

**STATUS AND ECOLOGY OF CHILTAN WILD GOAT,
CAPRA AEGAGRUS CHIALTANENSIS (CAPRINAE)**

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ABSTRACT: A massif rock peak 3335 meters above the sea level and its allied edged-ridges that rise out in all directions to the arid plains lies in the south-west of Quetta, Balochistan, is the original home of the Chiltan Wild Goat (*capra aegagrus chialtanensis*) declared in 1980 as protected, the Chiltan-Hazarganji National Park came into existence primarily with the object for the protection of this indigenous species. The present exploration of the Chiltan Wild Goat (*Capra aegagrus chialtanensis*) indicated the population that above 400 animals of this species are surviving (globally) in Chiltan- Hazarganji National Park, the only refuge known in Pakistan. The factors involving in suppression of population, habitat and its distribution in the area located out. In the habitat of this goat some 18 other mammals, including 74 species of birds, and 17 of the reptiles and 2 species of amphibians recorded during this study in distinctive seasons conducting thorough surveys round the year from 1997 to 1998 in variable environmental conditions. The important species of vegetation on which the wild goat rely have also been recorded in addition to a major part of flora that exist in the park play an animated role to maintain the eco-system and to develop the condition of Chiltan Wild Goat (*Capra aegagrus chialtanensis*) habitat.

KEYWORDS: Balochistan, Chiltan Wild Goat. Hazarganji, National Park. Quetta.

INTRODUCTION:

Wild goats are distributed in the arid rocky mountainous regions of North Africa, the Middle East and south-west Asia (Corbet and Hill, 1992). In Pakistan, there are three distinct species splitting Wild Goat (*Capra aegagrus*) into two sub-races, Markhor (*Capra falconer!*) into 4 extent identifiable subspecies (Nowak, 1991) and Himalayan Ibex (*Capra ibex sibirica*) distributed in the different eco-zones (Roberts, 1997) of which the under debate species Chiltan Wild Goat (*Capra aegagrus chialtanensis*) is the main focus of this study.

In the past only few studies, which exist the population dynamics of rodents with special reference to the vertebrate pests of agriculture carried out by Vertebrate Pest Research Institute, University of Karachi. Lydekker (1913) examined the horns in British Museum devoted by Appleton (1812) which presented by a local hunter from Quetta, identified as new specie, the Chiltan Markhor (*Capra falconeri chialtanensis*) quoted in Schaller (1977). The status of the Chiltan Wild Goat (*Capra aegagrus Chialtanensis*) population was initially assessed by Schaller and Mirza (1971) and later by Mirza (1975). Between 1979 to 1990, nearly annual surveys were carried out by the Wildlife Specialists, Pakistan Forest Institute (Forest Department Records). Thereafter followed a period when no surveys were conducted until the present investigation of Chiltan Markhor (*Capra aegagrus chialtanensis*) initiated in 1997. Combined of vertebrate wildlife, only 33 species recorded in (Ashiq, 1989) the park area. Shafique and Arain (1997) worked out the general vertebrate wildlife structure and noted about 90 species in the park. The study of the flora, in the late eighties and early nineties, staff and students of the Pakistan Forest Institute carried out on the area's watershed properties (Forest Departmental Files), only some of which was completed, however. Vegetation comprises a great interest of which more than 225 species have been identified.

The Park is most important as the last remaining refuge of the Chiltan Wild Goat (*Capra aegagrus chiltanensis*) declared as endangered species, and the wolf (*Canis lupis*) Afghan Fox (*Vulpes cana*) Marbled Pole Cat (*Vormela peregusna*) Striped Hyaena (*Hyaena hyaena*) and Common Leopard (*Panthera pardus saxicolor*) are the other prime animals of great interest and are badly exploited largely because of their valued fur and have some entered or reached near to be declared as Vulnerable or endangered in the Red Data Book. Likewise, it is an important habitat for many endemic species of the Balochistan flora including *Artemisia quettensis*, *Ampelopsis vitifolia* ssp. *hazariganjiensis*.

