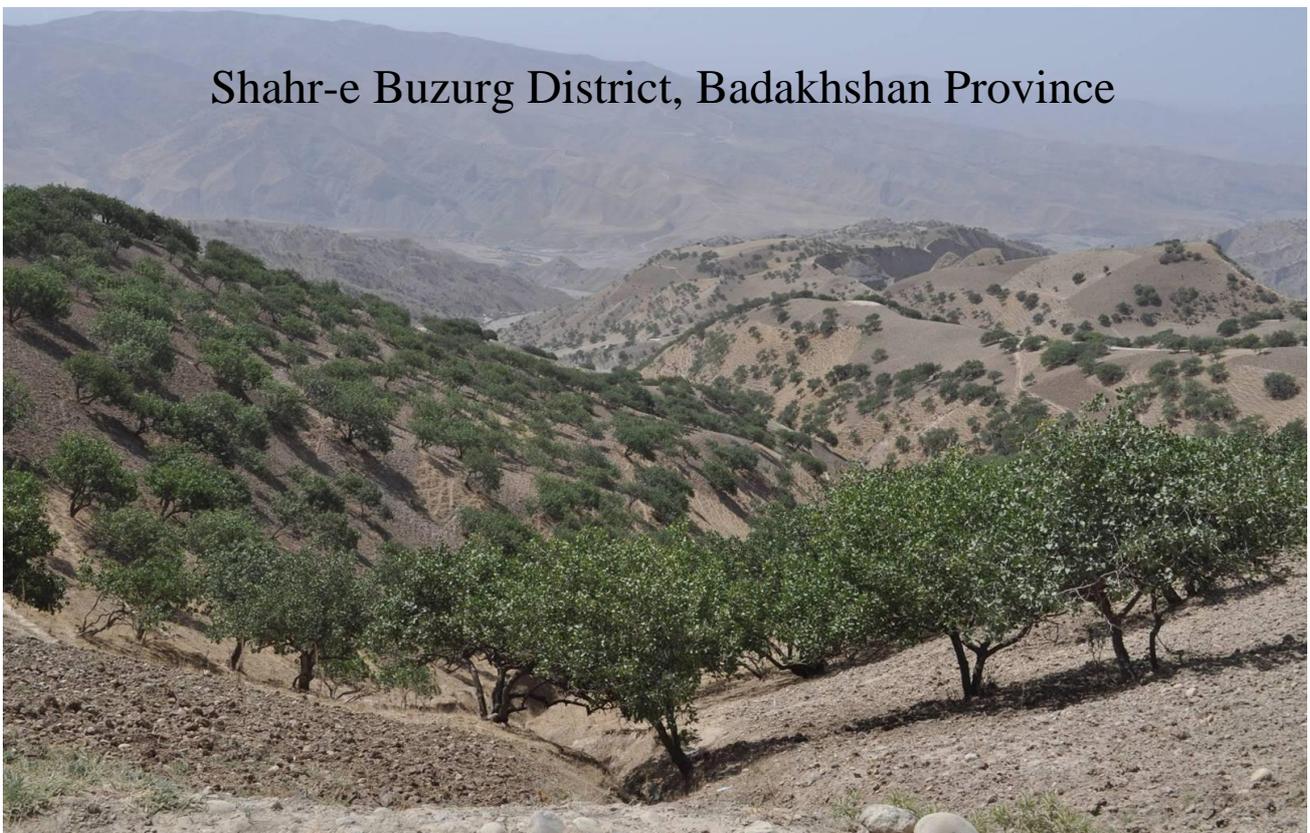




# Biodiversity Reconnaissance Survey

July-August 2011



Shahr-e Buzurg District, Badakhshan Province

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Wildlife Conservation Society, Afghanistan Program



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## Introduction

Afghanistan has been a country marred by conflict for three decades and therefore very little wildlife research has been done since the 1970s, and the current status of most species and their habitats remains unknown.

With funding support from USAID (United States Agency for International Development), the Wildlife Conservation Society (WCS) began to work in Afghanistan in 2006 with projects in the Central, Northeastern and Eastern parts of the country. As part of WCS's Badakhshan Project in the Northeast, a biological survey was conducted in Shahr-e Buzurg District bordering Tajikistan (Figure 1).

Wildlife were said to be abundant in Shahr-e Buzurg during the 1970s, and according to a gap analysis carried out by WCS in collaboration with the National Environment Protection Agency (NEPA) from the Afghan government in 2009, as part of the Program of Work on Protected Areas (PoWPA), it is an area of interest for biodiversity conservation. In addition, Habibi (2003) indicates that Shahr-e Buzurg is part of the historical range for the markhor (*Capra falconeri*) in Afghanistan. Therefore surveying this area has been viewed as a priority.

### About Shahr-e Buzurg

Translated to English, the name Shahr-e Buzurg means "Great City" (Wikipedia 2011). It is one of 28 districts in Badakhshan Province. The capital of this district is a town bearing the same name, Shahr-e Buzurg. It is a remote part of Afghanistan with a very poor road network. The northern boundary of the district runs along the Amu Darya river, which is also the international border between Afghanistan and Tajikistan; to the west and southwest the district borders with Takhar Province (Figure 1); and its eastern boundary is shared with Yawan and Yaftal-e Payan Districts of Badakhshan. Shahr-e Buzurg is divided into five zones and has a population of approximately 42,000 people spread across 74 villages. Villages are far away from each other and people lack public transportation. There are three larger towns which function as trading centers for the district: Shahr-e Buzurg (town), Abganda and Sharif Abad.

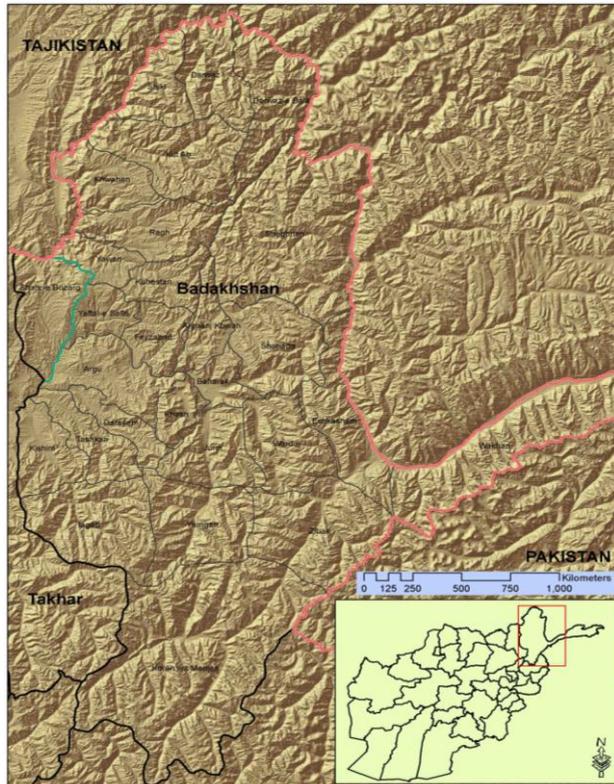


Figure 1: Shahr-e Buzurg District in relation to the other districts of Badakhshan.

