. An overview on developing and promoting international hunting

programs. Committee of China Wildlife Conservation Society. 5pp. (In Chinese)

Dulan Agricultural and Animal Husbandry Bureau. 1987. Current status and prospects of Dulan International Hunting Area. Dulan Agricultural and Animal Husbandry Bureau. 9pp. (In Chinese)

Dulan International Hunting Office. 1992. A introduction of wildlife resources and international hunting in Dulan County. Dulan International Hunting Office. 6pp. (In Chinese)

Gong, G. 1987. A brief proposal for opening of Dulan International Hunting Area. Dulan Agricultural and Animal Husbandry Bureau. 9pp. (In Chinese)

Kumar, K. 1987. Rapid, low-cost data collection methods for AID. AID Program Design and Evaluation Methodology Report No. 10, Agency for International Development. 34pp.

McNeely, J. A. 1988. Economics and biological diversity: Developing and using economic incentives to conserve biological resources. IUCN, Gland, Switzerland. 236pp.

Northwest Plateau Institute of Biology (CAS), editor. 1989. Fauna of economically valuated animals in Qinghai Province. Qinghai People's Press, Qinghai, China. 735pp. (In Chinese)

- Qinghai Agricultural and Animal Husbandry Planning committee. 1982. Designation of natural resources in Qinghai Province. Qinghai Agricultural and Animal Husbandry Planning committee. 42pp. (In Chinese)
- Qinghai Forestry Bureau. 1990. Mengda Nature Reserve, Qinghai. Xining People's Press. 76pp. (In Chinese)
- Qinghai Wildlife Management and Conservation Office. 1988. Qinghai wildlife management and protection manual. Qinghai Wildlife Management and Conservation Office. 80pp. (In Chinese)
- Qinghai-Gansu Survey Team of the Chinese Academy of Sciences. 1964. Survey report on mammals in Qinghai and Gansu. Science Press, Beijing. 80pp. (In Chinese)
- Qinghai Wildlife Management and Conservation Office. 1992. Survey on wildlife resources in Dulan International Hunting Area, Qinghai. Qinghai Wildlife Management and Conservation Office. 11pp. (In Chinese)
- U.S. Fish and Wildlife Service. 1992. Addition of argali to list of endangered and threatened wildlife (final rule). Federal Register 57:121. (50 CFR Part 17, June 23, 1992)
- Zhen, J., and S. W. Zhu. 1990. Some ecological information on argali (*Ovis ammon*, Hodgson) in Burhanbuda Mountains, Qinghai. *Acta Theriologica* 10:304-307.

APPENDIX I

Informal survey, Questionnaire (Sample Set, translated from Chinese).

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Survey on Management Problems, Conservation Potentials  
and Local Involvement  
In Dulan International Hunting Area  
Qinghai Province, People's Republic of China

Questionnaire Set I

Thesis Study Conducted by

Liu Yongsheng

Cooperative Wildlife Research Unit  
University of Montana  
Missoula, MT 59812 USA

No.: \_\_\_\_\_.  
Place of Interview: \_\_\_\_\_.  
Date of Interview: \_\_\_\_\_.  
Name of Translator: \_\_\_\_\_.  
Language Used: \_\_\_\_\_.  
Date of Transcription: \_\_\_\_\_.



## Section 1: Family Characteristics

Q1. What is your name? \_\_\_\_\_ .Sex: \_\_\_\_\_ .

Q2. How large is your family? \_\_\_\_\_ .

Q3. How many sheep, goat, yak, or cattle are owned by your family?

Sheep: \_\_\_\_\_ ;  
 Goat: \_\_\_\_\_ ;  
 Yak: \_\_\_\_\_ ;  
 Cattle: \_\_\_\_\_ .

Q4. How much meat, or money, does your family need to provided to the government as your annual assignment each year?

Q5. How much income can your family get from selling wool and mutton through the "free market" channel?

\_\_\_\_\_ .

Q6. Could you provide us some information concerning your family's pasture pattern?

## Section 2: International Hunting Program (IHP)

Q7. Have you heard about the IHP in this township?

Yes: \_\_\_\_\_ ; No: \_\_\_\_\_ .

Q8. Have you or any member in your family ever participated in the IHP directly, for example, working as a game guide, renting horses, etc.? How many times/year?

Yes: \_\_\_\_\_ ;  
 Renting Horses, Time/Year: \_\_\_\_\_ ; Horses/time: \_\_\_\_\_ ;

Hunting Guide, Time/Year: \_\_\_\_\_;  
 Game Guard, Time/Year: \_\_\_\_\_;  
 Other: \_\_\_\_\_.

Is there any other reason that your family is involved in this program?

No: \_\_\_\_\_.

Is there any particular reason that your family is not involved in this program?

Q9. How much does your family make/year from this?

Renting Horses: \_\_\_\_\_;  
 Hunting Guide: \_\_\_\_\_;  
 Game Guard: \_\_\_\_\_;  
 Other: \_\_\_\_\_.

Q10. Besides monetary benefits, what other benefits can the IHP contribute to your family?

Improvement of transportation: Yes: \_\_\_\_\_; No: \_\_\_\_\_.  
 Medical access: Yes: \_\_\_\_\_; No: \_\_\_\_\_.  
 Cultural interaction: Yes: \_\_\_\_\_; No: \_\_\_\_\_.

Q11. Do you or don't you think that wildlife increased since the opening of Dulan International Hunting Area? If yes, in what ways?

