

Improving livelihoods and governance through natural resource management in Afghanistan



**Activity Report of the Ecosystem Health Team in the Wakhan District, Badakhshan
Province, Afghanistan
July 2010**

**(Ranger training, livestock census in Big Pamir and questionnaire assessment of the
success of the foot-and-mouth disease vaccination program)**

Authors: Drs Hafizullah “Noori” and Ali Madad “Rajabi”

Supervised by Dr Stephane Ostrowski



Wildlife Conservation Society

2300 Southern Boulevard · Bronx, NY 10460

Cover Photograph:

Dr. Ali Madad “Rajabi” takes a blood sample from a yak via jugular veinipuncture while Dr. Hafizullah “Noori”, Mr. Sayeed Alam (a Wakhi ranger) and Mr. Zaman (the yak owner) restrain the animal, Darabig settlement in Shikargah Valley, Wakhan district, July 2010.

Contents

I. Summary.....	4
II. Capacity Development and Training Activities.....	4
II.1. Introduction.....	4
II.2. Methodology.....	6
II.2.1. <i>Wildlife health training</i>	6
II.2.2. <i>Range-use study and livestock census</i>	7
II.3. Results.....	8
II.3.1. <i>Wildlife health training</i>	8
II.3.2. <i>Range-use study and livestock census</i>	8
II.4. Discussion.....	9
II.4.1. <i>Wildlife Health Training</i>	9
II.4.2. <i>Range-use study and livestock census</i>	9
III. Health surveillance of livestock.....	12
III.1. Introduction.....	12
III.2. Method.....	12
III.3. Result.....	13
III. 4. Discussion.....	13
IV. Measuring success of the foot-and-mouth disease vaccination program.....	13
IV.1 Introduction.....	13
IV.2. Method.....	14
IV.3. Result.....	15
IV.4. Discussion.....	15
V. Acknowledgments.....	16

**Activity Report of the Ecosystem Health Team in the Wakhan District, Badakhshan
Province, Afghanistan
July 2010**

**(Ranger training, livestock census in Big Pamir and questionnaire assessment of the
success of the foot-and-mouth disease vaccination program)**

Authors: Drs. Hafizullah “Noori” and Ali Madad “Rajabi”

Supervised by Dr. Stephane Ostrowski

I. Summary

A training course for community rangers was conducted between June 27th and July 1st 2010 at Qila-e Panja village in Wakhan Valley by eight staff members of WCS. The main goals of the training were to enhance the capacity of 42 Wakhi community rangers, and improve their ability to survey wildlife. It combined theory and practice.

On June 28th we presented to the community rangers a lecture on diseases of concern to livestock and wild ungulates followed by a practical session. We used a PowerPoint presentation to illustrate and highlight the main topics of our lecture, then we slaughtered a sheep and taught the rangers how to identify different disease symptoms and lesions, how to take samples and report any anomaly they could observe on sick or dead animals.

After the training, accompanied by Dr. Ismail (WCS), we taught three community rangers (Mr. Saeed Alam, Mr. Ayan Big and Mr. Mirza Ali) selected among the best of the 42 trained rangers in Qila-e Panja to accurately census livestock in Wakhi settlements of Pamir highlands. During this mission we also took blood samples from livestock for disease diagnosis and epidemiological surveillance purposes. Eventually we distributed gps hand-held units to herders and shepherds in four different settlements (Jelmasirt, Ali Su, Dan Abakhan and Ganj Khaton) in order for them to record geographical locations of their herds throughout the summer 2010 grazing season. This work intends to document the summer range-use in Big Pamir of groups of livestock.

II. Capacity Development and Training Activities

II.1. Introduction

In 2008 WCS provided a preliminary training in wildlife-related topics to 16 Wakhi villagers from the Wakhan District (Fig. 1) selected by the Community Development Council (CDC) representatives of each village.