Shahr-e Buzurg is one of the poorest districts of Badakhshan and its inhabitants depend heavily on natural resources and agriculture. The major livelihood products coming from natural resources include pistachios, medicinal plants, pastures, fuel wood and gold.

The landscape is mostly undulating terrain with little water. People grow rain-fed wheat (“lalmi”); there is very little irrigated land. In the south of the district people keep sheep, goats, horses, donkeys and cattle, whereas in the north there are less livestock (mostly goats) and cattle.

There are gold mines across the district and the sand of the Amu Darya is said to contain small amounts of the metal. People excavate the sand to extract fragments and powdered gold pieces using traditional methods (Figure 2).



Figure 2: Mine dug by local people in search of gold.

## Aims and objectives

The aim of our survey was to carry out a rapid assessment of wildlife across Shahr-e Buzurg.

The objectives of the survey were to:

1. Assess the status of mammals and birds across the district.
2. Pay particular attention to evidence of markhor still occurring in the area.
3. Carry out villager interviews to understand local perceptions and threats to wildlife and other natural resources.
4. Gather information relevant to establishing a conservation program in the area.
5. Train counterparts, particularly the Ministry of Agriculture.

## Methods

The survey was carried out from August 21st to 30th 2011. The survey team consisted of Zalmai Moheb and Said Naqibullah Mostafawi (WCS), Mawlawi Ainuddin (District Forestry Officer, MAIL), Commander Khan Mohamad (field guide), Habib (driver), and various villagers who acted as field guides.

The survey was split between community interviews and field assessments. A large proportion of the survey was spent interviewing people and educating them, and finding out information about wildlife. We inquired about the presence and status of various species of large mammals. We focused our interviews on the village headman (“Arbob”), village elders, hunters and shepherds because they knew what was in an area in the past and what was there today. We showed people photographs of the large mammals (Table 1), which were known to have been, or suspected to have been historically distributed in the study area. Habibi (2003) was used as a guide in this process. The photos helped the informants identify species and avoid confusion. Besides photos of species found in Badakhshan we also had photographs of some that are not found in the area. We did this as a means of checking whether the informant was misguiding us.

Importantly, during the survey we also tried to educate the people about how they can draw benefits from conserving their wildlife. We explained about the importance of wildlife and told everybody of the successes in Wakhan District. We also informed them about conservation programs in Tajikistan, India and other places.

Table 1: Photos of species shown to informants.

No	Common Name	Scientific Name	Historical Range in the Study Area	
			Yes	No
1	Cheetah	<i>Acinonyx jubatus</i>		√
2	Persian Leopard	<i>Panthera pardus saxicolor</i>		√
3	Snow Leopard	<i>Panthera uncia</i>	√	
4	Common Leopard	<i>Panthera pardus</i>	√	
5	Jungle Cat	<i>Felis chaus</i>		√
6	Leopard Cat	<i>Prionailurus bengalensis</i>	√	
7	Pallas Cat	<i>Otocolobus manul</i>	√	
8	Wild Cat	<i>Felis lybica</i>		√
9	Himalayan Lynx	<i>Lynx lynx</i>	√	
10	Striped Hyena	<i>Hyaena hyaena</i>		√
11	Wolf	<i>Canis lupus</i>	√	
12	Jackal	<i>Canis aureus</i>		√
13	Red Fox	<i>Vulpes vulpes</i>	√	
14	Brown bear	<i>Ursus arctos</i>	√	
15	Asiatic black bear	<i>Ursus thibetanus</i>		√
16	Polar bear	<i>Ursus maritimus</i>		√
17	Siberian Ibex	<i>Capra ibex</i>	√	
18	Markhor	<i>Capra falconeri</i>	√	
19	Urrial	<i>Ovis orientalis</i>	√	
20	Long-tailed Marmot	<i>Marmota caudata</i>	√	

Our survey was carried out in 11 villages (Appendix 1) across northern and central Shahr-e Buzurg (Figure 3). Besides holding meetings and interviews with the local people, we also carried out field surveys of wildlife. During the entire survey we drove about 280 kilometers by car and walked for four days. We estimate the total area surveyed was around 500 km<sup>2</sup>, mostly across central and northern Shahr-e Buzurg (Figure 3).

Villager interviews comprised a large portion of the overall survey. We interviewed between five and eight people per village. Overall we conducted 72 interviews across the 11 villages.

Based on our previous survey experiences, villagers are uncomfortable participating in formal interviews where their responses are recorded on a data sheet. This is probably because poorly educated people are unsure how their information will be used and they fear that it could create problems for them in the future. Therefore, to avoid these problems we only held informal interviews (Appendix 2) and wrote up our notes after the interview had concluded and the respondent departed. We acknowledge it is not easy to be consistent with this sort of interview, however, at the same time we feel it was the best approach to use in Shahr-e Buzurg.

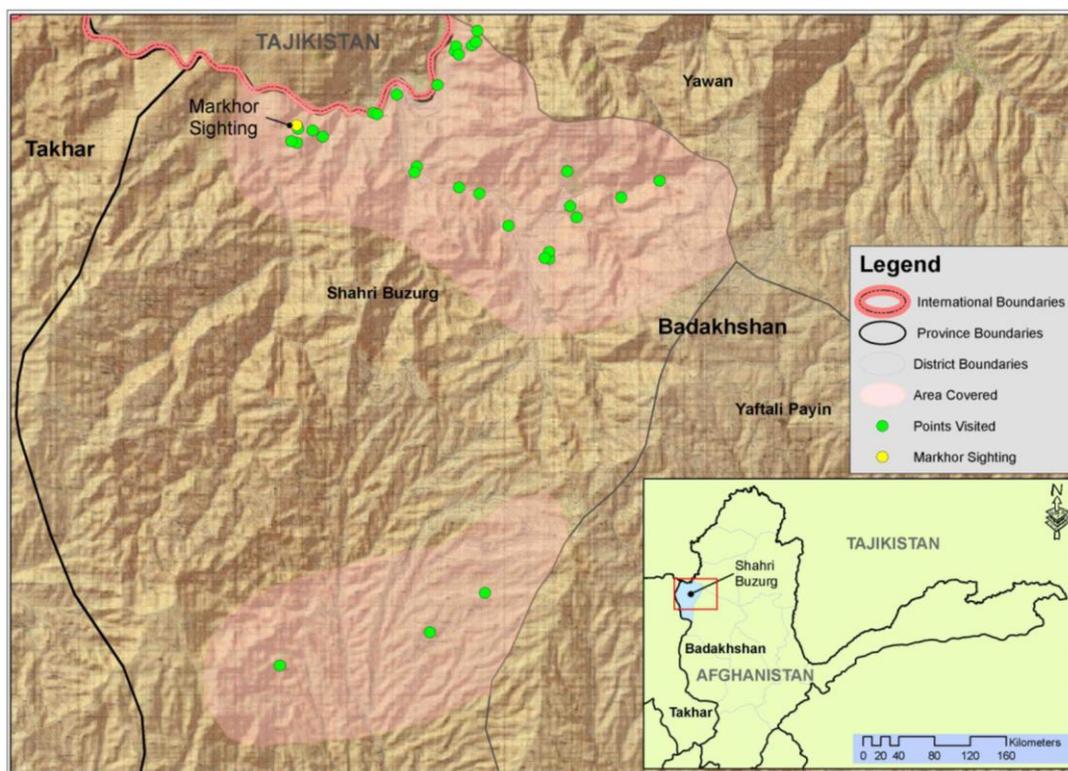


Figure 3: Areas covered during the survey.

