

*Conservation Area Series, 38*

**FAUNAL RESOURCES OF  
TAL CHHAPAR  
WILDLIFE SANCTUARY  
RAJASTHAN**



**ZOOLOGICAL SURVEY OF INDIA**

*Conservation Area Series, 38*

**FAUNAL RESOURCES OF  
TAL CHHAPAR WILDLIFE SANCTUARY  
CHURU, RAJASTHAN**

*Edited by the Director, Zoological Survey of India, Kolkata*



सत्यमेव जयते

**Zoological Survey of India  
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## **FAUNAL RESOURCES OF TAL CHHAPAR WILDLIFE SANCTUARY — AN OVERVIEW**

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### **INTRODUCTION**

Rajasthan, the largest State of India occupying an area of 3,42,239 sq.km. situated in the north-western part of the Indian Union (23° 30' 11' North latitude and 69° 29' and 78° 17' East longitude) is largely an arid State. The western boundary running to an extent of 1,070 km., touches four main districts of the region, namely, Barmer, Jaisalmer, Bikaner and Ganganagar. The state is girdled by Punjab and Haryana States in the north, Uttar Pradesh in the east, Madhya Pradesh in the south-east and Gujarat in the south-west.

The desert areas of Rajasthan are among the few tropical deserts of the world which have the highest population density. The Indian desert, generally known as the Thar desert, is one of the important ecosystems in India. The Thar desert is unique because of its location at the crossing where Palaeartic, Oriental and Saharan elements of biodiversity are found. Like all the hot deserts, the Indian Thar desert is also characterized by low rain fall, arid land and expanse of sand, salt or rock, largely barren except for very sparse or seasonal vegetation. Hence, the Thar is considered to be a fragile ecosystem mainly because of harsh climate and limited biological resources. The Indian desert is an extension of Sahara desert through Arabian and Persian desert. In India it extends from Punjab, Haryana, Rajasthan to Gujarat State and from there it further extends into Pakistan.

The sand dunes of Rajasthan occupy about 58% area of the desert. These are in varying degree of frequency and may be subsided into two chains. (i) the western part of Barmer, Jaisalmer and Bikaner districts upto the height of about 20-100m and many kilometers long and (ii) the eastern part of Bikaner and Churu districts. A few saline depressions are also present in the Thar viz. Tal Chhapar, Didwana, Panchpadra, Lunkaransar and Kuchaman. The Rann of Kutchch represents a vast saline flat which forms a separate ecosystem in the Thar of Gujarat state.

During the rains these lakes get filled with water but gradually dry up. In several of these lakes, when the brine gets concentrated due to evaporation during the dry, hot months, salt is commercially extracted. In summer, the lakes are dry and their clayey soils with evaporate deposits like sodium chloride, gypsum, gypsite, nitrate and other salts encrustations are present of varying species are found.

### STUDY AREA

Located at a distance of 220 km from Jaipur and 80 kms from Mandawa, the Tal Chhapar Wildlife Sanctuary is a small but rich wildlife sanctuary in Churu district of Rajasthan. Tal Chhapar Sanctuary is known for its enchanting natural beauty and unique and fragile ecosystem. Situated on the way of the migratory passage of exotic birds, the Tal Chhapar Sanctuary is famous for its rich population of Black bucks and thousands of beautiful migratory birds, especially the harriers who pass over the sanctuary during the month of September. Tal Chhapar receives protection on account of its black buck population.

Tal Chhapar , actually a flat saline depression is a unique and fragile ecosystem. It is located in Churu district of Thar desert of Rajasthan. Initially Tal Chhapar Wild Life Sanctuary was managed as a private hunting reserve of the Maharaja of Bikaner.

Tal Chhapar was declared as a sanctuary in the year 1962. The Sanctuary is famous for the black buck (*Antelope cervicapra*). Other animals found in the safeguard are desert fox and desert cat.

The terrain of the sanctuary is almost flat and has areas with open grass lands. The grass lands are interspersed with *Acacia* and *Prosopis* trees that give the sanctuary a look of the savannas.

A large number of migratory birds visit this region during the month of September. At this time, spot sparrow hawk, Ben harrier, Montague harrier, imperial eagle, marsh harrier, palhanier tawny harrier, skylark, short toad eagle, sparrow hawk, ring dove, crested lark, brown dove, blue grey ibis, green bees eaters, demosile cranes, blue jays and cranes can be seen.

The special type of grass found in the Tal Chhapar Wild Life Sanctuary is called 'mothiya' The word 'mothiya' is derived from the word moti (English word for pearl). The seeds of the grass are pearl shaped and the grass has a very sweet taste. This is liked by black bucks.

To the North of the sanctuary lie Chhapar village and about 9 kilometers from it in the south and south west lie the Gopalpura Hills. Between the Gopalpura Hills and Chhapar

village is the Flat saline depression. During the Monsoon, some of the water get collected into a pond around which about 2,500 acres land is called Taal. Here Kair (*Capparis deciduas*) and Babool (*Acacia arabica*) thrive as do wild animals such as fox cat and neelgai. In the south west part of this area, salt is extracted and the sanctuary is restricted to 722 hectares near the Chhapar village in the north. Recently about 417 acres of land from the sanctuary have been transferred to the salt works. This area now blocks the water coming to the sanctuary from the Gopalpura Hills.

Though notified as a sanctuary in 1962, a separate wild life wing was created in the Rajasthan government Forest Department in 1976. But until April 16, 1988 this sanctuary was not handed over to the wild life wing. In 1980, the center forest land was allowed to be transformed for the non forestry purposes. Because of the dislocation between and the Gopalpura Hills and the Chhapar village, many species such as Wild boar, Wolf and Jackal which were quite common in the past are no longer to be seen. At present black buck, hare, fox and cat are the dominant mammals.

The right time to visit Tal Chhapar Wild Life Sanctuary is just after the onset of monsoon i.e. September to November when one could observe the beauty of Tal Chhapar. The visitors could not imagine that such a beautiful sanctuary exists in Thar desert.

### HUMAN SETTLEMENT

Many villages surround this small sanctuary : Charawas and Naerbada villages in the west, Pandorai Chhapar villages in the north, Rampur and Teen Devani villages in the east and Soorwas village in the south. These villages support hordes of pariah dogs which harass and even kill black buck. The sick and young animals which fall prey to dogs. A major problem which exercise the Forest Department is the presence of cattle from these village.

### MYTHOLOGY

Most of the people of the villages consider this area to be sarcred. Even the butcher in the village gives black gram for the black bucks during the drought months. It is believed that Dronacharya used to live near the Gopalpura Hills which are also called Dronchal Hills by the local people. Nine kilometers south of the sanctuary is a Hanuman temple on a hill called Dronpuri Hill. In the past this area was under the Maharajah of Bikaner and was divided into two parts. In one part grazing was allowed and the other part was exclusively set aside for black buck.

## FLORA

The vegetation of the sanctuary is similar to that of most salt depression in western Rajasthan. The grasses are *Cyperus rotendus* (Mothia), *Chloris quinquesetica* (Bhernia), *Cynodon dactylon* (Doob), *Chloris virgiata* (Ghora moth) and other grasses locally called dachab, Kaar etc.

Some small trees of Khejri (*Prosopis cineraria*) and babul (*Acacia arabica*) grow well near kuccha roads, canals or ponds. *Prosopis juliflora*, an exotic tree which grows easily in salty area has become a nuisance here. Every year the Forest Department attempts to exterminate it.

## CLIMATE

In western Rajasthan the climate is very harsh. In summer, the day temperature rises up to 49°C with surface temperature sometimes touching 50°C. The nights are generally cool. The temperature in winter may fall up to 2°C or 1°C. The Churu district's name can very well be heard in news in summer as well as in winter due to extreme temperature, either very high or low.

## DROUGHTS AND SANDSTORMS

Several droughts were experienced during the last few decades accompanied by very high wind velocity and sandstorm raising the temperature to about 50°C.

In western Rajasthan the summer of 1988 was the harshest in living memory. Most of the emaciated black buck had by now dispersed from Tal Chhapar into surrounding fields in a futile search for water and vegetation. It is said that about 300 were found dead and about 500 had simply disappeared. Probably most perished due to thirst and hunger, while others fell prey to pariah dogs and *Bawarias* (a nomadic tribe). On April 18, 1988 government assistance in the form of famine relief fund was made available, but by now only about 800 out of a total of 1,900 black bucks were able to survive.

## MONSOON

In the month of July the rains generally arrive. Within three days of the first shower, 'mothia' (*Cyperus rotendus*) and other sedges grow here extensively sprouting from dormant underground tubers. Black bucks relish the leaves. Similarly the demoiselle cranes also eat

the tubers when they arrive here in the winter. Within a few weeks of good rains the sedges grow and change the appearance of the landscape.

During the month of September, Tal Chhappar becomes truly in its prime (specially during the years when good rains are experienced in Rajasthan.) Grasses rise tall and the ground becomes moist. In depressions, water collect creating small pools.

## FAUNA

The location of Tal Chhappar wild life sanctuary in Churu district falls under the Thar Desert of Rajasthan. As we are aware that being in desert, the Tal Chhappar wild life sanctuary has to face the extremes of all situation which are unfavorable for sustanances of life. Nature conditions, climatic fluctuations, temperature, droughts, sand storms and salinity of area prevents grazing due to lack of much floral wealth (food scarcity). Besides all the adverse conditions, Tal Chhappar sanctuary still holds rich wealth.