Probably of less direct and apparent value are the watershed aspects of the park. In terms of value to the people of Quetta, Nank and Mastung, the watershed properties are of greatest significance and importance, both now and in the long-term. These properties have not been recognized in the past to the detriment of the Park and the people who live around it.

Scientific investigation of the fauna and flora of Balochistan dates from the latter part of the nineteenth century. The vicinity of Quetta in particular (part of "British Balochistan") received attention during the colonial period and few have left some indelible publications (Blanford; 1891, Sterndale; 1884, Jerdon; 1874), some military officers, civil servants and others crossed passes as Darrah (1898) hopping for trophy but the one Stockley (1928) who reported that some straight-horned goat-like animal is present there. What seems somewhat surprising, however, is that there does not seem to have been a comprehensive study of the flora or fauna of the Chiltan-Hazariganji area despite its earlier association with the British, its notification as a state forest or its more recent notification as a national park.

More surprising is an apparent lack of any intensive investigation of the Chiltan Wild Goat (*Capra aegagrus chiltanensis*) apart from the (approximately) annual census of the species conducted in the 1980s. Various one-off investigations have been reported (Forest Deptt. of Balochistan) but these do not constitute a comprehensive study of the biology or habits of the species. Various local and international scientists have visited the Park over the years (e.g. Dr Craig Knowles, January, 1986), or have tried to arrange more comprehensive studies (e.g. Dr. Dan Edge: 1989, studied the biology and behavior of the Sindh Ibex (*Capra aegagrus blythi*) but these have either come to nothing or have only produced incomplete reports, short notes or comments - no formal publications or concrete pieces of work (Forest Department files).

Within the time and resource constraints of this current study of the Park, wherever possible, in-depth, studies of the flora and fauna have been conducted with special reference to the Chiltan Wild Goat (*Capra aegagrus chialtanensis*). Detailed information regarding the location and boundaries of the study site, climate, geology and map of the study area is given in Shafique & Arain (2002).

METHODOLOGY :

Glossing of the animals was mostly confined to early morning and late evening by using binoculars and telescopes, however some potential areas were also searched out in the mid-day for the population census of Chiltan Wild Goat (*Capra aegagrus chialtanensis*). Help of the foot prints were also considered to be the presence of this wild goat nearby in the vicinity. The team member (guides and watchers) often stayed with the author at nights in the habitat area so that they could start to take sightings early in the morning. The team members often split into two groups to avoid the double counting of the species. A regular trekking schedule with sighting of animals was followed and practiced repeatedly for many days in the divided area to make maximum accuracy of counting. Habitat conditions were observed and photographs of certain rich high pastures were taken. Maximum plant species were collected in the habitat of the wild goat and later identified.

The study site was naturally bisected by a great Chiltan nala into two main divisions then further these were sub-divided into many small divisions by other nullahs and deep narrow gullies which divided the population of the wild animal at some places and greatly assisted to count down the whole. Many of the measures were taken to avoid counting of the overlapping numbers.

RESULTS AND DISCUSSION:

Chiltan Wild Goat (*Capra aegagrus chialtanensis*) (previously known - Chiltan Markhor) was first described as a distinct subspecies-(*Capra falconeri chialtanensis*) by Lydekker in 1913. Other authors thought it anomalous quoled in Roberts (1977) and Schaller (1977), suggested Epslein, (1972) it may be a hybrid between the Straight Horned Markhor (*Capra falconeri jerdoni*) and the wild goat or a markhor and a domestic goat. Schaller and Khan (1975) and Schaller (1977) however, having studied populations of the various species and based on horn morphology, concluded that *C. falconeri chialtanensis* is a *C. aegagrus* which does not merit sub-specific status because **intermediate** forms exist between it and typical wild goats.