### Survey Schedule

1. We drove 75 kilometers from Faizabad to the administrative center of Shahr-e Buzurg district, Shahr-e Buzurg town. We used this place as a base from which to interview local people about wildlife in the central, eastern and southwestern parts of the district.
2. We drove to the easternmost village in the district, Samargh, a village of around 450 households that is close to the border with Yaftal-e Payan (another district of

Badakhshan) where we met the head of the village and introduced our team. Later we interviewed people here.

3. We returned southwest to Shikhan village, close to Takhar province, where we interviewed more people.

4. At Shikhan we had been told there is forest and wild animals in Dawung, so we headed to this location. Dawung is in the north of Shahr-e Buzurg towards the Amu Darya. This was where we focused the main part of the survey (about 70% of our effort). We stayed in different villages here, meeting and interviewing many people.

## Results

### *Status of wild animals*

The most abundant wild animals we saw were lizards and birds. However, the most notable finding of the survey was confirmation of markhor in the area.

The people of Shahr-e Buzurg currently do not value the conservation of their wildlife. Hunting is rampant and most species, except those such as wild pig that are deemed inedible for religious reasons, are threatened to the point of local extinction. People hunt wild birds very intensively year-round. Out of all the people we interviewed, around 60 of them reported that wildlife hunting is prevalent.

According to statements made by people interviewed, wildlife was abundant in Shahr-e Buzurg during the 1970s. But after the Soviet invasion and the unrest that has resulted since, most of the wildlife has either fled to Tajikistan or been hunted out.

Most of the people we encountered during the survey were armed with small pistols. The Arbob of the Abganda village complained that the Pakistani “ruffle guns” (a type of shotgun) have spread widely in the area in recent years and have brought a huge threat to wild birds, especially chukar partridge.

Government has very little control in the northern areas of Shahr-e Buzurg and the people do not obey hunting laws. Whenever they hear that a wild goat has been seen, many hunters pursue it. Hunters even go to Tajikistan to poach, usually going there in groups (S. Michel pers. comm.).

### **Mammals**

#### Markhor (*Capra falconeri*)

Markhor is called “Buz-e Adeer” in Shahr-e Buzurg, meaning mountain goat. Our literature searches have failed to find any confirmed reports of the presence of this species in Northern Badakhshan prior to the 1970s. The distribution map of markhor given by Hassinger (1973), who participated in the Street Expedition of 1965, does not include Shahr-e Buzurg District. Habibi (2003) and Michel (2010) mention markhor being in Northern Badakhshan, however, they present no evidence of the species presence. In fact we have only found two records of markhor in all of Afghanistan: Hassinger (1973) and Stevens et. al. (2011).

Research carried out by conservationists in Tajikistan confirms that markhor populations can be found across the Amu Darya River from Shahr-e Buzurg, Ragh and Darwaz districts of Badakhshan (Michel, 2010).

Our interviews in Shahr-e Buzurg strongly supported the historical presence of markhor in this district: 41 informants from northern and central Shahr-e Buzurg (36 and 5 respectively) stated confidently that markhor were abundant in northern Shahr-e Buzurg during the 1970s. But now it appears the situation has changed, and according to informants only a few transient animals that cross the river from Tajikistan inhabit Shahr-e Buzurg.

During one of our field surveys we observed four markhor (Figure 4) between Payan-e Moor and Aspakha villages in Kohe Ghaws area, very close to the Tajik border (Figure 3). However, some very experienced hunters, such as Mr Karim Falak from Payan-e Moor, believe that there are perhaps 20 markhor left in the area (Figure 5). This information was corroborated several times during different interviews, suggesting it is correct. But unfortunately we couldn't go farther towards this area due to security problems.



Figure 4: Place where one of the four markhor were observed.

We visited a section of mountain that runs along the Amu Darya, which seemed suitable habitat for markhor. It contains rugged mountains with steep cliffs and some areas that are inaccessible for the livestock and shepherds. This area is located opposite known markhor areas of Tajikistan (Michel 2009; Michel 2010). We believe this part of Shahr-e Buzurg is therefore a priority site for future protection (Figure 5).

