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**“Wildlife trade is the greatest single threat to many species of wildlife across the world today.” (Bennett 2006)**

## **WILD FAUNA TRADE IN AFGHANISTAN**

This report provides an analysis of three surveys concerning wild fauna trade conducted by the Wildlife Conservation Society in Afghanistan from 2006 to 2008

Analysis conducted by  
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# EXECUTIVE SUMMARY

Wildlife trade constitutes one of the most acute threats currently facing wildlife (Bennett 2006). It is estimated to affect about one-third of birds and mammals globally by contributing to overharvesting of threatened populations (Bennett 2006, Rivalan et al. 2007). Trade in wildlife has continued to expand as a result of significant global demand for animal products at all socioeconomic levels. Currently, the United States and China are the two largest consumers of wildlife in the world (Bennett 2006). China boasts a massive traditional medicinal market that drives consumption for animal parts like tiger whiskers, turtles, and bear gall bladders (Naylor 2004). Meanwhile, the United States experienced a 75% increase in wildlife trade between 1992-2002, with animal products flowing to diverse markets that include exotic cuisine, pets, fashion accessories and cosmetics (Naylor 2004, Bennett 2006). Rising wildlife trade in global markets has also brought about unforeseen consequences including a rise in disease transmission (i.e. Avian flu) and an increased risk for the introduction of exotic invasive organisms.

The global trade in wildlife constitutes big business. In 2001, an estimated 350 million live animals were traded around the globe with a net worth of almost US\$20 billion (WWF, 2001). One quarter of this trade is estimated to occur illegally, making wildlife trade the second most profitable form of illicit global trade after drug trafficking (WWF, 2001). By 2005, Karesh et al. (2005) estimated about 40,000 live primates, 4 million birds, 640,000 live reptiles, and 350 million live tropical fish were traded annually around the world. The immense value of wildlife trade markets creates a strong incentive for hunters and traders to continue to overharvest wildlife species even in the face of declining populations (Rivalan et al. 2007).

Wildlife trade in Asia paints a particularly bleak picture. Fewer than 5,000 tigers remain in the wild across the continent (Bennett 2006) and in Central Asia, overharvesting has led to the collapse of species important to trade such as the saiga antelope (*Saiga tatarica tatarica*). This species experienced a decline of almost 90% in Kazakhstan in the 1990s because of its role in medicinal trade. Mongolia witnessed a similar rapid decline in its saiga population, which plummeted from 5,000 to less than 800 within 5 years (Wingard and Zahler 2006). Overharvesting for trade has also significantly impacted populations of red deer (*Cervus elaphus*), Marco Polo sheep (*Ovis ammon polii*), and marmots (*Marmota sibirica* and *Marmota baibacina*) causing population reductions of almost 75% in certain regions (Wingard and Zahler 2006).

Wildlife has always been an important resource for humans and we have successfully harvested wildlife populations for thousands of years without catastrophic global declines. However, the rate of global take and trade has become unsustainable for a number of reasons. First, the human population is rapidly growing, and in some areas of the world has increased by more than 300 percent in the past 50 years (IDB, 2008). Second, technological improvements have provided humans with access to wild areas which were previously inaccessible. In the Amazon, wildlife harvest has been shown to increase exponentially after oil or timber companies build roads for resource extraction (Michalski and Peres 2005). Third, civil and international conflict in many countries has led to an influx of sophisticated weaponry, which has made hunting less about skill and more about opportunity. For example, Wildlife Conservation Society (WCS) field surveys revealed that Afghan villagers used AK-47s, RPGs, and anti-aircraft guns provided by foreign sources during the conflict with the Soviet Union to hunt ibex in Ajar Valley. Finally, hunting is no longer only for subsistence.

The rise of massive consumer markets has created high demand for wildlife products, meaning that these products exist as global commodities in a highly profitable form of global trade. These factors combine to create a situation in which wildlife populations are becoming scarcer as their value continues to increase.

Afghanistan also appears to be following the global trend of increasing trade in the face of decreasing wildlife populations, based on the few studies that have been conducted on the status of wildlife take and trade in the country since the 1970s. In order to update the available information, WCS conducted a series of wildlife trade and hunting surveys to determine the current status of trade in Afghanistan. These hunting and trade surveys have been crucial for enhancing the current understanding of harvest patterns and trade markets in the country. They constitute the first comprehensive examination of hunting and trade in Afghanistan since 2001 and have provided information that will be important to Afghanistan in its efforts to comply with international agreements like the Convention on International Trade in Endangered Species of Fauna and Flora (CITES). Results from these analyses point to a number of new developments in trade patterns and wildlife abundance, which may help focus harvest regulations and trade developments.

Results indicate that the top five most targeted species in Afghanistan include red fox (*Vulpes vulpes*), wolf (*Canis lupus*), jackal (*Canis aureus*), leopard (*Panthera pardus*), and hare species (*Lepus* spp.). Currently, evidence suggests that individual hunters and traders supply most of these animal products to markets in Kabul where they are sold as manufactured products to a consumer base consisting of tourists, cross-border traders, and Afghans. While previous studies conjectured that tourists make up the largest bulk of the consumer demand for animals products, WCS found that local people also greatly contributed to the demand for wildlife, and their participation in these markets has probably been significantly underestimated. Although we cannot be sure what happens to wildlife products once they cross the borders of Afghanistan, it appears that the primary target countries for export include Russia, European countries, and Pakistan.

Our results also suggest important changes in wildlife abundance across Afghanistan. Data suggest that historical source populations which used to supply trade markets in Kabul have since been depleted and are no longer used in trade routes. Furthermore, survey results suggest that the quantity and quality of many species supplied to retailers in Kabul has been decreasing in recent years. Despite these downturns, the total volume of trade in Afghanistan appears to have remained steady or increased for all species considered in our surveys. The increase has occurred in the face of a variety of enforcement measures implemented by Afghanistan to prohibit the harvest and trade of wildlife within and outside of the country. These include a Presidential Decree banning hunting and environmental legislation requiring a permit system for trade.

# BIODIVERSITY OF AFGHANISTAN

Afghanistan encompasses a diverse assemblage of species resulting from its location at the intersection of the Indo-Malayan and Palearctic biotic realms. Most species in Afghanistan are Palearctic, meaning that they resemble species from Europe and Siberia. However, Afghanistan also contains representatives from the Indo-Malayan and Afrotropic biotic realms. The reasons for this diversity reflect continental processes that happened over millions of years. Most important to Afghanistan was the collision of the Eurasian and Indian tectonic Plates 50 million years ago, which resulted in the formation of the Himalayas, Hindu Kush and Karakoram mountain ranges. These processes strongly influenced floral and faunal distribution within Afghanistan, and help to explain why the country is home to species ranging from large bears (Asiatic black bear) to hyena (striped hyena), as well as a diverse range of flora and invertebrate species.

Afghanistan, at 652,225km<sup>2</sup> (Shank 2006), is slightly smaller than the US state of Texas and slightly larger than the country of France. It is bordered by Iran, Pakistan, Tajikistan, Turkmenistan, Uzbekistan, and a small portion of China. The country can be divided into 17 ecoregions using the biogeographic classification system created by World Wildlife Fund (WWF) in 2001 ([www.worldwildlife.org/wildfinder/](http://www.worldwildlife.org/wildfinder/)) (Figure 1). An ecoregion is defined as “a relatively large unit of land containing a distinct assemblage of natural communities and species, with boundaries that approximate the original extent of natural communities prior to major land-use change”. The ecoregion classification is advantageous because it defines ecological communities at a higher resolution than more traditional approaches. For example, the average ecoregion is about 150,000 km<sup>2</sup> whereas older classification schemes like Udvardy’s Provinces average about 750,000 km<sup>2</sup> (Olson et al. 2001).

For its size, Afghanistan contains an amazing variety of ecosystems that span semi-deserts in the western reaches of the country to alpine and sub-alpine vegetation in the northeastern corner. Open woodland originally comprised about 38% of Afghanistan but has now been reduced to only 5% of the landscape and is considered to be on the verge of extinction (Shank 2006). Perhaps the most magnificent feature of Afghanistan is its mountainous regions which include the Hindu Kush – a 1000 km system stretching over one quarter of the country extending from Pakistan and descending in elevation to the semi-deserts of the northwest (Habibi 2003, Shank 2006). Elevation estimates suggest that around 27% of Afghanistan lies above 2,500 meters (Shank 2006) and that almost 10% is above 3,000 meters (Habibi 2003).

There is also a great variety of woody species and natural forests that dominate certain regions of the country. In 1980, natural forests were thought to occupy almost 4% of the country (Formoli 1995, Groninger 2006). Deforestation and illegal harvesting quickly reduced this percentage so that natural forests now make up less than 1% of the land area. The largest concentration of these forests remains in the eastern montane forest system, which is influenced by the Indian monsoons and receives the greatest and most steady supply of precipitation in the country. The eastern montane forests are dominated by oak (*Quercus baloot* and *Q. semicarpifolia*) above 1,300 meters, pine (*Pinus wallichiana* and *P. gerardiana*) between 2,100 and 2,500 m, and cedar (*Cedrus deodora*) between 2,500 and 3,100 m (Groninger 2006, Shank 2006). Spruce (*Picea smithiana*) and fir (*Abies webbiana*) may be found at elevations between 2,500 and 3,100 m in wetter areas (>800 mm) while juniper (*Juniperus semiglobus*) has been observed at elevations as high as 3,500 m (Groninger 2006). In the remainder of the country, species important for harvesting purposes



include juniper (*Juniperus excelsa*), almond (*Prunus amygdalus*), and pistachio (*Pistacia vera* and *P. atlantica*).

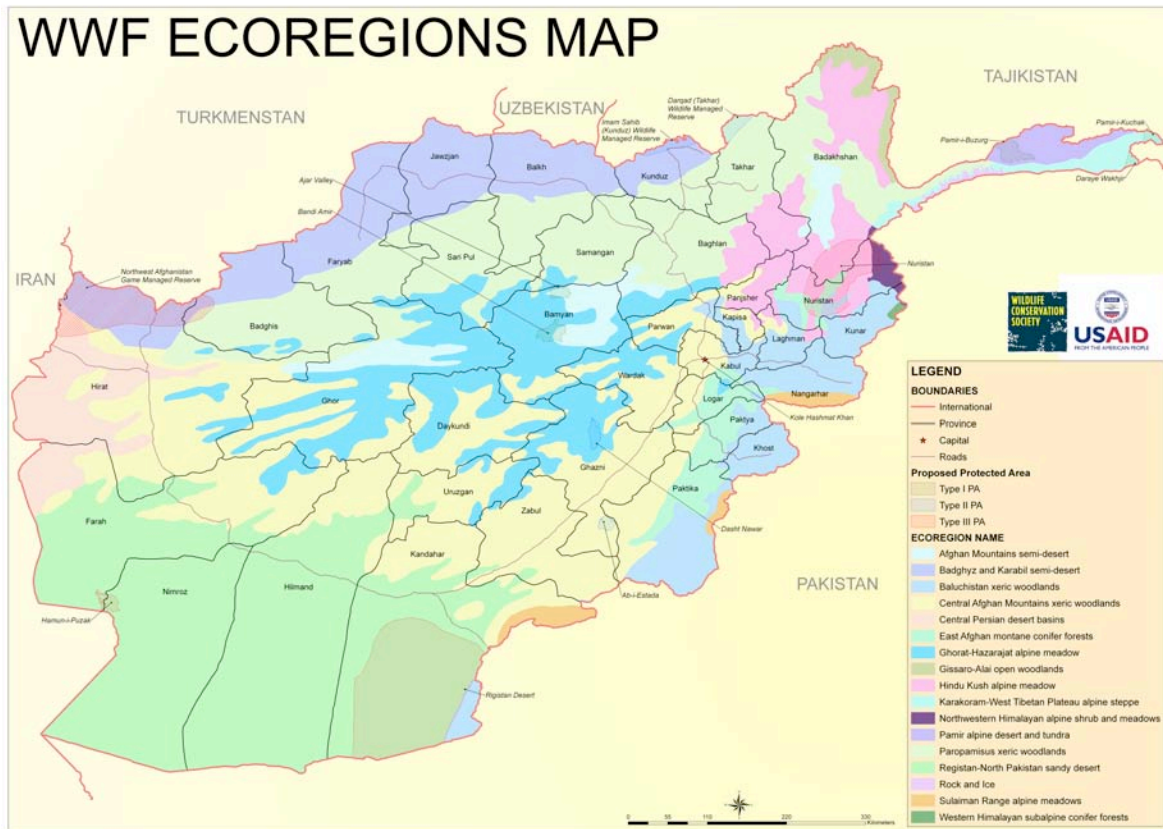


Figure 1. Afghanistan divided into 17 ecoregions as defined by World Wildlife Fund (2001)

## Fauna of Afghanistan

Knowledge regarding the extent of Afghanistan's fauna is limited due to 30-plus years of conflict. Early explorers noted the rich species diversity found in Afghanistan, and Babur, founder of the Mughal dynasty, included commentary on the spectacular wildlife he saw in his memoirs. Despite these early references to the biological diversity of Afghanistan, the first documented zoological expedition led by J.L. Chaworth-Musters occurred as late as 1930 (Habibi 2003). The goal of this expedition was the collection and documentation of Afghan mammals – a theme which continued in the majority of exploratory expeditions that followed. By 1978, most scientific work in Afghanistan ceased with the invasion by the Soviet Union and was only re-initiated after the fall of the Taliban in 2001.

Afghan wildlife faces many threats but among the most important have been long-lasting conflict, a dramatic increase in human population, and a changing climate. War can be detrimental to wildlife in a number of ways. It disrupts government services and functions, destroys natural resources and infrastructure, and diverts funding for military purposes (Dudley et al. 2002). Population growth has contributed to a severe strain on an already stressed environment. The Afghan population is currently hovering around 28,395,716 (CIA Factbook July 2009) and population is steadily growing at about 2.576% per annum. Almost half of the population (44.5%) is under the age of 14, indicating that growth will most likely increase as this segment of the population reaches childbearing age. The demand for resources by the Afghan population, which is largely rural and dependent on the surrounding environment, is likely to be significant and will only add to current pressures. Climate change

could significantly impact Afghan wildlife by changing precipitation patterns. Currently, almost all water within Afghanistan comes from rainfall as opposed to inflow from other countries (UNEP 2003 in Shank 2006), and variation in the quantity and seasonality of already limited precipitation could be devastating for both the fauna and people of Afghanistan.

Afghanistan contains a wide diversity of mammal species. The country once claimed legendary species like the Caspian tiger (*Panthera tigris virgata*) and Asiatic cheetah (*Acinonyx jubatus venaticus*); however, these species are now considered extinct within Afghanistan. Scientists currently estimate that there are less than 150 snow leopards (*Uncia uncia*) and populations of Marco Polo sheep (*Ovis ammon polii*), markhor (*Capra falconeri*), and urial (*Ovis orientalis*) are declining due to deteriorating range conditions and overharvesting. Little is known about populations of Asiatic black bear (*Ursus thibetanus*) and brown bear (*Ursus arctos isabellinus*) in the Eastern Forest as almost no data collection has occurred on mammals in this region. Distribution and abundance data for small mammals, including foxes, felids, mustelids, and rodents are also scarce. According to current data, six out of seven families of the order Carnivora are found in Afghanistan including 10 species of wild felid, eight species of mustelid, six canine species, two species of bear and the striped hyena. WCS is currently surveying mammal populations in the Eastern Forests, Badakhshan, and Hazarajat to determine distribution and abundance of remaining species.

Afghanistan is a critical stopping point for many migratory birds because it lies in the path of the Central Asian flyway and receives breeding migrants from central and western Siberia (Evans 1994 in Shank 2006). Many of the birds passing through Afghanistan are water birds utilizing Afghanistan's wetlands as nesting sites. Ducks, pelicans, gulls, cranes, and flamingos are often seen along riverbanks and within floodplains; however, the destruction of these sites has had negative impacts on avian species (Formoli 1995). Current estimates indicate there are 428 known species of bird in Afghanistan with another 87 being uncertain (Shank 2006). Afghanistan has one endemic bird species, the Afghan snowfinch (*Montifringilla theresae*), and six near-endemic species (Evans 1994 in Shank 2006). The country also contains various birds of prey including Lammergeiers (*Gypaetus barbatus*), Egyptian vultures (*Neophron percnopterus*), Cinereous vultures (*Aegypius monachus*), the Saker falcon (*Falco cherrug*), and many eagle species (Evans 1994 in Shank 2006, Formoli 1995). Little is known about reptile, fish, and amphibian life in Afghanistan and almost no research has been conducted on insects, vascular plants, lichen or fungi (Table 1).

Table 1. Number of species in Afghanistan by order (Shank 2006)

	Known Species	Uncertain Species	Estimates
Mammals	137	13	
Birds	428	87	
Reptiles	92	20	
Amphibians	6	2	
Fish	101	38	
Insects			10s of 1,000s
Vascular Plants			3 500 – 4 000
Lichens	208	?	
Fungi			1 000s

### Wild Fauna Population Status

Because of the relative scarcity of scientific data on many wildlife species in Afghanistan, scientists and historians rely heavily on personal accounts from local village residents. Interviews with these sources suggest that just 30 years ago, populations of ibex, urial, leopard and wolf were flourishing in certain regions of Afghanistan. For example, a local hunter in Surkhdar (Bamyan Province) spoke of “nodal” or “the time belonging to the urial”. This was a period noted by local Afghans that marked the migration period of urial in Bamyan. Urial would travel from the Kohe Baba in the south on a northward route around mid-December and return along the route during lambing season in the spring. All local hunters knew about nodal and would use this time to harvest migrating urial without young. Now, as our source in Sarkhdar relates, no urial partake in nodal because there are no longer any urial to do so.

Other sources in Ajar Valley indicate that populations of ibex have also decreased dramatically within the past 50 years. Historically, hunting parties of between 3-5 men would take between 1 and 4 days to hunt at least one ibex. However, hunters in the villages of Ruyesang and Deh Qanqala suggest that it now might take as much as two weeks to find a herd of ibex to hunt. In the 1960s and 1970s, Ajar Valley contained at least 3,300 ibex, 100 bactrian deer, and many urial. Abdul Mir Shikari, the King’s hunter in charge of managing the royal lands in this region, said that the war brought unregulated hunting and decimation of these wildlife populations. Furthermore, most hunters agree that populations of “palang” (leopard) in these regions have decreased dramatically. The only species that local hunters believe to have fared well in Afghanistan is the wolf, which has been said to benefit from the increase in domestic livestock around villages and towns.

The range and variety of ecosystems in Afghanistan suggest the potential for differences in traditional resource utilization. For example, hunter interviews in Bamyan province revealed that hunters preferentially hunted “ahou” (a word that simultaneously describes ibex and urial) for recreational purposes only. After a hunt, individuals would divide the meat between themselves or between neighbors in the village, but hunting was never done for subsistence purposes. One hunter said that a hunt would usually result in a town party where everyone would get a share of the meat. However, accounts from other regions in Afghanistan demonstrate that hunting may have been an integral part of the culture and used heavily for subsistence purposes. For example, Degener (2001) points out that hunting played a central

role in the mythology of local people in Nuristan because of the importance of markhor as a subsistence item. In other areas of the country, wildlife may be potentially hunted for trade purposes as anecdotal evidence has indicated that hunters are targeting snow leopards in Badakhshan to sell their pelts in the markets of Kabul.

Outside of information from individual sources, the degree to which conflict in Afghanistan afflicted wild fauna species is unknown. Some speculate that the conflict spared wildlife, especially in remote reaches of Afghanistan, by reducing hunting pressure (Fitzherbert 2003). Fitzherbert (2003) indicates that the Russian occupation significantly reduced hunting and wildlife take because Russian soldiers were not permitted to hunt and local Afghans were too afraid to be seen with weaponry outside of their homes. However, others argue that the Russian occupation and ensuing conflict severely affected wildlife populations by promoting overharvesting of meat, furs, and other products (Formoli 1995, Dudley et al. 2002). There have also been undocumented charges of increased eagle hunting in order to smuggle organs abroad for cash rewards and an increase in the Saker falcon trade to Saudi Arabia (Formoli 1995). The reality is probably a mix of the two theories depending on the region of Afghanistan under consideration and the degree to which it suffered in the conflict.