Since these studies, there appears to have been no further work on the taxonomy of Chiltan Wild Goat (*Capra aegagrus chialtanensis*). It is suggested that the only way this issue may be resolved; the phylogenetic relationship will be to carry out DNA analysis of the animal. This would involve the testing of Chiltan Wild Goat (*Capra aegagrus chialtanensis*)

as well as wild and domestic goat and markhor from other parts of Pakistan; for example *C.f. cashmeriensis*, *C.f. falconeri*, *C.f. megaceros*, *C.f. jerdoni*, and possibly from further extra range-field (e.g. *C.f. heptneri* from Uzbekistan). Therefore, the authors have adopted the scheme of study following Schaller (1975) and on their own observation of the species, agreed that its close affinity is more to a goat than a markhor.

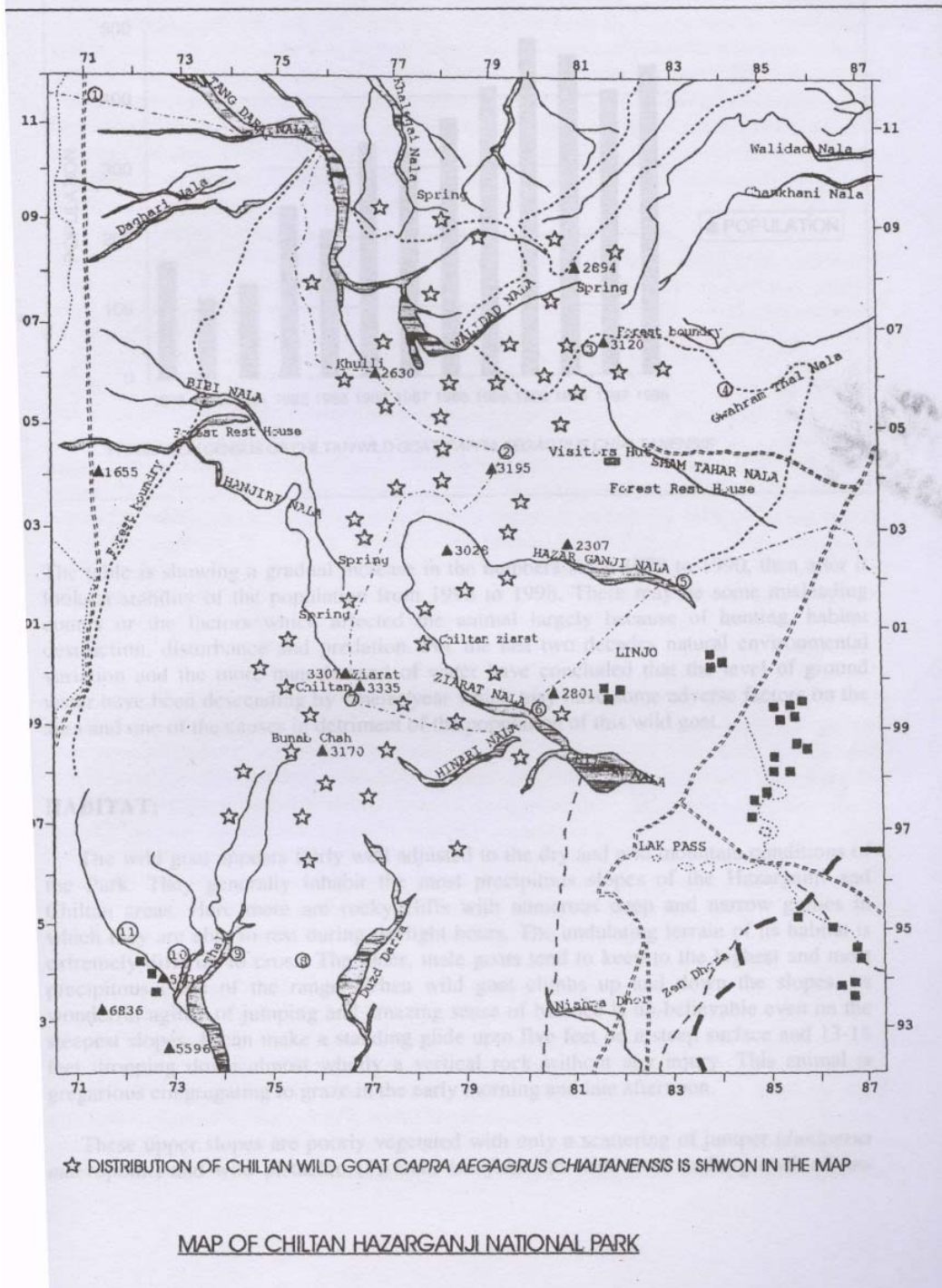
DISTRIBUTION:

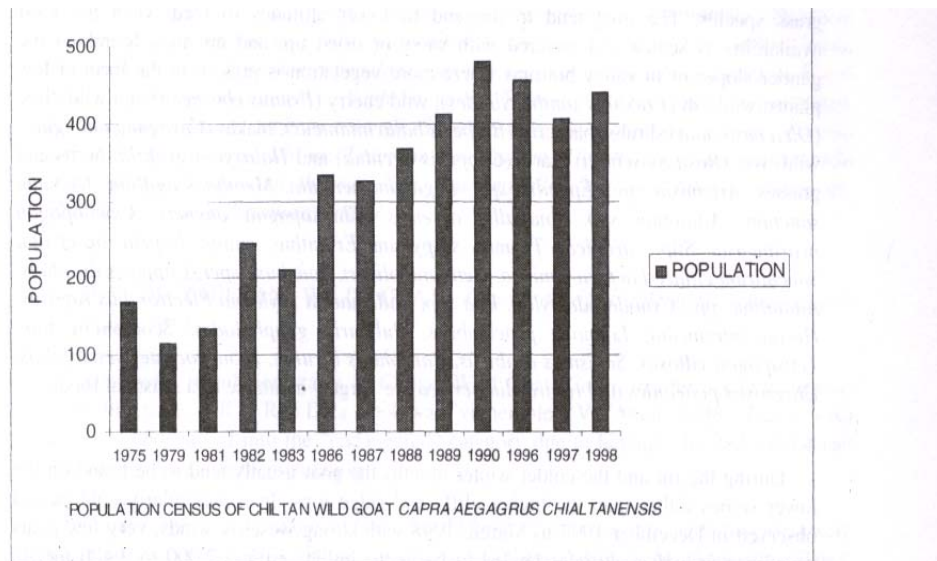
Up until the late seventies, it was thought that Chiltan Wild Goat (*Capra aegagrus chiltanensis*) were confined to three populations on three hill ranges of which the greater part survived on the Chiltan range with very small numbers on Murdar to the north-east and Koh-i-Maran to the south. It is now probably true to say that Chiltan Wild Goat survives in the area of Hazar Ganji-Chiltan National Park and its close surrounds in the south-east. The animals on the other two mountain ranges have either been hunted out or are so few in number as to be non viable populations. Distribution of the animal is shown in the map.

POPULATION:

Population data recorded in previous years and during the present study 1997 to 1998 shown in the table.

	Young	Yearling	Adult Male	Adult Female	Total
1975	57	15	22	74	168
1979	22	10	42	41	115
1981	42	20	28	45	135
1982	66	20	63	96	245
1983	82	17	26	85	210
1986	63	42	97	131	333
1987	67	39	66	124	326
1988	112	30	74	151	367
1989	139	44	88	141	412
1990	136	0	147	196	480
1996	0	120	122	213	455
1997	15	31	102	207	405
1998	64	39	107	229	439





The table is showing a gradual increase in the numbers since 1979 to 1990, then after it looks a stability of the population from 1996 to 1998. There may be some misleading counts or the factors which affected the animal largely because of hunting, habitat destruction, disturbance and predation. For the last two decades natural environmental variation and the more man-demand of water have concluded that the level of ground water have been descending by 1 meter/year which may have some adverse factors on the area and one of the causes in detriment of the population of this wild goat.