Increased: \_\_\_\_\_;  
 Not increased: \_\_\_\_\_;  
 No opinion: \_\_\_\_\_.

Q12. Do you or don't you think the IHP has negative impacts on the local community? If yes, what are they?

Q13. Does the IHP have any negative impacts on wildlife? If yes, what are they?

Q14. Could you please make any general comments on the IHP?

Q15. Could you please make any suggestions that you think can help to improve the IHP so local people and wildlife can benefit better from this program?

### Section 3: Local Utilization of Wildlife Resources

Q16. Do you or don't you think wildlife resources are valuable for local people?

Yes: \_\_\_\_\_;  
No: \_\_\_\_\_;  
Other: \_\_\_\_\_.

Q17. Why do you think so?

Q18. In what ways can your family benefit from wildlife resources?

Q19. Does your family collect dry antlers for extra income? How much can you make from this?

Q20. Does your family hunt blue sheep for meat or for other purposes every year? If yes how many?

Yes: \_\_\_\_\_; Number taken: \_\_\_\_\_; Purpose: \_\_\_\_\_;  
No: \_\_\_\_\_;  
Other: \_\_\_\_\_.

Q21. How about gazelle?

Yes: \_\_\_\_\_; Number taken: \_\_\_\_\_; Purpose: \_\_\_\_\_;  
No: \_\_\_\_\_;  
Other: \_\_\_\_\_.

Q22. How about Tibetan antelope?

Yes: \_\_\_\_\_; Number taken: \_\_\_\_\_; Purpose: \_\_\_\_\_;  
 No: \_\_\_\_\_;  
 Other: \_\_\_\_\_.

Q23. How about argali?

Yes: \_\_\_\_\_; Number taken: \_\_\_\_\_; Purpose: \_\_\_\_\_;  
 No: \_\_\_\_\_;  
 Other: \_\_\_\_\_.

Q24. How about red deer?

Yes: \_\_\_\_\_; Number taken: \_\_\_\_\_; Purpose: \_\_\_\_\_;  
 No: \_\_\_\_\_;  
 Other: \_\_\_\_\_.

Q25. How about white-lipped deer?

Yes: \_\_\_\_\_; Number taken: \_\_\_\_\_; Purpose: \_\_\_\_\_;  
 No: \_\_\_\_\_;  
 Other: \_\_\_\_\_.

Q26. Do you or any member of your family hunt other species of wildlife for meat or for other purposes? If yes, what is the quantity?

Yes: \_\_\_\_\_; Species: \_\_\_\_\_; Number taken: \_\_\_\_\_;  
 Purpose: \_\_\_\_\_;  
 No: \_\_\_\_\_;  
 Other: \_\_\_\_\_.

Q27. How severe is the competition for grasses between livestock and wildlife within your pasture? Why?

No opinion: \_\_\_\_\_;  
 Not at all: \_\_\_\_\_;  
 Not severe: \_\_\_\_\_;  
 Severe: \_\_\_\_\_;  
 Very severe: \_\_\_\_\_;

Explanation if any:

Q28. How many livestock are lost to predators such as wolves, foxes, bears, lynx, or snow leopards per year?

Wolf: \_\_\_\_\_; Species/No.: \_\_\_\_\_;  
 Fox: \_\_\_\_\_; Species/No.: \_\_\_\_\_;  
 Bear: \_\_\_\_\_; Species/No.: \_\_\_\_\_;  
 Lynx: \_\_\_\_\_; Species/No.: \_\_\_\_\_;  
 Snow Leopard: \_\_\_\_\_; Species/No.: \_\_\_\_\_;  
 Other species: \_\_\_\_\_; Species/No.: \_\_\_\_\_.

Q29. Do you kill predators? If yes, what species and how many do you or any member in your family kill per year? If no, is there any specific reason for not doing so?

Yes: \_\_\_\_\_;  
 Species, No./Year:

No: \_\_\_\_\_;  
 Reason:

Q30. What other negative impact does wildlife have on your family?

#### **Section 4: Violations of Protection Law and Poaching**

Q31. Is poaching a serious problem or not in this area? (If yes, go to Q32; If no, end of this section.)

Yes: \_\_\_\_\_; No: \_\_\_\_\_;

Q32. What species are most poachers interested in?

Q33. Do you know who the poachers are?

Q34. Could you provide us any poaching cases you know of as examples? (We will not turn them in.)

Q35. Has the IHP improved the poaching situation since its establishment in this area? If yes, how? If no, why not?

Yes: \_\_\_\_\_;  
Aspects being improved:

No: \_\_\_\_\_;  
Reason:

### **Section 5: General Comments**

Q36. What are the major problems in wildlife conservation in this area?

Q37. Do you have any suggestions to solve these problems?

Q38. Overall, what are your suggestions to improve wildlife management and conservation in this area?

## APPENDIX II

Trophy fees charged by the Ministry of Forestry for major species permitted to be hunted in Qinghai Province.

### License fees

\$300 per hunter, discount for groups.

### Service fees

\$2,800 per hunter, discount for groups.

### Trophy fees

<u>Species</u>	<u>Price</u>
Blue sheep	\$2,400
White-lipped deer	\$8,000
Elk	\$3,000
Tibetan gazelle	\$1,200
Goitred gazelle	\$1,200
Wolf	\$500
Fox(s)	\$300
Snow cock(s)	\$150
Ring-necked pheasant	\$100
Duck(s)	\$10