The full impact of conflict on wildlife will probably never truly be known; however, it is clear that many species in Afghanistan have been declining due to continuing conflict, climate change, and rapid human population growth (Shank 2006). Anecdotal evidence from field scientists and local people indicates that after the departure of the Soviets, hunting dramatically increased. In central regions of the country, hunters indicated that the availability of more sophisticated weaponry decimated populations of ibex and urial. A local resident of the Wakhan said that camel-loads of carcasses were brought down from the Little Pamir during the years of civil conflict in Afghanistan after 1989 (Fitzherbert 2003). More recently, local residents in this area have said that hunting continues although it is more opportunistic in nature than it was in the years following Soviet withdrawal. Field observations from Bamyan and Ajar Valley suggest that since larger mammals have become more difficult to hunt, bird hunting is occurring at an unsustainable rate. However, it is difficult to get an accurate portrayal of wildlife hunting and trade in Afghanistan because President Hamid Karzai placed a ban on hunting in Afghanistan in 2005 making most people reticent to admit to hunting now or in the past.

Currently, the World Conservation Union (IUCN) lists six Afghan species as critically endangered: Afghani Brook Salamander (*Batrachuperus mustersi*), Asiatic Cheetah (*Acinonyx jubatus*) (this species exists in small populations in the neighboring country of Iran and may potentially cross the border into Afghanistan; however, it is considered extinct in Afghanistan); Siberian Crane (*Grus leucogeranus*), White-rumped vulture (*Gyps bengalensis*), Indian Vulture (*Gyps indicus*); and the Sociable lapwing (*Vanellus gregarius*) (Table 2). Seven species, including the snow leopard, markhor, and Saker falcon, are listed as endangered and 18 species are listed as vulnerable. The Convention on International Trade in Endangered Species of Fauna and Flora (CITES) lists 35 Afghan species on Appendix I, 96 species on Appendix II, and 54 species on Appendix III although none of the Appendix III species have been listed by Afghanistan.

Table 2. Legal and Conservation Status of threatened species in Afghanistan

No.	Scientific Name	Common Name	IUCN	CITES <sup>1</sup>
<b>MAMMALS</b>				
1.	<i>Acinonyx jubatus</i>	Asiatic Cheetah	CR (2008)	I
2.	<i>Canis lupus</i>	Gray wolf	LC (2008)	I (Bhutan, India, Nepal and Pakistan); II (all others)
3.	<i>Capra aegagrus</i>	Wild goat	VU (2008)	-
4.	<i>Capra falconeri</i>	Markhor	EN (2008)	I
5.	<i>Cervus elaphus bactrianus</i>	Bactrian deer	LC (2008)	II
6.	<i>Equus hemionus</i>	Asiatic Wild Ass	EN (2008)	II
7.	<i>Felis silvestris</i>	Wildcat	LC (2008)	II
8.	<i>Gazella subgutturosa</i>	Goitered gazelle	VU (2008)	-
9.	<i>Lutra lutra</i>	Common otter	NT (2008)	I
10.	<i>Lynx lynx</i>	Eurasian lynx	LC (2008)	II
11.	<i>Moschus cupreus</i>	Musk deer	EN (2008)	I
12.	<i>Otocolobus manul</i>	Pallas's cat	NT (2008)	II
13.	<i>Ovis ammon polii</i>	Marco Polo sheep	NT (2008)	II
14.	<i>Ovis orientalis</i>	Urrial	VU (2008)	I (ssp <i>ophion</i> )
15.	<i>Panthera pardus</i>	Leopard	NT (2008)	I
16.	<i>Panthera uncia (Uncia uncia)</i>	Snow leopard	EN (2008)	I
17.	<i>Prionailurus bengalensis</i>	Leopard cat	LC (2008)	II
18.	<i>Rhinolophus mehelyi</i>	Mehely's Horseshoe Bat	VU (2008)	-
19.	<i>Ursus thibetanus</i>	Asiatic Black bear	VU (2008)	I
20.	<i>Vormela peregusna</i>	Marbled polecat	VU (2008)	-
21.	<i>Vulpes cana</i>	Blanford's fox	LC (2008)	II
<b>BIRDS</b>				
1.	<i>Anas Formosa</i>	Baikal Teal	VU (2008)	II
2.	<i>Aquila clanga</i>	Greater Spotted Eagle	VU (2008)	II
3.	<i>Aquila heliaca</i>	Eastern Imperial Eagle	VU (2008)	I
4.	<i>Chlamydotis undulata</i>	Houbara Bustard	VU (2008)	-
5.	<i>Columba eversmanni</i>	Pale-Backed Pigeon	VU (2008)	-
6.	<i>Falco cherrug</i>	Saker falcon	EN (2008)	II
7.	<i>Falco naumanni</i>	Lesser Kestrel	VU (2008)	II
8.	<i>Grus leucogeranus</i>	Siberian Crane	CR (2008)	I
9.	<i>Gyps bengalensis</i>	White-rumped Vulture	CR (2008)	-
10.	<i>Gyps indicus</i>	Indian Vulture	CR (2008)	-
11.	<i>Haliaeetus leucoryphus</i>	Pallas' Fish Eagle	VU (2008)	-
12.	<i>Marmaronetta angustirostris</i>	Marbled Teal	VU (2008)	-
13.	<i>Neophron percnopterus</i>	Egyptian Vulture	EN (2008)	-
14.	<i>Otis tarda</i>	Great Bustard	VU (2008)	-
15.	<i>Oxyura leucocephala</i>	White-headed Duck	EN (2008)	II
16.	<i>Pelecanus crispus</i>	Dalmatian Pelican	VU (2008)	I
17.	<i>Vanellus gregarius</i>	Sociable Lapwing	CR (2008)	-
<b>FISH</b>				
1.	<i>Cyprinus carpio</i>	Wild Common Carp	VU (2008)	-
2.	<i>Luciobarbus brachycephalus</i>	Shorthead Barbel	VU (2008)	-
<b>AMPHIBIAN</b>				
3.	<i>Batrachuperus mustersi</i>	Paghman Salamander	CR (2008)	-

<sup>1</sup> I – CITES Appendix I, II – CITES Appendix II, III- CITES Appendix III

# HISTORY OF WILDLIFE TRADE IN AFGHANISTAN

Afghanistan is heavily reliant on its natural resources with almost 80% of the population living in rural settings (Formoli 1995). In the past, Afghans employed sustainable use strategies to ensure the safety and continued existence of their natural resources. Habibi (2003) points to forest use in Nuristan as a prime example of historical environmental regulation in Afghanistan. Tree felling was intensely regulated by village councils, only dead wood could be collected for burning, and the entire village was consulted on the construction of new buildings in order to control the number of trees used. However, decades of conflict and population growth have created a strain on environmental resources. Research suggests only about 5% of the original Afghan forests still exist (Shank 2006) while wildlife populations have been steadily decreasing.

Information about past and current wildlife trade in Afghanistan is limited. Before the current study, the most comprehensive data were collected by Rodenburg in 1977 for the Food and Agricultural Organization and United Nations Development Program. More recently, Khushal Habibi completed an assessment of mammals in Afghanistan while Mishra and Fitzherbert (2004) conducted a smaller survey of the Kabul fur markets. The government of Afghanistan has had to create legislation and make policy decisions on the basis of decades-old information that probably does not reflect what is currently happening in the country. Thus, the surveys conducted by WCS come at a time when the need for information on trade and wildlife harvest is most necessary.

In his analysis of Afghan mammals, Habibi (2003) noted “hunting of fur animals is also being conducted at an unsustainable level. As a result those species whose furs have good market value are slowly disappearing.” Various field reports suggest hunting and habitat degradation have reduced populations of wild goat (*Capra aegagrus*), urial (*Ovis orientalis*), ibex (*Capra ibex*), markhor (*Capra falconeri*), Bactrian Deer (*Cervus elaphus bactrianus*), otter (*Lutra lutra*), stone marten (*Martes foina*), and long-tailed marmot (*Marmota candata*) (Formoli 1995). Species that sell particularly well in trade markets, especially snow leopards and leopards, also appear to be declining in number. Often, hunters kill these cats solely for their furs and discard the rest of the carcass as it is against Islamic beliefs to eat these predators. Wildlife trade declined but did not disappear during conflict between 1992 and 2001 (Fitzherbert 2003) and has recently resurged due to the influx of foreigners and military personnel.

Historically, the main centers for wildlife trade were thought to include Mazar-i-Sharif, Maimana, Kunduz, Ankhoi, Khanabad, Ghazni, and Herat (Figure 2) (Rodenburg 1977). Wildlife products were targeted for tourists, other foreigners and a small number of exports with Afghan citizens constituting only a small portion of the market (Rodenburg 1977). More recent work on wildlife trade in Afghanistan indicates that wildlife products are probably brought into the Kabul central market by “itinerant traders” or buyers (Mishra and Fitzherbert 2004) who sell to stores based in the capital city. These retailers then target aid workers, military personnel, and visiting foreigners who want to take a piece of Afghanistan back to their home countries.



Figure 2. Map of Afghanistan demonstrating historical trade centers (underlined in Red)

In the past 30 years, Afghanistan has made several attempts to regulate its national and international wildlife trade market without great success. In 1973, Presidential Decree No. 628 created a blanket ban on the sale and export of all predator species in Afghanistan. A certification program requiring stamps on fur and fur products in Kabul bazaars followed shortly after in 1974 (Rodenburg, 1977). The certification program was a failure as counterfeit stamps were employed to sell skins which had not previously been certified and the ban on sales and export was largely ignored without consequence. Rodenburg (1977) illustrated the degree of failure when he stated in his trade analysis, “legal export has merely been replaced by illegal export to Pakistan.”

In 1985, Afghanistan became a party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). CITES was the first Multilateral Environmental Agreement signed by Afghanistan and constituted an important step in recognizing the problems associated with wildlife take and trade. Joining CITES should have helped decrease the amount and degree of trade in Afghanistan; however, steps to implement the convention were not taken. Currently, Afghanistan is still not in full compliance with CITES.

# PRESENT WILDLIFE TRADE CONTROLS

Although Afghanistan has been unable to control much of its hunting and trade issues historically, government entities in cooperation with non-governmental organizations like WCS have been working to create institutional and policy frameworks to enhance enforcement and implementation on issues like wildlife trade. However, these processes are still developing and Afghanistan has much work ahead of it before it will be able to adequately control the harvest and trade of wildlife resources. Some more recent measures have been introduced in order to stem the growing tide of wildlife resource utilization, but these have proved difficult to implement and enforce.

Presidential Decree No. 53 was issued in 2005 banning all hunting in Afghanistan for 5 years. This decree has had little impact on decreasing the amount of trade or in curtailing growing markets. Decrees are a form of governance allowing the President of Afghanistan to issue a regulation that takes the form of law. President Hamid Karzai has issued two Decrees in his presidency, one banning hunting and the other banning logging. New proposed hunting legislation is currently being drafted by a legislative drafting group to replace the blanket ban. The hunting law, which will regulate wildlife harvest and possibly trade in Afghanistan, is in revision stages but should be completed within the year.

As a member of CITES, Afghanistan is responsible for monitoring the import and export of all wildlife products – especially if the species in question is considered threatened or endangered. Due to the general lack of implementation activities in Afghanistan, the CITES Secretariat threatened the country with expulsion from the Convention in 2004. Afghanistan delayed expulsion from CITES by passing the Environment Law (English translation as Gazette No. 912, 2007) in 2006. The Environment Law established procedures necessary for import and export of CITES listed species. Articles 54-57 of the Environment Law define basic procedures to control international and domestic trade in Afghanistan and Article 47 requires Afghanistan to provide a list of “protected” and “harvestable” species. The language within the legislation is purposely vague because the Environment Law is considered framework legislation that requires additional regulations for implementation and enforcement.

However, Afghanistan has yet to pass implementing regulations, which has resulted in a limited ability to track wildlife trade markets. Currently, Articles 55-57 of the Environment Law govern the movement of trade. These Articles give NEPA authority to grant export permits pursuant to the payment of fees.

The issuance of export permits is limited by two additional conditions:

- 1) the scientific authority has advised that export will not be detrimental to the survival of the species;
- 2) the exporter holds a valid permit proving that the specimen was lawfully obtained or imported into the country.

Compliance with these conditions is nearly impossible for exporters because Afghanistan has yet to establish a scientific authority and almost no population surveys have been recently



completed to know if exportation would actually be detrimental to the survival of Afghan species. Many developing countries issue permits irrespective of these two conditions if they do not have the necessary data for compliance; however, the CITES Secretariat may formally negate the validity of export permits issued in this manner. In such instances, a species may be legally hunted and traded within the country but may not be exported to any other country that is a party to CITES. The existence of Presidential Decree No. 53 banning all hunting within Afghanistan makes the second condition impossible to fulfill. The decree is set to end in March 2010 but it is uncertain as to whether the President will choose to renew it or to change regulations.

## INSTITUTIONAL FRAMEWORK

The National Environmental Protection Agency (NEPA) and the Ministry of Agriculture, Irrigation and Livestock (MAIL) are the government institutions responsible for devising, implementing and enforcing the Environment Law in Afghanistan. These two agencies exist within the executive branch of Afghanistan. NEPA currently acts as a policy oversight body responsible for addressing “green and brown” issues in Afghanistan while MAIL primarily focuses on natural resource management as a subset of Afghanistan’s agricultural strategy. However, the powers and duties of these two institutions are still in flux, and they often clash because of overlapping mandates. The indistinct separation of their powers makes enforcement and implementation difficult, especially when dealing with issues like wildlife take and trade.

NEPA is divided into six branches: International Environmental Affairs, Research/Policy and Information, Implementation and Enforcement, Natural Heritage Protection, Environmental Assessment and Sustainable Development, Human Resources, and Finance. The Environment Law makes NEPA the lead implementing agency for many of the policies proscribed within it. It requires NEPA to implement bilateral or multilateral environmental agreements like CITES while also monitoring the implementation of other objectives and provisions within the law.

MAIL has been given the primary responsibility for natural resource management with a focus on forests, protected areas, rangeland, and irrigation. In its mandate, MAIL is required to “manage and protect the natural resource base”. The Ministry is divided into three departments: Department of Forestry, Department of Rangeland, and Department of Wildlife and Protected Areas. The contact point for CITES currently resides in MAIL.

### **CITES and Trade**

Although MAIL has a designated management authority recognized by CITES, in reality this position has yet to function properly. Furthermore, according to the Environment Law NEPA is responsible for implementing CITES, and Articles 55-57 state that NEPA is responsible to issue permits for domestic and international trade. Since the scientific and management authorities have the final responsibility for approving trade permits, NEPA and MAIL face conflicting mandates for CITES implementation. This may be one of the primary reasons that Afghanistan has no permitting procedure set up within its governing institutions.

Implementing regulations would be the appropriate method to clarify these institutional roles; however, in the interim, permits must be authorized by NEPA according to the Environment Law. NEPA is also responsible for managing protected species and creating a harvestable and protected species list. WCS is working closely with the appropriate government agencies to establish institutions able to enforce and implement policies compliant with CITES and Afghan law.

# WILDLIFE TRADE SURVEY METHODS

Wildlife trade is notoriously difficult to monitor because people do not readily divulge information about their business or consumption practices – especially if these activities are illicit. Therefore, observation and recall surveys are a common technique used to analyze trade markets around the world. Although there are limitations to using these survey techniques, they provide better security and anonymity for respondents while building a robust analysis of trade patterns within a country. Our study used three different types of surveys to perform a preliminary analysis of Afghanistan’s trade markets. The goal of these surveys was to illuminate three elements of wildlife trade in Afghanistan including the activities of harvesters, markets, and consumers. Two surveys were completed in the capital city of Kabul between August 2006 and May 2007 and one survey was completed in Nuristan and Bamyán Provinces between December 2006 and February 2008. Although the aim was to capture information that could provide general information on trade activities throughout the entire country, security considerations restricted researcher access to markets in remote rural areas that service the main markets of Kabul.

The survey team in Kabul was composed of five local Dari-speakers who could administer the surveys to respondents in Dari. This team was provided with training courses in order to standardize survey techniques before beginning data collection. They completed 41 surveys of Kabul fur markets (Kabul Market Survey) that accounted for the majority of fur traders within the city limits. The survey team also completed 2,618 household consumption surveys (Household Survey) to assess hunting practices and consumption patterns. Two members of WCS international staff conducted focus interviews with hunters in Bamyán, Ajar Valley, and the Wakhan to assess hunting patterns prior to the Russian occupation. Finally, a survey team from Nuristan completed 139 surveys examining harvest practices in the Eastern Forest. While it was desirable to complete more surveys in this region, security concerns made this almost impossible. Illicit activities in Afghanistan, including hunting, are often connected to other forms of illicit trade such as opium and timber trade. These three activities occur in Nuristan making it an extremely volatile and dangerous place for researchers to collect information. Due to these considerations, WCS decided to use Kabul as a surrogate for more direct observations on the assumption that sourcing the products on the market would provide an indication of the impact of wildlife trade on resources in other areas of the country.

All surveys relied on recall methods, an approach which has well-known advantages and disadvantages. Recall surveys are advantageous as they can obtain a surprising amount of information and provide one of the best opportunities to gather preliminary data on delicate information within a short period of time. Furthermore, different types of data within a recall survey are not all subject to recall problems. For example, information regarding whether an individual does or does not hunt is not subject to a recall bias. However, recall surveys are difficult to ground-truth for a number of reasons. First, they require information that depends on the ability of a respondent to accurately remember information upon demand. Recall may result in error and misdirection for data collectors especially if surveyors ask a respondent to recall exact information like figures or dates (e.g. on average how much did a fox skin sell for last year). Second, a surveyor has little ability to substantiate the veracity of claims made by respondents, a problem which is enhanced when the subject material is sensitive. Third, surveys are open to interpretation by the surveyor and the respondent, which may result in miscommunication or misunderstanding.

## HOUSEHOLD CONSUMPTION SURVEYS

Household consumption surveys were directed at individuals in Kabul and, through an approximately 20-minute interview, identified the types and quantities of species hunted, the quantities later sold to markets, and the amounts and types purchased by individuals at such markets. The method was adapted from two studies on wildlife trade in Africa and Central Asia. The first by Starkey (2004) examined bushmeat trade in Koulamoutou, Gabon. The second, completed in 2005 by Wingard and Zahler (2006), adapted survey methods from the longer-term method employed by Starkey. Both of these previous studies relied primarily on recall responses to provide information on trade market behaviors over the entire country. In the household surveys conducted in Kabul, surveyors completed 2,618 surveys in 22 sections of Kabul.

To quantify harvest volumes, questions were formulated to address several components of an individual or family's wildlife harvests on a species-by-species basis. To simplify analyses, WCS determined whether there was a statistical difference in responses given by an individual versus those given as a family unit. Results showed that there was no significant difference between individual and familial responses (t-test,  $P = 0.1025$ ) and thus, individual responses were treated as a proxy for familial values. Questions from the household consumption survey included the names of the species harvested, amounts harvested for each species per hunting excursion, the number of hunting trips per year, estimated yearly harvest, harvest seasons and level of effort, trends in harvest amounts and species harvested, techniques used currently and any changes, and any observed changes in the quality or abundance of species harvested. Differences in the perception of wildlife abundance over time were examined using a Single-Factor ANOVA (SYSTAT 2007). Respondents were asked to judge the abundance (abundant, rare, very rare) of species 50, 30, 10, 5, and 1 year ago as well as their perception of the current status.

A similar set of questions was devised to quantify wildlife use. All participants were asked to respond regardless of whether or not they harvested the species. Questions included the names of the species used, the parts, purposes, amounts, and market prices for each species used, the yearly average of use, market sources for each species, the amount of wild game meat consumed, the amount of meat (whether domestic or wild game) consumed on a daily basis, trends in use (amounts or types of species), trends in market values, and any observed changes in the quality, availability, or quantity. The responses to questions on wildlife use varied greatly depending on how popular the species were as harvest species.

To select sampling areas for the Kabul population, a stratified sampling methodology was developed that divided the urban population into non-overlapping districts using the district mapping available from the city. Each district was sampled using a simple random sampling method. Researchers conducted an equal number of sidewalk interviews at randomly selected locations within each district. On site, survey staff designated a square on the sidewalk. After waiting one minute, the first person to enter the square was questioned. This process was repeated, with one minute waiting periods between interviews, until the desired number of interviews for the area had been completed.

The household consumption surveys were particularly important in our study and we placed relatively more energy into completing a greater number of these surveys for two reasons. First, hunting has been banned in Afghanistan and although enforcement is still somewhat weak there is recognition by hunters and traders that their activities are considered illegal. Therefore, questions are greeted with skepticism especially by storeowners and market vendors, making the market the most difficult and unreliable source of information.

Second, the primary source of wildlife products for traders in Afghanistan is individual hunters located throughout the country. Other studies (Wingard and Zahler 2005) indicated that individual hunters were more willing to answer questions in a one-on-one interview; therefore the household consumption surveys targeted individuals to ask them about their hunting practices. This methodology allows better comparison between market responses and individual responses and provides a more robust picture of trade patterns within Afghanistan.