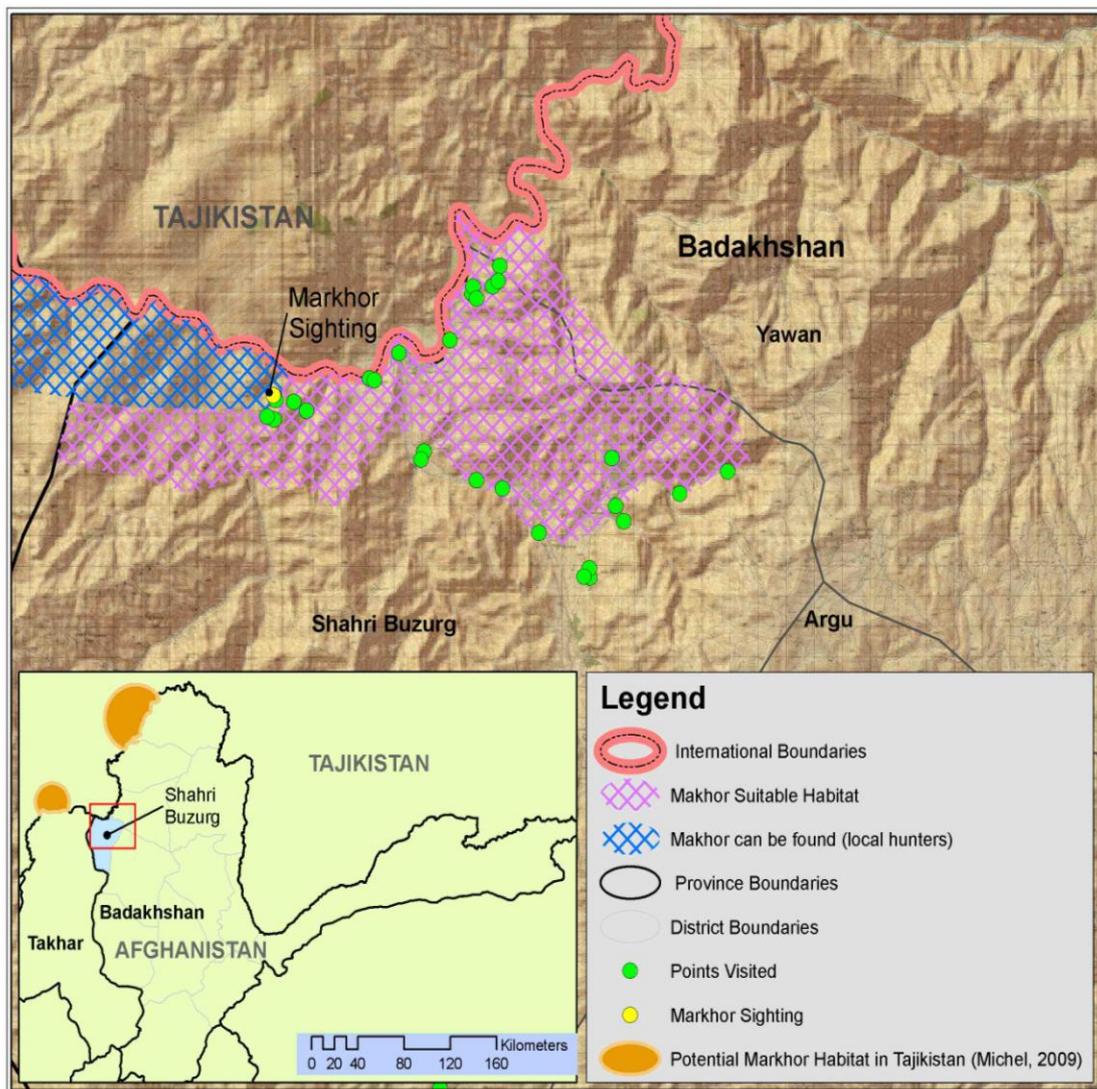


Figure 5: Areas that appeared to be good habitat for markhor.

The hunters in northern Shahr-e Buzurg are aware that markhor can be found across the river in Tajikistan, and we were told numerous stories of groups of hunters going there to poach. In Payan-e Moor village, the horns of a five-year-old male markhor and the skin of a female were shown to us (Figure 6). The owner claimed that they had been shot in Tajikistan. Additionally, we were told a young markhor had been captured in Tajikistan about three months prior to our survey and smuggled to Takhar Province where it is kept as an exhibit by a high-ranking official.



Figure 6: Two markhor supposedly shot in Tajikistan.

### Other ungulates

During this survey we didn't receive any reports about the presence of ibex (*Capra sibirica*) or urial (*Ovis orientalis*) in northern Shahr-e Buzurg (our main focal area). According to our interviews, people have no recollection of the presence of these species in their areas. However one informant, Mr. Farmanullah from the District Center, stated that ibex are present in the mountains of Kull in southwest Shahr-e Buzurg.

### Felids

None of the informants reported the presence of Persian leopard (*Panthera pardus saxicolor*) or snow leopard (*Panthera uncia*), either past or present in Shahr-e Buzurg. However, one informant, Mohamad Yosuf, stated that a long time ago he encountered a snow leopard in Tajikistan while hunting markhor.

Although the people who we interviewed were generally good at identifying non-felid mammal species that are present in their local area, in the case of small cats they had trouble with identification. These species could not be identified accurately from the photographs. This is somewhat understandable given they are largely nocturnal and cryptic animals.

Nonetheless, according to the information we received, small cats seem relatively abundant in the area. While showing photographs to informants, many emphasized that small cats are abundant in the forested areas. According to some informants from Danishmandi, sometimes the cats can be heard fighting during the night.

The majority of people we interviewed claimed that the jungle cat (*Felis chaus*) is the main felid species in Shahr-e Buzurg. However, several informants also pointed with certainty to the lynx (*Lynx lynx*) photograph, saying it is present and preys upon young livestock. But, confusingly, after then showing other felid species photos, such as wild cat (*Felis lybica*), informants generally became uncertain about which species were present. Furthermore, a resident of Danishmandi village said that he had seen a "black cat" in his ayloq.

Interestingly, Habibi's (2003) distribution maps do not indicate that the wild cat (*Felis lybica*) and jungle cat (*Felis chaus*) occur in Shahr-e Buzurg. But based on our interviews we feel there is a reasonably strong likelihood that these species are present. More investigations are needed to confirm whether this is the case, however.

### Canids

Many complaints were made against the red fox (*Vulpes vulpes*) and wolves (*Canis lupus*), which strongly suggests that these two species exist in Shahr-e Buzurg; and judging by the frequency of information we received about this (57 out of 70 interviews), it seems that these two species are relatively abundant.

Wolves are said to attack livestock in the ayloqs. According to the Shikhan village Arbob, Mr. Ahmad Khan, wolves even sometimes attack during the day.

According to our interviews, red foxes were suffering from scabies and dying in the northern parts of the district at the time of our survey. When we asked informants if they could show us a dead fox, they said they aren't easy to find. This problem was not reported about any other wild animals; however, we did hear that the disease was also affecting domestic stock, but not as seriously as with the fox.

Hyena (*Hyaena hyaena*)

Habibi (2003) does not show the hyena (*Hyaena hyaena*) to be distributed into Badakhshan. But surprisingly, out of the twelve people we interviewed in Awiz and Payan-e Moor villages, five of them stated with confidence that hyena is present in the area. Some of these people even told us that the species is present before we had asked about it. But all of them said that the species is very scarce.

One person, Gul Mohammad from Awiz village, claimed that in early spring 2011 a female hyena killed three of his goats after which he followed the animal and killed it. He said that he later sold the animal's skin in Ragh District.

Residents of Awiz and Payan-e Moor, two villages on the border with Tajikistan, said that in the past the hyena was very abundant in northern areas of Shahr-e Buzurg and on the Tajik side of the river. But, as with other wildlife in the district, the abundance this species is now said to have decreased dramatically.

There also appears to be information on the Tajikistan side of the river supporting the claim that hyena is present in this area. Stefan Michel (pers. comm.) reports that a dead hyena was found on the Tajik side of the river opposite Shahr-e Buzurg in 2001.

Stone marten (*Martes foina*)

People we interviewed regularly reported this species. Although this is a nocturnal animal that can be difficult to observe in the wild, people know of its presence due to it predated poultry.

We didn't find any evidence of stone marten during our survey, but the many reports made by informants suggest it exists.

Wild pig (*Sus scrofa*)

Wild pig is common in Tajikistan along the river across from Shahr-e Buzurg (S. Michel pers. comm.). Judging by the information we received, sounders of 3–5 wild pigs occasionally cross the river from Tajikistan to raid crops in Shahr-e Buzurg, and then go back again.

Wild pigs are not hunted in Afghanistan for religious reasons; the local people only chase them away from their agricultural lands. The species is considered a pest in Awiz village where it damages crops.

In the Tapa-e Qalandar area (UTM zone 42 0605696E / 4157115N), we found what our guide said was an old pig scat. Although we did not take a sample of the scat, we did photograph it. The clarity of the photograph (Figure 7) is not good, however, so this record remains somewhat unconfirmed. Nonetheless we feel confident wild pig occurs in Shahr-e Buzurg.