Post monsoon season is the time when insect and animal life can be seen in its diversity. Grasshoppers, beetles, crickets, flies, mosquitos, dragon flies and winged termites lie hidden from predators in the greenery. The diverse insect life in turn attract insectivorous birds such as harriers, kestrels, buzzards, eagles, bee eaters, drongos, egrets and mynas all of which serve to make the Tal a veritable bird Sanctuary.

Tal Chhappar Wild Life Sanctuary is famous for Black buck. Ellerman and Morrison-Scoth (1951) recognised four subspecies of black bucks of which *Antelope cervicapra rajputanae* occurs in Rajasthan. By reaching the age of about eight years the pelage is at its darkest. The three years old buck is called 'Raag' and the female 'modavan' (shaven head). The average life expectancy is around 17 to 18 years, the main cause of death being starvation and thirst during drought months and pneumonia in winter months.

During the period under (2004-2005) report, three surveys were conducted by the (DRS) of Zoological Survey of India, (ZSI.) One survey was conducted by Shri L.P. Dubey, Zoological Assistant in the month of February, 2004 and the second survey was conducted by Dr. Sanjeev Kumar, Scientist B. in the month of October, 2004 which contributed much to the collections since it was the right time for conducting survey to Tal. The third survey was conducted by Dr. Vinita Sharma, Scientist-B. The faunal groups collected were Soil samples for plant and soil nematode study (due to availability of moisture in the soil), insect groups of Orders Odonata, Embioptera, Coleoptera, Hymenoptera, Lepidoptera, Diptera, Orthoptera, Hemiptera, Arachnida, Myriopoda and some Amphibia, Reptiles, and Mammalia.

The Invertebrate fauna of Thar Desert has already been extensively worked being a unique and fragile ecosystem, In spite of all the unfavourable situation, the Thar Desert is rich and unique in biodiversity, starting from protozoa to mammalian which had been significantly worked out. The main contributors are: Mahajan (1963-77); Mc Clure et al (1978); Gupta and Kataria (1993); Arrya (1957); Bajaj and Bhatti (1982); Baqri (1991-2004); Edward and Lofty (1977); Soota and Saxena (1982); Advani & Vazirani (1981); Sanyal & Dey (1996); Gupta (1977-79); Gupta (1996); Tiwari (1951-66); Tiwari (1996) Bhargava (1996); Roonwal (1977-89); Bohra & Rathore (1996); Rathore (1996); Varshney (1996); Sharma (1976-2004); Rahmani (1986-1996); Prakash (1956-1996); Sinha (1975-1996), Agarwal (1967); Alfred & Agarwal (1996); Alfred, Ramakrishna & Pradhan (2006) and Kumar & Rathore (2007).

The present project report on fauna of Tal Chhapar Wildlife Sanctuary includes : 7 species of Plant and Soil Nematodes, 9 species of Scarabaeid beetles, 7 species of termites (Order Isoptera), 4 species of ants of Family Formicidae, 1 species of Order Hemiptera *Lethocerus indicus* (Lepeletier & Serville), 2 species of scorpions *Campsobuthus actue-caninatus rugosutus* (Pocock), *Androcctonus australis funlumus* (Pocock) belonging to Family Buthidae. About 95 avian species, 2 species of Amphibia, 13 species of Reptiles and 13 species of Mammals.

#### Faunal Composition

Invertebrate	Species (No.)	Vertebrates	Species No.
Plant and Soil Nematodes	07	Amphibia	02
Arachnida: Buthidae	02	Reptiles	13
Insecta:Isoptera	07	Aves	95
Insecta:Hemiptera	01	Mammals	13
Insecta:Coleoptera:Scarabaeidae	09		
Insecta:Hymenoptera:Formicidae	04		
<b>Total</b>	<b>30</b>		<b>123</b>
<b>Grand Total</b>			<b>153</b>

Total 153 species of vertebrate and invertebrate fauna have been reported during present study from Tal Chhapar Wildlife Sanctuary.

### **THREATS**

- About 417 acres of land from the sanctuary have been transferred to the salt works. This area now blocks the water coming to the sanctuary from Gopalpura hills. So now hardly any water comes during monsoon.
- Subsoil water is saline and therefore not potable, so the Forest Department cannot look to solve the problem by digging wells.
- Human settlement in village surrounding the Sanctuary support hordes of pariah dogs which harass and even kill black buck. Generally the sick and young animals which fall prey to dogs.
- Presence of cattle population around Sanctuary.
- Rajasthan State Government Department transferred land to Revenue Department and it again transferred to Salt Industry.
- Because of the dislocation between the Sanctuary and the Gopalpura hills many species such as Wild boar, Wolf and Jackal which were quite common here in the past are no longer to be seen Now Black buck, Hare, and Cat are the dominant mammals, a tragic and possibly fatal reduction of mammalian diversity.
- Tal Chhapar Wildlife Sanctuary is a unique and fragile ecosystem, now sanctuary will not take the strain of abuse much longer. It needs State Government's intervention now.

### **CONSERVATION**

- Tal Chhapar has never been thought of as a unique and fragile ecosystem composed of different inter dependent components, each essential for the stability and viability of the each ecosystem.
- Only the areas where black buck lived was preserved, other parts were left unprotected, in fact, used for salt work and residential purposes. This practice should be stopped
- The life line of Tal Chhapar Ecosystem i.e. water supply to the Sanctuary is restored again to save the Tal Chhapar Wildlife Sanctuary which is unique and fragile Ecosystem also.
- The genetic value of ecosystem should be taken on priority to conserve such unique ecosystem.

- A wire fencing to stop the entry of pariah dog in Sanctuary should be arranged.
- Trained Forest Department guards to be appointed to look after the Tal Chhapar Wildlife Sanctuary for protection.
- Human Settlement around Sanctuary are to be provided awareness about the importance of wild animals living inside the sanctuary that will be more effective effort.
- The land taken from the Sanctuary to be returned to restore sufficient space for wild animals.
- Siltation work should be shifted to some other alternative suitable place.

### ACKNOWLEDGEMENTS

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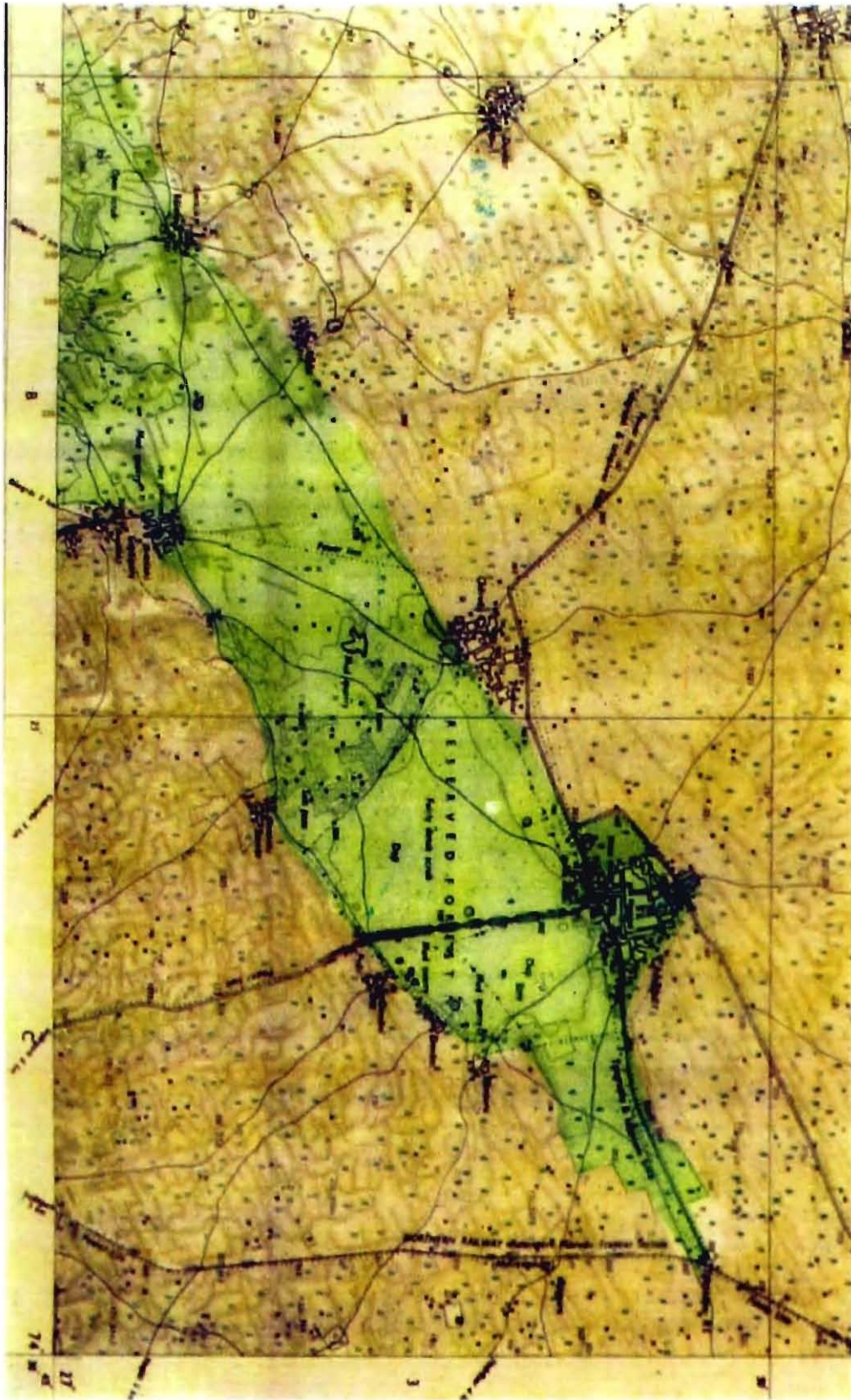
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*Faunal Resources of Tal Chhapar Wild Life Sanctuary*



**Fig. 1. :** *Map of Tal Chhapar Wild Life Sanctuary, Rajasthan*

**Waterbodies at Tal Chhapar Wildlife Sanctuary**



Bhansolao Talao - A man made water body



Maharaja Ganga Singh Talao

**Man made Water holes at Tal Chhapar Wildlife Sanctuary**



Temporary water holes filled by Forest Deptt.