HABITAT:

The wild goat appears fairly well adjusted to the dry and arid mountain conditions of the Park. They generally inhabit the most precipitous slopes of the Hazarganji and Chiltan areas. Here there are rocky cliffs with numerous deep and narrow gullies in which they are able to rest during daylight hours. The undulating terrain of its habitat is extremely difficult to cross. The older, male goats tend to keep to the highest and most precipitous cliffs of the range. When wild goat climbs up and down the slopes, its wonderful agility of jumping and amazing sense of balance is un-believable even on the steepest slopes. It can make a standing glide upto five feet on a steep surface and 13-18 feet dropping down almost wholly a vertical rock without any injury. This animal is gregarious congregating to graze in the early morning and late afternoon.

These upper slopes are poorly vegetated with only a scattering of juniper (*Juniperus inacropoda*) and wild pistachio (*Pistacia khinjuk*) and with some under-growth of few grass species. The goat tend to descend to lower altitudes to feed when the food availability is scarce, and covered with snow or dried up, and are then found on the gentler slopes or in valley bottoms where more vegetation is present in the form of few plants;

wild ash (*Eraxinus xanthoxyhides*}, wild cherry (*Primus eburnean*}) and wild olive (*Olea cuspidata*) shrubs; barberry (*Berberis baluchitanicas*), makhi (*Caragana ambigua*}, wild rose (*Rosa moschata*) Karir (*Capparis decidia*}) and *Hahxylon griffithi*, herbs and grasses, *Artemisia* spp., *Ephedra* spp., *Peganum henna la*, *Mentha longifolia*, *Ocimum sanctum*, *Adiantuin spp*, *Anagallis arvensis*, *Chrysopogon aucheri*, *Cymbopogon l\varancusa*, *Stipa arabica*, *Thymus serpyllum* *Erianthus miinja* *Nepeta bracteata*, *Saccliaruin ciliare* *Lactuca viminea*, *Gentiana oliveri*, *Sonchns asper*, *Capparis deciduas*, *Adiantuin spp.*, *Cynodon dactylon*, *Poa spp*, *Lallemantia royleana* *Plectranthus rugosus*, *Hertia intermedia*, *Lannaea prociimbens*, *Pulicaria gnaphalodes*, *Scorzonera spp.*, *Tetrapogon villosns*, *Schismus arabicus*, *Parapholis incurva*, *Hymenocrater sessilifolius*, *Eragrostis poaeoides* and *Henrardia persica* are largely available as a seasonal foods.

During the rut and the colder winter months the goat usually tend to be found on the lower slopes rather than the higher cliffs and ridge tops. In a particularly cold period observed in December 1997 to March, 1998 with strong westerly winds, very few goats were seen at higher altitudes tended to be in the gullies around 2,000 to 2,400 meters when snow is on the ground in the early months of the year, the goats are forced to the lower altitudes.

The other vegetation which play a key role in the eco-system of the study site and direct or indirect benefit the Chiltan Wild Goat (*Capra aegagrus chialtanensis*) was recorded and given as follows.