Figure 6: Old dung, said to be that of wild pig.

Porcupine (*Hystrix indica*)

Although we did not observe porcupine, the presence of the species was evident by the presence of quills, diggings and droppings in areas we surveyed.

People of Shahr-e Buzurg think that porcupines are responsible for the destruction of the pistachio forests where they are said to debark young trees.

**Birds**

It seems that the threats to wild birds in Shahr-e Buzurg are even more severe than mammals. Our interviews and field surveys suggest that birds are intensively hunted and collected across the entire Shahr-e Buzurg District. We observed 81 bird species during the survey (Appendix 3).

Chukar partridge (*Alectoris chukar*)

Informants said that in the 1970s there were thousands of chukars in every valley, however, during our field surveys we encountered only a few birds. The species is threatened by hunting, egg collection and capture for the pet trade.

The people of Shahr-e Buzurg use special technique called “roba gak” to hunt chukars (the word “roba” means fox). This technique (Figure 8) sees the



Figure 7: Hunter with fox skin used for hunting chukar partridges

hunter put a fox pelt over himself. When the chukars see the pelt they don't fly away; instead they all gather together on the ground, particularly mothers with their chicks, and the hunter is easily able to shoot them.

Of interest, and possibly a concern for conservation, the chukar partridges found around Awiz village are said to be very strong, and are highly regarded for their fighting ability. We were told that many people come from other districts and provinces to buy chukars from Awiz.

### Raptors

Shahr-e Buzurg is very good habitat for raptors because of the rocky and mountainous terrain, and the climate. During the survey we saw 14 species of raptor, several being species that are important for conservation like the Egyptian vulture (*Neophron percnopterus*) and the lesser kestrel (*Falco aumanni*).

The lesser kestrel was observed twice during the survey at Oqabshin and Pakashill field sites (UTM zone 42 0598323E / 4152642N and 0612117E / 4149644 N respectively). This is significant because the lesser kestrel is a species rarely observed in Badakhshan province. It is also listed on Afghanistan's Protected Species List (NEPA-AWEC, 2009).

Mohammad Yusuf from Awiz village said that last year people from outside Shahr-e Buzurg captured falcons and exported them to Pakistan for the raptor trade.

Several informants complained about raptors, saying that they prey on their poultry. Ashor Mohamad from Chelkan Shahr said that he had lost 3 chickens to vultures this year. We question this report since vultures are not birds of prey; they are scavengers that feed on carrion.

### Other bird species

It appears that people in Shahr-e Buzurg capture chicks and adults of different species of birds to keep as pets. In Awiz village we saw a young boy with a juvenile nightjar (*Caprimulgus* sp), and in Abganda village another boy had a young Eurasian Sparrowhawk (*Accipiter nisus*) in captivity (Figure 9).



Figure 9: Wild birds that were being kept as pets.

### *Livestock*

Livestock in most of the places we visited seemed less numerous than in other parts of Badakhshan. In several places, such as the area between Payan-e Moor and Aspakha villages, we observed free-ranging cattle.

According to information we received, the practice of going to ayloqs to graze livestock is becoming less common over time. Among the villages we visited in this survey only three of them still send their livestock to ayloqs. In most places livestock are managed collectively by groups of households.

In Sar-e Kham area, the place where we spotted the markhor, old shepherd shelters and corrals (figure 10) tell the story of the place once being used as a summer pasture settlement, but now it is disused. We aren't sure why it is disused, but perhaps because of a decrease in their livestock numbers and/or poor security conditions.



Figure 8: Abandoned ayloq in Sar-e Kham area

### *Diseases of wildlife and livestock*

We did not notice any ongoing disease outbreak in domestic stock in the areas we surveyed. However, people we interviewed reported having diseases that resembled foot-and-mouth disease, pleuropneumonia syndrome, enterotoxaemia, and scabies at different times of the year.

Mortalities caused by *Mycoplasma* bacteria are reported in domestic goats and markhor across the border in Tajikistan (Ostrowski et al. 2011), but we did not witness a similar situation in Shahr-e Buzurg.

As mentioned earlier, people reported high mortality among red foxes due to scabies. The disease was present in domestic stock as well. Fortunately though, in the areas of

Shahr-e Buzurg where we surveyed, we did not hear any reports of disease in the caprines.

### *Forests*

According to the District Forest Department there are more than 15,000 hectares of forest in Shahr-e Buzurg District, and a similar amount of natural pasture. There are three main forest types: pistachio, juniper, and mixed forests.

The condition of forested areas is reasonably good and local people appear to manage their forests well (Ainuddin pers. comm.). The people we interviewed generally understood two important concepts of forest management: (i) they realize that if they lose the forest their agricultural land will be susceptible to flood and erosion; and (ii) they know that forest is a major source of income in terms of harvesting non timber forest products.

There seems to be some inter-district and inter-provincial conflicts over the forests, in terms of illegal cutting, etc. Some people we spoke to were complaining about villagers from other districts or from Takhar province coming into their area to cut trees.

In order to improve management of the forests, the District Forest Department has made Forestry Shuras in every village, consisting of the Arbob, Mullahs, elders and other volunteers.

### Forest zones

The forests are divided into five different zones: Qarluq, Central, Pasa Koh, Dara-o-bar and Dawung zones (Figure 11). According to the District Forest Officer, Mr Mawlawi Ainuddin, these zones were formed during the Soviet period and are based on the geographical distribution and congregation of the villages in different areas of the district.

During the Soviet period the central forest zone had remained occupied by the Soviet army until the end of their occupation (Ainuddin pers. comm.). According to the local people, the Soviet troops used to purchase wood from the locals for fuel, and the locals were selling them pistachio timber. As a consequence the forest in this zone of Shahr-e Buzurg has totally disappeared.

The other forest zones have been much less exploited. We were told that this is partly due to those areas having been inhabited by local military groups opposing the Soviets during their occupation of Afghanistan.