In 2009 the number of participants was increased to 42 in order to reach the target of one ranger on average from each Wakhi village. During 2009 the rangers received continuous

training. Rangers are hired to patrol conservation areas and report sightings, hunting events and mortality of wildlife.

This year WCS committed to provide a follow-up training for the rangers in June and July 2010. The training focused at improving their skills and capacities. Our contribution to the training was to provide them with an overview of wildlife diseases and to highlight the importance of their routine patrol work also as a health surveillance exercise.

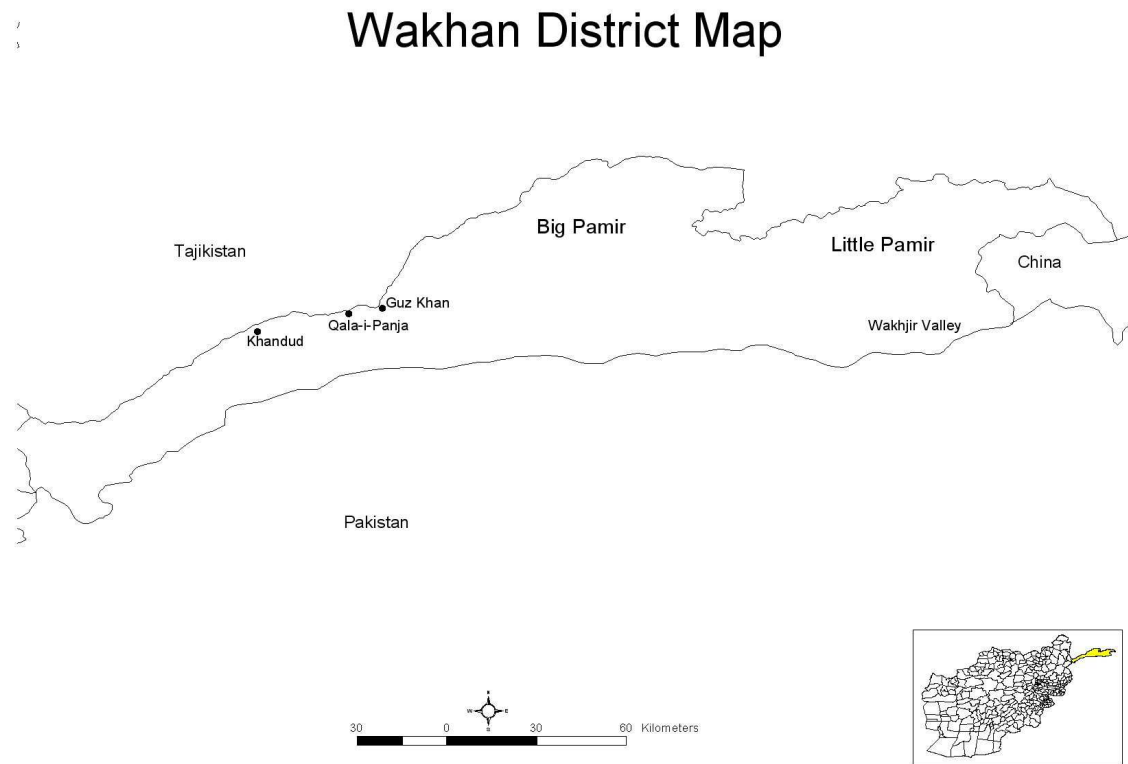


Figure 1: Map of the Wakhan District where we undertook all activities in July 2010.