## MARKET SURVEYS

Market surveys from this report constitute a cursory overview of wildlife trade markets in Kabul, Afghanistan. Six markets were surveyed in Kabul from November 1-7, 2006. These included Emporium, Fariab, Jada-e-Maiwand, Jada-e-Waylat, Kocha-e-kah froshi, and Chicken Street. They were conducted rapid fire to get an immediate sense of trade patterns and to focus future research efforts to better understand wildlife markets around the country. The current study is one of the first to assess the wildlife markets in Kabul since the 1970s and as such, it is creating baseline data for future surveys. However, this means there was little information available to guide the survey team and data collection occurred opportunistically rather than systematically.

Table 3. Description of markets surveyed in Kabul, Afghanistan

Market Name	Number of Stores	Market Type	Store Type
Emporium (5)	3	Retail	Clothing
	1	Wholesale & Retail	Clothing
	1	Retail	Tourist
Fariab (1)	1	Wholesale & Retail	Tourist
Jada-e-Maiwand (6)	1	Retail	Traditional Medicine
	1	Wholesale	Clothing
	4	Wholesale & Retail	Clothing
Jada-e-Waylat (9)	4	Retail	Clothing
	4	Wholesale & Retail	Clothing
	1	Retail	Tourist
Kocha-e-kah froshi (6)	1	Retail	Traditional Medicine
	4	Retail	Clothing
	1	Retail	Other
Chicken Street (14)	6	Retail	Clothing
	3	Wholesale	Clothing
	5	Wholesale & Retail	Clothing

To overcome the lack of existing information on the number and location of wildlife traders or markets in Kabul, the market surveys used “snowball” questions to find and question other retailers. This survey covered 41 shops in six markets around Kabul. Based on observation, the survey probably covered the majority of retailers remaining in the city (Table 3); however, this is not a certainty. Storeowners estimated that there were between 30-50 shops selling wildlife products in Kabul, but future research should include a systematic count of stores selling wildlife products in each market. In 1977, Rodenburg conducted similar research in Kabul using recall surveys to investigate 66 retailers of wildlife products. In his final report, he estimated that he surveyed about 40% of the shops selling wild animal furs in the city. However, trade in wildlife and wildlife products declined precipitously during the conflict years from 1992 to 2001 (Wakhan Mission Technical Report 2003). It is unknown how many shops closed during this period or how many re-opened after the departure of the Taliban.

Markets were defined as retail, wholesale, or both. Rodenburg (1977) further dissected shops within markets into four categories based on the type of product sold. This method was simplified for use in this survey. Stores were defined as clothing, tourist, traditional medicine or other. Tourist shops included those stores that contained wild animal products as well as a range of other items, which targeted foreigners. Clothing shops specialized in selling only wildlife products made as clothing.

The survey addressed several categories of information including market type, product source data, price and sales estimate data, customer information and product use, and awareness and enforcement. Once collected, data were entered into an Excel (Microsoft 2003) database. Data were cleaned, checked for errors and certain questions were removed. Question 5 and 6 were removed because the English-Dari translation of the questions indicated a different meaning than that originally intended by the survey authors. Questions 17, 20, and 21 were discarded because almost all of the respondents did not answer and those that did answer provided responses that were clearly incorrect. These questions dealt with earnings and trends in fur sales; thus, it is unsurprising that respondents would not readily volunteer this information. Questions 26d and 26e were deleted because the validity of the responses indicating age and ethnicity deemed dubious. All survey questions may be examined in Appendix I of this report.

The surveys attempted to access information about the export market in Afghanistan by asking questions about exports in three different ways. First, the respondent was asked whether their products were being exported and to which countries if the answer was positive. Second, the respondent was asked about their customer base and the nationalities of those customers. This was in an attempt to identify if local purchasers were major exporters of wildlife items. Finally, respondents were asked to estimate their volume of exported products to each country. The final question was not answered as often as the first two. This could be a result of the question specifically addressing business practices of the retailer whereas the first two questions are more general in nature.

Descriptive statistics were used to determine percentages and averages on most responses. Data are reported both as a mass aggregate of all results across all species and for individual

species. Results of this analysis should be interpreted with caution and used only as a preliminary gauge of the trade market in Kabul. The degree of non-response was large enough so that it is not certain that many of conclusions would hold had the full spectrum of information been gathered. Instead, these results should be used to direct future study and refine methods for collecting data on wildlife and wildlife products in Afghanistan.

## HUNTER SURVEYS

Two members of WCS international staff conducted focus interviews with village hunters in February and March 2008 in order to obtain information on hunting conditions prior to the start of conflict in 1979. In February, three focus interviews were conducted in Surkhdar, Ruyesang, and Deh Qanqala in Bamyan Province. Interviews in March were conducted in villages in the Wakhan. Focus interviews were around 45 minutes in length. Questions concentrated on species primarily hunted in villages, historical abundance of wildlife populations and hunting methods employed by villagers. A translator was used to facilitate the question and answer process.

The Nuristan surveys were administered between December 2006 and May 2007 by the WCS Nuristan wildlife survey team. The Nuristan wildlife surveys were completed in parallel to a presence/absence survey that assessed the presence of particular species in the Eastern Forest, as well as hunting pressure on these species. This survey team was used due to security concerns in the Eastern Forest, which makes it almost impossible for anyone but locals to gather data. Surveyors targeted hunters and “people who know wildlife” in villages within Nuristan; thus, the surveys were not randomly administered. Survey questions were asked by one member of the team after receiving permission from the local village Shura. If surveyors encountered shepherds in the forest they would also ask to interview them.

The Nuristan surveys focused on questions regarding hunting practices, poaching, and the reliability of local knowledge regarding the presence of particular wildlife species. Reliability tables were used to estimate the level of confidence we could potentially have when analyzing responses from other questions in the survey and the presence/absence of particular species. Respondents were shown a picture of the animal in question and asked whether it exists within Nuristan Province. Respondents indicated either yes or no depending on whether they believed the species to be present in Nuristan. Table 4 presents the results from the reliability analysis. Overall, WCS is fairly confident that respondents could identify species that commonly occur in Nuristan, like snow leopard, fox, leopard and wolf species. However, it appears that we may have less confidence in species that are more rare in Nuristan (e.g. bear species) and that locals may often confuse species. For example, the incorrect percentage rate under “cheetah” may be due to confusion with the leopard, which does exist in Nuristan.

Table 4. Reliability table for Nuristan

	Snow Leopard	Fox	Leopard	Sloth Bear	Jaguar	Wolf	Polar Bear	Brown Bear	Cheetah	Black Bear
Correct	40	46	37	22	22	45	23	24	15	45
Incorrect	7	1	10	25	24	2	24	23	32	2
Percent Right	85.11	97.87	78.72	46.81	46.81	95.74	48.94	51.06	31.91	95.74
Percent Wrong	14.89	2.13	21.28	53.19	51.06	4.26	51.06	48.94	68.09	4.26

Note: Species found in Nuristan are the Snow leopard, fox, leopard, wolf, Brown Bear and Black Bear.

Data from responses to the remaining questions were cleaned and checked for errors. Descriptive statistics were used to determine percentages and averages on responses where there was not enough information for more formal statistical analysis including questions on species preferences, gun ownership, and hunting motivation. These results provide important data regarding the status of local knowledge about the state of the environment that can be compared to species knowledge questions in other surveys.

## DATA ANALYSIS METHODS

The data were analyzed following methods used in a study of take and trade in Mongolia by Wingard and Zahler (2006). Due to differences in the quantity and variety of collected data, only some of the assessments done in this previous study could be performed. However, there was enough information obtained to compare between and within surveys to identify trade markets and examine trends in wildlife trade and take. The study focused mostly on identifying trends by using response rate majorities and non-responses to questions. The analysis also used descriptive statistics to provide information on species preference, value, and enforcement issues. The sensitive nature of a subject like wildlife trade in Afghanistan made it difficult to obtain the quantity of responses necessary to conduct statistical analysis on much of the data. However, these results provide the most up-to-date information available on wildlife take and trade issues in Afghanistan.

Wildlife population abundance was inferred in all of the surveys by asking respondents to indicate how they perceived animal numbers to change over time. The goal of these questions was to obtain information on wildlife population status and surmise whether it could potentially affect trade. The household consumption surveys asked respondents to characterize abundance as very rare, rare, or abundant in the present and over time (50, 30, 10, 5, and 1 year ago). Responses describing wildlife resources from 50 years ago were limited since the median age of our respondents was 36, but we obtained a significant amount of data qualifying wildlife status from 30 years ago onward. A single factor ANOVA was run to assess whether local perception on wildlife abundance significantly differed between time periods, i.e. whether responses about abundance 50 years ago differed from responses about abundance 30 years ago. Data were then grouped into two time periods (10-30 years) and (0-



5 years) and ran another single factor ANOVA to determine if there were any differences between grouped data.

### **Assessment of Data**

Data analysis and methods were guided by considerations of the sample design, researcher bias, quantity and quality of data and internal consistency. In any study, the analysis of survey data requires making assumptions about the degree to which researchers may scale up from small sample sizes in order to make predictions about the entire country. In Afghanistan, scaling up is often more difficult because of the limitations researchers face in their movements due to security. Generally, we attempted to glean as much information as possible from very few places – making generalizations about trade practices and markets more difficult. However, we have attempted to be transparent and acknowledge assumptions and shortcomings in the survey design and implementation. Because surveys from focus interviews and Nuristan surveys were not random, we did not attempt to extrapolate these data to the country at large. It should be emphasized that these results are region-based and should not be confused with more general descriptions of trade and take in Afghanistan. Despite the relatively small sample size and limited sample locations, the Afghan trade surveys were able to obtain novel information on wildlife and trade the likes of which have not been performed since the 1970s. The estimates agree with data reported by other studies conducted on individual species and the perspectives of those familiar with wildlife harvest in the country.

Certain limitations were encountered during the administration and analysis of these surveys that deserve mention so that they might be avoided in the future. The survey team encountered translation difficulties between the English and Dari versions of the surveys and multiple questions had to be discarded. This is a problem often faced in the English-based conservation world, where concepts may not translate well into different languages, as there is no history of their existence. Concern for security may have also affected response accuracy. A number of people surveyed refused to answer questions from the surveys citing security fears as their reason for non-participation. It is unclear whether they were concerned about response from enforcement officials or other insurgent groups currently active in Afghanistan. Finally, most respondents demonstrated a low but pre-existing knowledge of the legal status of hunting and wildlife trade in Afghanistan which may have affected response accuracy. Knowledge of the Presidential Decree banning hunting may have made some survey respondents unwilling to answer questions on hunting and trade, especially if that trade included endangered species or highly valuable animals.

# WILDLIFE TAKE AND TRADE TODAY

Despite all efforts to create a more controlled legal environment, hunting and trade are still prevalent throughout the country. The five main species marketed for trade, in order of the number of times they were observed, were red fox (*Vulpes vulpes*), wolf (*Canis lupus*), jackal (*Canis aureus*), cape hare (*Lepus capensis*), and leopard (*Panthera pardus*). This result differed from the Nuristan hunting survey, which found the top five species ranked in order of hunter preference included markhor, black bear, leopard, wolf, and musk deer (*Moschus moschiferus*). Species ranked by hunting preference from the household consumption survey included duck, partridge, fox spp., hare spp., and wolf. From these results, we conclude the main species targeted in Afghanistan either for trade or other hunting purposes are fox, wolf, hare, and leopard. Discrepancies in survey results may be the result of regional differences or other factors that may be better understood through more data collection.

## SPECIES IN TRADE

The main species marketed, in order of the number of times they were observed in shops, were red fox (*Vulpes vulpes*), wolf (*Canis lupus*), jackal (*Canis aureus*), cape hare (*Lepus capensis*), leopard (*Panthera pardus*), beech (or stone) marten (*Martes foina*), snow leopard (*Uncia uncia*), Afghan fox (*Vulpes cana*), common otter, (*Lutra lutra*), honey badger (*Mellivora capensis*), and ibex (*Capra sibirica*) (Table 5). Other species observed by surveyors, but for which we could not obtain data from retailers included musk deer (*Moschus moschiferus*), corsac fox (*Vulpes corsac*), wildcat (*Felis silvestris*), lynx (*Lynx lynx*), Pallas' cat (*Otocolobus manul*), and argali (*Ovis ammon polii*).

Table 5. Ranking of species based on market observations

Scientific Name	Common Name	No. times observed
<i>Vulpes vulpes</i>	Red fox	30
<i>Canis lupus</i>	Wolf	27
<i>Canis aureus</i>	Jackal	24
<i>Lepus capensis</i>	Wild hare	22
<i>Panthera pardus</i>	Leopard	11
<i>Martes foina</i>	Beech marten	10
<i>Uncia uncia</i>	Snow leopard	9
<i>Vulpes cana</i>	Afghan fox	8
<i>Lutra lutra</i>	Common otter	7
<i>Mellivora capensis</i>	Honey badger	6
<i>Capra sibirica</i>	Asiatic ibex	4
<i>Moschus moschiferus</i>	Siberian musk deer	2
<i>Vulpes corsac</i>	Corsac fox	2
<i>Vulpes spp.</i>	Fox species	2
<i>Felis lybica</i>	Wildcat	1
<i>Lynx lynx</i>	Lynx	1
<i>Otocolobus manul</i>	Pallas's Cat	1
<i>Ovis ammon polii</i>	Marco Polo Sheep	1
<i>Cervus elaphus bactrianus</i>	Red deer	1
<i>Acinonyx jubatus</i>	Cheetah	1
<i>Panthera tigris ssp. virgata</i>	Caspian tiger	1

Results were slightly different from the Nuristan survey and the Kabul household consumption survey. Markhor, leopard and wolf were the most commonly hunted species in Nuristan (Table 6). In contrast, bird, fox, and hare species were identified as the most commonly hunted species in the household consumption data (Table 7).

Table 6. Ranking of species importance based on Nuristan hunting surveys

Species	Scientific Name	Responses	Percent
Markhor	<i>Capra falconeri</i>	46	38.0
Black bear	<i>Ursus thibetanus</i>	20	16.5
Leopard	<i>Panthera pardus</i>	19	15.7
Wolf	<i>Canis lupus</i>	9	7.4
Musk Deer	<i>Moschus moschiferus</i>	7	5.8
Fox spp.	<i>Vulpes spp.</i>	6	5.0
Wild Goat	<i>Capra aegagrus</i>	2	1.7
Jackal	<i>Canis aureus</i>	1	0.8
Urrial	<i>Ovis orientalis</i>	0	0
Snow leopard	<i>Uncia uncia</i>	0	0
Lynx	<i>Lynx lynx isabellina</i>	0	0
Brown Bear	<i>Ursus arctos</i>	0	0
Ibex	<i>Capra ibex</i>	0	0

Note: Species are ordered from the most heavily hunted species to the least heavily hunted species.

Table 7. Ranking of species importance based on Kabul household consumption survey

Species	Scientific Name	Hunted	Sold	Used
Duck	Species undetermined	212	14	106
Chukar partridge	<i>Alectoris chukar</i>	202	16	89
Fox spp	<i>Vulpes spp.</i>	112	29	18
Hare spp	<i>Lepus spp.</i>	104	12	72
Wolf	<i>Canis lupus</i>	88	22	18
Eurasian coot	<i>Fulica atra</i>	56	4	25
Sparrow	<i>Passer spp.</i>	49	2	20
Markhor	<i>Capra falconeri</i>	45	18	20
Pigeon	Species undetermined	40	2	14
Urial	<i>Ovis orientalis</i>	36	4	30
Cape hare	<i>Lepus capensis</i>	34	0	6
Jackal	<i>Canis aureus</i>	28	4	6
Bactrian deer	<i>Cervus elaphus bactrianus</i>	24	0	4
Grey heron	<i>Ardea cinerea</i>	18	2	14
Crested porcupine	<i>Hystrix indica</i>	20	0	2
Quail	Species undetermined	16	0	2
Ibex	<i>Capra ibex</i>	14	4	12
Crane	<i>Grus spp.</i>	18	2	16
Fish spp	Species undetermined	12	0	6
Wild boar	<i>Sus scrofa</i>	8	0	4
Wild goat	<i>Capra aegagrus</i>	8	0	2
Goitered gazelle	<i>Gazella subgutturosa</i>	6	0	0
Musk deer	<i>Moschus moschiferus</i>	5	0	0
Leopard cat	<i>Prionailurus bengalensis</i>	4	0	2
Lark	Species undetermined	4	0	2
See-see partridge	<i>Ammoperdix griseogularis</i>	4	0	2
Snow leopard	<i>Uncia uncia</i>	2	2	0
Marco Polo sheep	<i>Ovis ammon polii</i>	2	0	2
Perch	<i>Perca fluviatilis</i>	2	0	0
Owl	Species undetermined	2	0	0
Common Pheasant	<i>Phasianus colchicus</i>	2	0	2
Eagle	Species undetermined	2	2	0

Note: Respondents reported the number of animals hunted, sold and used per year.

The household consumption data is unique in that it identifies those species that are important for consumption, trade, or both. For example, predators that are not likely to be eaten by hunters, like the snow leopard, were reported as having no use value. Two snow leopards were hunted and two snow leopards were sold – there was no part of the animal that was used by hunters. These results confirm observations by Mishra and Fitzherbert (2004) in the Wakhan that leopard species are often killed solely for their pelts.

The household consumption data also highlighted species that did not appear in the market survey or Nuristan survey data. For example, eagles and Marco Polo sheep both appeared in the household consumption data but were absent from other surveys. Although the data on these species are limited, these results tenuously confirm the existence of lucrative trade chains that may operate beyond what is currently seen in the markets. Performing larger surveys which canvas a greater area may be necessary to demonstrate the existence of such species in more illicit trade chains and markets.

The variation within the three tables demonstrates differences in hunting and trade preferences regionally, and raises interesting questions about trade chains and markets. For example, black bear is the second most commonly hunted species in Nuristan yet WCS saw no evidence of bear pelts in the Kabul markets. Further research might illuminate whether wildlife products that are hunted but not found within markets exist in different markets not uncovered by our research or whether future demand may influence the provision of these goods.

These survey findings are in accordance with other surveys completed on Kabul trade markets in 2004 and 1977 with some notable differences. In their 2004 survey, Mishra and Fitzherbert (2004) found that lynx and leopard were the most abundant species in Kabul markets while Rodenburg (1977) listed the red fox and jungle cat (*Felis chaus*) as most common. WCS surveys recorded very little lynx in the markets and found cat pelts (wildcat, jungle cat, desert cat) to be relatively absent. For example, wildcat, lynx, and Pallas' cat were mentioned only once as trade species in our Kabul market surveys and were seen infrequently within stores. However, Rodenburg estimated that his survey results indicated harvest of 5,246 jungle cats, 1,279 desert cats, 463 wildcats, and 111 lynx. WCS surveyors may have missed these pelts as cat skins are often patched together to make bed coverings or jackets; thus, they require considerably more effort and knowledge to correctly identify as manufactured products. However, leopard was more common in the present surveys than they were in surveys conducted by Rodenburg (1977). In the Kabul Market surveys leopard was the 5<sup>th</sup> most reported trade species whereas Rodenburg (1977) found it to be so scarce that he did not report it in survey results.

### **Hunting Purposes**

The current ban on hunting makes it difficult to obtain information on hunting in Afghanistan. In the market, household consumption, and Nuristan surveys we directly asked participants if they hunted either now or in the past. Almost 100% of respondents indicated that they no longer hunted citing reasons such as hunting was “uninteresting” or “lack of time”. However, when respondents were being asked about individual species and not on hunting as a general topic they presented different reasons for no longer hunting. For example, when asked about hunting partridges respondents indicated that population declines, war, and lack of security were the main reasons they no longer hunted the bird. The motivation for the inconsistency in responses is unclear but indicates that people are not comfortable admitting they hunt. No one mentioned the Presidential decree as a reason for not hunting.

In hunter surveys in Bamyan and Ajar, hunters were less reluctant to discuss hunting as long as it focused on activities that occurred in the past. They indicated that people no longer

hunted for a number of reasons. First, many weapons were confiscated by the Russians and the Taliban. Abdul Mir Shakari, the King’s hunter in Ajar, had 70 machine guns and 5 grenade launchers confiscated by the Taliban in 1999. Second, the security situation in Afghanistan created the need for people to concentrate more on producing food through agriculture rather than hunting for recreation. Finally, some hunters indicated that they knew hunting was not currently allowed by the government and cited fears of reprisal as a reason for not hunting.