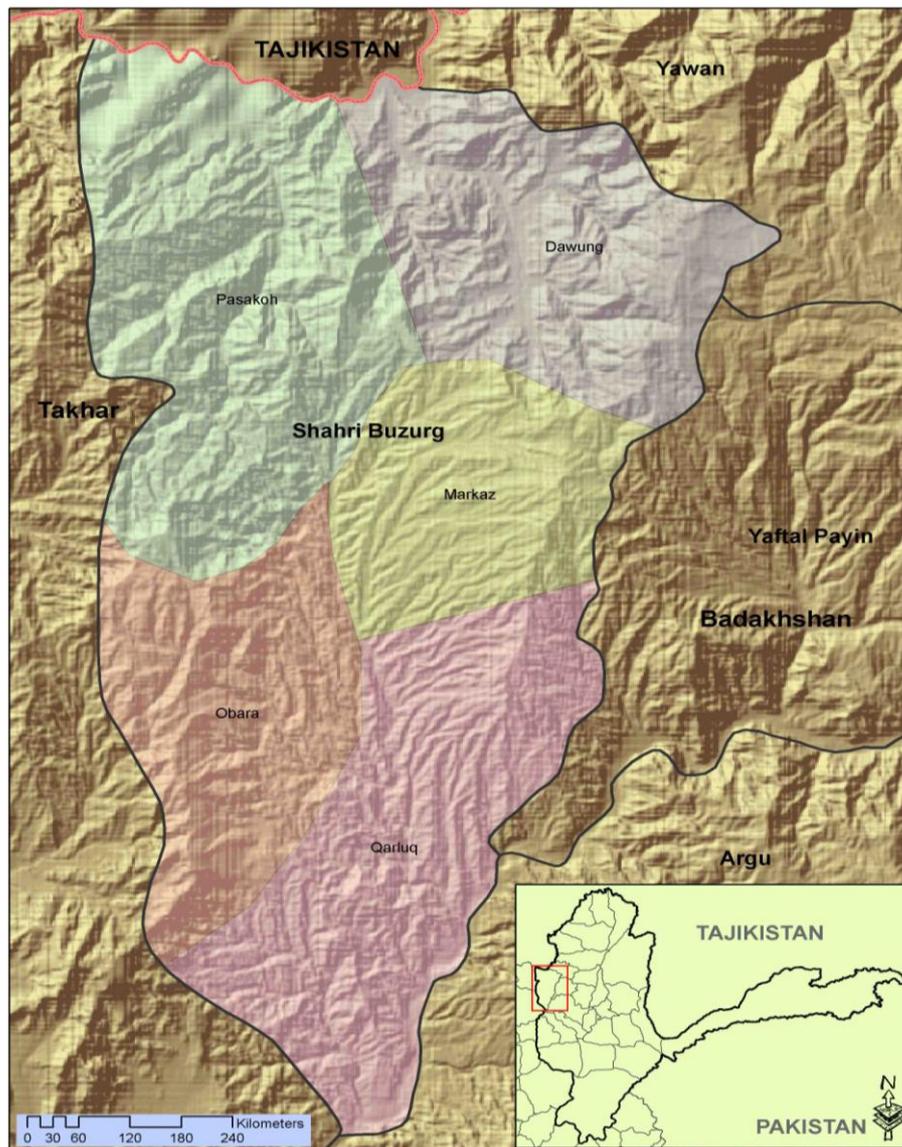


Figure 11: The forest zones (approximate location) of Shahr-e Buzurg District.

### Pistachio forest

A variety of forest products can be found in Shahr-e Buzurg: pistachio nuts, medicinal plants, herbs and grain products. The pistachio forests are a very highly valued resource for the district, but a resource that faces challenges.

Pistachios are found in all the forest zones of Shahr-e Buzurg except the central zone. Although we did not come across any stands of pure pistachio forest, we did observe areas where the species was clearly dominant. There are also forest patches where no single tree species dominates the assemblage; we have called this the mixed forest type.

Our interviews indicate that pistachio harvests vary in quality and quantity each year, and that yield is largely determined by precipitation. During years of good precipitation, for example, a family will harvest anywhere from 20 to 200 kg of pistachio nuts from their mountains per annum; whereas in periods of drought the harvest drops to almost zero. In the drought times only a few of the poorest families are said to go to the mountains in search of pistachios. The people we interviewed said that pistachio production was low this year as a result of drought.

There is a belt of pistachio forest across northern Afghanistan, stretching from Herat in the west to Badakhshan in the east. These forests are a valuable resource for Afghanistan and therefore government actively participates in their management. Pistachio woodlands are considered communal property, and the government is responsible for announcing the harvest time each year. Between August and early September in Herat province, the western end of the pistachio belt, the government announces to the people that they can harvest the pistachios (Schaller 2007 field doc.). Our research found this same procedure to be happening in Shahr-e Buzurg, where usually in August the District Forest Department makes a public announcement that pistachio harvesting can begin.

When the pistachio harvest time arrives the local people rush to the trees and try to collect as many nuts as possible. This frenzy of activity damages the shoots of the trees, which in turn can lower productivity for the next year.

Even though the people of Shahr-e Buzurg are aware that maintaining their forests helps mitigate the risk of floods and erosion, we observed several places where pistachio forests were being used for agriculture. Farmers are planting wheat amongst the pistachio trees. This practice is slowly killing those pistachio forests by preventing the recruitment of new trees into the assemblage. These practices will eventual result in the loss of these forests and so needs to be addressed.

### Juniper forest

Juniper forest mostly occurs in the Dara-o-bar, Pasa Koh and Dawung forest zones. There is an elevation gradient separating the juniper forests from other forest types (juniper being found at higher elevations). However, in a few places where the habitat is suitable, both juniper and pistachio trees can be found intermingled.

## Discussion

### *Conservation value*

It is too early to draw final conclusions about the importance of Shahr-e Buzurg as a conservation area, since it forms only a small portion of a broader landscape of interest in Northern Badakhshan, which we are yet to survey. However, the presence of markhor in the area, seen in a place where we thought it unlikely to encounter the species, is an encouraging sign.

### *Public opinion*

Although the plight of wildlife in Shahr-e Buzurg is grim, public interest in conservation in general was good. In fact, the people who we spoke to seemed to be open to the idea of conserving their natural resources. Additionally, most people understood that natural resources do not just belong to individuals but are property of the broader community. We received many requests from people who were asking for WCS's support to help them return their district to an area that is rich in wildlife, similar to what is happening in Wakhan.

Although people we interviewed showed an interest in conservation, most of them knew very little about its value. It was generally not clear to them why hunting was

detrimental and what benefits they could expect if they abandon this activity. Considering all of this, community-based conservation initiatives, public awareness, and conservation incentives could help benefit Shahr-e Buzurg's natural resources.

### *Governance*

The District Forest Department (DFD) is achieving good results in protecting the forests. The Forestry Shuras they have created appear to be quite successful and are generally seen as a positive part of the community. Although these community structures are in place, technical assistance and support is needed to enable them to function more effectively.

The DFD feels that if they could stop the forest cutting, their overall environment will improve. It is certainly true, however, that the DFD should also give more consideration to the damage caused through other activities besides forest cutting, such as the development of agriculture inside the pistachio forests.

### *Protected areas*

Although northern Shahr-e Buzurg is a suitable habitat for markhor and other wildlife, it is too early to state whether the area qualifies for inclusion in Afghanistan's national protected areas system plan. Surveys of the surrounding districts and other provinces in Afghanistan are needed before this is known.

Additionally, the broader Shahr-e Buzurg area is known to be important area for wide-ranging species like markhor and hence needs to be considered as part of transboundary conservation initiatives.

### *Security*

Security is a significant concern in Shahr-e Buzurg. Government control over the district is very weak and unreliable. There are district and border police checkpoints everywhere and the officials in those places emphasized to us that we should stay near to them for safety reasons. This was not possible, however, because we needed to get into the wilderness areas and remote communities. We didn't survey some areas along bordering with Takhar Province, due to the reportedly poor security conditions.