Aegilops tanschii, *Alyssum desertorum*, *Amaranthus hybridus*, *Anagallis arvensis*, *Artemisia aiiettensis*, *A. maritima*, *A. scoparia*, *Aspengo prociimbens*, *Avena fatua*, *Arena sp.*, *lloissiera squarrosa*, *Bromus tectorum*, *Calendula arvensis*, *Campanula leucoclada*, *Capsella bursa*, *Caragana ulicina*, *Caragana ambigna*, *Centaurea iberica*, *Centaurea pergamacea*, *Chrysopogon aucheri*, *Convolvulus spinosus*, *Conyza honariensis*. *Cynoglossum glochidiatum*, *Dephne oleoides*, *Dodonaea viscosa*, *Ebeniis stellata*, *Ephedra ciliata*, *E. gerardiana*, *E. intermedia*, *E. nebrodensis*, *E. procera*, *Eragrostis poaeoides*, *Eremostachys edelbergii*, *Eremostachys thyrsiflora*, *Erianthus miinja*, *Eritrichium strictum*. *Eagonia cretica*, *Eerdia costala*, *Ferula oopoda*, *Eerula ovina*, *Eicus carica*, *Eorsskalea tenacissima*, *Erankenia pulverulenta*, , *Gaillonia eriantha*, *Galiiim aparine*, *Gentiana oliveri*, *Gnaphalium luteo-album*, *Hahxylon griffithi*, *Heliotropiitm cabulicum*, *Heliotropium dasycarpum*, *Heliotropium europaeum*, *Henrardia persica*, *Hertia intermedia*, *Hordeum murimim*, *Lamium amplexicaule*, *Eaunaea prociimbens*, *Leptaleum filifolium*, *Limonium griffithii*, *Marrubium vulgare*, *Melica persica*, *Mvosotis caespitosa*, *Myosotis refracta*, *Nepeta bracteata*, *Nepeta glomenilosa*, *Nonnea caspica*, *Onobrychis cornuta*, *Onobrychis laverniaefolia*, *Onosma hispidum*, *Paracarvum asperum*, *Parapholis incurva*, *Pennisetum orientale*, *Perovskia abrotanoides*, *Perovskia atriplicifolia*, *Phlomis stewartii*, *Piptatherum vicarium*, *Plantago lanceolata*, *Plantago major*, *P. cabulica*, *Plantago ovata*, *Plectranthus rugosus*,

Polygala chinensis, *Polygala erioptera*, *Psammogeton hiternatum*, *Pulicaria gnaphalocles*, *Rochelia stellulata*, *Salvadora oleoides*, *Salvia cabulica*, *Scabiosa cana*, *Scdhiosd olivieri*, *Scorzouera hemilasia*, *Scorzonera virgata*, *Sci.itellaria stocksii*, *Silene indica*, *Solatium surattense*, , *Sophora molia*, *Spiraea hoissieri*, *Stachys parviflora*, *Stellaria kotschyana*, *Stellera lessertii*, *Stipa arabica*, *Taeniatherum crinitum*, *Tecoma nndulata*, *Tetrapogon villosus*, *Teiicrium stocksianum*, *Thvnnis serpyllum*, *Vdlerianella o\rrh\ncليا*, *Verhascum thapsus*, *Veronica anagallis*, *Veronica biloba*, *Vulpia sp.*, *Zataria niultiflora*, *Ziziphora tenuior*.

SATUS OF CHILTAN WILD GOAT, *Capra aegagrus(falconeri) chialtanensis*
Lydekker, 1913

The world population status of Chiltan Wild Goat (*Capra aegagrus Chialtanensis*) according to the IUCN Red Data Book was "vulnerable" (V) (Anon., 1988). That is, taxa believed and moved into the "endangered" category due to having a limited habitat and decreasing gradually its population.

Initial surveys of the status of Chiltan wild Goat (*Capra aegagrus chialtanensis*) were made in the early 1970s. In the absence of authentic data, C.M. Anderson (Dawn, Karachi, 8 August, 1970) guessed the population to be around 500. In November 1970, following some field work, Schaller and Mirza (1970) estimated the population of the Chiltan area at two hundred (107 animals were actually seen). Mirza (1975) did a follow up count over a fifteen day period in 1975 and counted 168 animals. He found that most animals were confined to the southern area of the range and that the adult males kept above 2,800 m in the most difficult terrain.

From 1980 to 1990 the goat surveys have normally been undertaken by untrained staff on foot walking in the Park or recorded from visual vantage points. They are not based on a sampling programme that will withstand statistical analysis, nor have aerial surveys been undertaken. The trend between 1979 and 1990, however, indicates that the goat population was increasing.