In 2007 and 2008, as part of a study to document the range-use of Wakhi livestock in Big Pamir, we distributed hand-held gps units to Wakhi herders who we trained to use this equipment. The information was retrieved at the end of the summer grazing season for the sheep and goat herds of Qabal Gah, Dara Big, Nakchirshitk, Aba Khan, Senin, Kund-u-Thur, Mulung-Thun and Asan Katich grazing areas. In addition to this work we also fitted 6 GPS collars on domestic free-ranging yaks in 2008 in Shikargah, Kund-u-Thur and Nakchirshitk. Yet because of the limited number of gps hand-held units four main herds of sheep and goats could not be tracked during this study. The present mission aimed at training a selected number of herders at using these units for the ‘missing’ herds in Jelmasirt (Jabarkhan), Manjulak (Aba Khan), Ali Su and Ganj Khaton, and at performing a large-scale livestock count in Big Pamir. We took the opportunity of the livestock count to teach rangers accuracy, exhaustiveness and perspicacity in order for them to be able to carry out similar census operations in the future.

II.2. Methodology

II.2.1. Wildlife health training

The wildlife health training was delivered in two parts; a theoretical lecture on health issues at the wild ungulate and livestock interface and a practical training using a slaughtered sheep as teaching material.

The theoretical lecture used a computer presentation delivered with a video projector over 45 minutes. The first part of the lecture was presented by Dr. Ali Madad "Rajabi" and the second part by Dr. Hafizullah "Noori". Attendees included 42 Wakhi rangers and the WCS staff present in Qila-e Panja. In brief the lecture focused at improving the knowledge and awareness of the rangers in wildlife health topics. While surveying wildlife in the Pamirs and the Hindu Kush, rangers should be capable of recording the health status of the wildlife they observe (eg. occurrence of clinical symptoms visible without handling animals). They were also taught about the measures they should follow in case they find the carcass of a wild animal, such as personal sanitary precautions, external examination of the carcass, sampling, and evidence of the cause of death, documentation and reporting routine.

After the theoretical part of the training we gave a practical training and explained to the trainees how to complete reporting forms of health status of sick or dead wildlife. Then we slaughtered an adult sheep in order for them to see and practice the post-mortem basic gross lesion evaluation, external examination, and sampling methods.