A man made water point

**Habitat Ecology around Tal Chhapar Wildlife Sanctuary**



Chadwas Talao - A Village pond in the vicinity



Salt Mining (An-illegal establishment)

**Grassland habitat at Tal Chhapar Wildlife Sanctuary**



Sparsely Forested Grassland



A luxuriant patch of Grassland

**Mammalian Fauna of Tal Chhapar Wildlife Sanctuary**



*Antilope cervicapra*



*Gazella bennettii*



*Boselaphus tragocamelus*



*Tatera indica*

**Raptile Fauna of Tal Chhapar Wildlife Sanctuary**



*Acanthodactylus cantoris*



*Hemidactylus leschenaulti*



*Uromastix hardwicki*



*Varanus bengalensis*



*Echis carinatus*



*Eryx johnii*

**Avian Fauna : Raptors of Tal Chhapar Wildlife Sanctuary**



*Aquila Nipalensis*



*Circus Cyaneus*



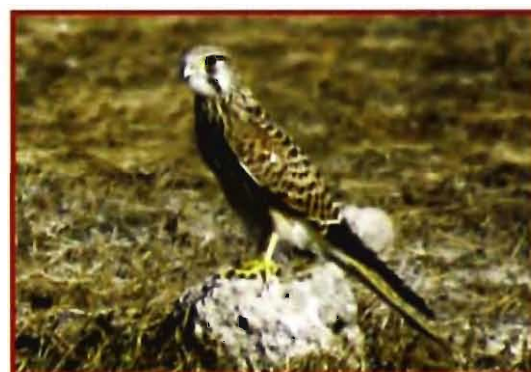
*Neophron Percnopterus*



*Aquila Rapax*



*Spilornis Cileela*



*Falco tinnunculus*

**Habitat Ecology around Tal Chhapar Wildlife Sanctuary**



*Pseudibis papillosa*



*Coracias benghalensis*



*Merops orientalis*



*Cursorius cormandelicus*



*Lanius meridonalis*



*Pterocles orientalis* .

## **PLANT AND SOIL NEMATODES**

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### **INTRODUCTION**

The present paper reports the species of plant and soil nematodes from the samples collected by the survey parties of DRS, Jodhpur during 2002-2005 from Talchhapar Wild life Sanctuary. These samples yielded 7 species belonging to 7 genera under three families of order Dorylaimida. Out of these, two species have been recorded for the first time from the Rajasthan. The brief Description and information on the hosts and localities of species are provided below.

### **MATERIAL AND METHOD**

Nematodes were killed and fixed in hot 4% formaline and mounted in anhydrous glycerine. All the specimens included in the present study have been deposited in National Zoological Collection of DRS/ZSI.

### **SYSTEMATIC ACCOUNT**

Order DORYLAIMIDA Pearse, 1942

Suborder DORYLAIMINA Pearse, 1936

Superfamily DORYLAIMOIDEA DeMan, 1876

Family DORYLAIMIDAE DeMan, 1876

1. *Mesodorylaimus mesonyctis* ( Kreis, 1930) Andrassy, 1959

*Material examined* : 2 females, 1 male, 9.10.04; Coll. S.Kumar (collected from soil around roots of unidentified grasses) Reg. No. IV/1026.

*Measurements* : Females (2) : L = 1.31 – 1.51 mm; a = 38 – 45; b = 4.4 – 4.7; c = 26 – 28; v = 10-11 50-52 10-11.

*Male (1)* : L = 1.50 mm; a = 41; b = 4.4; c = 44; T = 50.

*Description : Female* : lip region marked by constriction. Odontostyle 12-13 um long; its aperture 3-4 um long. Odontophore 16-18 um long Guiding ring 7-8 um from anterior end. Basal expanded part of oesophagus 40-42 % of neck region. Prerectum 75-80 um or 4.0-4.2 anal body width long, conoid than spicate.

*Male* : Spicules 35 um long, ventromedian supplements nine, spaced irregularly. Tail short, rounded conoid 27 um or 0.9 anal body width long.

*Habitat and locality* : Collected from unidentified grasses at T.C.W.S., Churu.

## 2. *Prothornenema capitatum* Baqri and Bohra, 2003

*Material examined* : 4 females, 2 males; 9.10.04. Coll. S.Kumar (collected from soil around roots of unidentified grasses). Reg. No. IV/1027.

*Measurements : Females (4)* : L = 1.03-1.05 mm; a = 28-31; b = 5.5-5.6; c = 9.2-14.6; c' = 3.7-5.5; v = 15-16 46-47 15-16.

*Male (2)* : L = 1.03 – 1.11 mm; a = 32-33 ; b = 5.7-6.0; c = 54-58; c'=1.0; v = 56-60.

*Description : Female* : Body slightly curved upon fixation, tapering gradually towards both the ends. Lip region cap-like, set off from body by constriction, with moderate labial and post labial scleratization. Odontostyle 10-11 um, its aperture 3-4 um long. Odontophore 12-13 um long. Guiding ring 6-7 um from anterior end. Basal expanded part of oesophagus occupies 32-34% of neck region. Vulva a transverse slit. Female reproductive system is amphidelphic. Prerectum 50-52 um or 2.6-3.0 anal body width long. Rectum 22-24 or 1.2-1.0 anal body width long. Tail 72-111 um elongate conoid to filiform, 3.7-8.1um anal body width long.

*Male* : Spicules 30 um. Lateral guiding piece 6-7 um long. Ventromedian supplements contiguous 15-17 in number. Preractum 75-80 Or 3.9-4.2 anal body width long. Tail short conoid with broadly rounded terminus.

*Habitat and locality* : Collected from soil around roots of unidentified grasses at T.C.W.S., Churu.

## 3. *Ecumenicus monohystera* (deMan,1880) Thorne, 1974

*Material examined* : 5 females; 9.10.04; Coll. S.Kumar (collected from soil around roots of unidentified grasses). Reg. No. IV/1025.

**Measurements : Females (5) :** L = 1.07-1.64 mm; a = 27-30; b = 5.0-5.7; c = 35-43; v = 36-38 7-11.

**Description : Female :** Lips setoff. Odontostyle 12-15  $\mu$ m long, its aperture 3-4  $\mu$ m. Guiding ring 6-7 $\mu$ m long. Basal expanded part of oesophagus occupies 41-42 % of neck region. Female reproductive system mono-opisthodelphic. Tail convex- conoid, 30-38 $\mu$ m or 1.6-1.7 anal body width long.

**Male :** Not found.

**Habitat and locality :** Collected from soil around roots of unidentified grasses at TCWS, district churu.

#### 4. *Discolaimus texanus* Cobb,1913

**Material examined :** 2 females; 9.10.04; Coll. S.Kumar (collected from soil around roots of unidentified grasses). Reg. No. IV/1031.

**Measurements : Female (2) :** L = 1.29-1.32 mm; a = 33-37; b = 3.4-3.6; c = 44-50; v = 43-44.

**Description : Female :** Body slightly curved upon fixation. Lip region broadly expanded. Odontostyle 16-18 $\mu$ m long ; its aperture 50% of odontostyle length. Odontophore 20-22% long. Guiding ring 7-8 $\mu$ m from anterior end. Basal expanded part of oesophagus occupies 50-60% of neck region. Vulva transverse. Female reproductive system amphidelphic. Prerectum 35-40 $\mu$ m or 1.5-1.6 anal body width. Rectum 23-25 $\mu$ m long 1.4 anal body width long. Tail 26-29 $\mu$ m or convex conoid to blunt rounded terminus or 1.1 anal body width long.

**Male :** Not found.

**Habitat and locality :** Collected from soil around roots of unidentified grasses at TC W S district Churu.

**Remark :** This species is being reported for the first time from the Rajasthan.

#### 5. *Discolaimium muktarpurienses* Baqri and Jairajpuri, 1969

**Material examined :** 1 female, 9.10.04; Coll. S.Kumar (collected from soil around roots of unidentified grasses). Reg. No. IV/1029.

**Measurements : Female (1) :** L = 1.0 mm; a = 4.1.95; b = 3.2; c = 35.9; v = 9-10 55 9-10

**Description : Female :** Body slender, slightly tapering in posterior third of its length upon fixation. Cuticle smooth. Lateral chord  $\frac{1}{4}$ th of body width with well developed 55 glandular

bodies. Lip region set off. Odontostyle 16  $\mu\text{m}$  long, its aperture 6  $\mu\text{m}$ . Guiding ring single. Odontophore 15  $\mu\text{m}$  long. Basal expanded part of oesophagus occupies 35 % of total neck region. Vulva transverse. Vagina 11 $\mu\text{m}$  about 1/3rd of corresponding body width. Female reproductive system amphidelphic. Prerectum 75  $\mu\text{m}$  or about 4.6 anal body width long. Rectum 28  $\mu\text{m}$  or 1.7 anal body width long. Tail 28 $\mu\text{m}$  or 1.7 anal body width long convex-conoid with a rounded terminus.