Of course, it is unlikely that respondents have simply stopped hunting. Recent observations from the field (February 2008) saw a number of people out with shotguns and hundreds of decoys out on rivers and lakes for waterfowl hunting. Many people in Afghanistan own guns and have the means by which to hunt. The household consumption surveys demonstrated that even in Kabul about 7% of the people we polled owned a gun (Table 8).

Table 8. Responses from Kabul household consumption data about gun ownership.

Gun Type	Number of Responses
Kalashnikov	14
Hunting Rifle	140
Blow gun (air powered)	13
Shotgun	8
No Response	4

About 3% of the respondents in this survey also owned traps (Table 10). The most common trap types reported were metal traps; however, the most numerous types of trap were bird traps. Only 11 people claimed to own bird traps but collectively this translated into over 2,000 traps. The high number of bird traps may be further evidence of a lucrative bird trade in Afghanistan. Field observations from areas outside Kabul indicate that guns are more prevalent in rural areas, and the same is expected to be true about the number of traps outside the city. In Nuristan, for example, 100% of respondents indicated hunting with guns.

Table 9. Responses from Kabul household consumption data about trap ownership

Trap Type	Number of Responses	Number of Traps
Bird	11	2061
Snare	4	16
Pit	2	8
Metal (for mouse)	58	560
Net	3	4
No Response	5	

The Nuristan survey provided a different perspective on hunting and trade in Afghanistan. In this survey, 92% of respondents indicated that hunting occurred mostly for meat consumption while 1% said hunting happened solely for trade. About 7% of respondents said that hunting occurred for both trade and meat consumption. When asked about individual hunting practices, 42% said that they hunted, 34% replied that they never hunt, and 24% indicated they had hunted in the past but no longer did so. Most people replied that organized poaching and trophy hunting were non-existent in Nuristan but that incidental poaching did occur (Table 10). These results seem to agree with the assessment that much of the wildlife in the Wakhan supplied to trade markets is incidental take (Mishra and Fitzherbert 2004).

Table 10. Results from Nuristan survey about hunting purposes.

	Organized Poaching?	Incidental Poaching?	Trophy Hunting?
No	107	18	116
Yes	13	100	4
No Response	11	15	14

These results provide an interesting comparison between urban and rural regions in Afghanistan. This study and previous studies have found that people living in non-urban environments are more likely to hunt to obtain resources, protect domestic livestock, or if the opportunity arises. However, our surveys demonstrate that even in rural areas wildlife is hunted for trade – and burgeoning demand is likely to increase the harvest rate. Our urban responses from the Kabul household surveys indicated that people hunted primarily for recreational purposes. No one in the household surveys indicated they had ever hunted for trade. Further research might better illuminate whether the urban-rural divide supplies the trade market with different products. For example, our results suggest that urban hunters

could potentially feed the bird trade market in Afghanistan while furs are more likely to come from rural regions.

### **Trade Purposes**

In Afghanistan, animals are harvested for sport, subsistence, and for predator control. For some species, particularly furbearers and birds, trade of live wildlife and wildlife products provides an added monetary incentive for harvest. However, the value of some furbearers in Afghanistan does not seem consistent with the number of those individuals seen in wildlife markets. Recent studies suggest that this disconnect indicates a lack of awareness about the economic potential of wildlife trade. Mishra and Fitzherbert (2004) argue that trade products that originate in Wakhan are probably opportunistic kills or an animal shot for attacking livestock and not the result of hunting for trade. Although this may not be the case for all regions in Afghanistan it suggests that the potential for an explosive increase in the degree of hunting for trade is very real. Concurrently, it is not known how much illicit trade crosses the Tajik, Chinese, and Pakistan borders – but these markets may also lead to increases in wildlife harvest.

In the market surveys, most retailers sold wildlife products in the form of manufactured goods like hats, coats, or scarves and the vast majority of survey responses indicated that these products were purchased for warmth in the winter or home decoration. Rodenburg (1977) also noted in his survey “the only complete skins offered regularly for sale are wolf, leopard, and snow leopard”. We also found fox and jackal complete skins at many shops available as wall pieces. However, manufactured goods appeared to be the total extent of wildlife products offered in Kabul markets. Only individual hunters seemed to use harvested wildlife for consumption purposes and these species only included wild goat or other non-predators.

## **TRADE VALUES**

Price varied greatly between markets, species, and seasons. It was exceptionally difficult to obtain accurate information about purchase and sale price because retailers did not want to provide information on their profit margins. The most common response in our survey depicted that retailers purchased and sold their products for no profit, which is obviously untrue. However, enough responses were obtained to gauge a fairly accurate price scale for some species.

Snow leopard was the most expensive pelt on the market and was quoted at \$1500. Purchase price for snow leopard pelts was estimated at between \$200-400 indicating about a 500% mark-up. The least expensive skins on the market were cape hare which were sold on average for \$15. Purchase price ranged to such a degree that it was impossible to tell for what price skins were actually purchased from harvesters. Hunters from the Nuristan survey reported selling leopard skins for \$300 per skin and Markhor for between \$400-600. Price estimates represented single skins and therefore would vary depending on the number of skins used to create any article of clothing.



# TRADE VOLUMES & PERCEPTIONS OF WILDLIFE ABUNDANCE

Estimating trade volume in a country like Afghanistan is exceptionally difficult due to a lack of data on the status of most wildlife populations that supply trade markets. Without data on specific population numbers, it is difficult to determine whether variation in trade volume arises from population declines that reduce supply or whether it is more likely related to consumer demand. Researchers in Afghanistan are currently in a data gathering stage since almost all of the information about Afghan biodiversity originated prior to 1979 (UNEP 2006). Habibi (2003) completed the most recent comprehensive work on Afghan mammals, but even his research is based on decades old anecdotal data that may reflect past conditions more than present. Availability of data for other taxa is also scarce. For example, most bird data is more than 30 years old, little work has been done on reptiles and amphibians, and there is virtually no information on invertebrate communities.

To make up for the lack of information, researchers have used anecdotal evidence from local people to infer the status of wildlife populations. This evidence is important as it constitutes one of the only sources of current data available. WCS is attempting to overcome the data gap by surveying wildlife populations. However, until these results become available we are also reliant on anecdotal information and respondent recall. Therefore, the present surveys used some anecdotal information, like perception of wildlife abundance over time, to estimate wildlife population trends for particular species as a gauge for variation in trade volume.

From initial observations, the data suggested that people believed wildlife to be more abundant 30 years ago than in the present (Figure 3). However, when an ANOVA was performed to determine whether perceptions on abundance significantly differed between years, no statistically significant difference ( $F = 79.70$ ,  $p = 5.96$ ) was found. This result indicates that respondents were as likely to perceive wildlife to be rare or very rare 30 years ago as they were to have that perception today. When time periods were grouped, no statistical difference in perceptions between periods were detected; however, the p-value moved closer to significance ( $F = 291.80$ ,  $p = 1.24$ ). This may suggest that there is currently not enough data to produce a significant trend.

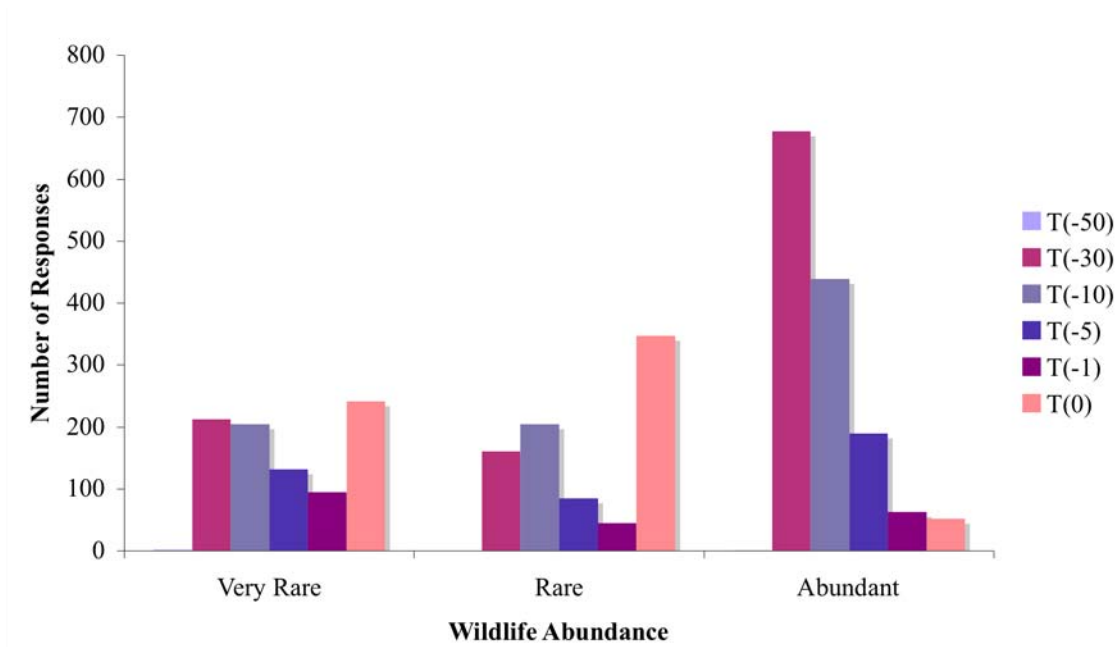


Figure 3. Perception of wildlife abundance over time from the household consumption survey

Note: Respondents indicated whether they thought wildlife resources were very rare, rare, or abundant 50, 30, 10, 5 and 1 year ago as well as in the present. No statistical significance was found between time periods.

Despite the lack of significance, the data seem to suggest that a trend does exist. The hunter interviews in Bamyan and Ajar support this perception as all interviewees responded that wildlife populations were more abundant and easier to hunt in the past. The hunter in Bamyan reported that urial no longer migrated in “nodal” and in order to hunt ibex in this region, a hunter would have to travel for at least 2 weeks. Similarly, the respondent in Ruyesang indicated that villagers were once able to watch ibex up in the mountains from the town but that this is no longer possible. Finally, surveys of ibex in Ajar indicate that while a population of almost 3,300 existed in the 1960s and 1970s, only around 100-200 remain.

We also included questions from the Nuristan survey that asked about the abundance of specific wildlife species in order to assess wildlife trends across all of our regions. Most respondents believed the leopard, snow leopard, and brown bear were all declining in number while the black bear was reported as stable and the wolf was thought to be increasing in number (Figure 4). Wolves are often seen as a nuisance species that kills domestic livestock, which may have contributed to the response that wolf numbers are increasing. However, other reports suggest that wolf numbers may be rising as a result of the abundance of livestock, which substitutes for food in the face of declining prey populations. The reason for variation in responses about black bear abundance is unclear. Bear populations have not been surveyed for many years so it is impossible to know actual population status. However, the percentage positive responses suggest that bear populations may be faring better than the scientific community believes them to be. Results from the household consumption and Nuristan surveys suggest that dips in trade volume could be directly related to decreasing wildlife abundance. Other areas within our survey suggest that demand has remained high over time, even during years with severe conflict, and that other locations which were once an abundant source of wildlife for trade (e.g. Herat) have since been depleted (Rodenburg 1977).

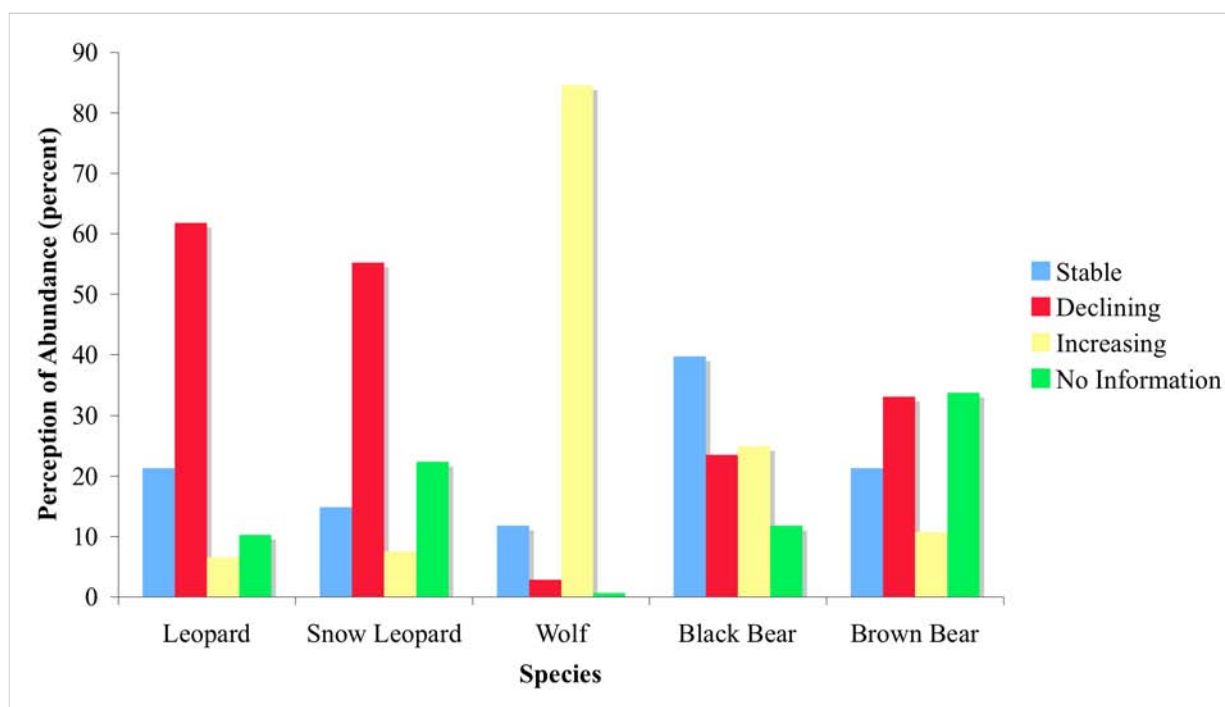


Figure 4. Perception of wildlife abundance from Nuristan

In the market surveys, all respondents except one agreed that quantity in wildlife products had decreased over recent years. The primary reason given for the decrease in quantity and availability was that people were no longer hunting the species in question. No one indicated whether this was a product of numbers in the wild or consumer demand. Most evidence points to the fact that wildlife populations are declining – especially those of ungulates and carnivores. Although there is no hard data to support this hypothesis both anecdotal evidence and field observation suggest this to be the case. However, a large percentage of responses to the question about trade volume in the market surveys were non-responses (60.8%). We are unsure as to why respondents refused to answer questions on volume, but it could be related

to hiding information regarding the actual volume of trade that comes through a market on an annual basis. In order to obtain more information, a more specific version of the question was included asking people to identify whether trade volumes were higher 5 and 10 years ago compared to the present. Unfortunately, the data did not provide any supplemental information as most people responded in a way that indicated they might not understand the question.

While hard numbers about the status of trade volume in Afghanistan cannot be provided, the overall sense from survey respondents is that it is in decline. Although a conclusive reason for its decrease from our market surveys was not obtained, the other two surveys suggest that the main reason stems from the decline in wildlife abundance across the country. This conclusion seems fairly reasonable given the differences in harvest regions between our study and Rodenburg's analysis in 1977. However, future studies should attempt to quantify actual volume in order to better gauge the true impact of wildlife decline on trade.

## TRADE CHAINS

A primary goal for understanding wildlife trade in Afghanistan is to create trade chains that accurately depict the life of wildlife products from harvest to final destination (Wingard and Zahler 2006). Trade chains are pictorial descriptions of the lifecycle of a trade item, and attempt to diagram different routes a product might take to reach its final consumer. Trade chains illustrate regions where an animal was first harvested for consumption, the different markets or middle points that products pass through including central dispersal markets, and end with a hypothesis of where that product either stops or crosses an international border. Recent studies in Afghanistan have hypothesized that the majority of the wildlife products provided for the trade markets originate from individual hunters who sell their kills to itinerant traders (Rodenburg 1977, Mishra and Fitzherbert 2004). One of the goals of these surveys was to better define the trade chains taken by wildlife products that eventually end up in the Kabul markets.

A complete trade chain exceeded the scope of these surveys; however, they provided enough information to suggest likely chains operating in Afghanistan (Figure 6). More information is required to refine the chains especially regarding the fate of wildlife products after they leave Afghanistan. Currently, it appears as though international exports mainly travel to the former USSR, Pakistan, Europe and the United States; however, the export methods and fate of products once they are out of Afghanistan is still unknown. This is an important area for future study.

Most retailers reported that they knew the region of Afghanistan from which their products were harvested (58.2%) or did not respond to the question (41.1%). The level of non-response was anticipated and is likely a function of an unwillingness to share what are probably closely guarded trade secrets or a lack of specific knowledge about the source. Despite this general reluctance, enough respondents answered the question to help begin defining four major harvest zones in Afghanistan including Badakhshan, Mazar-i-Sharif, Takhar, and Ghazni (Figure 5). Afghanistan also appears to have a large import market from Pakistan. These harvest centers are different from Rodenburg's analysis in the 1970s. Like our study, he reported Mazar-i-Sharif and Ghazni as large harvest zones but also included

Maimana, Kunduz, Ankhoi, Khanabad, and Herat. Badakhshan was not mentioned in the 1970s analysis and appears only recently to have opened up to hunting and trade. Currently, a substantial number of wildlife products originate from Badakhshan.

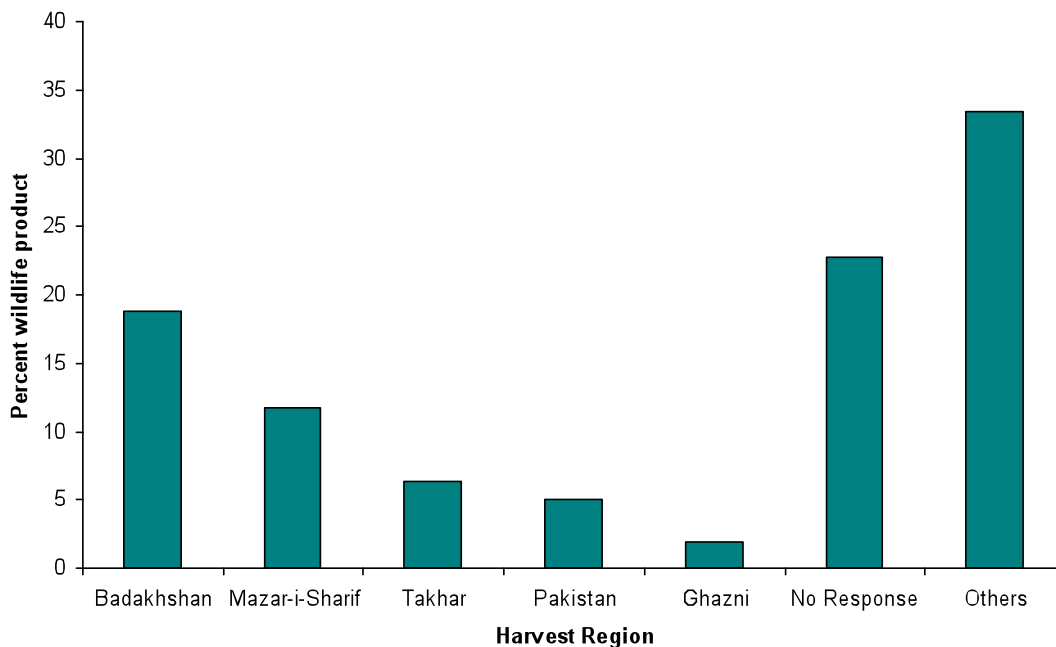


Figure 5. Ranking of harvest regions in Afghanistan

Note: Green bars indicate the percentage of wildlife and/or wildlife products harvested in each region of Afghanistan

Differences in results between our study and Rodenburg’s survey in the 1970s potentially reflect changing wildlife populations in Afghanistan. WCS has conducted numerous presence/absence surveys and field studies since the start of the biodiversity project in 2006. Data reveal that areas which once reported plentiful wildlife have undergone significant ecological changes that have pushed some species to the brink of extinction. For example, Schaller (2007) undertook an expedition to the northwest territories to survey what was left of the Northwest Game Reserve. The reserve was designated in the 1970s because of the abundant wildlife which included Goitered gazelle, onager, ibex, wild goat, leopard, cheetah, wolves and a number of other small carnivores and rodents. Undoubtedly, hunters and traders made use of this abundance to supply the Kabul markets with wildlife products. However, results from Schaller’s exploration of this area indicate that almost all of the species that once thrived in this area have been extirpated or reduced to small patches where hunters cannot reach them. Habibi (2003) has pronounced the Asiatic cheetah extinct in Afghanistan while Schaller (2007) maintains that a few might be left in this region. Although WCS has yet to survey the other regional sources mentioned by Rodenburg, we expect that similar declines have occurred in these regions making it unsustainable for trade.