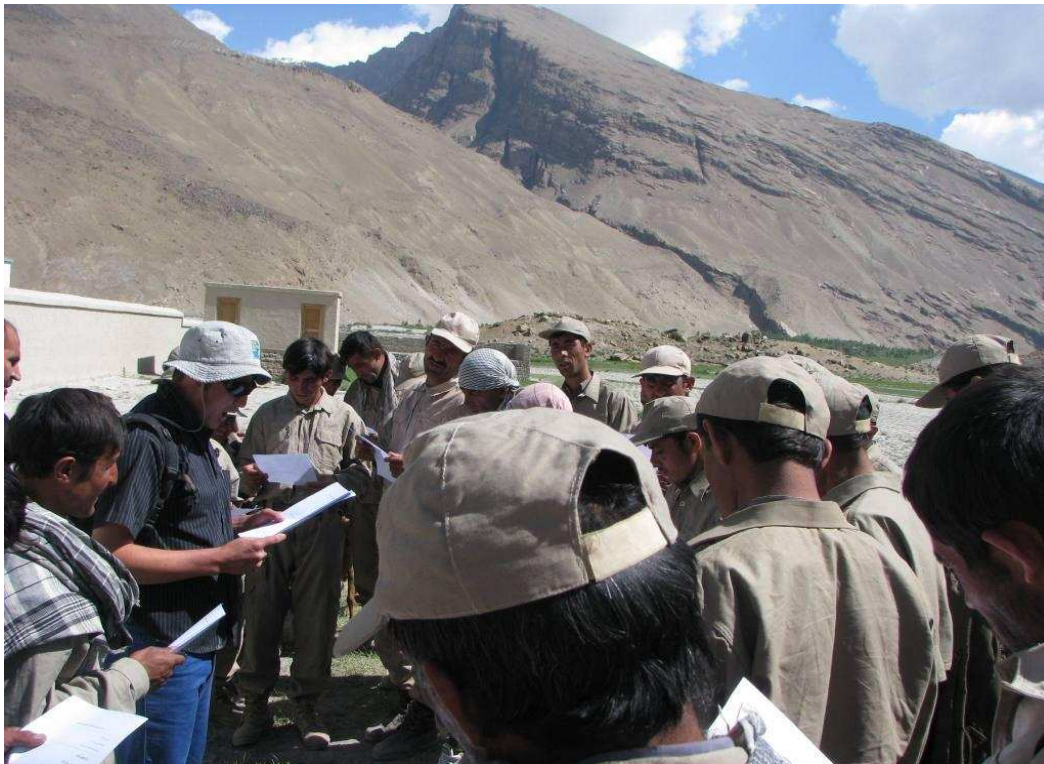


Plate 1: Dr Ali Madad "Rajabi" explains to the rangers how to use a health recording form for sick or dead wildlife they may encounter during their work, Qila-e Panja, Wakhan District, 28 June 2010.

II.2.2. Range-use study and livestock census

On the 4th of July we departed with the three rangers with highest scores at the training evaluation and Dr Esmail (WCS staff member) to the Big Pamir from the village of Goz Khun. After 4 days of walking we reached Dalan settlement in the lower reaches of Jermasirt pasture and started our work which consisted of counting livestock, training and distributing gps units and blood sampling of livestock. We provided one hand-held gps unit (Garmin60) to Mr Safar Boy the head of Jabarkhan settlement. He selected 2-3 persons to collect gps locations two times a day while pasturing the sheep and goat herd. We taught these people how to use the gps units as well as the data collection schedule. It was agreed that WCS will compensate this extra load of work by giving 50\$/month to the settlement. We also distributed GPS units to three other settlements in Ali Su, Dan Abakhan, Ganj Khaton and followed a similar teaching procedure.

The census of livestock was carried out in all Wakhi settlements in Big Pamir in order to better understand the composition and abundance of Wakhi livestock in the western Big Pamir, where a protected area is planned to be established. We trained three rangers to accurately count large groups of animals. We taught them the concept of precision by counting the groups first, then asking them to count the same groups and comparing their count results with ours. We also had them experience different methods of counting (for example with and without hand counters).



Plate 2: Dr.Hafizullah “Noori” teaches post-mortem external examination using a freshly slaughtered adult sheep as educational material, Qila-e Panja, Wakhan District, 28 June 2010.

We counted the animals either when they were returning to the night corrals or, in case people were reluctant to let us count their animals in settlements, from far away with binoculars when they were grazing altitude pastures during the day.

II.3. Results

II.3.1. Wildlife health training

The rangers were divided in several groups, worked cooperatively with each other and completed under our supervision the wildlife health reporting forms. They all had the occasion to check and report about the body condition of the slaughtered sheep. We did not find any external or internal parasites in this animal.

II.3.2. Range-use study and livestock census

We distributed four hand-held gps units in four different Wakhi settlements in Big Pamir. In Jabarkhan camp (Jermasirt pasture) three persons were trained to use the equipment; Mr. Safar boy, Mr. Rostam big and Mr. Qodus boy. In Manjulak camp (Manjulak pasture) the trained persons were Mr. Dilawar Khan, Mr. Big Mohammad and Mr. Fize Ali. In Abakhan camp (Ali Su pasture) we taught Mr. Samad and Mr. Abdullah and in the camp of Ganj Khaton (Manjulak pasture) we taught Mr. Abdul Ahmad. We directed the herders to take one location fix of the herd of sheep and goats two times per day at 9:00 am and at 3:00 pm. For each gps unit we provided 3 pairs of extra batteries, we also provided wrist watches to those who did not have any.

We counted the livestock of all Wakhi settlements in Big Pamir with the help of three Wakhi rangers. Livestock were discriminated according to species and age. Census results will provide important information concerning livestock productivity, risk of disease transmission to wild ungulates and extent of overgrazing threat on pastures. Census results are detailed in Table 1. Overall we counted 13,552 heads of livestock in Big Pamir during this period, including 245 cattle, 930 yak, 4,008 goats, and 8,369 sheep.