*Male* : not found.

*Habitat and locality* : Collected from soil around roots of unidentified grasses at TCWS, district Churu.

#### 6. *Discolaimium upum* Baqri and Jairajpuri, 1968

*Material examined* : 2 females; 9.10.04; Coll. S.Kumar (collected from soil around roots of unidentified grasses). Reg. No. IV/1028.

*Measurements* : *Female* (2) : L = 0.82-0.87 mm; a = 34-38; b = 3.0-3.5; c = 36-37; c' = 1.5; v = 9-10 46-49 9-10.

*Description* : *Female* : Body slender. Lip region setoff. Lateral chords one fifth to one sixth of body width. Lateral glandular organs onspicuous, 34-40 in number. Odontostyle 11-12  $\mu\text{m}$  long, aperture less than half of its length. Guiding ring 5-6 $\mu\text{m}$  from anterior end. Odontophore 17-18  $\mu\text{m}$  long. Basal expanded part of oesophagus occupies 45-50 % of its total neck region. Vulva a transverse slit. Vagina 8-10 $\mu\text{m}$  or one third across the body. Female reproductive system amphidelphic. Prerectum 45-50  $\mu\text{m}$  or 2.9-3.0 anal body width. Rectum 14-17 $\mu\text{m}$  long or one anal body width long. Tail 22-24 $\mu\text{m}$  long, tapers slightly to bluntly rounded terminus, about one and a half anal body width long.

*Male* : Not found.

*Habitat and locality* : Collected from soil around roots of unidentified grasses.

*Remark* : This species is being reported first time from the Rajasthan.

### Superfamily TYLENCHOLAIMOIDEA Filipjev, 1934

#### Family TYLENCHOLAIMIDAE Filipjev, 1934

#### 7. *Tylencholaimus surywanshii* Ali and chisty, 1972

*Material examined* : 2 females, 9.10.04; Coll. S.Kumar (collected from soil around roots of unidentified grasses). Reg. No. IV/1030.

*Measurements : Female (2) : L = 0.71-0.73 mm; a = 21-25; b = 3.8-3.9; c = 30-31; v = 10-11 54-55 10-11.*

*Description : Female : Body slightly ventrally arcuate upon fixation, tapering towards both ends. Lip region set off from body by constriction. Odontostyle 7-8µm long; aperture 3-4µm long. Odontophore 11-12µm long with small basal thickenings. Basal expanded part of oesophagus occupies 40-43 % of neck region. Vulva a transverse slit. Vagina 10-11µm or one fourth of corresponding body width. Female reproductive system amphidelphic. Prerectum 42-44µm or 2.2-2.3µm anal body width long. Rectum 17-19µm or 0.8-1.0 anal body width long. Tail 21-24µm or 1.1-1.2 anal body width long with hemispheroid terminus.*

*Male : Not Known.*

*Habitat and locality : Collected from soil around of roots of unidentified grasses at TCWS, district Churu.*

### SUMMARY

The soil samples brought from Talchaper Wild life Sanctuary yielded the following species of plant and soil Nematodes : *Mesodorylaimus mesonyctis* (Kreis, 1930) Andrassy, 1959; *Prothornenema capitatum* Baqri and Bohra, 2003; *Ecumenicus monohystera* (deMan, 1880) Thorne, 1974; *Discolaimus texanus* Cobb, 1913; *Discolaimium muktarpurienses* Baqri and Jairajpuri, 1969; *Discolaimium upum* Baqri and Jairajpuri, 1968; *Tylencholaimus surywanshii* Ali and Chisty, 1972.

*Discolaimium upum* Baqri and Jairajpuri, 1968 and *Discolaimus texanus* Cobb, 1913 are being reported for the first time from the Rajasthan.

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## **INSECTA : ISOPTERA**

**N.S. RATHORE AND MADHUMITA MANDAL**

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### **INTRODUCTION**

The name Isoptera refers to the adult primary reproductives which possess two pair of equal length wings. They live in small to large communities composed of reproductives together with numerous apterous sterile soldiers and workers. They exhibit division of labour performing different biological function.

The termite fauna of Tal Chhapar Wildlife sanctuary was until recently unknown. The present paper reports seven species of termite belonging to six genera and two families. Out of these, six species are reported for the first time from district Churu, Rajasthan. The present paper is based on the collection made by the authors and survey parties of DRS, Jodhpur during 2002-2005.

### **METHODOLOGY**

Termite collected was preserved in 70% alcohol and was later identified with the help of standard keys (Roonwal and Chhotani, 1989 and Chhotani, 1997) and the measurements of different morphological characters (Roonwal, 1970) were taken with the help of ocular micrometer.

### **SYSTEMATIC ACCOUNT**

Family RHINOTERMITIDAE

Sufamily HETEROTERMITINAE

1. *Heterotermes indicola* (Wasmann), 2004

2004. *Heterotermes indicola* Rathore and Bhattaharya, *Rec. zool. Surv. India, Occ. Pap. No. 223* : 20.

*Material examined* : Tal Chhapar Wildlife Sanctuary, Churu, 8 soldiers, 7 workers, 11.i.2005, ex. From tree trunk of Acacia, V. Sharma coll., Tal Chhapar Wildlife Sanctuary.,

Churu, 1 soldier, 12.i.2005, ex. Under bark of dead tree trunk, V. Sharma, Coll., Tal Chhapar Wildlife Sanctuary, Churu, 5 soldiers, 22 workers, 13.i.2005, ex. From tree trunk, V. Sharma Coll.

*Diagnostic characters* : Soldier : Total length 3.5-6.10 mm. Head-capsule rectangular, much longer than broad, length to mandible base 1.25-1.77 mm, width 0.83-1.00 mm, sides subparallel. Fontanelle small, with a brownish tube. Antennae with 14-16 segments (generally 15) segment 3 variable either shorter or longer than 2 and either subequal to or longer than 4. Labrum triangular with a hyaline, spine like tip, length much more than width. Mandibles fairly long, saber-shaped, length 0.73-0.93 mm, left mandible with 3-4 crenulations in a basal part of inner margin. Pronotum flat, subtrapezoidal, length 0.35-0.50 mm, width 0.60-0.83 mm.

*Distribution* : India : Gujarat, Haryana, Punjab, Rajasthan (Bikaner, Jaisalmer, Jodhpur, Sirohi, Sawaimadhopur, Udaipur) Uttar Pradesh, West Bengal.

*Elsewhere* : Afganistan, Bangladesh, Pakistan.

*Remark* : First time reported from district Churu.

### Subfamily COPTOTERMITINAE

#### 2. *Coptotermes heimi* (Wasmann)

2004. *Coptotermes heimi* Rathore and Bhattacharya, *Rec. zool. Surv. India, Occ. Pap. No. 223* : 18.

*Material examined* : Tal Chhapar Wildlife Sanctuary, Churu, 68 soldiers, 197 workers, 11.i.2005, ex. From tree-trunk of Acacia, V. Sharma Coll., Tal Chhapar Wildlife Sanctuary, Churu, 17 soldiers, 21 workers, 11.i.2005, ex. Under bark of dead tree trunk, V. Sharma coll.

*Diagnostic characters* : Soldier : Very variable. Total length 4.20-6.00 mm. Head-capsule variable in shape, pyriform to subcircular, generally longer than broad, length to mandible base 1.20-1.45 mm, width 1.05-1.35 mm, head index (width/length) 0.77-1.04. Fontanelle large, circular, prominent, with highly sclerotised border. Antennae with 14-16 segments, segment 3 either smallest or subequal to 2 or 4. Postclypeus and anteclypeus short, trapezoidal. Labrum subtriangular, longer than broad, apex hyaline, length 0.28-0.35 mm, width 0.23-0.30 mm. Mandibles long, saber-shaped, sharply pointed with incurved apex, length 0.70-1.00 mm. Left mandible with 4 crenulations and a basal projection in proximal half. Right with 4 crenulations in proximal one-third. Pronotum flat, subreniform, much broader than long, length 0.40-0.50 mm, width 0.75-0.95 mm.

**Distribution** : India : Assam, Delhi, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Meghalaya, Orissa, Punjab, Rajasthan (Jaipur, Jaisalmer, Jodhpur, Nagaur, Pali, Sawaimadhopur, Sikar, Udaipur), Uttar Pradesh, West Bengal.

**Elsewhere** : Bangladesh, Bhutan, Java, Oman, Nepal, Pakistan.

**Remark** : First time reported from district Churu.

### Family TERMITIDAE

#### Subfamily AMITERMITINAE

#### 3. *Amitermes belli* (Desneux)

2004. *Amitermes belli* Rathore and Bhattacharya, *Rec. zool. Surv. India, Occ. Pap. No. 223* : 24.

**Material examined** : Tal Chhappar Wildlife Sanctuary, Churu, 1 soldier, 1 worker, 13.i.2005, ex. From dead stump, V. Sharma coll.

