



## RESEARCH PAPER

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## A study on natural behavior and biology of Punjab Urial (*Ovis orientalis punjabiensis*) in District Kohat

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### Abstract

In Pakistan, Punjab Urial (*Ovis vignei punjabiensis*) are mostly located in northern Punjab and enlisted by International Union for Conservation of Nature (IUCN) as an endangered animal. Behavior and biology of Urial in Kotal Wildlife Park and Borraaka Wildlife Sanctuary were studied during research work from January 2017 to December 2017. The grazing capacity of an area, animal population, animal's time budget, and behavior to intrusion were observed and calculated. Total number of Urials in Kotal Park and Borakha Wildlife Sanctuary were ranging from 25-30 and 5-10 respectively. Feeding time was usually in the early mornings and in the late evenings. Parturition period was month of April while ram have little interest toward ewe during month of October. It is concluded that poaching eradication of natural flora and habitats of animals should be discouraged.

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## Introduction

Punjab Urial [*Ovis vignei punjabiensis*] is enlisted as vulnerable animal species in World Conservation Union's red list of threatened species, as more than 25% of their total population has been declined during last ten years [Rakha *et al.*, 2013]. The main reasons of continuous decrease in number of this species are loss of natural habitat, poaching, development of infrastructures, roads and to some extent abrupt changes in climate as well as vertical and horizontal transmitted infectious diseases from other animals [Awan *et al.*, 2005]. It is assumed that continuous illegal hunting may result in eradication of this species in next twenty to thirty years [Ayaz *et al.*, 2012]. In Pakistan, Punjab Urial are mostly found in northern Punjab and enlisted as an endangered animal by IUCN (The International Union for Conservation of Nature). They are endemic to Indus and Jhelum River at elevations of 225-1,400m. Mountains, sub-tropical areas and semi ever green forages present in northern Punjab are their natural habitat [Frisina *et al.*, 2001]. They are shy and gregarious. Sexually they are dimorphic with male weight up to 45kg and having curly horn of size more than 90 cm while female weigh only under 25kg with straight horn of less than 15 cm only [Mirza *et al.*, 1980]. At the beginning of April, female give birth to one or less common to a twin lamb. Like other wild sheep, their population is decreasing in salt ranges, suggesting main factors such as poaching, fragmentation of natural habitat, mining, construction of roads etc. [Schaller and Mirza 1974]. In 1976, total population was estimated more than 1,950 while in 2004 they were just 860, suggesting a decline of more than 55 %. Although their hunting is illegal, but having lamb as pet is considered as status symbol in Pakistan [Awan *et al.*, 2006].

Present study was conducted to study the behavior and biology of Punjab Urial along with distribution of this wild species in Kotal Wildlife Park and Borraka Wildlife Sanctuary. It will provide basic information on habitat and wildlife for future studies.

## Materials and methods

### Study area

The behavior and biology of the Urial in Kotal wild life park and Borraka wild life sanctuary were studied during research work from January 2017 to December 2017. Both wild life parks are occupied on an area of more than 100 hector. Scrub forest are dominant forest with rough topographical appearance. Observation points were selected where foot prints and fecal materials of Punjab Urial were frequently spotted. These points were hidden to shy animal so that their natural behavior can be investigated properly. The timings for observation was 6 a.m to 10 a.m and 2 p.m to 6 p.m during the study. Moreover, a questionnaire was designed to find out the data about behavior, habits and biology of Punjab Urial.

### Grazing capacity of the area

The grazing capacity of an area during a specific day without change in forage production and soil quality was calculated according to formula described by Stoddard *et al.* [1975].

#### Grazing capacity

$$= \frac{\text{Total available air dry forage}}{\text{Requirement of one animal unit month}}$$

However true grazing capacity was determined only by stocking an estimated number of animals and watching the habitat trends regularly. To ascertain the grazing capacity of area, both wild life sanctuary were observed carefully on daily basis.

## Results and discussion

On the basis of data collected during study duration of January 2017 to December 2017, following results were obtained;

Kotal Wildlife Park was founded in late 1980's and occupied an area of more than 140 acres. In 1989-1990 over an area of 150 acres this park was under control of divisional administration of forest officer wild life Kohat. The location of park was 6 km from the Kohat city in North Western side. The area was considered to be in sub-tropical climatic zone with annual rain fall of 250-350mm. Mean maximum temperature in summer and winter seasons were

recorded as 40.3°C and 23.7°C respectively while mean minimum temperature in summer and winter seasons were noted as 22.1°C and 8.2°C respectively.

Predominant plants species in this area were; *Eucalyptus camaldulensis*, *Zizphus numularia*, *Olea ferruginea*, *Saccharum munija*, *Monothea buxifolia* and *Tamarix aphylla*.

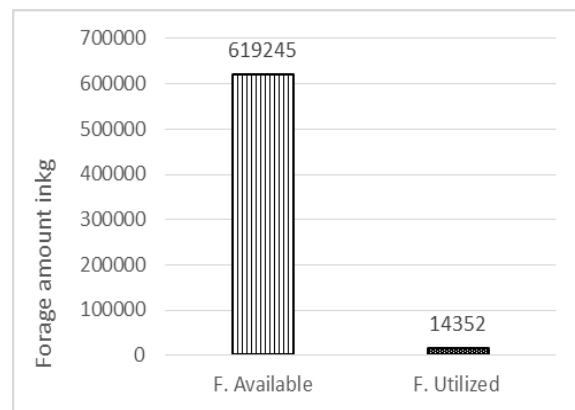
Borraka Wildlife Sanctuary was established in late 1970's covering an area of more than 5000 acres. It is located in hilly area having reserve forests.