Table 1: Number of Wakhi livestock in different camps of Big Pamir between 7 and 14 July 2010. The census was carried out by the veterinary team with the help of Wakhi rangers.

Location	No/cows	No/calf	Adult yaks	young yaks	No/sheep	No/lamb	No/goats	No/kids	Date
Kund-u-Thur	70	0	85	17	550	120	430	168	13/7/10
Mulung Than	0	0	70	10	326	155	90	70	13/7/10
Asan Katich	25	0	60	16	300	100	180	50	13/7/10
Voygd Boy	10	0	46	5	310	200	132	80	13/7/10
Darah Big	0	0	32	9	280	260	90	60	12/7/10
Ganj Khaton	26	1	30	6	300	90	150	40	12/7/10
Nakchirshitk	10	17	44	16	364	190	185	110	11/7/10
Manjulak	3	0	49	12	404	200	195	80	10/7/10
Jabarkhan	0	0	100	20	800	150	150	50	8/7/10
Boqbon	0	0	18	2	245	118	190	88	9/7/10
Buloq	0	0	12	8	213	148	105	82	8/7/10
Lopghul	0	0	100	26	470	304	180	105	7/7/10
Senin	18	0	30	5	263	114	145	105	14/7/10
Qabal Gah	17	0	24	13	442	220	230	155	12/7/10
Chashmayen	8	0	25	5	250	107	50	13	13/7/10
Wuzed	0	40	30	5	196	180	180	70	14/7/10
TOTAL	187	58	755	175	5,713	2,656	2,682	1,326	

II.4. Discussion

II.4.1. Wildlife Health Training

The ranger presentation carried out in Qila-e- Panja for half a day on disease transmission between wildlife population and livestock was a very new topic of concern for all Wakhi community rangers. They did not anticipate that some diseases could affect both livestock and wildlife. Increasing their level of understanding of the disease transmission risk will hopefully translate in increased health considerations in the management of their livestock. It will also make them aware of the possible risk of disease transmission to wild ungulates with the risk of losing their wildlife and a possible future source of income through tourism.

II.4.2. Range-use study and livestock census

WCS has identified three main threats to wild ungulates in the Afghan Pamirs: hunting, overgrazing by livestock and disease transmission. Hunting used to be a very significant threat until recently. Since the involvement of WCS in 2006 hunting pressure seems to have decreased, at least in Western Big Pamir. Overgrazing is still a major threat, yet difficult to estimate. The range-use study using gps units will clarify the grazing pattern of livestock herds in Big Pamirs and allow a better management of livestock grazing pressure and lower the risk of disease spill-over to wild ungulates sharing common pastures.

Livestock counts will also help in reaching these objectives. We will perform an additional count in autumn 2010 to estimate the mortality rate of livestock in Big Pamir in summer. It is also possible to compare the results of the recent counts with the measurements we made in 2006-2007. Our earlier survey results proposed an average of 9,258-9,533 shoats (= sheep + goats), and 787-807 yak in summers 2006 and 2007 in Big Pamir. Results of our July 2010 census suggest a minimum increase of 29.8% for shoats and 15.2% for yak in Big Pamir over a period of three years. In the absence of other reliable census results prior to 2006, it is not possible to estimate whether this increase translates a continuous trend of sustained population growth. Yet it is unquestionable that livestock grazing the west of Big Pamir have increased since 2006/2007. Following a harsh winter in 2008/2009 that claimed many livestock victims in Wakhan, the winter 2009/2010 has been remarkably clement with only minor losses reported in livestock populations, certainly contributing to the net increase of livestock since 2006/2007.



Plate 3: Dr. Ali Madad “Rajabi” trains Mr. Dilawar Khan, a Wakhi shepherd to use a gps unit in order for him to record the locations of its herd of sheep and goats during summer, Ali Su, Big Pamir, Wakhan District, 9 June 2010.