The majority of wildlife products in Kabul markets were obtained from hunters (32.45%). This suggests a large number of products head straight from harvesters to Kabul markets where they are sold to end users or other traders (trade chain A or B in Figure 6). However, there were also a number of respondents that reported obtaining products from other traders (17.33%) implying that trade chain C, which includes middlemen from local collection points, is also a likely pathway for wildlife products (Figure 6). However, many respondents

did not respond (40.4%) suggesting that there might be other chain possibilities that might be illuminated by more data. A similar number of respondents reported that they obtain skins by purchasing them from local collection points (24.39%) or buy them directly from hunters or traders who come to Kabul (34.15%). These results suggest that although wildlife products are harvested in many regions in Afghanistan and probably come through a local collection point, the main redistribution center, especially for exports, is the city of Kabul.

Wildlife products originated from areas that still have relatively abundant wildlife populations like Mazar-i-Sharif or Wakhan. However, we believe that our surveys were not able to detect all the trade chains in Afghanistan and anecdotal evidence suggests that other forms of illicit trade also exist. Formoli (1995) indicated that the Saker falcon trade and eagle hunting had increased precipitously with the departure of the Russians in the late 1970s. Female Saker falcons may sell for as much as \$30,000 dollars in Saudi Arabia and it appears that this trade has continued despite declining population sizes. We hypothesize that such highly lucrative yet illegal forms of trade such as the Saker falcon trade exist within their own trade chains in Afghanistan, beginning with hunters/falconers and then illegally exiting the country for other destinations. There is no evidence of a medicinal trade in Afghanistan although this could change dramatically if trade markets open to a greater extent between China and Afghanistan (Mishra and Fitzherbert 2004).

Surveying the local collection points where products go after harvest could potentially refine the hypothesized trade chains and provide more information about the number of animals harvested per annum. Such surveys would target regions pinpointed by the current surveys as centers of redistribution including Badakhshan, Mazar-i-Sharif Takhar, and Ghazni. Employing market and hunting surveys could provide crucial information on the volume and variety of wildlife species which come from each collection point. Hunting surveys in particular would need to focus on ascertaining the number of hunters in the region, their motivation for hunting (consumption, trade), and which species are usually targeted.

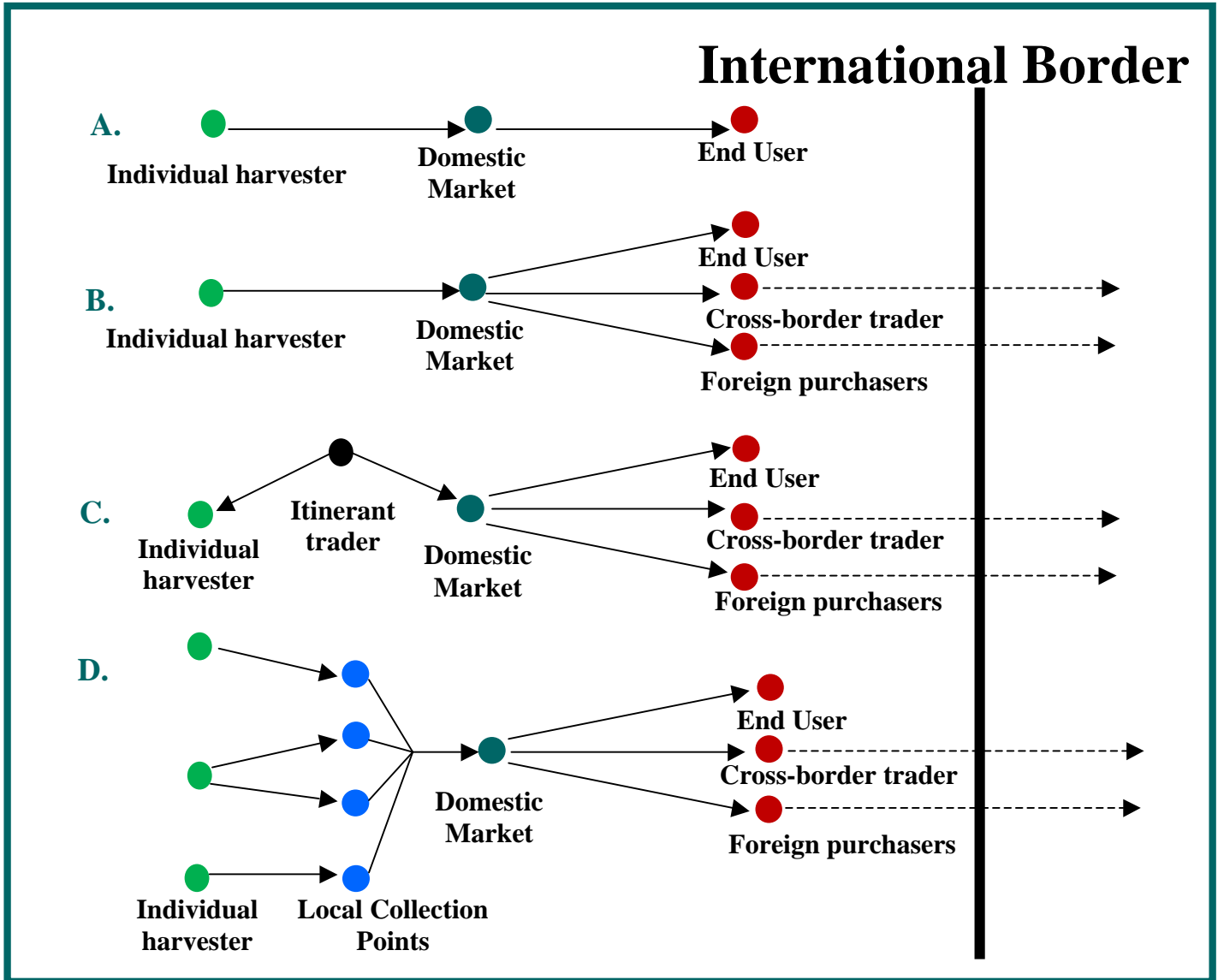


Figure 6. Graphic representation of hypothesized trade chains in Afghanistan

Note: This figure is a graphic representation of four chains identified by our trade surveys. The area to the left of the bold line represents the starting point of trade in Afghanistan. Small green circles depict individual harvesters, small blue circles represent local collection points, small turquoise circles indicate Kabul markets, small black circles describe itinerant traders, and small red circles represent end consumers. The area to the right of the bold line represents the international trade elements. Each line corresponds to the descriptions provided in this section.

### Trade Chain A

Trade chain A in Figure 6 depicts the simplest trade route in Afghanistan. The chain begins with individual harvesters (light green circles) consisting of hunters who most likely originate from Badakhshan, Mazar-i-Sharif, Takhar or Ghazni. Survey results and historical studies suggest that these hunters are not harvesting wildlife primarily for trade, but rather wildlife products that end up on the trade market are the result of incidental take or an opportunistic kill. However, anecdotal evidence suggests this trend may be changing. In his survey of the northwest region of Afghanistan, Schaller (2007) reports that Kuchi nomads will hunt down any wild animal of which they hear – especially if it is valuable on the trade markets. Independent reports from Badakhshan and, more specifically the Wakhan, also suggest that

hunting for commercial trade purposes is increasing. Future research should make tracking these trends a priority.

Next, harvesters move their products directly to trade markets in Kabul (turquoise circles). Once animal products have been distributed within Kabul they are purchased by consumers living within Afghanistan (red circles). Trade chain A stops to the left side of the bold line indicating an international border, which represents the idea that citizens and permanent residents make up a large portion of the consumer market for wildlife species. Previously, expatriates and military personnel were pinpointed as primary consumers. Although these buyers are probably still very active in trade markets, we recognize local consumers as being important to understanding wildlife consumption. In market surveys, residents indicated animal products were useful for decorative purposes and provided warm clothing in the winter.

### **Trade Chain B**

Trade chain B in Figure 6 is similar to the first trade chain with the main difference being that wildlife products move across the international border. In the first two steps, hunters harvest wildlife and supply their products to Kabul markets from regions outside the city. The chain recognizes three potential consumers in the Kabul market: end users as in chain A, foreign purchasers including expatriates and soldiers, and cross-border traders who sell Afghan wildlife products abroad. In his market survey, Rodenburg (1977) reported tourists and resident foreigners as the primary consumers of wildlife. In the present surveys, tourists, locals, and traders made up 51%, 31%, and 18% of consumers respectively. Tourists and traders participate in the final step of this trade chain where purchased goods are moved out of Afghanistan either for export or as consumer goods. The lines moving to the right of the international border in Figure 6 are dotted to indicate that as of yet, the end destination of wildlife trade chain is relatively uncertain. Although there is a fairly good estimate of the countries to which wildlife products ultimately flow, it is unclear as to how these products move once they cross the border.

### **Trade Chain C**

Individual harvesters in trade chain C (Figure 6) begin the chain by hunting animals in regions outside of Kabul. However, many of these harvesters have no way to move the products they wish to sell to the Kabul markets. Fitzherbert (2003) found in his field assessment of the Wakhan that itinerant traders proved to be an important link between hunters in remote areas and urban markets. He defined itinerant traders as men “with everything from clothes, shoes and boots, tea, salt, pens, batteries, needles, scissors, and so on” who moved between communities trading for livestock, dairy products, or harvested wildlife (Fitzherbert 2003). Itinerant traders move from what our surveys recognized as local collection points (Mazar, lower Badakhshan, Takhar) to outlying areas in order to trade with harvesters who otherwise would have no means of selling their goods (Fitzherbert 2003).

The market survey also confirmed the importance of itinerant traders to wildlife trade. It appears that particular stores within Kabul have relationships with one or two traders who bring goods from outlying regions to sell in the city. The survey also attempted to find evidence of professional traders who make their living trading in wildlife products – but we were unable to uncover this information in the present surveys. Although these traders are likely to exist in Afghanistan it is difficult to obtain information about them as they usually operate as inconspicuously as possible. Like trade chain B, end users, cross-border traders,



and foreign purchasers are the likely consumers of wildlife products in Kabul markets. The chain ends with traders or foreign purchasers moving products across the international border.

### **Trade Chain D**

The final trade in the set is trade chain D. This trade route differs from the others because it includes local collection points that in our study included Mazar-i-Sharif, Takhar, and Ghazni. The first step in this chain is similar to the previous chains. Individual hunters harvest wildlife products in remote areas of Afghanistan and bring them to local collection points. At these points, itinerant traders or middlemen purchase incoming wildlife products and move them to Kabul markets. Currently, there is little information about the volume of trade that comes through any one of these trade chains. Our surveys indicate that conducting trade surveys at these local collection points would facilitate a better understanding of how wildlife products move within the country. Interviewing traders and hunters could potentially reveal which of the hypothesized trade chains is more likely to operate within Afghanistan.

The typical three consumer types purchase wildlife products from the Kabul markets. Our surveys reveal that the most likely countries of export include Russia, Turkey and the United States, as well as a number of European Union countries. Russia was a primary export country for most of the trade species in the market surveys, suggesting that a high volume of wildlife trade flows into this country. However, very little is known about what happens to these products once they leave Afghanistan. TRAFFIC performed a study on wildlife trade in Russia and Central Asia in 1998, but noted that the secrecy of wildlife trade in these countries made it exceptionally difficult to track movement of wildlife within and between countries (TRAFFIC 1998). Although Russia has been a member of CITES since 1976, it lacks the legislative authority to confiscate wildlife products once they pass the border, meaning that if trade products are able to pass into the country they become almost impossible to track. These issues are further complicated by the fact that the Russian Management Authority for CITES is responsible for issuing permits for former Soviet countries (TRAFFIC 1998). Russia lacks the ability to control such a large region, making much of Central Asia something of a black hole for wildlife trade. Much more information is required to better hypothesize the fate of trade chains once they pass the international border, especially within the countries of Russia, China and Pakistan.

## **WILDLIFE PRODUCT EXPORTS**

Despite the illegality of wild species export in Afghanistan, wildlife and wildlife products still flow out of the country. WCS attempted to capture this type of information through the market surveys, which provided information about export of wildlife products from Afghanistan. Table 11 depicts species commonly traded in the market survey and the countries to which they are most likely exported. It is important to note that the survey respondents tended not to distinguish between tourists exporting wildlife goods and business individuals who trade export products abroad. Thus, while the general direction that many of these products travel is known we do not know who exactly is responsible for opening or maintaining these trade routes. Our survey analyses indicate that most purchasers are resident expatriates taking wildlife products back to their home country and Afghan nationals, but this does not rule out the possibility of cross-border traders.

Table 11. Primary export countries for trade species in Afghanistan

Species	Survey	Exported Internationally	Country
Wolf	Market, Household, Nuristan	Yes	1*, 2, 3, 4, 5, 6, 7, 8*, 9, 10, 11, 12, 13
Jackal	Market, Household, Nuristan	Yes	1*, 2, 4, 5, 6, 7, 8*, 9, 10, 11, 12, 13
Red fox	Market, Household, Nuristan	Yes	1*, 2, 3, 5, 6, 7, 8*, 9, 10, 11, 12, 13, 15
Cape hare	Market, Household	Yes*	1*, 6, 7, 8*, 9, 10, 11, 12, 13, 14, 15
Leopard	Market, Nuristan	Yes	1*, 2, 3, 5*, 6, 8*, 11, 12*, 13
Stone marten	Market	Yes*	1*, 5, 7*, 8*, 9, 11, 13
Snow leopard	Market, Household, Nuristan	Yes	1*, 3, 4, 5, 7, 8, 12
Blanford's Fox	Market	Yes*	1*, 4, 7, 8*, 9, 11, 12
Common otter	Market	Yes	8, 10, 11, 15
Honey Badger	Market	Yes*	1*, 3, 5, 10, 11
Capra sibirica	Market	Yes	1, 3, 4, 5, 8*, 11

Note: the ^ symbol indicates that wildlife products may be exported but national trade predominates. The \* symbol indicates that most respondents reported that products were traded within or to these countries. Countries are labeled as following: 1 – Afghanistan, 2 – China, 3 – Denmark, 4 – England, 5 – Finland, 6 – Kazakhstan, 7 – Pakistan, 8 – Russia, 9 – Saudi Arabia, 10 – Tajikistan, 11 – Turkey, 12 – USA, 13 – Uzbekistan, 14 – UAE, 15 – European countries.

Responses to survey questions on export were combined to provide a more comprehensive idea of the export path for wildlife products. Table 12 depicts countries ranked in order of the number of appearances in the survey. Russia was reported to receive an overwhelming majority of export products. Respondents indicated that in 8 out of 10 species, Russia was a primary destination for Afghan wildlife. However, survey responses also indicated that “Afghanistan” was an end point for many species. This result runs contrary to previous studies claiming that expatriates were the main consumer of wildlife products, and potentially indicates that the number of nationals buying from trade markets has been seriously underestimated.

Table 12. Ranking of countries by the number of exports reported

Country	No. of Appearances	Rank
Russia	54	1
Turkey	24	2
USA	18	3
Pakistan	16	4
Finland	14	5
Uzbekistan	12	6
Tajikistan	10	7
Denmark	9	8
Kazakhstan	8	9
Saudi Arabia	8	10
England	6	11
China	4	12
Europe	3	13

Responses to the question regarding the national identity of wildlife product consumers further substantiate the claim that Afghans constitute a substantial consumer pool for trade markets. Market surveys indicated that Afghan nationals were the most frequent consumer of products, followed by “foreign” (of unknown origin), Russian, Turkish, and American citizens (Table 13). These results were similar to the grouped export results in Table 12.

Table 13. Ranking of consumer citizenship

Citizen	No. of Appearances	Rank
Afghanistan	46	1
Foreign	14	2
Russia	8	3
Turkey	8	4
USA	7	5
Saudi Arabia	5	6
China	4	7
European	4	8
Finland	4	9
England	2	10
Saudi	2	11
France	1	12

The “identity” question was asked again in another form to validate the reliability of retailer responses on national identity. The question asked storeowners to identify customers as tourist, traditional medicine practitioner, local person, or trader. The majority (73 and 45 respondents respectively) identified consumers as tourists or local people (Table 14). Fewer were identified as traders (25 responses); however, enough respondents identified traders as consumers to suggest the existence of an export market of wildlife products in Afghanistan.

Table 14. Ranking of purchasers

Purchaser	No. of Appearances	Percentage
Tourists	73	50.69
Local People	45	31.25
Traders	25	17.36
Traditional Medicinal Practitioners	1	0.69

## AWARENESS & ENFORCEMENT OF WILDLIFE TRADE REGULATIONS

Hunting is an important aspect of Afghan life and in many ways plays a large role in defining culture (Degener 2001). The Presidential Decree has done little to stop hunting practices because hunting is necessary for most rural Afghans, and they either cannot or will not stop. In Kabul, most people seem to be aware of the Decree. However, it is unclear whether this is the reason why the majority of respondents in our market survey said that they did not hunt (68.3%) or did not respond to the question of whether they hunt (29.3%). It did not seem to affect response rate in Nuristan, where 40% of respondents in the survey admitting to hunting. More information is required to determine whether the differences are due to an awareness of legal issues surrounding hunting or other, possibly regional, differences. However, all of the respondents in the market survey refused to respond to a question requesting they name a particular hunter or store which is known for providing wildlife products upon demand. This result potentially suggests that retailers are more aware of the legality of harvesting wildlife products and will protect the source of their product base.

In order to assess the state of knowledge regarding trade policy in Afghanistan, we asked questions in both the market and household consumption surveys regarding legal awareness of trade and hunting issues, as well as enforcement. Respondents were asked to indicate whether they knew the legal status of wildlife in general (household consumption) or the status of products sold in their stores (market), if they had witnessed any control or enforcement (both surveys), and if they supported changes to hunting allowances in Afghanistan (both surveys).

In the market survey, respondents were divided equally in their awareness of the legal status of wildlife products. Surveys indicated that about 39.0% of respondents said they knew the legal status, 31.7% said they did not, and 29.3% did not respond. The nature of Afghan legislation as it currently stands mandates that trade and sale of wildlife products is legal with a permit; however, in order to get a permit a retailer must prove that the animal was harvested legally, which is impossible given the Presidential Decree. It is uncertain as to the degree to which retailers were aware of the Environment Law provisions but almost everyone was aware of the hunting ban. However, most retailers mentioned that as long as certain furs were

not overtly displayed (i.e. snow leopard) they could sell and trade their products without interference by the government. This suggests retailers understand well that certain products bring more enforcement problems than others, but the issue can generally be avoided by simply removing these products from sight. Only one trader in the Emporium could produce a permit from the Ministry of Agriculture indicating that his sales were “legal”.

In the household consumption surveys, 80% of respondents reported they knew the legal status of most animals while only 20% reported they did not know. When questioned further on whether regulations to control wildlife trade were appropriate for Afghanistan, only 90 people (3.4%) said that permits were necessary while none said they were not. The remainder of interviewees did not respond. For those that answered permits were necessary, everyone thought that permits should limit take to less than 50 animals. However, most people thought that permits should allow take of just 1 or 2 animals per permit.

In the market surveys, the majority of retailers (61.0%) had never seen the government insert control measures on trade of wildlife and no respondent indicated ever having seen any type of enforcement personnel in markets. This is unsurprising given the fact that Afghanistan has few resources to institute enforcement measures and legislation is too equivocal to choose which regulations should actually be enforced. One fur trader mentioned that as long as stores kept large skins like leopard out of displays then they would remain under the radar of any government officials. However, all one had to do was ask for them and the owner could produce snow leopard skins or Leopard skins from his home or the back of his shop.

Despite the fact that most respondents indicated an understanding that harvest of wildlife products was illegal and the supply of those products was decreasing, there was an even divide between survey respondents as to whether hunting posed a problem to retailers, the economy, or wildlife. About 34.1% of retailers suggested hunting was a problem in Afghanistan because it was being done unsustainably whereas 34.1% said it was not a problem and could continue unabated. The majority of shopkeepers had no response when asked what should be done about the hunting issue in Afghanistan. However, other respondents replied with a variety of answers. At least 5 people suggested a ban on hunting and four people suggested the establishment of reserves with hunting limits.

## **SPECIES SPECIFIC INFORMATION**

In addition to the trade and hunting surveys, WCS conducted an extensive literature review to document what is known about species global conservation status, their population status in Afghanistan, and results from surveys conducted during this study. Where possible, WCS identified distribution, densities, and possible threats that are most important to species survival. It is important to note that the status of many of these species is unknown in Afghanistan; thus, even if they are defined as “least concern” by the global community the picture may be entirely different within the country. For example, the leopard is considered stable over most of its range in the world; however, evidence suggests that in Afghanistan numbers are decreasing precipitously due to overhunting and trade.