**Diagnostic characters** : Soldier : Head sparsely and body fairly hairy. Total body length 3.50-5.60. Head oval, narrowed in front, length to base of mandibles 1.07-1.44 mm, maximum width 0.85-1.15 mm. Fontanelle transverse, situated anteriorly a little behind postclypeus. Antennae with 14 segments, segment 4 shortest. Clypeus bilobed. Labrum broad, tongue-shaped. Mandibles thin, long and strongly incurved in distal half, more or less sickle-shaped and basally wide, length 0.58-0.80 mm, each with a backwardly directed, sharp tooth at about middle. Pronotum saddle-shaped, length 0.28-0.40 mm, width 0.56-0.78 mm.

**Distribution** : India : Delhi, Gujarat, Madhya Pradesh, Rajasthan (Barmer, Bundi, Jaipur, Jaisalmer, Jodhpur, Kota, Nagaur, Sawaimadhopur, Udaipur).

**Elsewhere** : Pakistan.

#### 4. *Microcerotermes beelsoni* Snyder

2004. *Rhinotermitidae* Rathore and Bhattacharya, *Rec. zool. Surv. India, Occ. Pap. No. 223* : 28.

**Material examined** : Tal Chhappar Wildlife Sanctuary, Churu, 1 soldier, 20 workers, 12i.2005 ex. From dead tree trunk, V. Sharma, coll., Tal Chhappar Wildlife Sanctuary, Churu, 1 soldier, 40 workers, 13.i.2005, ex. Under bark of dead tree trunk, V. Sharma coll.

**Diagnostic character** : Soldier : Total body-length 4.3-5.5 mm. Head-capsule subrectangular, length to mandible base 1.28-1.67 mm, width 0.77-1.00 mm, head-index I 0.58-0.60. Fontanelle minute, situated at about anterior third of head. Antennae with 13 segments, segment 3 shortest. Labrum subpentagonal, anterior margin sharply rounded.

Mandibles a little more than half to about 2/3 as long as had, coarsely serrated, with a large tooth-like serration a little behind middle, anteriorly weakly to appreciably incurved, length 0.75-0.92 mm, head-mandibular index 0.58-0.66. Pronotum saddle-shaped, length 0.22-0.33 mm, width 0.47-0.60 mm.

*Distribution* : India : Assam, Delhi, Gujarat, Haryana, Kerala, Madhya Pradesh orissa, Punjab, Rajasthan (Churu), Sikkim, Uttar Pradesh, West Bengal.

*Elsewhere* : Bangladesh, Bhutan, Pakistan.

*Remark* : First time reported from district Churu.

### 5. *Microcerotermes tenuignathus* Holmgren

2004. *Microcerotermes tenuignathus* Rathore and Bhattarya, *Rec. zool. Surv. India, Occ. Pap. No. 223* : 32.

*Material examined* : Tal Chhappar Wildlife Sanctuaary, Churu (6 lots), 17 soldiers, 237 workers, 11.i.2005, ex. From dead tree trunk, under bark of tree trunk, V. Sharma coll., Tal Chhappar Wildlife Sanctuary, Churu (6 lots), 11 soldiers, 179 workers, 12.i.2005, ex. From dead tree trunk, under bark of tree trunk, V. Sharma coll., Tal Chhappar Wildlife Sanctuary, Churu (2 lots), 2 soldiers, 80 workers, 12.i.2005, ex. From dead tree trunk, V. Sharma coll.

*Diagnostic characters* : Soldier : Total body-length 4.0-5.0 mm. Head-capsule subrectangular, sides weakly convex, length to mandible base 1.0-1.27 mm, width 0.75-0.90 mm. fontanelle indistinct. Antennae with 13 segments, segment 3 shortest. Labrum subpentagonal, anteriorly projecting out medially. Mandibles, long and strongly incurved apically, length 0.70-0.95 mm, head-mandibular index 0.70-0.95, finely serrate. Pronotum saddle-shaped, length 0.23-0.30 mm, width 0.51-0.60 mm.

*Distribution* : India : Gujarat, Maharashtra, Rajasthan (Barmer, Churu, Jaisalmer, Jodhpur, Kota, Sawai madhopur).

*Elsewhere* : Pakistan.

*Remark* : First time reported from district Churu.

### Subfamily Macrotermitinae

### 6. *Odontotermes redemanni* (Wasmann)

2004. *Odontotermes redemanni* Rathore and Bhattacharya, *Rec. zool. Surv. India, Occ. Pap. No. 223* : 44.

*Material examined* : Tal Chhappar Wildlife Sanctuary, Churu, 3 soldiers, 2 workers, 13.i.2005 ex. From base of dead tree trunk, V. Sharma coll.

**Diagnostic characters** : Soldier : Total body-length 3.5-5.5 mm. Head-capsule oval, length to mandible base 1.15-1.35 mm, maximum width 1.0-1.20 mm, width at base of mandibles 0.55-0.78 mm. Antennae with 16-17 segments, segment 4 shortest in 16 segmented antennae and 3 in 17 segmented antennae. Labrum tongue-shaped anterior margin broadly rounded. Mandibles long, slender, sabre shaped, incurved distally, length 0.75 mm, head mandibular index 0.69-0.79. Tooth distance 0.23-0.33 mm, tooth index 0.30-0.37. Pronotum saddle-shaped, length 0.45-0.60 mm, width 0.70-1.0 mm.

**Distribution** : India : Andhra Pradesh, Bihar, Gujarat, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Rajasthan (Churu, Nagaur, Sawai Madhopur, Sirohi), Tamil Nadu, Tripura, West Bengal.

**Elsewhere** : Sri Lanka.

**Remark** : First time reported from district Churu.

### 7. *Microtermes mycophagus* (Desneux)

2004. *Odontotermes redemanni* Rathore and Bhattacharya, *Rec. zool. Surv. India, Occ. Pap. No. 223* : 47.

**Material examined** : Tal Chhappar Wildlife Sanctuary, Churu, 2 soldiers, 11 workers, 13.i.2005 ex. From base of dead tree trunk, V. Sharma coll.

**Diagnostic characters** : Soldier : Head and body densely hairy. Total length 3.20-5.0 mm.. Head-capsule oval, slightly longer than wide, length to mandible base 0.85-1.03 mm, width 0.78-0.95 mm. Antennae with 15 segments, segment 2-5 variable in size. Labrum tongue-shaped, tip broadly pointed, not lanceolate, longer than wide, length 0.28-0.35 mm, width 0.25-0.30 mm. Mandibles thin and feeble, weakly incurved apically, length 0.58-0.65 mm, head-mandibular index mandible length/head length 0.62-0.67. Left mandible with a minute, rudimentary tooth on apical third. Right mandible without any tooth. Pronotum saddle-shaped, anterior margin distinctly notched and posterior margin weakly emarginated, length 0.35-0.48 mm, width 0.55-0.70 mm.

**Distribution** : India : Delhi, Gujarat, Haryana, Punjab, Rajasthan (Alwar, Barmer, Bikaner, Churu, Ganganagar, Jaipur, Jaisalmer, Jodhpur, Karauli, Nagaur, Sawaimadhapur, Sikar).

**Elsewhere** : Pakistan.

**Remark** : First record of the species from Tal Chhappar Wildlife Sanctuary.

## SUMMARY

Termite fauna of Tal Chhapar Wildlife Sanctuary is distributed over 2 families and six genera. Extensive surveys resulted into seven species. The family Rhinotermitidae is represented by two genera and two species followed by Termitidae with four genera and five species. All the seven species are reported for the first time from Tal Chhapar Wildlife Sanctuary. Six species namely *Heterotermes indicola*, *Coptotermes heimi*, *Amitermes belli*, *Microcerotermes beelsoni*, *Microcerotermes tenuignathus* and *Odontotermes redemanni* are reported for the first time from district Churu.

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## **INSECTA : HYMENOPTERA : FORMICIDAE**

**NEENA TAK**

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### **INTRODUCTION**

The present studies are based on the material collected from Talchhapar (Churu district) area of Rajasthan by the survey party of Desert Regional Station, Zoological Survey of India, Jodhpur. The manuscript deals with four ant species and three genera under one subfamily Myrmicinae of Order Hymenoptera. All the four species are new record from Talchhapar

*Abbreviations used* : Vinita Sharma-V.S.

### **SYSTEMATIC ACCOUNT**

Class INSECTA

Order HYMENOPTERA

Family FORMICIDAE

Subfamily MYRMICINAE Forel

(i) Tribe **Solenopsidini** Forel

1. *Monomorium (Holcomyrmex) scabriceps* Mayr
2. *Monomorium (Xeromyrmex) salomonis indicum* Forel
3. *Monomorium (Monomorium) pharaonis* Linnaeus

(ii) Tribe **Pheidolini** Emery

4. *Messor barbarus himalayanum* Forel
5. *Pheidole* sp

## Subfamily MYRMICINAE Lepeletier

(i) Tribe **Solenopsidini** ForelGenus *Monomorium* Mayr

*Monomorium (Holcomymex) scabriceps* Mayr

*Monomorium (Holcomymex) scabriceps* Mayr, *Verh. Zool.-bot. Ges. Wien*, **28**(1878) 627, (Holcomymex).

*Material examined* : 1 ex., V.S. coll. 11.1.05 (collected from the base of tree (desi babul) feeding on termite.