Plate 4: Mr. Mirza Ali, a Wakhi ranger counting livestock with a hand-counter in Big Pamir, Asan Katich, Big Pamir, Wakhan District, July 2010.



Plate 5: Two Wakhi rangers (Mr. Sayeed Alam and Mr. Ayan big) counting lambs and kids in Darah Big settlement, Big Pamir, Wakhan District, 12 July 2010.



Plate 6: Dr.Hafizullah “Noori” counting livestock in Shikargah Valley near, Qabal Gah settlement, Big Pamir, Wakhan District, July 2010.

III. Health surveillance of livestock

III.1. Introduction

The upper Wakhan is a remote area where animal health structures and veterinary auxiliaries were absent and livestock disease status largely unknown until the involvement of WCS. Since 2006 we have sampled blood from livestock in upper Wakhan and have documented their serological exposure to Blue Tongue, Foot-and-Mouth Disease and Rinderpest viruses and the agents of Q fever, Toxoplasmosis and Chlamydiophylosis. Between 2010 and 2012 we plan to pursue disease screening in livestock, focusing on two zoonotic diseases of major economical concern: brucellosis and tuberculosis. Brucellosis will be tested serologically and tuberculosis with an intra-dermal reaction test. During this present mission we started sampling blood for brucellosis exposure detection.

III.2. Method

In each investigated village or settlement we first met with heads of Shora or settlement and explained to them the main purpose of disease screening. The heads of Shora then introduced us to one of the Shora members who would facilitate and coordinate our blood sampling operation. Then we visited each house and took blood samples from the jugular vein in sheep, goats, cattle and yak. The equipment for blood sample collection includes needles, needle holders and vacuum dry tubes (vacutainers). We sampled 5-9 ml blood from each sampled animal, allowed the blood to clot at room temperature for 3-5 hours and centrifuged the tubes for 8-10 minutes with a manual centrifuge. Sera separated from the rest of the clotted blood were stored in liquid nitrogen at -196°C .



Plate 7: Drs.Hafizullah “Noori” and Ali Madad “Rajabi” processing blood samples at the WCS office in Qila-e Panja, Wakhan District, July 2010.

III.3. Result

We collected blood from sheep, goats, cattle and yaks in Wakhan corridor and Big Pamir between 22 June and 18 July 2010. In total we sampled 281 animals (Table 2). We shipped the samples by car to Feyzabad and then to WCS headquarter in Kabul where they will be kept in a freezer (-18°C) until being processed at the laboratory.

Table 2: Number and species of Wakhi livestock blood-sampled in different camps of Big Pamir and in villages of Wakhan Valley.

Location	Goat	Sheep	Yak	Cattle
Kund-u-Thur	0	0	6	0
Jabarkhan	0	4	0	0
Asan Katich	0	0	6	0
Voygd Boy	0	0	2	0
Darah Big	0	0	2	0
Dahan Abakhan	2	8	0	0
Buloq	0	0	3	0
Lopghul	0	0	4	0
Zarnow	1	5	6	0
Sarkand	8	7	0	5
Qila-e Panja	14	23	0	64
Peakot	19	17	0	0
Avgarch	12	19	1	14
Sast	9	12	0	8
TOTAL	65	95	30	91

III. 4. Discussion

Although 281 samples constitute already a relatively large sample size, it may not allow detection of diseases of low prevalence in the population. In Tajikistan brucellosis prevalence in several districts is less than 5%. We therefore plan to collect 400-500 additional samples in September/October 2010. This relatively large sample size would allow to detect with 99% certitude at least one positive animal, even if the disease prevalence in the population is as low as 0.5%.