In the following analysis, we included species that did not figure prominently in the surveys in order to ensure complete coverage of species important to take and trade in Afghanistan. Our surveys, while extensive in scope and range, may not have been able to uncover all information about trade, especially for more illicit trade species (e.g. Saker falcon). We attempted to include the most up-to-date distribution and abundance data, however many of the data are simply not available. While we have reason to believe that many of these species are declining across their range in Afghanistan, more data collection should remain a priority for the scientific community. The majority of species in this review are heavily hunted in regions of Afghanistan for meat, skins/fur, or international trade in body parts. In all cases, hunting and trade is occurring outside legal requirements of Afghanistan.

## RED FOX (*VULPES VULPES*)

**Order:** Carnivora

**Family:** Canidae

**Legal and Conservation Status Worldwide:** *Vulpes vulpes* was listed by the IUCN Canid Specialist Group as lower risk/least concern (2004 Assessment). There are three subspecies of red fox listed as Appendix III species in CITES: *Vulpes vulpes griffithii*, *Vulpes vulpes montana*, and *Vulpes vulpes pusilla* (listing country is India). There are no other trade restrictions on red fox in Afghanistan.

**General Description:** *V. vulpes* is a solitary, nocturnal animal with a diet consisting of rodents, reptiles, small birds, fruits and insects. Red foxes are generalist predators that can easily shift their diet to accommodate changes in their ecosystem or habitat (Gese and Bekoff 2004). Their generalist tendencies allow them to be superlative competitors that directly impact other species in their range. Intra-specific competition has been frequently observed with red foxes (Macdonald and Reynolds 2004), and they are known to directly compete for resources with Arctic fox (*Alopex lagopus*) (Tannerfeldt et al. 2002) and corsac fox (*Vulpes corsac*) (Heptner and Naumov 1992). Preferred habitat includes montane valleys, rocky slopes, semi-deserts and watercourses between 300 and 4,500m in elevation (Habibi 2003). However, *V. vulpes* is highly tolerant of human environments and may actually benefit from fragmentation and encroachment in some instances (Macdonald and Reynolds 2004; Gese and Bekoff 2004). Human influence may also negatively affect fox populations by increasing mortality rates through hunting, increased exploitation, and habitat degradation.

Red foxes are small carnivores noted for their dense, heavy, long fur coat. Pelage color varies, however most are a dark red-brown. The head-body length measures about 60-70cm and the tail ranges between 35-45cm long (Habibi 2003). The tail is very bushy with a white tip. Fox furs with the tail still attached are generally more valuable than those without a tail. In Afghanistan, red foxes often have a yellow tinge to their coat and their underparts range between white and blue-grey. The muzzle is fairly narrow and they have large pointed ears, the back of which are a darker red-brown.

**Distribution and Population Trends:** There have been limited population assessments of *V. vulpes* in Afghanistan. Worldwide it has the widest geographical range of any species in the order Carnivora. The red fox occurs over 70 million km<sup>2</sup> of the northern hemisphere (Macdonald and Reynolds, 2004 IUCN), and has been recorded from the Arctic Circle to North Africa, Central America and across the Asian steppes (Macdonald and Reynolds, 2004 IUCN). Habibi (2003) suggests that *V. vulpes* is widespread in Afghanistan and can be found

in almost any environment in the country. They have been recorded from the southern deserts to the Pamir tundra, and within heavily populated areas including Kabul. *V. vulpes* is common in the Hazarajat mountains and between Herat and Obeh where their range extends to the Seistan basin and Bakwa desert.

Densities vary considerably depending on the region and environmental conditions. Studies have shown fox density can range from about 0.1/ km<sup>2</sup> in the Arctic Tundra to 30/ km<sup>2</sup> in suburban regions where food is superabundant (Harris and Rayner 1986, Voigt 1987). Afghanistan lacks density information on the red fox, and only limited data exists about populations in surrounding countries. Wingard and Zahler (2006) estimated a population of about 1 million animals in Mongolia. If Mongolia covers an area of about 1,565,000 km<sup>2</sup> and there are an estimated 1 million red foxes the suggested density of red fox in Mongolia is about 1.565 foxes/km<sup>2</sup>. If we used the same density to estimate populations in Afghanistan, which covers 647,500 km<sup>2</sup>, then the estimated population size in Afghanistan would be about 413,738 animals.

**Take and Trade:** Red foxes are an important trade species in Afghanistan. They were by far the most abundant animal observed in our surveys and surveyors routinely observed anywhere from 1 to 50 pelts in market stores. However, it was not uncommon for retailers to report well over 100 pelts in the shop. There is little historical information about trade in red foxes in Afghanistan and no records available from government sources. Rodenburg (1977) estimated an annual take of about 12,803 foxes but it is difficult to say whether this number has changed in more recent years.

Most fox pelts reportedly originate from Badakhshan (19.5%) and Mazar-i-Sharif (13.8%) but a fair number was also reported as imported from Pakistan and Europe. The import of fox skins suggests the potential that at least some furs might originate from “fur farms” where animals are raised for the sole purpose of slaughter for fur. We did not uncover any evidence of fox farms in Afghanistan or retailers who imported from farms, but the industry may exist in Afghanistan and should be noted in future studies. Fox skins did not appear to be a heavy export item, but from the survey responses, Russia, Turkey, Finland, Uzbekistan and the USA seemed to be among the major countries of export. Most likely, tourists, who were the most-reported consumer of fox skins, carried these pelts back to their country of origin.

Purchase price ranged from \$4-300 and generally differed in each survey. These purchase prices should be viewed with some skepticism as many shopkeepers insisted that they purchased and sold their products for the same price. Sale price varied from \$25-500 depending on the season, but the actual price is more likely to be under \$50 per skin. WCS was able to purchase a red fox skin for training purposes from a local vendor on Chicken Street for about \$20, but Afghans may be able to purchase fox pelts for much less. Quantity was reported as decreasing in recent years. The reason given for the apparent decline was that less people were hunting the animal. Given the fact that red fox has remained one of the most important trade species in Afghanistan for over 30 years, we expect that fox populations are heavily targeted for harvest and more accessible populations may be suffering as a result.

## WOLF (*CANIS LUPUS*)

**Order: Carnivora**

## Family: Canidae

**Legal and Conservation Status Worldwide:** CITES recognizes *Canis lupus* as an Appendix I and II species. Populations in Afghanistan, Bhutan, India, Nepal and Pakistan are classified as Appendix I species due to intense harvest pressure. Elsewhere, the wolf is listed as an Appendix II species. Wolf populations have been reduced from their original range by about a third due to persecution (Mech and Boitani 2004), but some populations in the United States and Canada have recently stabilized due to increased legal protection, reintroduction programs, and land use changes (Nowak 1999). It is listed as Least Concern (Assessment 2004) on the IUCN red list.

**General Description:** *Canis lupus* is a medium-size canid that is heavily persecuted due to its reputation as a predator of livestock and for its valuable fur. Wolves live and hunt in packs, feeding on wild ungulates, marmots, hares and birds. During periods of food shortage, they will target domestic species. *C. lupus* has a thick, luxurious coat that varies in color from white to black with heavy sprinklings of grey. Their underparts are generally lighter in color and vary from white to yellow. Head-body length measures about 100-140cm, and the tail varies between 30-50cm. Wolves weigh between 18-80kg. *C. lupus* has a broad muzzle, prominent pointed ears, and its tail is darker on the upper side and has a dark tip. The legs are generally lighter in color than the rest of the body.

**Distribution and Population Trends:** *Canis lupus* was once the most widely distributed mammal in the world. Its former range covered the entire northern hemisphere from north of 15°N latitude in North America and 15°N latitude in India (Mech and Boitani 2004). It has been extirpated from most of Western Europe, Mexico and the United States. The current distribution ranges from about 75°N to 12°N over wilderness areas in Canada, Alaska, northern United States, Europe and Asia (Mech and Boitani 2004). In Afghanistan, wolves have been recorded throughout most of the country (Habibi 2003). Records exist from the Central Highlands, Kunar Valley, Nuristan, the Wakhan corridor, and the Zebak Valleys of Badakhshan. In the Pamirs, they have been recorded hunting argali and ibex. They also occur in Hazarajat in areas including Punjao, Lal-wa-sarjantal, and the Hari Rud basin.

According to the IUCN Canid Specialist Group, the status of Afghan wolves is stable but in suspected decline. Wolf populations still cover about 90% of the country and according to IUCN the estimated number of animals remaining in Afghanistan is about 1,000. However, past research indicates wolf density ranges from about 1/12 km<sup>2</sup> to 1/120 km<sup>2</sup> depending on resource availability. Nowak (1999) recorded a density as high as 4-5 wolves per 100 km<sup>2</sup> in Alaska and a study in Kazakhstan estimated the density to be about 1.5 wolves per 100 km<sup>2</sup> (Dimitriyev 2005). If wolf density in Afghanistan were similar to the density recorded in Kazakhstan then the estimated population would be about 8,741 wolves. We believe this is an acceptable comparison given that Kazakhstan borders Afghanistan and they share similar environments.

The higher population estimate seems plausible given the perceived status of *Canis lupus* in Afghanistan by locals, who consider wolves to be abundant and a major threat to livestock. In the Pamirs in Badakhshan, wolves were seen as the main problem carnivore because of their tendency to kill livestock (Fitzherbert 2003, Mishra and Fitzherbert 2004). WCS surveys in Nuristan found that local people overwhelmingly believed wolf numbers to be increasing, a result we suggest is due to their reputation as livestock killers. Livestock owners reported wolves, along with snow leopards, take a large percentage of domestic animals throughout



the year in pastures or near settlements, especially sheep, goat, cattle and yak (Fitzherbert 2003, Mishra and Fitzherbert 2004). The perception that wolves are a direct threat to livestock has contributed to their persecution as a pest species, a fact which is evident in their precipitous decline worldwide.

**Take and Trade:** *Canis lupus* is heavily targeted for its fur in Canada, Alaska, Russia, Kazakhstan and Mongolia (Mech and Boitani 2004, Wingard and Zahler 2006). Afghanistan also utilizes wolf pelts and they are abundant in local markets. In the present survey, *Canis lupus* was the second most observed species, and a majority of retailers reported having between 1-50 pelts in their shop at any one time. Mishra and Fitzherbert (2004) also concluded that wolf, as well as lynx, was the most common wildlife product on sale in Kabul fur markets and Rodenburg (1977) found they were a major item of trade in his market surveys in the 1970s.

Wolf pelts originated from Badakhshan (18.7%), Mazar-i-Sharif (12.3%) and Takhar (7.7%); however, a substantial percentage was also reported from Herat and Kunar. *C. lupus* furs were mostly supplied by hunters; however, almost half of the respondents did not respond to the question about primary suppliers suggesting other supply routes exist. The major countries of export for wolf skins were Russia, Turkey, United States, Uzbekistan, and Kazakhstan. However, the majority of retailers did not respond as to whether they exported wolf products (48.1%). It is probable that many pelts stay within Afghanistan since one of the primary buyers of the product was local people (37.0%). Tourists were the other major purchaser (40.7%).

Purchase price for *Canis lupus* ranged from \$4-200 depending on the season it was purchased. Retailers stated that demand was higher in the winter because people required more of the product for warmth. Selling price ranged from about \$160 in the spring to almost \$500 in the winter. There was high variation in the price range given but the median was about \$160. By far, the majority of these skins were sold in the winter. Quantity was said to be solidly decreasing, because people were no longer hunting wolf.

## GOLDEN JACKAL (*CANIS AUREUS*)

**Order:** Carnivora

**Family:** Canidae

**Legal and Conservation Status Worldwide:** *Canis aureus* is listed by CITES as an Appendix III species by India. Trade is less restricted because the golden jackal is fairly common over its range and the population appears relatively stable. An IUCN assessment in 2004 classified the jackal as Least Concern.

**General Description:** *C. aureus* is an omnivorous canid that feeds primarily on rodents, birds, reptiles, fruits, and insects. It prefers habitats including stony deserts, steppes, and watercourses at elevations between 300 and 3,500m (Habibi 2003). The jackal has coarse, wiry fur that varies in color from pale-yellow to a mix of brown and black. It has a large, bushy tail that is red-brown in color and with a black tip. The tail measures between 20-25cm while head-body length varies between 60-75cm (Habibi 2003). The underparts of the body are lighter than the dorsal fur, ranging from cream to white. Although similar to the black-backed jackal (*Canis mesomelas*) and the side-striped jackal (*Canis adustus*), it can be

morphologically distinguished by its pale golden color of its coat and the absence of a dark saddle on the back. The species tolerates human encroachment because of its generalist characteristics, and has learned to utilize resources in semi-urban and urban environments. However, increased land conversion to intensive agricultural systems and hunting for skins and tails are creating an increased threat level for this species.

**Distribution and Population Trends:** The golden jackal occurs over much of north and northeast Africa, southeast Europe, the Arabian Peninsula, Central Asia, and the Indian sub-continent (Jhala and Moehlman 2004). Habibi (2003) includes a range extension from Bruma to southeast Thailand. *Canis aureus* is fairly common and occurs in high densities (1-4/km<sup>2</sup>) where there are abundant resources (Jhala and Moehlman 2004). There are an estimated 80,000 jackals on the Indian sub-continent; however, population sizes in Africa and central Asia are unknown. In Afghanistan, *C. aureus* is distributed throughout the steppes and lowlands. It has been recorded from the Dashte Nawar Waterfowl Sanctuary and from the Hamune Puzak Lake. In the eastern reaches of the country, it ranges from Jalalabad to Kunar and Paktiya Provinces.

**Take and Trade:** *Canis aureus* has figured prominently in mythology and earned a reputation as a wily and intelligent canid, much like the coyote in North America. Ancient Egyptians worshiped Anubis, the jackal-headed god, and the animal was an important symbol in mythology in Africa, India and Europe (Jhala and Moehlman 2004). As such, the jackal has enjoyed an existence relatively free of persecution. However, trade in jackal skins and tails is growing as global markets for animal products expand. Furthermore, there is limited protection for the golden jackal outside of protected areas and few countries have utilized trade restrictions to prohibit commercial trade in the species. Jackal skins figured prominently in Kabul markets with surveyors generally observing between 1 and 50 pelts in shops. The golden jackal was a major product of trade in Rodenburg's survey (1977), and he estimated about 3,000 jackals harvested per annum.

The majority of products reportedly came from Badakhshan (20.1%) with the rest evenly distributed between Mazar-i-Sharif, Takhar and imported from Pakistan. Retailers indicated that hunters were the primary supplier (37.5%), and that traders and local people supplied the remaining product in equal abundance. Of those who responded to the question on exports, most said jackal skins were heading to Russia, Pakistan, Turkey, and United States. However, this question needs further refinement as it is unclear for what reason Afghanistan might import jackal skins from Pakistan and then re-export them. This result potentially indicates a processing industry in Afghanistan, where products undergo a processing step not available to Pakistan. The majority of purchasers were tourists, indicating that a percentage of the exports could consist of people carrying goods back to their country of origin.

The price of jackal skin was extraordinarily difficult to gauge. The range of price retailers reported purchasing jackal skins for was between \$3-300, with each survey indicating a different purchase price. Sale prices were given as anywhere from \$120 in the fall to \$500 in the winter – a response which is also unreliable. The improbability of these figures is high given the fact that recount of sale prices fluctuated in every survey by a severe degree. Most likely, jackal skins can be purchased for a price similar to red fox, or about \$30-50. Results indicated that jackal skins were declining in abundance with the reason given that many people were not hunting the species.

# LEOPARD (*PANTHERA PARDUS*)

**Order:** Carnivora

**Family:** Felidae

**Legal and Conservation Status Worldwide:** CITES lists *Panthera pardus* as an Appendix I species, meaning that commercial trade is strictly prohibited. IUCN defines it as Least Concern (2001 Assessment) based on its overall density and range, which indicates its effective population size is greater than 50,000 breeding individuals worldwide. However, leopard populations are declining due to loss of habitat and prey, the value of leopard fur on the global market, and increased persecution due to its reputation as a threat to livestock.

**General Description:** *P. pardus* is a nocturnal, solitary felid that feeds primarily on wild goats, sheep, antelope, monkey, hares and rodents. The leopard is a strong, stout cat that weighs between 30-80kg and measures up to 160cm in head-body length (Dollinger and Berne 2008). Its tail can be up to 100cm and has a black tip that reaches to the ground when the animal is standing. The fur is dense, soft, and short and marked with black rosettes without a central spot. Underparts of the body are generally white and less densely spotted. *P. pardus* has small rounded ears that are black in back.

*P. pardus* preferred habitats include rugged mountains, coniferous forests, plains, semi-deserts and hilly steppes between 1,400-4,000m (Habibi 2003). They have been found in mountainous regions ranging from 1,800m in Turkmenistan (Bragin 1990) to 3,200m in Iran (Misonne 1959). They live in relative isolation and occupy fairly large home ranges, which indicates why populations ranging over central Asia are usually small and widely dispersed. Large ungulates serve as the major prey base and recent reductions in wild ungulate populations has contributed to increased incidents between livestock and leopards (Cat Specialist Group 2002). Leopards have acquired a reputation as a killer of livestock that has contributed to increased harvest throughout their range. In Afghanistan, the leopard garners greater respect than the Snow Leopard which is thought to be less intelligent and more indiscriminant in taking livestock (Fitzherbert 2003). In general, leopards are described as intelligent, stealthy, and more tolerable than their white counterpart (Fitzherbert 2003).

**Distribution and Population Trends:** The leopard ranges over Sub-Saharan Africa, North Africa, and southwest and central Asia although it is nearly extinct in North Africa (Cat Specialist Group 2002). Densities appear high in Botswana, Tanzania, Zambia, Zimbabwe and Zaire (Dollinger and Berne 2008). Populations in southwest and central Asia are small, fragmented and threatened (Shoemaker 1993) whereas populations in India, China and southeast Asia are more stable. In northeast Asia the leopard is critically endangered and has been reduced to an extremely low population size.

Leopards may be found in all major mountain ranges in Afghanistan including Hindu Kush, Kohe Baba, Kohe Paghman, and Safed Koh (Habibi 2003). They have been recorded from the Wakhan Corridor and the Darkad Peninsula in Badakhshan, and still range within Khost Fereng and Salang mountains (Habibi 2003). Populations are also thought to exist in Logar and Kunar Provinces, as well as Ajar Valley in central Afghanistan.

**Take and Trade:** Rodenburg (1977) estimated a take of between 80-100 animals annually in Afghanistan. They appeared even more abundant in the survey completed in Kabul by Mishra and Fitzherbert (2003). This survey indicated that turnover in leopard skins was about 3-10

skins per year per shop. If that figure was extrapolated to estimate a countrywide harvest using WCS survey information about the number of retail shops in Kabul, the present day leopard harvest might be as high as 120-400 animals per year. WCS' survey found that leopard skins were not as abundant as in 2003 but we are uncertain as to whether these results stem from a decreased supply or the fact that leopard skins are not easily observed in shop displays.

The majority of leopard pelts reportedly originated from Badakhshan (20.3%) and Mazar-i-Sharif (17.2%), with the remainder coming from Kunar and Takhar. Hunters and other traders primarily supplied leopard pelts to Kabul markets. Leopard skins available in Kabul markets were mainly for export (50%), although about 40% of the retailers did not respond to the question. The high non-response rate for this question suggests that retailers may be aware of the legal issues surrounding export leopard skins. The main countries of export were Finland, United States, Russia and Denmark. Purchasers seemed evenly split between tourists, traders, and locals, potentially suggesting that skins as valuable as leopard might have a more organized system of export than other species (e.g. red fox) whose main mode of export from Afghanistan appears to be tourists. Fitzherbert (2003) indicated that Afghanistan is still in early stages of trade where large carnivores like leopards are still only used as furbearers; however, there is a potential for this market to expand to countries like China.

Retailers reported they purchased leopard skins for between \$200-2400; however, the reliability of these figures is questionable. Fitzherbert (2003) indicated that hunters in Wakhan sold snow leopard pelts for a maximum of \$140 to itinerant traders. Given that Leopard is worth less than snow leopard in the Kabul markets, it is doubtful that retailers would purchase the skins from hunters or traders for more than \$150. Sale price for leopard pelts also ranged from \$200-2400 but the median price was about \$850. These results correlate with Mishra and Fitzherbert (2004) who found that leopard skins sold for between \$150-1000 in Kabul depending on the season. Quantity of Leopard pelts was said unanimously to be decreasing because the population is deficient and less animals are available to hunt.