The exact number of Punjab Urial inside Kotal Park and Borakha Wildlife Sanctuary was unknown as no recent study has been conducted in these areas till now. According to our observations, total number of Urials in Kotal Park and Wildlife Sanctuary were ranging from 25-30 and 5-10 respectively. There were six rams of variable age groups while remaining were ewes [personal observations] in Kotal Wildlife Park. A herd of two rams and four ewes were also sighted in Borraka Wildlife Sanctuary. However, it was observed that population was reduced due to poaching and unfavorable abrupt climatic changes.

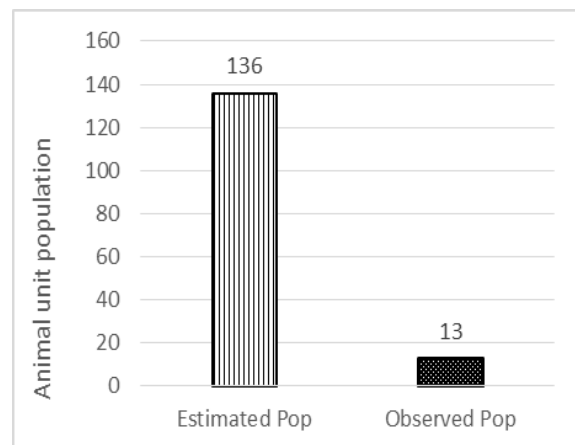
As the weather varies, the daily activities and behavior of animal also changes. The feeding timing was usually early in the morning and late in the evening, while animal likes to take rest during sunny and mid of the day. Parturition period was month of April while ram have little interest toward ewe during month of October. For matting purposes, ram approaches ewe from behind.

The animal was observed to feed mostly on grasses but animal was also spotted to browse on *Zizphus numularia*, *Olea ferruginea* and *Tamarix aphylla*. Fecal materials of Punjab Urial were found in oval form usually accumulated at one place. Punjab Urial was observed to be very shy, cautious and fearful of interruption. Once Punjab Urial heard the voice of feet they used to run away with jerking up their heads.

Following the procedure as described in methodology, grazing capacity of the study area was measured as; forage production was 594kg/hector, available forage per season was 297kg/hector, total area was 2085 hector, hence total available forage was  $2085 \times 297 = 619245$ kg, if forage required for one animal unit was considered to be 9.2kg, so one animal unit month [AUM] was  $9.2 \times 30 = 276$ kg while one animal unit for four months were  $276 \times 4 = 1104$ kg, therefore, grazing capacity was= total available forage/AUM,  $619245/1104 = 591$ . If one animal unit was 3 Punjab Urial then total number of Punjab Urial which can graze during one season were  $591 \times 3 = 1773$  Punjab Urial (Fig. 1).



A



B

**Fig. 1A.** Comparing the total available forage [F. Available] per season, produced over an area of 2085 hectors, to total forage utilized [F. Utilized] by the Urial population in District Kohat. **B:** The expected estimated Urial unit population that can be sustained by the total available forage, produced in the study

area, compared to current Urial unit population observed in District Kohat.

According to observations during our study it can be concluded that climatic conditions and grazing capacity of both Kotal Wildlife Park and Boraka Wildlife Sanctuary were suitable for proper growth and establishing natural habitat for Punjab Urial. Food was found to be enough, therefore animal were not suffering any competition. But outside the parks environment was observed as vulnerable due to illegal capturing and poaching of animal, hence decrease in population led to extinction level. Our findings are in agreement to previous studies, where *Ovis orientalis vignei* were very few in number where people use open areas for grazing of their livestock.

According to observations of the present study it can be concluded that actual number of Punjab Urial inside the Kotal Park and Wildlife Sanctuary was not recognized because no previous study has been conducted at these points. The total number of Punjab Urial in Kotal Park and Wildlife Sanctuary ranged from 20-30 and 5-7 respectively. It was investigated that population of Punjab Urial has been decreasing tremendously due to poaching and unfavorable circumstances inside and outside the Kotal Park and Wildlife Sanctuary. Similar results were of previous studies; Robert [1997] found that maximum number of Urials were exterminated at Koho-i-Murat hills, and only few were left. While in other survey, it was estimated that 1288 Urials were in Kalabagh Reserve, 213 in Kala chitta hills and 588 in Jehlum Valley hills. Our observations were coincided with Hes, *et al.* [1997], that population of Urials is decreasing to extinct level due to illegal hunting on large scale, pet trade, destruction of natural flora of forests, shortage of grazing area, infrastructure development, roads construction and eradication of natural habitats of Urials. Comparable aspects were described by Valdez and Batten [1995] in diminution of wild life in Mongolia.

At the end of study, it can be suggested that poaching should be strictly prohibited in areas where wild life especially Urials are found. Eradication of natural

flora and habitats of animals should be discouraged. Alternative resources must be assessed to wild life before development of infrastructure so that population of Punjab Urial can be increased.

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