## **Acknowledgements**

We are grateful to Dr. David Lawson, WCS Country Director, Dr. Stephane Ostrowski and Anthony Simms for their advice with this survey. We also thank Peter Bowles, Shafiq Nikzad, Zabihullah Ijlasi, Qais Sahar and other WCS-Afghanistan staff for their assistance. Haqiq Rahmani prepared all the maps for the survey and this report. The head of MAIL in Faizabad and various district officials, police and other commanders to whom we extend our thanks, most hospitably received our survey team. Similarly, village leaders, local guides, and others assisted us as best they could, for which we are grateful. We also appreciate the patience with which local people answered our many questions. Lastly, we would like to thank our survey team: Mawlawi Ainuddin, Commander Khan Mohamad and Habib our driver.

## Appendices

### Appendix 1: Location of places mentioned in this report

Place name	Location		Village	Field Site
	UTM-E	UTM-N		
Samargh	606032	4131871	√	
Shikhan	596876	4128608	√	
Awiz	603915	4154685	√	
Kohe Ghaws	597614	4152872		√
Payan-e Moor	601215	4153370	√	
Danishmandi	602881	4150759	√	
Tapa-e-Qalandar	605696	4157115		√
Abganda	609697	4150800	√	
Sar-e Kham	597389	4152162		√
Sharif Abad	607916	4144821	√	
District Center	603572	4130087	√	
Jungle-Shughak	605634	4156621		√
Dehnaw	605787	4149803	√	
Dehtoot	608901	4146880	√	
Chelkan Shahr	609830	4149234	√	
Pakashill	612113	4149634		√
Dara-e Kaling	613830	4150372		√
Oqabshin	598323	4252642		√

### Appendix 2: Topics covered and questions asked during the interviews.

- Wildlife presence/absence in the area.
- Status of the wildlife species in the area, past and present?
- (Showing photographs) Have you seen these animals in your area?
- Any species that were present in the past but now gone.
- Any species recently found in the area that were not present in the past.
- Do you face any threat from wildlife? If yes, which species?
- What do you think are the major threats to wildlife in your area?
- How would you conserve wildlife in your area?
- Is there any disease your livestock suffer from?
- What do you use as fuel wood for heating and cooking?

## Appendix 3: List of mammals observed or reported

No.	Common Name	Scientific Name	Observed / Reported
1	Markhor	<i>Capra falconeri</i>	O
2	Urial	<i>Ovis orientalis</i>	R
3	Porcupine	<i>Hystrix indica</i>	R
4	Striped hyena	<i>Hyaena hyaena</i>	R
5	Wolf	<i>Canis lupus</i>	R
6	Jackal	<i>Canis aureus</i>	R
7	Red fox	<i>Vulpes vulpes</i>	R
8	Jungle cat	<i>Felis chaus</i>	R
9	Wild cat	<i>Felis lybica</i>	R
10	Wild pig	<i>Sus scrofa</i>	R
11	Stone martin	<i>Martes foina</i>	R
12	Himalayan Lynx	<i>Lynx lynx</i>	R
13	Bat sp.	Unknown species	O

## Appendix 4: List of birds observed during the survey

No.	Common Name	Scientific Name
1	Black Kite	<i>Milvus migrans migrans</i>
2	Eurasian Sparrowhawk	<i>Accipiter nisus</i>
3	Long-legged Buzzard	<i>Buteo rufinus</i>
4	Booted Eagle	<i>Hieraaetus pennatus</i>
5	Golden Eagle	<i>Aquila chrysaetos</i>
6	Griffon Vulture	<i>Gyps fulvus</i>
7	Himalayan Vulture	<i>Gyps himalayensis</i>
8	Egyptian Vulture	<i>Neophron percnopterus</i>
9	Lammergeier	<i>Gypaetus barbatus</i>
10	Cinereous Vulture	<i>Aegypius monachus</i>
11	Western Marsh Harrier	<i>Circus aeruginosus</i>
12	Lesser Kestrel	<i>Falco naumanni</i>
13	Common Kestrel	<i>Falco tinnunculus</i>
14	Eurasian Hobby	<i>Falco subbuteo</i>
15	Chukar Partridge	<i>Alectoris chukar</i>
16	See-see Partridge	<i>Ammoperdix griseogularis</i>
17	Common Quail	<i>Coturnix coturnix</i>
18	Little Ringed Plover	<i>Charadrius dubius curonicus</i>
19	Lesser Sand Plover	<i>Charadrius mongolus</i>

20	Common Sandpiper	<i>Actitis hypoleucos</i>
21	Rock Pigeon	<i>Columba livia</i>
22	Hill Pigeon	<i>Columba rupestris</i>
23	Oriental Turtle-dove	<i>Streptopelia orientalis meena</i>
24	Eurasian Collared-dove	<i>Streptopelia decaocto</i>
25	Laughing Dove	<i>Streptopelia senegalensis</i>
26	Nightjar	<i>Caprimulgus sp.</i>
27	Common Swift	<i>Apus apus</i>
28	Alpine Swift	<i>Tachymarptis melba</i>
29	Little Swift	<i>Apus affinis</i>
30	European Roller	<i>Coracias garrulus</i>
31	Common Hoopoe	<i>Upupa epops epops</i>
32	European Bee-eater	<i>Merops apiaster</i>
33	Blue-checked Bee-eater	<i>Merops persicus</i>
34	Eurasian Wryneck	<i>Jynx torquilla</i>
35	White-winged Pied Woodpecker	<i>Dendrocopos leucopterus</i>
36	Oriental Skylark	<i>Alauda gulgula</i>
37	Crested Lark	<i>Galerida cristata</i>
38	Short-toed Lark	<i>Calandrella sp.</i>
39	Eurasian Crag-martin	<i>Ptyonoprogne rupestris</i>
40	Northern House-martin	<i>Delichon urbicum</i>
41	Barn Swallow	<i>Hirundo rustica</i>
42	Wire-tailed Swallow	<i>Hirundo smithii</i>
43	Citrine Wagtail	<i>Motacilla citreola</i>
44	Grey Wagtail	<i>Motacilla cinerea</i>
45	White Wagtail	<i>Motacilla alba</i>
46	Rufous-backed Long-tailed Shrike	<i>Lanius schach erythronotus</i>
47	Southern Grey Shrike	<i>Lanius meridionalis</i>
48	Rufous Shrike	<i>Lanius phoenicuroides</i>
49	Asian Paradise Flycatcher	<i>Terpsiphone paradisi</i>
50	Blue Rock-thrush	<i>Monticola solitarius</i>
51	Common Blackbird	<i>Turdus merula</i>
52	White-capped Redstart	<i>Chaimarrornis leucocephalus</i>
53	Variable Wheatear	<i>Oenanthe picata opistholeuca</i>
54	Red-tailed Wheatear	<i>Oenanthe chrysopygia</i>
55	Streaked Laughing-thrush	<i>Trochalopteron lineatum</i>
56	Winter Wren	<i>Troglodytes troglodytes</i>
57	Hume's Leaf-warbler	<i>Phylloscopus humei</i>
58	Common Whitethroat	<i>Sylvia communis</i>
59	Rufous-naped Tit	<i>Parus rufonuchalis</i>
60	Turkestan Tit	<i>Parus bokharensis</i>
61	Wallcreeper	<i>Tichodroma muraria</i>
62	Eastern Rock Nuthatch	<i>Sitta tephronota</i>