IV. Measuring success of the foot and mouth disease vaccination program

IV.1 Introduction

Foot and mouth disease (FMD) is an extremely contagious viral (family Picornaviridae) disease of cloven hoofed domestic and wild animals. It is endemic in most of Asia (including the Middle East), Africa and South America. There are seven immunologically distinct serotypes and over 60 subtypes of the FMD virus (FMDV). The disease is endemic in Afghanistan where it occurs as regular epizootics. It has a direct effect on food security as it drastically reduces milk production in cows, reduces their fertility rate and incapacitates breeding bulls and oxen. A new serotype (Asia 1) was identified in Afghanistan in March 2001 (S. Yingst / CVL-Kabul pers. comm.), bringing the total of known serotypes to three for the country (A, O and Asia 1).

Results of our earlier investigations showed that the disease is endemic in Wakhan and that at least two serotypes (O and Asia 1) circulate in the area. In 2009 we carried out a mass vaccination campaign against FMD in cattle and yak in upper Wakhan. We estimated that at least 85% of cattle and yak in the area received at least one vaccination shot. In April 2010 we conducted a questionnaire survey in upper Wakhan to evaluate the level of protection of vaccinated animals since May 2009. We found that vaccinated animals were significantly less likely to develop a clinical FMD disease than those which were not vaccinated. However we were confronted by the bias that a large majority of animals in the surveyed area has been vaccinated and few remained non-vaccinated. We therefore decided to extend the questionnaire survey to lower Wakhan where no cattle or yak had been vaccinated against FMD in 2009. The present work reports briefly about this survey. Final results of the vaccination effectiveness survey will be compiled and published in a report after the autumn vaccination campaign.



Plate 8: Dr.Hafizullah “Noori” interviewing a livestock owner about the occurrence of FMD disease in his livestock herd since May 2009, Rorong village, Wakhan District, April 2010.

IV.2. Method

On 19 and 20 July 2010 we drove from Qila-e Panja to Ishkeshim, visiting villages between Pak and Fitr. In each village we interviewed 4-6 livestock owner and asked them about the occurrence of foot-and-mouth disease (“Zikpod”) since May 2009.

Respondents were interviewed individually. Questions were asked consistently in the same order between respondents.

IV.3. Result

We interviewed 70 livestock owners between the villages of Pak and Fitr. Forty-nine respondents (70%) said that they had observed clinical cases of FMD in their livestock since May 2009. Most commonly affected livestock were cattle followed by sheep and goats (none of the 70 respondents had domestic yak). Animals of all ages were affected and in the large majority they recovered. Nine respondents thought that the disease had caused abortions. Four respondents admitted that they lost animals due to the disease, 2 goats for one of them and two cattle for the other three. Twenty-one respondents answered that they had had no clinical cases of FMD in their livestock since May 2009.



Plate 9: Dr. Ali Madad “Rajabi” interviewing a livestock owner about foot-and mouth disease occurrence in his herd, near Nishtkhowr village, Wakhan District, April 2010.

IV.4. Discussion

According to provided responses FMD actively circulates in lower Wakhan Valley between Qila-e Panja and Fitr villages. Livestock in the area have apparently never been vaccinated against FMD, yet two paraveterinarians sponsored by AKF operate in the area. It appears that they do not vaccinate livestock against FMD. Discussions will have to be developed with these veterinary auxiliaries to better understand their vaccination strategies.

Data collected during the present survey will be compiled with those collected during April 2010 and analyzed together. The effectiveness of FMD vaccination in Wakhan will be published in a separate report in late 2010 after the autumn mission.

V. Acknowledgments

The study was made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents of the report are the responsibility of the Wildlife Conservation Society, and do not necessarily reflect the views of USAID or of the United States Government.

We thank all the WCS staff at Kabul for logistical and financial support throughout the mission. We thank the three Wakhi community rangers, who helped us counting livestock in Big Pamir and we express gratitude to all Wakhi communities for their help at performing our work duties, and especially blood sampling of their livestock. We also acknowledge Mr. Ghulam Sidiq (WCS driver) who drove us throughout this period.