*Diagnostic characters* : Length : Worker : 3.5-7.0 mm Worker : Reddish ferruginous with the abdomen dark brown in colour. Head rectangular, sides straight, the posterior lateral angles rounded with a median impressed line. Mandibles very thick, much curved and masticatory margin indistinctly dentate. Antennae 12-jointed with the club formed of apical three joints. Pilosity very sparse. Alitrunk-the pronotum narrower than the head rounded anteriorly, the basal portion of the metanotum nearly as long as the pro-mesonotum, the posterior face of the metanotum obliquely truncate. Petiole the 1st node petiolate in front, higher than the 2nd subtriangular, conical and rounded at the top; 2nd node subglobose, as broad as long. Abdomen broad, truncate anteriorly.

*Distribution* : Rajasthan, Gujarat, Karnataka, Tamil Nadu, Kerala, Punjab, Throughout India.

*Remarks* : Reported for the first time from Talchhapar.

Tribe **Solenopsidini** ForelGenus *Monomorium* Mayr

*Monomorium (Xeromyrmex) salomonis indicum* Forel

*Monomorium salomonis* Linn. race *indicum* Forel, *Rev. Suisse Zool.*, **10** (1902) : 213.

*Monomorium (Xeromyrmex) salomonis* subsp. *indica*; Emery, C., *Gen. Insect. Fasc.*, **174 B** (1922) : 178.

*Material examined* : 7 exs, V.S. Coll., 11.1.05 (collected from base of tree (desi babul) feeding on termite, 3 exs, V.S. Coll., 11.1.05 (from ground), 6 exs, V.S. Coll., 12.1.05 (from ground).

*Diagnostic Characters* : Length: Worker : 3-3.5 mm. Worker : Ferruginous red with abdomen dark brown. Head opaque almost as broad as long, broader anteriorly than posteriorly.

Mandibles narrow with three to four teeth, when closed partially concealed under the projecting margin of the clypeus. Antennae moderately long, the scape not quite reaching the posterior margin of the clypeus. Alitrunk anteriorly rounded moderately broad, the meso-notum broadening posteriorly. Petiole the nodes seen from above equal. The rounded 1st node higher than the 2nd node and petiolate anteriorly. Abdomen oval.

*Distribution* : India : Rajasthan, Gujarat, Chandigarh, Karnataka, Andhra Pradesh, Tamil Nadu, Punjab, Maharashtra, Bengal. Elsewhere: Myanmar.

*Remarks* : Reported for the first time from Talchhapar.

### Tribe *Solenopsidini* Forel

#### Genus *Monomorium* Mayr

*Monomorium (Monomorium) pharaonis* Linnaeus

*Monomorium (Monomorium) pharaonis* Linnaeus, *Syst. Nat.* (1758) : 1.

*Material examined* : Many exs, V.S. Coll., 13.1.05 (collected from base of tree (desi babul) feeding on termites.

*Diagnostic Characters* : Length : Worker : 2.5-3 mm. Worker : Reddish yellow, posterior two thirds of the abdomen black, shining. Head half as long again as broad, slightly convex, the posterior margin transverse. Mandibles narrow, linear, slightly broadened at the masticatory margin with 3-4 teeth. Antennae long and thick, scape reaching nearly upto posterior margin of the head. Alitrunk – Pro-mesonotum convex, rounded in front and at the sides narrowing posteriorly, meso-metanotal suture very distinct, slightly emarginate, metanotum seen from above rectangular, somewhat flat, the posterior lateral angles of the basal portion scarcely tuberculate. Petiole 1st node little thick and rounded at the top, anterior with a long petiole, 2nd node from above globose, slightly broader than the 1st node. Abdomen oval, truncate anteriorly.

*Distribution* : India : Rajasthan, Gujarat, Karnataka, Punjab, Haryana, Himachal Pradesh, Uttar Pradesh, Meghalaya. Elsewhere: New Britain, Oceania, Java, Sumatra, throughout our limits spread over tropical region of both the hemispheres.

*Remarks* : Reported for the first time from Talchhapar.

Tribe **Pheidolini** Emery

Genus ***Messor*** Forel

*Messor barbarus* subsp. *himalayana* Forel

*Messor barbarus* subsp. *himalayana* Forel, *Rev. Suisse Zool.*, **10**(1902) : 220, Worker, Female, Male (Stennama).

**Material examined** : 18 exs, V.S. Coll., 11.1.05 (on ground), 13 exs, V.S. Coll., 11.1.05 (on ground near water body), 4 exs, V.S. Coll., 12.1.05 (from soil).

**Diagnostic Characters** : Length : Worker : 4-10 mm. Worker : Black, shining, mandibles reddish brown, flagellum of the antennae castaneous. Head without the mandible square, slightly emarginate. The outer margin of the mandibles strongly curved, the masticatory margin dentate, the teeth obsolete. Antennae 12-jointed with no distinct club. Alitrunk – the pronotum rounded in front, the mesonotum raised anteriorly, pro-mesonotal suture distinct meso-metanotal suture deeply marked metanotum posteriorly distinctly bidentate. Petiole – the 1st node conical, rounded above with a long petiole anteriorly, 2nd node broader, rounded above, about as broad as its length. Abdomen oval.

**Distribution** : India : Rajasthan, N.W, Himalayas Dharmasala, the tons valley, Quetta.

**Remarks** : Reported for the first time from Talchhapar.

Tribe **PHEIDOLINI** Emery

Genus ***Pheidole*** Westwood

*Pheidole* sp.

**Material examined** : 2 exs, V.S. Coll. 12.1.05 and 3 exs, V.S. Coll. 13.1.05 : Collected from base of tree (desi babul) feeding on termite.

**Remarks** : The above mentioned five specimens of ants are workers of Genus *Pheidole* which were found feeding on termites. Species identification could not be carried out due to lack of soldier caste of *Pheidole* as the identification of *Pheidole* is based on soldiers.

**Remarks** : Reported for the first time from Talchhapar.

**SUMMARY**

The manuscript on Ants (Formicidae : Hymenoptera) of Talchhapar (Churu) district of Rajasthan deals with four ant species of Order Hymenoptera. All the four species are new records from Talchhapar.

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## **INSECTA : COLEOPTERA : SCARABAEIDAE : COPRINAE (DUNG BEETLES)**

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### **INTRODUCTION**

The family Scarabaeidae is the largest family of the order Coleoptera of class Insecta and the representative of the sub family Coprinae are popularly known as “Dung Beetle” because they are largely depend upon the dung of cattle for their food. They are cosmopolitan and coprophagus (Scavenger) in nature and abundantly found in warmer season. They are economically important because they play very important role in pasture ecosystem, where they annually break down tons of animal dung and incorporate much of it into the soil, increasing the soil fertility and at the same time they also destroyed the eggs and the habitat for the larvae of horn flies which they lay eggs in the dung, causes the disease in domestic and wild cattles.

The present study is based on the collection of dung beetles, collected from “Tal Chhapar Wild Life Sanctuary” by the parties of Desert Regional Station, Zoological Survey of India, Jodhpur during the year 2004-2005. These studied dung beetles have been listed according to their systematic position under two tribes Scarabaeini and Coprini.

### **SYSTEMATIC ACCOUNT OF DUNG BEETLE**

Class INSECTA

Order COLEOPTERA

Suborder POLYPHAGA

Superfamily SCARABAEOIDEA

Family SCARABAEIDAE

Subfamily COPRINAE

## CLASSIFIED LIST OF DUNG BEETLES

### Tribe I. SCARABAEINI

#### Genus 1. *Gymnopleurus* Illiger

1. *Gymnopleurus koenigi* Fabricius

### Tribe II. COPRINI

#### Genus 2. *Copris* Geoffroy

2. *Copris repurtus* Walker
3. *Copris furciceps* Felsche

#### Genus 3. *Phalops* Erichson

4. *Phalops cyanescens* D'orbigny

#### Genus 4. *Caccobius* Thomson

5. *Caccobius torticornis* Arrow

#### Genus 5. *Onthophagus* Latreille

6. *Onthophagus catta* Fabricius
7. *Onthophagus bonasus* Fabricius
8. *Onthophagus seniculus* Fabricius
9. *Onthophagus kuluensis* Bates

### Key to the tribes of Subfamily COPRINAE

1. Middle coxae not widely separated; middle tibia with one terminal spur ..... SCARABAEINI.
- Middle coxae widely separated, middle tibia with two terminal spurs ..... 2
2. Posterior legs extremely long, the tarsi filiform ..... SISYPHINI
- Basal joint of the hind tarsus much longer than the second ..... 3
3. Posterior legs not extremely long, tarsi more or less flat and tapering ..... COPRINI.
- Basal joint of the hind tarsus not much longer than the second ..... PANELINI.

## Tribe 1 SCARABAEINI

The body is rather depressed and legs are very slender, middle and hind tibiae are narrow and dilated at the each end, bearing a single terminal spur and tarsi filiform. The clypeus is produced into two or more lobes at front margin and ocular lobes are prominent. The male and female are generally alike and ball rollers. The tribe consists of two genera *Scarabaeus* and *Gymnopleurus*. The single species of *Gymnopleurus* has been recorded from "Tal Chhappar Wild Life Sanctuary"

Genus 1. *Gymnopleurus* Illiger 1803

1803. *Gymnopleurus* Illiger, *Mag. Ins.*, 2 : 199.  
 1807. *Gymnopleurus* Latreille, *Gen. Crust. Ins.*, 2 : 78.  
 1856. *Gymnopleurus* Lacordaire, *Gen. Col.*, 3 : 73.  
 1931. *Gymnopleurus* Arrow, *Fauna of British India including Ceylon and Burma* (Coleoptera: Lamellicornia: Coprinae), 3 : 46-48.  
 1963. *Gymnopleurus* Balthasar, *Monographie der Scarabaeidae und Aphodiidae der Palaearktischen und Orientalischen Region* (Coleoptera: Lamellicornia), 1 : 177-182.