63	Corn Bunting	<i>Miliaria calandra</i>
64	White-capped Bunting	<i>Emberiza stewarti</i>
65	Rock Bunting	<i>Emberiza cia par</i>
66	Red-headed Bunting	<i>Emberiza bruniceps</i>
67	European Linnet	<i>Acanthis cannabina</i>
68	Fire-fronted Serin	<i>Serinus pusillus</i>
69	Eurasian Golden Finch	<i>Carduelis carduelis</i>
70	Mongolian Finch	<i>Bucanetes mongolicus</i>
71	House Sparrow	<i>Passer domesticus</i>
72	Eurasian Tree Sparrow	<i>Passer montanus</i>
73	Rock Sparrow	<i>Petronia peronia</i>
74	Indian Golden Oriole	<i>Oriolus kundoo</i>
75	Common Starling	<i>Sturnus vulgaris</i>
76	Rosy starling	<i>Sturnus roseus</i>
77	Common Myna	<i>Acridotheres tristis</i>
78	Red-billed Chough	<i>Pyrrhocorax pyrrhocorax</i>
79	Carrion Crow	<i>Corvus corone</i>
80	Common Raven	<i>Corvus corax tibetanus</i>
81	Eurasian Magpie	<i>Pica pica</i>

#### Appendix 5: Daily summary of survey

##### Day 1 / 19-Jul-2011:

In the morning the survey team flew from Kabul to Faizabad. In the afternoon they went to the provincial governor office and submitted the letter from the MAIL, Kabul, and asked for an introduction letter that could introduce them to the district level authorities in the study area.

##### Day 2 / 20-Jul-2011:

In the morning the team went to Agriculture Department in Faizabad, submitted the letter from MAIL, Kabul and explained the aim and objectives of this survey. Engineer Alim, head of the department said that he would appoint his district level forest officer for this mission. The team got the letter from the governor's office as well. Shopping and other preparation for the mission were done in the afternoon.

##### Day 3 / 21-Jul-2011:

Drove from Faizabad to Shahr-e Buzurg center, met with the District Acting Governor, Mr. Gullabuddin.

##### Day 4 / 22-Jul-2011:

People were interviewed in three villages, Samargh, the district center, and Shikhan.

##### Day 5 / 23-Jul-2011:

The survey team drove towards northern Shahr-e Buzurg; on the way met with the police check post in Sharif Abad town (27km from dist. center) and explained their activities after which they left for Abganda from where Mula Ainuddin, (the district Forest officer appointed for this mission) joined the team. After lunch in Abganda they left for Awiz (the easternmost village belong to Shahr-e Buzurg). On the way people

were interviewed in Danishmandi village. Before camping in Awiz village (54km from district center) the whole team met with the Commander of the Border Police checkpoint, Mr. Abdul Bashir Khan, in Awiz and explained about the mission. In the evening we met with the people and did interviews.

Day 6 / 24-Jul-2011:

Before going for field visit the team went to border police to get their permission for the field visit in the border areas in Awiz village, after which the surveyors left for the Jungle-Shughak area for a field survey. Some old scats of wild boar in Tapa-e-Qalandar (UTM zone 42 0605696E / 4157115N) and some digging made by porcupines were seen there in the field. In the evening the surveyors returned back to the camp in Awiz village. In the evening the team explained the importance of the wildlife for the local communities. The team also observed a bat (unknown species) in its roosting site in the roof of the house where they stayed in Awiz.

Day 7 / 25-Jul-2011:

In the morning the survey team left Awiz village for Payan e Moor, the westernmost village visited in Shahr-e Buzurg district. Here they talked with the people and did interviews. At first the people didn't receive the team hospitably but after the importance of the wildlife were explained to the people then they opened up gave good information about the wildlife. People brought the team one horn and one skin belonging to a male and a female markhor. In the evening almost all the villagers from the Payan-e Moor village gathered and met with the survey team, after which the team got to know that there are good places for wildlife to be visited on the next day.

Day 8 / 26-Jul-2011:

The weather was too hot to leave for the field in the morning. Therefore the survey team was advised to leave in the evening and stay for the night in the field and only then would they have a chance to see markhor in the area. The surveyors left for the field at 3:30pm towards Sar-e Kham area belong to Aspakhah village. At 6:45pm they reached Sar-e Kham and camped for the night there.

Day 9 / 27-Jul-2011:

Early in the morning at 4:40am while scanning the area the survey team spotted four markhor in Kohe Ghaws area (UTM zone 42 0597614E / 4152872N) in a very cliff and rocky area. Surveyors kept walking towards Aspakhah in order to scan the area for wildlife. At 8:25am while the weather was too hot they returned back from the field towards Payan-e Moor village which they reached at around 11:40am. The team left Payan-e Moor to Dewnaw village where they had lunch and did interviews with the villagers as well. At 3:40 pm left Dewnaw for Abganda village and stayed in Abganda for the night.

Day 10 / 28-Jul-2011:

People were interviewed in three villages (Abganda, Dehtoot, and Chelkah Shahr villages). From the interviews the survey team got to know that there is an area called Pakashill (this is the area which our field guide also emphasized for a visit) that is good for wildlife. For the night the survey team stayed close to this canyon (Pakashill) and planned to visit this site the next day.

Day 11 / 29-Jul-2011:

The survey team left for the field (Pakashill Canyon) at 6:30 am and went up to the Dara-e Kaling in the upper half of the Pakashill sub valley but little wildlife was seen except for a few raptors e.g. Lesser Kestrel in Pakashill (UTM zone 42 0612117E /

4149644 N) and one agama in (UTM zone 42 613830E / 4150372N). Then they returned back from the field to Abganda village and from there went directly to the district center where they stayed for the night.

Day 12 / 30-Jul-2011:

In the morning the survey team visited the district acting governor, Mr. Gullabuddin in the district governor office and explained him about their mission and success. The team recorded information regarding the human population, number of schools in the district, human and animal clinics, agricultural and rangelands etc. Late in the morning the team left Share Buzurg for Faizabad with the mission completed. In the evening they reached Aria Guesthouse in Faizabad and stayed there for the night.

Day 13 / 31-Jul-2011:

At 9:00am the survey team went to the agriculture department in Faizabad and visited Engineer Alim, head of the department. In this visit survey team explained all the activities they had done in Shahr-e Buzurg district and how his representative contributed in this mission. Engineer Alim was happy with the report and he thanked the team for the mission.

Day 14 / 01-Aug-2011:

Waited for a flight to Kabul in Faizabad

Day 15 / 02-Aug-2011:

Flew to Kabul.

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