## SNOW LEOPARD (*UNCIA UNCIA*)

**Order:** Carnivora

**Family:** Felidae

**Legal and Conservation Status Worldwide:** *Uncia uncia* is listed under CITES Appendix I and as endangered in IUCN Red Data Book (2008). According to the IUCN Species Survival Commission Cat Specialist Group Global Vulnerability Ranking, the snow leopard is defined as a Category 2 species (highly vulnerable) (Wingard and Zahler 2006). Given the extent of its range, the estimated population size is about 2,500 breeding adults with no more than 250 breeding individuals in any subpopulation (Cat Specialist Group 2002).

**General Description:** *U. uncia* is a solitary, nocturnal felid known for its elusive nature. It makes its home among some of the most mountainous territory in the world, generally between 3,000-5,000m in elevation, and has been observed in the Himalayas at elevations as high as 5,500m (Cat Specialist Group, Habibi 2003). Habitat generally consists of barren areas, semi-arid or arid shrub land, and grassland (Jackson 1996). The snow leopard feeds on mountain ungulates including ibex, markhor, urial, and bhatal in the Karakoram Mountains

and Ladakh (Habibi 2003). It is also known to predate livestock and other domestic animals. *U. uncia* is a large cat that weighs between 30-40kg and measures 100-150cm in head-body length (Dollinger and Berne 2008). The tail, an essential tool for balance during rock climbing and long-distance leaping, is almost as long as the body ranging between 95-105 cm. Snow leopards have some of the most beautiful and valuable fur in the world. The coat is dense and soft with color varying from white to light grey. Rosettes are pale black to smoky grey and less distinct than in other leopard species. The throat and underparts are an unspotted snow white while the tail is tufty, spotted, and with a dark tip on the upper side. *U. uncia* has short, rounded ears that are black on the tips and margins.

**Distribution and Population Trends:** The snow leopard occurs throughout mountainous regions of Central Asia, mostly in Tibet and China, and covers approximately 1.6 million km<sup>2</sup> though its range may be as large as 2.3 million km<sup>2</sup> (Cat Specialist Group 2002, Mishra et al. 2003). It has been recorded in twelve countries, including Afghanistan, northern Pakistan, India, Nepal, western China, Bhutan, Mongolia, Russia, Tajikistan, Uzbekistan, Kazakhstan, and Kyrgyzstan (Mishra et al. 2003). Like the leopard, populations of snow leopard are small and fragmented throughout Central Asia. Numbers have been declining in recent years due to high levels of persecution, habitat loss, and loss of prey mainly from competition with pastoralists and agropastoralists (Mishra et al. 2003).

In Afghanistan, *U. uncia* ranges throughout the northeastern Hindu Kush and Pamir Valleys in Badakhshan. It has been recorded near Moqor Qara Jelga Valley near Zor Kol Lake in the Big Pamir, Qazideh in the Wakhan corridor, and in various small valleys in the Small Pamir. In southern Badakhshan, it has been reported in the tundra zone of Zebak and near the snow line in Laghman and Nuristan. Habibi (2003) suggests the snow leopard ranges into Ajar valley, but there is little evidence to substantiate this claim.

The most severe threat to snow leopards over their entire range is retaliatory persecution, loss of prey items from hunting and competition with livestock (Mishra et al. 2003). Pastoralism is the dominant land use type within snow leopard habitat and livestock loss has become a primary source of conflict between local residents and wild carnivores. Snow leopards, in parallel with wolves, cause the majority of livestock losses every year in Central and South Asia. A study in the Indian Trans-Himalayas reported that domestic livestock contributed 58% and 40% to snow leopard diet in two different study sites (Bagchi and Mishra 2006) with donkeys, horses, yak and cattle making up the majority of prey items. The rate at which domestic animals are lost depends on the density and availability of wild ungulates over the home range of a snow leopard which varies from 14 km<sup>2</sup> to >1500 km<sup>2</sup> (Mishra et al. 2003).

**Take and Trade:** Rodenburg reported an annual take of about 50-80 skins in Kabul markets (1977). Mishra and Fitzherbert estimated in their 2004 survey that most retailers could sell about 2-5 skins per year. Given the estimated number of fur shops in Kabul (about 50) this conclusion suggests a harvest number similar to Rodenburg's. Our results differed little from the two earlier surveys as snow leopard pelts were observed only about 9 times in different shops by our surveyors. However, most snow leopard pelts were not actually out on display and a retailer had to be asked directly in order to produce them. Thus, the actual number of pelts for sale in Kabul might be higher than what was observed in any of the surveys done on markets in Kabul.

The majority of snow leopard pelts observed in the current survey were reportedly from Badakhshan (13.8%), Hindu Kush (6.9%) or imported from Pakistan (6.9%). However, it should be noted that a majority of respondents did not respond to the question about origin (65.5%). The non-response rate may indicate the sensitivity surrounding the sale and trade of snow leopard pelts or support the suggestion by Fitzherbert (2003) that locals may not know the origin because snow leopard harvest is more an opportunistic activity than a planned hunt.

In the Wakhan, Fitzherbert (2003) claims that locals do not actively hunt or trap snow leopards but that most snow leopard take is the result of livestock owners defending their domestic animals or are “occasional and opportunistic”. Fitzherbert substantiates his claim by suggesting that if Afghans were actively hunting snow leopards for commercial purposes, they would use the entire animal for trade including flesh, bones, and organs (as they do in China) instead of only trading pelts. However, Fitzherbert’s observations may simply provide evidence that trade chains with countries like China, where there is a value associated with meat, organs or bones, have not yet opened to their fullest potential with Afghanistan rather than the absence of purposeful harvest. Afghan retailers are well aware of the high value of snow leopard pelts and anecdotal evidence exists suggesting that planned hunts take place for snow leopards at least in Badakhshan.

Export data on snow leopard was scarce because most respondents refused to answer the export question; thus, only two of our surveys provided information on whether snow leopard pelts were exported. As above, the high non-response rate could indicate a large potential export market especially if the major buyers of snow leopard pelts are tourists. The countries mentioned in the two responses were Russia, Pakistan, England, Finland, Denmark, and the United States.

Only one respondent in our survey indicated a purchase price for snow leopard pelts; thus, we have little substantive evidence for how much profit retailers make off sales. Our respondent indicated he purchased skins for between \$200-400 and sold them for as much as \$1500 in the fall and winter. However, Fitzherbert (2003) indicated that hunters sell snow leopard pelts within a wide range, the maximum being about \$140. Price for wildlife products is generally a function of size, quality, season, and the buyer. In Afghanistan, greater value is attributed to longer skins that include a tail. Snow leopard pelts especially vary in price depending on the quality of the pelt and whether a tail, which is a valuable item, was attached. Sale price in consumer markets varied from \$300-1500. Mishra and Fitzherbert (2004) quoted sale prices at about \$300 suggesting that an original purchase price would be well under \$200. Our results suggest Mishra and Fitzherbert’s estimate of \$300 to be low, but the actual sale price might be well below \$1500. We estimate that snow leopard skins may be purchased for close to the purchasing price of a leopard pelt (\$850).

The majority of respondents said that price was increasing for snow leopard pelts and the primary reason was that people were no longer buying the product. Rationally, this reason would suggest that price would decrease so that retailers could move their products; thus, it is unclear what could be potentially motivating price to increase. Snow leopard pelts were unanimously reported to be declining in quantity primarily because people thought that there were no animals left to sell.

## MARKHOR (*CAPRA FALCONERI*)

**Order:** Artiodactyla

**Family:** Bovidae

**Legal and Conservation Status Worldwide:** The World Conservation Union listed *Capra falconeri* as endangered (1994 assessment); however, this assessment is currently out of date. The global population trend for markhor is unknown. Habibi (2003) suggests that markhor populations are in decline in Afghanistan, but population densities in Pakistan appear relatively high (1-9 individuals/km<sup>2</sup>). Global trade in markhor is restricted as it is a CITES Appendix I species.

**General Description:** *C. falconeri* is a wild goat species known for its spiraling horns, which can reach up to 160cm in adult males (Animal Diversity Web, 2008). Females have shorter horns that reach an average length of about 35cm. Markhor measure between 140-180cm in head body length and their tail adds an extra 8-14cm. The species is sexually dimorphic with males weighing between 80-110kg and females weighing 32-50kg. Adult markhor have long beards and shaggy hair covering their neck, shoulders, and the area above their hocks. Both sexes have beards but they are thicker and more prominent in males. The coat is short and varies from tan to dark brown in color. The legs and belly are white. The tail is very short and sparsely covered in black hair. Markhor habitat includes conifer forests, stony ravines, cliffs and gorges between 1,000-4,000m in elevation (Habibi 2003). They are often associated with oak (*Quercus ilex*), pine (*Pinus gerardiana*), and juniper (*Juniperus macropoda*). Adult females and young animals live in small groups (8-9 markhor) while mature males live in solitude until the rut in late October-December. They are a grazing and browsing species feeding primarily on grasses, leaves, twigs and shrubs.

**Distribution and Population Trends:** Markhor are patchily distributed throughout the western Himalayas in Afghanistan, Pakistan, India, Tajikistan, Turkmenistan, and Uzbekistan. They range from the Chitral forests of Pakistan to the Karakoram Mountains. They have also been recorded in the Baluchistan highlands.

There are three subspecies of Markhor in Afghanistan. *Capra falconeri falconeri* is found primarily in Laghman with seasonal distributions occurring in Nuristan and Paktiya provinces (Habibi 2003). *Capra falconeri megaceros* ranges from the Kohe Safi region in Kapisa to just east of Kabul. *Capra falconeri heptneri* may be found in the Darwaz peninsula.

**Take and Trade:** Markhor did not appear in the WCS market surveys, however it was the primary species targeted by hunters in Nuristan. Given that most people reported consuming the wildlife they hunted, we expect that markhor are hunted primarily for meat.

## ASIATIC BLACK BEAR OR HIMALAYAN BLACK BEAR (*URSUS THIBETANUS*)

**Order:** Carnivora

**Family:** Ursidae

**Legal and Conservation Status Worldwide:** The World Conservation Union recently completed an analysis of *U. thibetanus* in 2008, classifying it as vulnerable. No substantial population estimates exist for this species; however, it is in expected global decline due to its

importance in traditional Chinese medicine. The Asiatic Black Bear is a CITES Appendix I species.

**General Description:** *U. thibetanus* is an omnivorous species living in broadleaf and coniferous forests between 1,500-4,300m in elevation (Garshelis and McLellan 2008). Its diet consists primarily of vegetation in the spring, insects and fruits in the summer, and nuts in the autumn. In some regions, black bears will feed on mammalian ungulates and have been accused of attacking domestic livestock. *U. thibetanus* generally move to different habitats and elevation depending on the season and food availability. In northern habitats, bears will generally hibernate through the winter, sometimes starting as early as October. However, bears living in more tropical climates will generally not spend the winter in hibernation. Asiatic black bear measures about 180cm in head-body length, and males are larger than females. Their coat is dense, shiny and jet black. All bears have a v-shaped pattern on their chest that varies in color between cream and yellow. Black bears often have a “mane” or longer hair running from the middle of their cheeks to their shoulders. Mating season occurs in June and July and cubs are born from November to March (Garshelis and McLellan 2008). However, breeding information is not known across their entire range and Habibi (2003) suggests black bear in Afghanistan do not mate until October.

**Distribution and Population Trends:** *U. thibetanus* is distributed from southeastern Iran throughout the foothills of the Himalayas to Myanmar (Garshelis and McLellan 2008). It occurs in all countries in mainland Southeast Asia except Malaysia. It is patchily distributed in southern China and in the southern islands of Japan. It is also found in Taiwan and Hainan. The World Conservation Union suggests bear populations are declining over much of their range, especially in Southeast Asia and China. Over the last 30 years, *U. thibetanus* is hypothesized to have declined between 30-49% due to habitat loss and overhunting for trade.

In Afghanistan, *U. thibetanus* is confined to the monsoon forests in the eastern portion of the country. It is found in Laghman and Nuristan provinces and had been reported near Jalalabad.

**Take and Trade:** Asiatic black bear was the second most commonly hunted species in the Nuristan surveys; however, it was never observed in the Kabul markets. Black bears are commercially valuable as a trade species and are hunted for their skin, paws, and gall bladders. The World Conservation Union suggests almost all commercial trade routes for black bear end in China for use in traditional Chinese medicinal markets (Garshelis and McLellan 2008). It is unknown whether trade routes have opened from Afghanistan to China for *U. thibetanus*, but it would seem possible given that WCS surveys found no other potential uses within the country.

## MUSK DEER (*MOSCHUS MOSCHIFERUS*)

**Order:** Artiodactyla

**Family:** Moschidae

**Legal and Conservation Status Worldwide:** The World Conservation Union lists *Moschus moschiferus* as vulnerable (1996 assessment), and CITES lists the species on both Appendix I and II. Musk deer occurring in Afghanistan, Bhutan, India, Myanmar, Nepal and Pakistan are listed as Appendix I, as well as subspecies in Japan, Denmark and the Himalayas.

**General Description:** *Moschus moschiferus* is a small deer species highly valued for their musk pods. The deer live between 1,500-3,000m in elevation in conifer and oak forests. The



species is solitary and probably territorial, feeding on leaves grasses, bark and twigs of trees, and lichen (Habibi 2003). It is active in the early morning and late afternoon, often resting in secluded spots for the majority of the day. The musk deer is unique in that it has no antlers and elongate upper canines that extend below the lower jaw (Habibi 2003). Its back legs are longer than the front and it has large rounded ears. *M. moschiferus* has coarse, brown-grey hair covering its body and white hair on its throat, lower cheeks, and belly. The tail is completely hidden under longer hair covering its buttocks. Males have a musk gland beneath the skin of their abdomen that is highly valued throughout the Middle East. When fresh, the scent of the gland is unpleasant but acquires the scent of musk when dried. The rut occurs from November to December and young are born in early June.

**Distribution and Population Trends:** *Moschus moschiferus* is distributed from the Himalayas to Nepal, throughout southwest China, and in the boreal forests of Russia. Little is known about its range in Afghanistan, although it is suspected to occur in the valleys and forests of Nuristan province. More research on the distribution and abundance is necessary for a better understanding of the status of this species.

**Take and Trade:** Musk deer occurred in all three WCS surveys, although it was less common in the Kabul market surveys. It was reported the fifth most preferred species by hunters in Nuristan. *Moschus moschiferus* is heavily hunted for its meat and for the value of its musk pod. It is regarded as extremely rare and probably unable to withstand current harvest levels.

## CHUKAR PARTRIDGE (*ALECTORIS CHUKAR*)

**Order:** Galliformes

**Family:** Phasianidae

**Legal and Conservation Status Worldwide:** The World Conservation Union defines *A. chukar* as least concern (2001) and it is not listed by CITES.

**General Description:** The chukar is a medium sized bird with a red bill, eye ring, and legs. A white throat patch is enclosed by a black band stretching from forehead to breast. Chukar are easily distinguished by the black-red bars that stripe their flanks. Juveniles are duller in color than adults.

**Distribution and Population Trends:** Chukar are widely distributed throughout the world. Their global extent ranges from 1,000,000-10,000,000 km<sup>2</sup> and the global population is estimated at between 100,000-150,000 individuals. They appear to be widespread in Afghanistan, and are hunted in many different regions within the country.

**Take and Trade:** Chukar partridges are popular with hunters in Afghanistan. They were ranked the second most important species for hunting in the household consumption surveys and came up numerous times in hunting interviews in Bamyan and Ajar. In Ajar Valley, Abdul Mir Shakari indicated chukar was heavily hunted by the King when he traveled to the hunting reserve and that the species was also hunted by the King's daughter. Outside of Ajar in the village of Ruyesang, hunters said that they would hunt chukar with shotguns and trap them by setting a noose around a spring.

In the household consumption surveys, 100% of respondents indicated that chukar had been harvested historically but hunting stopped about 25 years ago. The reasons provided for the cessation of hunting included the lack of security, war, and that there were no longer any

chukar left. However, recent interviews with hunters suggest that at least some people are still actively hunting chukar. In Afghanistan, chukar are generally hunted for recreational purposes in the spring and summer with shotguns. Interviewees indicated that Panjsher, Paghman and Kapisa were the best provinces in which to hunt chukar. The average number of chukar harvested per trip was about 28 birds with an annual take of 247. If consumed, this would average about 115.79kg of meat annually although respondents say that the quality and quantity of chukars has decreased in recent years.

## CAPE HARE (*LEPUS CAPENSIS*)

**Order:** Lagomorpha

**Family:** Leporidae

**Legal Status Worldwide:** *Lepus capensis* is not listed by CITES and is considered Lower Risk/Least Concern by the World Conservation Union (1994 assessment).

**General Description:** *L. capensis* is a small lagomorph species found in alpine and sub-alpine valleys, semi-deserts, and scrub environments (Habibi 2003). Its fur is soft, dense, and blue-grey in color although the ventral fur is pure white. The tail is black and tufty and ears are large with black tips. Cape hares grow a thick underwool in winter that is extremely warm and dense. On average, individuals measure 41 cm in head-body length and the tail is about 5 cm long. *L. capensis* feeds on grasses, herbs and leaves and is generally active from before sunset to well after dark.

**Distribution and Population Trends:** *L. capensis* is widely distributed within Asia, Africa and Europe. It is also found in most regions of Afghanistan including the Pamir Valleys, Kohe Baba range, Hazarajat, and from Ghor to Herat. There are also reports of its occurrence in Badghis province.

**Take and Trade:** *L. capensis* is an important trade species in Afghanistan. WCS observed between 1-50 pelts in most shops; however, there were 5 stores where we observed between 50-100 pelts and 4 stores where we saw greater than 200 pelts. Hunters (31.2%) and traders (27.3%) supplied the majority of skins, and the majority of consumers were reported to be tourists. However, “Afghanistan” was reported as the country to which Cape hare was most heavily exported, possibly indicating that local Afghans are primary end users.

Most pelts reportedly came from Badakhshan (17.9%) and Mazar-i-Sharif (14.2%). Price varied substantially from \$1 to \$300 with each survey reporting a different sale and purchase price. The median selling price was about \$15 with higher prices reported in winter. Price and quantity was believed to be decreasing because people have not been hunting the species.

## STONE MARTEN (*MARTES FOINA*)

**Order:** Carnivora

**Family:** Mustelidae

**Legal Status Worldwide:** *Martes foina* is considered Lower Risk/Least Concern by the World Conservation Union (1994 assessment). *Martes foina subspecies intermedia* has been listed by India as an Appendix III species. There are no other trade restrictions on the species.

**General Description:** *M. foina* is an omnivorous mustelid species found in mountainous ravines, canyons and bush covered mountain slopes between 1,000-3,500m in elevation (Habibi 2003). It feeds primarily on rodents, hares, pikas, birds, and reptiles, although it includes many fruits in its diet. The stone marten is solitary and diurnal, living in rock crevices or hollow trees. It has dense, soft fur that is grey brown to slate in color on the upper dorsal surfaces and darker on the limbs. The throat ranges in color from pure white to light straw. It measures 40-55cm in head-body length and its tail is between 25-30cm. The tail is long and bushy, and much darker in color than the dorsal hair. *M. foina* has powerful front legs which it uses for digging, swimming, and climbing trees. Males are generally larger than females.

**Distribution and Population Trends:** *Martes foina* is distributed throughout Europe and Asia from Spain to northern China. In Afghanistan, it occurs in the central highlands, Ajar Valley and portions of Badakhshan. Specimens have also been recorded in Nuristan and different locations in the western portion of the Pamir Mountain Range.

**Take and Trade:** Stone marten pelts were observed several times by our surveyors; however, respondents were more reluctant to share information on this species than others. It is unclear whether this is a result of retailers not wanting to give away trade secrets or because they were unclear about the origin of many of the specimens. The number of pelts generally observed within shops was between 1-50, and the majority reportedly originated from Badakhshan (9.1%). Respondents also indicated that *M. foina* was supplied from Mazar-i-Sharif, Pakistan, and Nuristan (6.8% each).

Retailers indicated that they purchased *M. foina* pelts from hunters and local traders for between \$2-10. However, WCS surveys could not accurately gauge sale price for these wildlife products. \$500 was suggested as an average sale price, but this seems inconsistent with other similar wildlife products sold in trade markets (e.g. *Mellivora capensis*). Price and quantity was reported as decreasing in recent years because there were “no more animals left to sell” and therefore, no one was hunting the species. It also appears from the responses we obtained that *M. foina* is not a species used for export. Most of the product consumed remained in Afghanistan with the majority of purchasers consisting of either local people or tourists.

## BLANFORD’S FOX (*VULPES CANA*)

**Order:** Carnivora

**Family:** Canidae

**Legal and Conservation Status Worldwide:** The World Conservation Union lists *Vulpes cana* as Vulnerable (2001 assessment) and CITES has classified it an Appendix II species. There is little other information on trade or population status globally for this species.