During various reconnaissance visits within the Park during the period of field work, bodies of two young goats were found in Ziarat nala (in October 1996) -presumably having fallen from the cliffs above. The body of an adult goat was found in Waisanghe in December 1996. It appears to have been shot.

POACHING:

Despite the fact that the National Park is an area in which no hunting should occur, it is a fact that it does still happen and the authors have evidenced the invaders entering with the guns in the certain habitat (Khulli area where the rich population was counted by the authors) from Chiltan side. The authors when staying at Chiltan, Forest Rest House during the field work in December, 1997, heard a shot fired in Bonap area at night, later the signs shooting of a wild goat found spreading with blood on the surface. Everything was cleared from the spot as the information received that the poachers dropped the rescues al inaccessible ditch after separating the useful flesh. During 1992/93, the Marri tribe was accused of poaching Chiltan Wild Goat (*Capra aegagrus Chialtanensis*) within the Park (IUCN, 1993). In October 1996, a hunting incident was reported in the Daghari/Nali area in the west of the Park. In November 1996, it was alleged that four goats were shot in the Koh-i-Surkho area and one east of Lak Pass by hunters from

Masking. In this case, the goats were outside the Park boundaries, but they were almost certainly part of the population using the Park as its main refuge.

OTHER MAMMALS:

History indicates that several decades ago, before indiscriminate hunting destroyed all the herds, urial (*Ovis vignei blanfordi*) used to inhabit the area to the north of where the Park is now situated (Roberts, 1977). Today, there are no urial present though Shafiq (1984) reported that a few were still surviving on the western slopes in the early eighties. During the December 1996 wild goat survey a single wolf (*Canis lupis*) was seen by one of the survey teams above Ziarat nala. Many sightings of wolf footprints have also been recorded during our field work; the species is listed as vulnerable in Groombridge (1988).

Common Red Foxes (*Vulpes vulpes griffithi* Linnaeus) have been seen on a number of occasions throughout the field work; a den was also located where the fox bred and seen with its cubs near the dam, Chilian, Asian Jackal (*Canis aureits* Linnaeus) - are common in the Park, but generally only seen at night. Striped Hyaena (*Hyaena hyaena* Linnaeus) -are also present on the south-west of the park on spreading and flattening slopes but may be few families.

Likewise, the population of the Indian Crested Porcupine (*Hystrix indica* Kerr) is thought to be considerable as evidenced by the large number of droppings and territorial marking points present in all the lower valleys to the middle layer of the park. This large population of porcupine suggests that the population of the wolf and jackal; the larger predators in the park are very low in numbers but there is a good combination of carnivores and herbivores - predator and prey.

Cape Hares (*Lcpus capensis* Linnaeus) are presently common in the park as a useful source of food for many carnivores.

Some important mammals recorded in the habitat of Chiltan Wild Goat (*Capra Aegagrus chialtanensis*).

Migratory Hedgehog - *Hemiechinus hypomelas hypomelas* Brandt

- Afghan Hedgehog -*H. megatons* Blyth
- Beech or Slone Marlen -*Maries foina* Erxleben.
- Indian Wolf- *Canis lupuspallipes* Sykes
- Asiatic Jackal - *Canis aureus* Linnaeus

- Marbled Pole-cat -*Vormela peregusiia alpherakii* Birula

- Libyan Jird -*M. libycus* Lichtenstein
- Striped Hyaena -*Hyaena hyaena* Linnaeus
- Afghan Pika or Collared Pika -*Ochotomi nifescens* Gray
- Long-tailed Hamster -*Catomyscus baluclu* syn. *C. bailwardi* Thomas
- Persian Jird -*Meriones persicus* Bland ford
- Sundeval's Jird or Swinhoe's Jird -*M. crassus* Sundevall

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