**Diagnostic Characters** : Small broad and depressed. The clypeus is completely-fused with the ocular lobes and produced into two or four short teeth at front margin. The prothorax is large and convex, having several patches dorsally. The fore legs are short and stout and the front tibia is armed with three external teeth. The all six tarsi are filiform. The scutellum is visible. Male and female are almost alike and ball rollers.

1. *Gymnopleurus koenigi* Fabricius

1775. *Scarabaeus koenigi* Fabricius, *Syst. Ent.*, p. 29.  
 1931. *Gymnopleurus koenigi* Arrow, *Fauna of British India including Ceylon and Burma* (Coleoptera : Lamellicornia : Coprinae), 3 : 51-52, Pl. III, Fig. 5.  
 1963. *Gymnopleurus koenigi* Balthasar, *Monographie der Scarabaeidae und Aphodiidae der Palaearktischen und Orientalischen Region* (Coleoptera : Lamellicornia), 1 : 200-201, Fig. 90.

**Material examined** : 18 exs., 09.10.2004, S. Kumar.

**Diagnostic Characters** : Black and shining. Broadly oval and moderately convex and dorsally clothing with white or pale yellow setae. The head is densely granular and the clypeus is deeply notched in the middle, forming a single lobe on each side. The prothorax is convex, very transverse with strongly rounded sides and with acute front angles and rectangular hind angles. The elytra are deeply sulcate, punctured and the intervals are shining and convex, the 2nd and 4th are much broader in front than the rest. The elytra are bearing double series of

elongate patches upon the 2nd, 4th and 6th intervals, one beyond and two before the extremity, 3rd patch upon the 2nd interval close to the hind margin and also one upon the dorsal part of first abdominal sternite. The lateral margins are deeply excised, exposed the metasternal epimera. The pygidium is thinly angular and setose with a small carina. The male frontal tibial spurs are flat and truncated and the hind tibial spurs are shorter in the female.

*Distribution* : India : Rajasthan : Tal Chhapar Wild Life Sanctuary, Churu (18 exs. 09-10-2004, S. Kumar) and also recorded from Pondicherry and Tamil Nadu.

*Elsewhere* : Sri Lanka.

### Tribe 2 COPRINI

The head and prothorax are generally bearing horns, tubercles and carinae. The legs are not very slendered, middle and hind coxae are far apart and more or less parallel. The middle and hind tibiae are dilated towards the extremity and the middle with two and hind with one terminal spur. The middle and hind tarsi are more or less flattened.

The tribe Coprini consists of the most commonly found genera and species of dung beetles those are known with an ample of morphological variation in size and forms. A total of eight species identified under four genera were collected from Tal Chhapar Wild Life Sanctuary.

#### Key to the Genera of Tribe COPRINI

1. Prothorax with deep median groove..... *Copris* Geoffroy
- Prothorax without deep median groove..... 2
2. Posterior tarsi broadly dilated ..... *Phalops* Erichson
- Posterior tarsi not broadly dilated ..... 3
3. Terminal margin of the front tibia at right angle to the inner margin and front angle of prothorax hollowed beneath ..... *Caccobius* Thomson
4. The middle and hind tibiae dilated from base to extremity ..... *Onthophagus* Latreille

#### Genus 2. *Copris* Geoffroy 1762

1762. *Copris* Geoffroy, *Ins. Des. Env. De.*, Paris, 87.

1785. *Copris* Fourcroy, *Ent.* Paris, 1 : 13.

1856. *Copris* Lacordaire, *Gen. Col.*, 3 : 96.

1931. *Copris* Arrow, *Fauna of British India including Ceylon and Burma* (Coleoptera; Lamellicornia: Coprinae), 3 : 102.

1963. *Copris* Balthasar, *Monographie der Scarabaeidae und Aphodiidae der Palaearktischen und Orientalischen Region* (Coleoptera : Lamellicornia), 1 : 317-319.

**Diagnostic Characters** : Compact, convex or little depressed. The head is broad, more or less semicircular and clypeus notched in the middle at the front margin. The prothorax is broad and transverse and its front margin furnished with membranous fringe and hind margin with a deep median groove. The middle coxae are long and nearly parallel. The tarsi are short and basal joint about twice as long as the second. The scutellum is wanting. The elytra are not very short, having eight striae and single lateral carina.

The two species of the genus *Copris* have been recorded from the Tal Chhappar Wild Life Sanctuary.

#### Key to the Species of the Genus *Copris*

1. Front angles of prothorax truncated and elytra feebly striate ..... *repertus* Walker
- Prothorax, elytra and metasternal shield well punctured ..... *furciceps* Felsche

#### 2. *Copris repertus* Walker

1858. *Copris repertus* Walker, *Ann. Mag. Nat. Hist.*, 3(2) ; 208.

1877. *Copris claudius* Harold, *Ann. Mus. Civ. Genova*, 10 : 48.

1886. *Copris repertus* Lansberge, *Tijds. Ent.*, 29 : 11.

1931. *Copris repertus* Arrow, *Fauna of British India including Ceylon and Burma* (Coleoptera: Lamellicornia: Coprinae), 3 : 126-127, pl. X, figs. 8 & 9.

1963. *Copris repertus* Balthasar, *Monographie der Scarabaeidae und Aphodiidae der Palaearktischen und Orientalischen Region* (Coleoptera : Lamellicornia), 1 : 351-352.

**Material examined** : 2 exs. 9.10.2004, S. Kumar.

**Diagnostic Characters** : Broadly oval, highly convex and covered with reddish bristles beneath. The head is semicircular and the clypeus is deeply notched in the middle. The prothorax is strongly grooved longitudinally in the middle, the front angles are truncate and the hind angles almost obsolete. The front tibia is broad, armed with four external teeth and nearly straight. The male bears a slendered slightly compressed erect cephalic horn and with a minute tooth near the base on each side and female with short transverse elevated cephalic carina.

**Distribution** : India : Rajasthan ; Tal Chhappar Wild Life sanctuary, Churu (2 exs. 9-10-2004, S.Kumar) and also recorded from Arunachal Pradesh, Bihar, Gujarat, Karnataka, Maharastra, Madhya Pradesh, Pondicherry, Tamil Nadu and Uttar Pradesh.

*Elsewhere* : China, Myanmar, Srilanka.

### 3. *Copris furciceps* Felsche

1910. *Copris furciceps* Felsche, Deutsche. *Ent. Zeitscher*, p. 348.
1931. *Copris furciceps* Arrow, *Fauna of British India including Ceylon and Burma* (Coleoptera : Lamellicornia : Coprinae), 3 : 130-131.
1963. *Copris (Paracopris) furciceps* Balthasar, *Monographie der Scarabaeidae und Aphodiidae der Palaearktischen und Orientalischen Region* (Coleoptera: Lamellicornia), 1 : 372.

*Material examined* : 2 exs. 9.10.2004, S. Kumar.

*Diagnostic Characters* : oval and not very convex. The head is very smooth and shining in front, strongly and closely punctured behind. Prothorax is densely punctured, the front angles are blunt and hind angles obsolete. The elytra are lightly striate and closely punctured. The metasternal shield is well punctured except along the middle line of the anterior part. The front tibia armed with four sharp external teeth.

*Distribution* : India : Rajasthan; Tal Chhapar Wildlife sanctuary, Churu (2 exs. 9-10-2004, S. Kumar) and also recorded from Arunachal Pradesh, Gujarat, Meghalaya and Uttar Pradesh.

*Elsewhere* : Myanmar.

### Genus 3. *Phalops* Erichson 1848

1848. *Phalops* Erichson, *Nat. Insect. Dutsch*, 3 : 764.
1856. *Phalops* Lacordaire, *Gen. Col.*, 3 : 109.
1883. *Phalops* Lansberge, *Stett. Ent. Zeit.*, 44 : 162.
1893. *Ephillopus* Reitter, *Verh. Ver. Brunn*, 31 : 168.
1931. *Phalops* Arrow, *Fauna of British India including Ceylon and Burma* (Coleoptera : Lamellicornia : Coprinae), 3 : 134.
1963. *Phalops* Balthasar, *Monographie der Scarabaeidae und Aphodiidae der Palaearktischen und Orientalischen Region* (Coleoptera : Lamellicornia), 1 : 604-606.

*Diagnostic Characters* : Rather short and broad and not very convex. The clypeus is narrowly produced in front. The legs moderately long, middle and hind tarsi are broad and flattened.

The single species of the genus *Phalops* has been found from Tal Chhapar Wild Life Sanctuary.

**4. *Phalops cyanescens* D'orbigny**

1897. *Phalops cyanescens* D'Orbigny, *Ann. Soc. Ent. France*, **64** : 243.

1931. *Phalops cyanescens* Arrow, *Fauna of British India including Ceylon and Burma* (Coleoptera : Lamellicornia: Coprinae), **3** : 136-137.

1963. *Phalops cyanescens* Balthasar, *Monographie der Scarabaeidae und Aphodiidae der Palaearktischen und Orientalischen Region* (Coleoptera: Lamellicornia), **1** : 609.