**General Description:** Blanford’s fox is a small canid species with large ears (6-8cm) and a long, bushy tail. Little is known about its habitat or diet except that it probably lives below 1,000m in elevation in semi-deserts and steppes. It is omnivorous and field reports suggest that it prefers fruits and nuts. *V. cana* measures between 40-50cm in head-body length and its tail is almost as long as the body (35-40cm) and has a black tip. The coat is dense and soft, varying in color from light grey to yellow. A dark dorsal line extends toward the tail and the underparts are almost entirely white. The legs are slightly different in color ranging from buff to chestnut.

**Distribution and Population Trends:** *V. cana* is probably distributed throughout Afghanistan, Iran, Uzbekistan, and Turkmenistan (Boitani CITES). No solid distribution data has been recorded within Afghanistan. Rodenburg saw four skins in the Kabul markets but could not ascertain their origin. A record from the 1800s suggests the fox may occur in Kandahar and other southern provinces (Habibi 2003).

**Take and Trade:** The WCS market survey observed *V. cana* in 6 different shops. In four shops, surveyors observed between 1-10 skins and in the other two they saw between 11-20. Retailers said that the majority of skins were from Badakhshan (18.8%), Takhar (18.8%), and Kunduz (8.3%). Further distribution data is required to determine whether *V. cana* ranges as far north as Badakhshan. Hunters supplied the majority of fox pelts, which were purchased by retailers for between \$6-10. Sale price was reported at about \$20, although one retailer mentioned he sold his product for \$500 in the winter.

Respondents indicated that the quantity of *V. cana* pelts was decreasing because hunting efforts have decreased for the species. The majority also said that there were no longer any animals left to sell. A majority of interviewees who responded on *V. cana* (63%) said the product was exported out of Afghanistan with the majority of products traveling to Russia (7), Pakistan (3), and unnamed “foreign” countries (3). Tourists were the most reported consumer of *V. cana* pelts (50%) with the rest of the consumer market equally divided between locals, traders, and non-responses.

## SAKER FALCON (*FALCO CHERRUG*)

**Order:** Falconiformes

**Family:** Falconidae

**Legal Status Worldwide:** The World Conservation Union lists *F. cherrug* as endangered (2001). Its value in the falconry trade has contributed to worldwide declines over the last 20 years, and CITES has listed the species on Appendix II. During the 1990s, intense controls were placed on various countries in 2002, CITES imposed a trade ban on the United Arab Emirates in order to stem the increasing trade for falconry (Birdlife International 2007). Recently, countries like the UAE have developed intensive captive breeding programs to supplement the decrease in wild caught birds.

**General Description:** *F. cherrug* is a large, heavy falcon. Individuals are brown with a pale brow and a white spotted breast. The belly and flanks are heavily streaked. From above, the wings are two-toned and from below they are pale in color. Wing tips are much shorter than the tail tip, and the tail is long, pale, and narrowly barred. Saker falcons measures about 52cm in head-body length and weigh between 0.73 and 1.3kg.

*F. cherrug* inhabits desert edges, semi-deserts, steppes and arid montane ecosystems. They are diurnal and hunt mid-size rodents and small mammals, although they will switch to prey on other birds particularly when they are near water. Saker falcons hunt close to the ground in open terrain and are known for their rapid acceleration and maneuverability. They nest on cliff sides and in copses, and clutch sizes generally averages between 2 and 6. *F. cherrug* may be partially or completely migratory depending on food availability in the winter.

**Distribution and Population Trends:** Saker falcons range from Eastern Europe to western China with breeding populations occurring in Austria, Hungary, Czech Republic, Slovakia,

Serbia & Montenegro, Bulgaria, Romania, Moldova, Belarus, Ukraine, Turkey, Iraq, Armenia, Russia, Uzbekistan, Tajikistan, Kyrgyzstan, Kazakhstan, Mongolia and China (Birdlife International 2007). They mostly likely bred (and may still breed) in Turkmenistan and Afghanistan, and possibly India. Migrating individuals are known to occur in Italy, Malta, Cyprus, Israel, Jordan, Egypt, Libya, Sudan, Tunisia, Ethiopia, Kenya, Saudi Arabia, Yemen, Oman, UAE, Bahrain, Kuwait, Iran, Pakistan, India, Nepal, Afghanistan and Azerbaijan (Birdlife International 2007).

The greatest threats to the Saker falcon include capture for falconry trade and habitat loss. Birdlife International (2007) estimates falconers take between 6,825-8,400 individuals per year in the Middle East alone, with almost 77% of those individuals comprised of juvenile females. In 1990, the global population was estimated at 8,500-12,000 breeding pairs; however, this number decreased to 3,600-4,400 breeding pairs by 2003. The World Conservation Union estimates that over 13 years global populations of *F. cherrug* have decreased by 61%.

**Take and Trade:** Although WCS witnessed no evidence of falcon trade in Afghanistan, recent reports suggest that traders from the Middle East are active in the country. A news article from February (2008) reported that 20 traders were taken hostage by the Taliban in the western province of Farah while they were trapping for Saker falcons and other valuable bird species. Some of the traders were reportedly Afghan but the remainder of the group originated from Arab states.

The number of bird traps reported from the household consumption surveys also suggests an active bird trade in Afghanistan. However, the hypothetically lucrative nature of the falcon trade might mean that trade chains are covert and will not be easily rooted out by international surveys. Some evidence estimates that wild-caught falcons may be traded for as much as \$US 20,000 in countries like Saudi Arabia.

## HONEY BADGER (*MELLIVORA CAPENSIS*)

**Order:** Carnivora

**Family:** Mustelidae

**Legal and Conservation Status Worldwide:** The World Conservation Union classifies *M. capensis* as Lower risk/least concern (1994), although this assessment is out of date. According to the CITES species database, *M. capensis* is listed on Appendix III in Botswana and Denmark and there is a live trade quota of 100 for Tanzania.

**General Description:** *M. capensis* live in temperate climates below 1,000m in elevation in habitats that include foothills, valleys, and steppes (Habibi 2003). It is an omnivorous species that feeds on small reptiles, rodents, birds, insects, fruits, berries, roots and an assortment of plants. The honey badger (or ratel) is a small, thickset animal that weighs between 9-12kg (Animal Diversity Web 2008). The head-body length measures 0.8m and the tail is about 0.3m long. Females are generally slightly smaller than males. Honey badgers are entirely black except for the top part of their head, neck, and back, which are covered by a honey or silver colored stripe running the entirety of the body. They have powerful forelimbs used for digging and a broad head with a short muzzle.

Honey badgers are so called because of their symbiotic relationship with the Greater honeyguide (*Indicator indicator*). The bird leads *M. capensis* to beehives and waits for it to break open the hive and expose certain choice parts like larvae and wax. The honey badger generally consumes the honey and leaves the rest for its guide. Honey badgers are extremely bold and aggressive. They have been witnessed attacking African buffalo, gnu, waterbuck, and even lion. They live in small groups or alone, and are highly secretive. Mating occurs in September and October with 1-4 cubs born in April and May.

**Distribution and Population Trends:** *M. capensis* is distributed throughout Africa (from South Africa to Sudan), the Arabian Peninsula, Iran, Turkmenistan, Pakistan, India and Bangladesh. Northern Afghanistan is also included in its range although there have been only few collections of specimens from the country. Little is known about the global population of honey badgers.

**Take and Trade:** In the market surveys, WCS surveyors saw many skins belonging to *M. capensis*. The majority of these skins came from Badakhshan and Mazar-i-Sharif, which corresponds to suggested range data. However, almost 42% of the responses on the origin of honey badger pelts were non-responses. Retailers indicated that sale prices ranged between \$50 and 150 in the winter when sale prices were higher due to demand. The major consumers of honey badger were tourists.

## SIBERIAN IBEX (*CAPRA SIBIRICA*)

**Order:** Artiodactyla

**Family:** Bovidae

**Legal and Conservation Status Worldwide:** The World Conservation Union lists *C. sibirica* as lower risk/least concern (1994), however this assessment is out of date. It is not listed on any CITES appendices although trophy hunting for ibex still occurs over much of Central Asia.

**General Description:** Siberian ibex reside in alpine valleys, permafrost zones, cliffs and rocky crags between 2,000-5,000m in elevation (Habibi 2003). They are heavy and thickset, weighing between 35-130kg. Females and young ibex vary in color from red-brown in the summer to dark grey in the winter. Males have a dark brown coat with a pale saddle patch over their back. The tail, which is between 10-18cm in length, is bushy and covered by long black hairs. Individuals have a long brown stripe extending down the dorsal side of their body from shoulder to tail. Ibex are graced with long, scimitar-shaped horns that grow to about 130cm in males and 30cm for females.

Ibex live in small herds numbering from 2-30 individuals. The rut occurs in autumn and the young are born in May. Once the rut ends, males form small bachelor herds. Ibex are active at dawn and in the late afternoons feeding near the snow line in summer and in valley bottoms during the winter. They mainly feed on grasses, leaves, and shoots from bushes and trees.

**Distribution and Population Trends:** Ibex are distributed in Afghanistan, China, India, Kazakhstan, Kyrgyzstan, Mongolia, Pakistan, and the former Russian Federation (IUCN 2008). In Afghanistan they are found throughout the Hindu Kush, Paghman, and Kohe Baba Mountain ranges (Habibi 2003). They also occur in the Big and Small Pamir, Darwaz Peninsula, and alpine valleys of Zebak in the north. They were once fairly abundant in the

King's hunting reserve in Ajar Valley numbering about 3,400 animals. They are also found in alpine areas in Badakhshan and northern Nuristan. Ajar valley, Tange Gharu and Lataband passes, Khost Fereng mountains in Baghlan.

**Take and Trade:** The majority of ibex products came from Badakhshan (28.6%) followed by Takhar (21.4%). Purchase price ranged from \$4-80. More ibex products were sold in the winter because of the demand for warm products. Market surveys revealed that tourists were mostly likely to consume ibex products.

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# APPENDIX

## QUESTIONNAIRES

### Market Survey Questionnaire - Afghanistan

Date: \_\_\_\_\_ Survey Member Name(s): \_\_\_\_\_  
 Survey Location: City \_\_\_\_\_ Specific Designation: \_\_\_\_\_

Investigator's Initial Observations (these sections should be filled in without questioning anyone in the shop):

1. Market Name: \_\_\_\_\_
2. Market Type: Retail \_\_\_\_\_ Wholesale \_\_\_\_\_ Both \_\_\_\_\_
3. Store Type: Traditional Medicine \_\_\_\_\_ Pharmaceuticals \_\_\_\_\_ Tourist Shop \_\_\_\_\_ Clothing Store \_\_\_\_\_  
 Grocery \_\_\_\_\_ Kiosk \_\_\_\_\_ Roadside Shop \_\_\_\_\_ Department Store \_\_\_\_\_ Container Shop \_\_\_\_\_  
 other \_\_\_\_\_

4. How many of each species or species parts are seen by investigators. Observer observation.

Species Name	Part	Unit(s)	Total

5. Does the shop contain any imitation wildlife products? Does the shop contain any wildlife products?

Product	Imitation of what species	Unit(s)	Total

6. How are products (real or imitation) displayed? Open display (od), on demand only (do), both (b) How do the products look: imitation or real? Sometime ask shop keeper and sometimes just from observation.

Species Name	Part	Display type	Amount displayed

7. Description of products available in the shop/stall (for example, fresh or old, how old, condition, color, length, juvenile or adult): same except only data on old/new/both

Species Name	Part	Description

Store Owner's Willingness to Respond to Questions (designed to assist with strategizing approach to survey):

8. Is the store owner willing to answer questions? Yes \_\_\_\_\_ No \_\_\_\_\_ (If yes, go to question #9)
9. If not, why? \_\_\_\_\_

Wildlife Product Types (quick table of all wildlife products available through store, whether or not displayed or currently available):

10. Do you sell any wildlife products other than those already observed by the interviewer? If so, what products and from what animals (skin, meat, etc., check appropriate box). If store sold wildlife in the past, fill in the table below anyway and mark this as historical data here: *Historical* \_\_\_\_ *Brief explanation why no longer sells*

Species Name	Whole animal	Live animal	Skin	Meat	Tongue		Oil, Fat	Heart	Liver	Kidney	Horns or Antlers	Blood Antlers	Horn/ Antler powder	Genitals	Glands	Gall Bladder	Placenta	Paws, nails	Feather			Tail	Other (write name of part in box)		

Wildlife Product Sources (designed to assist in defining the types of trade chains used in wildlife trade):

11. Where do you obtain these wildlife products?

Species Name	Part	Region	Sales Source (individual hunter, trader from region, other)

12. Do people come to you or do you go to them? Go to Source \_\_\_\_\_ Source comes to Store \_\_\_\_\_

13. Do you know where this animal is harvested? Yes \_\_\_\_ No \_\_\_\_ If yes, where?

Species Name	Part	Region

14. When do you usually purchase these animals or parts and at what price?

Species Name	Part	When	Price

Sales Volumes and Values (present and historical) (warning: store owners and traders will rarely give this kind of detailed information, but we need to try):

15. How much do you sell these animals or parts for? If there are price differences between seasons, explain.

Species Name	Part	Price				Reason for price difference
		Spring	Summer	Fall	Winter	

16. During which season do you sell the most of which species/parts? (unit type refers to whole animal, just skin, kilos of meat, etc.)

Species Name	Part	Unit type	Quantity				Reason for seasonal sales differences
			Spring	Summer	Fall	Winter	


17. Can you estimate how much of which species you sold in the past, on average every month, season, or year?

Species Name	Part	Unit type	Month	Season				Annual	Last year	5 years ago	10 years ago
				Spring	Summer	Fall	Winter				

18. Recently, which species prices have increased/decreased? Why?

Species Name	Part	Increase (+) or Decrease (-)	Reason(s)

19. Has the quantity available changed recently? Why?

Species Name	Part	Increase (+) or Decrease (-)	Reason(s)

Trend and Snowballer (we want to know about the trend, but also WHERE else should we be looking):

20. Are there animals that used to be sold that are no longer sold? If no longer sold, how much did they cost, where were they available, how long has it been since they are off the market? Why?

Species Name	Part	Available at:	Off market since:	Reason(s)

21. Are there new animals being sold? Where available? Since when? Why?

Species Name	Part	Available at:	Available since:	Reason(s)

22. Do other markets sell these same products? Which ones? \_\_\_\_\_

23. Do you know if your products being exported or resold elsewhere? Where? \_\_\_\_\_

24. If you don't have "X" species, do you know somebody who can hunt one for me?

Name of store or individual:

\_\_\_\_\_

Customer Base and Product Uses:

25. Why do people buy these animal products? (directed at specific articles on the market)

Species Name	Part	Purpose


26. Who is buying these products? (Types of purchasers include - Tourists (T), traditional medicine practioners (TMP), Local People (LP), Traders (TR))

Species Name	Part	Purchasers	Age Range	Gender	Citizenship

27. If exported, can you estimate what percentage of your sales volume is being exported and to which country? \_\_\_\_\_

Species Name	Part	Estimated Export Volume(s)	Country or Countries

Awareness and Enforcement:

28. Are you aware of the legal status of these animals? \_\_\_\_\_

29. Have you seen or is there any control of wildlife trade in this market? \_\_\_\_\_

30. Have you ever seen enforcement personnel in your store or in this market? \_\_\_\_\_

31. How does the permitting process work for the purchasing of these animals? \_\_\_\_\_

32. Do you hunt? Yes \_\_\_\_\_ No \_\_\_\_\_

33. Do you believe that hunting causes a problem to you, the economy, or the wildlife? Yes \_\_\_\_\_ No \_\_\_\_\_

Why? \_\_\_\_\_

34. What should be done about this (these) problem(s)? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Household Consumption Questionnaire - Afghanistan

1. Date:
2. Surveyor:
3. Survey Location:
4. GPS Location:

### 5. Demographics

Age	Gender	Family	Ethnicity	Residency Code	Residency Name	Education

### 6. Employment and Income

Employed?	Professional Code	Profession	Monthly Salary or Pension	Other Sources of Income (Y/N)	Other sources amount per month	Total Monthly Income	Other Family Members Working?	Profession	Monthly income from others	Annual individual income	Annual family income

### 7. Vehicle Ownership

Vehicle Ownership (Y/N)	Type	Vehicle Value

### 8. Gun/Trap Ownership

Own Gun (Y/N)	Type of Gun	Own Traps? (Y/N)	Trap Type	# of Traps

9. Meat Consumption

Monthly Meat Consumption for family (kg/month)	Monthly Meat Consumption per person	Annual meat per individual (person/kg)	Total Annual Game Meat Consumption (kg)	Percentage of Game Meat in Diet (per person)

10. Characterization of Abundance of Wildlife Resources (very rare, rare, or abundant)

Knows or Doesn't Know	50 years ago	30 years ago	10 years ago	5 years ago	Last year	This year

11. Legal Status

Knowledge of Legal Status	Permit Necessary? (Y/N)	Number of Animals Allowed by Permit?

12. General Wildlife Harvest and Use

Interviewee hunts? Y/N	Has interviewee ever hunted?	If no longer hunts, how many years ago did they stop?	Why?	Family Members Hunt? Y/N	Has Family Member Ever Hunted? Y/N	# of Family Members Hunt or Hunted	If no longer hunts, stopped how many years ago?	Age(s) of Family Members that Hunt or Hunted	Re-sell Products? Y/N	Interviewee Uses Wildlife? (Y/N)	Has interviewee ever used wildlife products?



12 (cont'd) General Wildlife Harvest and Use

If no longer uses, stopped how many years ago?	Why?	<b>Family members use wildlife? (Y/N)</b>	Has family member ever used? (Y/N)	If no longer uses, stopped how many years ago?	Why?

13. Mammals

Species	Hunted	Sold	Used
Grey Wolf			
Vulpes vulpes			
Vulpes corsac			
Jackal			
Asiatic Black Bear			
Brown Bear			
Goitered Gazelle			
Ibex			
Markhor			
Musk deer			
Wild Ass			
Bactrian deer			
Wild Boar			
Jungle Cat			
Wildcat			
Leopard Cat			
Marbled Pole cat			
Pallas' Cat			
Snow Leopard			
Common Leopard			
Himalayan Lynx			
Rhesus macaque			

Stone Marten			
Yellow Throated Marten			
Hare spp?			
Porcupine			
Wild Goat			
Cape hare			
Urial			
Marco Polo sheep			

14. Fish

Species	Hunted	Sold	Used
Fish spp			

15. Birds

Species	Hunted	Sold	Used
Duck			
Partridge			
Pigeon			
Quail			
Coot			
Owl			
Lark			
Sparrow			
Common Pheasant			
Grey heron			
See-See Partridge			
Crane			
Eagle			
Falcon			

16. Reptiles

Species	Hunted	Sold	Used
Reptile spp			

## Nuristan Hunting Questionnaire - Afghanistan

1.

Questionnaire Number	TEAM	Date	Area	Grid	Name of Person Filling Form
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2.

Informant's Gender	Informant's Village	Informant's Age	1. Man Mauling Occurred?	2. Which Species?	3. Livestock Predation?
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3.

3a. Which Livestock Killed?	3b. By Which Species?	4. Evidence of Livestock Predation?
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### 4. Reliability Table

RELIABILITY TABLE	
Snow Leopard	is the Snow Leopard in Nuristan?
Fox	Is the Fox in Nuristan?
Leopard	Is the Leopard in Nuristan?
Sloth Bear	Is the Sloth Bear in Nuristan?
Jaguar	Is the Jaguar in Nuristan?
Wolf	Is the Wolf in Nuristan?
Polar Bear	Is the Polar Bear in Nuristan?
Brown Bear	Is the Brown Bear in Nuristan?
Cheetah	Is the Cheetah in Nuristan?
Black Bear	Is the Black bear in Nuristan?
Reliability Score	Reliability Percentage

5.

CARNIVORE TREND IN LAST TEN YEARS				
Leopard	Snow Leopard	Wolf	Black Bear	Brown Bear

6.

EVIDENCE OF SPECIES DURING PAST ONE YEAR												
Leopard	Snow Leopard	Wolf	Black Bear	Brown Bear	Lynx	Pallas Cat	Jungle Cat	Leopard Cat	Wild Cat	Markhor	Urial	Ibex

7.

8. Organized Poaching?	9. Incidental Poaching?	10. Trophy Hunting?	11. Interviewee Hunts?	11. If no longer Hunts, when stopped?
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8.

12A. Species Hunted?	12B. Where Hunted?	12C. Time of Year?	12D. How do you hunt? (gun, trap, etc.)	12E. Purpose of Hunt?	12F. If selling, how much money received?
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