*Material examined* : 13 exs. 9.10.2004, S. Kumar.

*Diagnostic Characters* : Dark blue and elytra with a yellow outer marginal line and with numerous irregular spots. The upper surface is clothed with minute yellow setae. The side of the head is produced into a broadly rounded lobes and the clypeus of the male is reflexed into tongue like process in front and bilobed in female. The front tibia of the male is long and with broad, blunt external teeth and strongly toothed in female.

*Distribution* : India : Rajasthan; Tal Chhapar Wild Life Sanctuary, Churu (13exs. 9-10-2004, S. Kumar) and also recorded from Gujarat and Tamil Nadu.

*Elsewhere* : Pakistan.

**Genus 4. *Caccobius* Thomson 1863**

1863. *Caccobius* Thomson, *Skand. Col.*, **5** : 34.

1872. *Caccophilus* Jekel, *Rev. Mag. Zool.*, 410.

1872. *Cacconemus* Jekel, *Op. Cit.*, 418.

1913. *Caccobius* D'Orbigny, *Ann. Soc. Ent. France*, 16.

1931. *Caccobius* Arrow, *Fauna of British India including Ceylon and Burma* (Coleoptera : Lamellicornia : Coprinae), **3** : 141-142.

1963. *Caccobius* Balthasar, *Monographie der Scarabaeidae und Aphodiidae der Palaearktischen und Orientalischen Region* (Coleoptera: Lamellicornia), **1** : 113-115.

*Diagnostic Characters* : Short compact and generally small sized. The front angles of prothorax are deep hollow beneath, sharply defined. The tibia is a very short, broad and terminal tooth not placed obliquely. The antennae are eight jointed.

The single species *Caccobius torticornis* has been found from Tal Chhapar Wild Life Sanctuary.

**5. *Caccobius torticornis* Arrow**

1931. *Caccobius torticornis* Arrow, *Fauna of British India including Ceylon and Burma* (Coleoptera: Lamellicornia: Coprinae), **3** : 144-145.

1963. *Caccobius torticornis* Balthasar, *Monographie der Scarabaeidae und Aphodiidae der Palaearktischen und Orientalischen Region* (Coleoptera : Lamellicornia), **2** : 135-136.

*Material examined* : 3 exs. 9.10.2004, S. Kumar.

*Diagnostic Characters* : Black and shining with deep red spots on each shoulder and red marginal patch at the extremity. The antenna and the legs are reddish. The body is broadly oval, compact and convex. The head is broad and bluntly angular in front of the eyes. The clypeus is sharply bidentate and sides are straight and convergent. The prothorax is moderately strongly but not closely punctured. The front angles are fairly sharp, sides nearly straight in front and feebly curved behind, and the base is jointly rounded. The elytra are striate, intervals flat and minutely sparsely aciculate-punctate. The pygidium is strongly and not closely punctured. The metasternum is bearing few large punctures. The posterior margin of the head of the male is produced as flat plate and its angles produced into short and sharp horns, the clypeus and the frons of the female are separated by strong carina.

*Distribution* : India : Rajasthan; Tal Chhapar Wild Life Sanctuary, Churu (3 exs. 9-10-2004, S. Kumar) and also recorded from Uttranchal.

#### Genus 5. *Onthophagus* Latreille 1802

1802. *Onthophagus* Latreille, *Hist. Nat. Crust. Et. Ins.*, **3** : 141.

1856. *Onthophagus* Lacordaire, *Gen. Col.*, **3** : 105.

1856. *Onthophagus* D'orbigny, *L'Abeille*, **29** : 126-132

1883. *Proagoderus* Lansberge, *Notes Leyed. Mus.*, **5** : 15.

1913. *Proagoderus* D'orbigny, *Ann. Soc. Ent. France*, **132** : 493.

1917. *Proagoderus* Marcus, *Arch. F. Nat.* A10, **133** : 1.

1931. *Onthophagus* Arrow, *Fauna of British India including Ceylon and Burma* (Coleoptera : Lamellicornia : Coprinae), **3** : 159-162.

1963. *Onthophagus* Balthasar, *Monographie der Scarabaeidae und Aphodiidae der Palaearktischen und Orientalischen Region* (Coleoptera : Lamellicornia), **2** : 153-168.

*Diagnostic Characters* : Rather short, compact, smooth or clothed with hairs or setae. The clypeus is fused with ocular lobes and variable in shape. The prothorax is with angulated lateral margin in the middle and rounded at the base. The legs are stout, femora thick and front tibia armed with four but occasionally with three external teeth. The middle and hind tibiae are dilating greatly from base to extremity. The elytra are covering the abdomen and having a single lateral carina and seven striae.

The four species of the genus *Onthophagus* have been recorded from Tal Chhapar Wild Life Sanctuary.

### Key to the Species of the Genus *Onthophagus*

1. Prothorax sparsely granulate in the middle and finely scattered punctures behind, front angles not very sharp ..... *catta* Fabricius
  - Front angles of prothorax very sharp ..... 2
2. Prothorax very smooth and with scattered granules in its middle part ..... *bonasus* Fabricius
  - Prothorax not sparsely granulate ..... 3
3. Prothorax sparsely punctured with blunt front angles. Elytra opaque, intervals flat and minutely punctured ..... *seniculus* Fabricius
  - Prothorax not sparsely punctured. Elytra shining, intervals not flat and eyes very small ..  
..... *kuluensis* Bates

#### 6. *Onthophagus catta* Fabricius

1787. *Scarabaeus catta* Fabricius, *Mant. Inst.*, 1 : 12.

1787. *Scarabaeus gazella* Fabricius, *Op. Cit.*, 2 : 377.

1798. *Copris metallicus* Fabricius, *Ent. Syst. Suppl.*, 281.

1798. *Copris antilops* Fabricius, *Op. Cit.*, 32.

1931. *Onthophagus catta* Arrow, *Fauna of British India including Ceylon and Burma* (Coleoptera : Lamellicornia : Coprinae), 3 : 230-231.

*Material examined* : 3 exs. 8.10.2004, S. Kumar.

*Diagnostic Characters* : Broadly oval and convex, smooth and moderately shining. The head is semicircular, clypeus strongly reflexed anteriorly and separated from the frons by a strong, feebly curved carina. The prothorax bears granules in middle part and scattered punctures behind. The elytra are striate and with flat intervals. The pygidium bears an angulated basal carina and a few scattered punctures. The vertex of the male bears a pair of slendered horns and prothorax is having two minute prominence, which are separated by a slight groove.

*Distribution* : India : Rajasthan; Tal Chhappar Wild Life Sanctuary, Churu (3 exs. 8-10-2004, S.Kumar) and also recorded from Arunachal Pradesh, Gujarat, Haryana, Himachal Pradesh, Karnataka, Maharastra, Punjab, Uttranchal, Uttar Pradesh and Tamil Nadu.

*Elsewhere* : Africa, Arabia, Pakistan, Cambodia, Myanmar, Madagascar and Sri Lanka.

#### 7. *Onthophagus bonasus* Fabricius

1775. *Onthophagus bonasus* Fabricius, *Syst. Ent.*, P. 23.

1898. *Onthophagus bonasus* D'orbigny, *L' Abeille*, **29** : 218.
1931. *Onthophagus bonasus* Arrow, *Fauna of British India including Ceylon and Burma* (Coleoptera : Lamellicornia : Coprinae), **3** : 231-232, Pl. XIII, Fig. 5 & 6.
1963. *Onthophagus (Digitonthophagus) bonasus* Balthasar, *Monographie der Scarabaeidae und Aphodiidae der Palaearktischen und Orientalischen Region* (Coleoptera : Lamellicornia), **2** : 296-297, Pl. XII, Fig. 5.

*Material examined* : 9 exs. 17th & 18th April, 2004, R. Sewak.

*Diagnostic Characters* : Very broadly oval, and convex. The legs and the sides of the body are clothed with yellow setae beneath. The head is semi-circular with strongly reflexed front margin. The clypeus is separated from the frons by a strong curved carina. There is a short acute horn in the middle and the vertex with a pair of backwardly directed horns. The prothorax is having a slight median groove and the front angles are acutely produced, sides feebly sinuate, hind angles and base are angulated in the middle. The front tibia of the male is elongated slendered and has feebly curved external teeth and its inner extremity is produced as a long slender tooth.

*Distribution* : India : Rajasthan : Tal Chhapar Wild Life Sanctuary, Churu (9 exs. 17th & 18th April 2004, R.Sewak) and also recorded from Arunachal Pradesh, Himachal Pradesh, Haryana, Karnataka, Maharashtra, Madhya Pradesh, Punjab, Tamil Nadu and Uttar Pradesh.

*Elsewhere* : Afghanistan, Pakistan, Myanmar, Siam, Tonkin and Cambodia.

### 8. *Onthophagus seniculus* Fabricius

1781. *Scarabaeus seniculus* Fabricius, *Spec. Ins.*, **1** : 23.
1931. *Onthophagus seniculus* Arrow, *Fauna of British India including Ceylon and Burma* (Coleoptera : Lamellicornia : Coprinae), **3** : 235-236.

*Material examined* : 2 exs., 7th & 8th Oct., 2004, S. Kumar.

*Diagnostic Characters* : Broadly oval, moderately compact, smooth, not very shining above. The head is having a straight, parallel carina and the basal joint of the antennae has serrate at anterior edge. The prothorax has smooth, shining excavation just behind the front margin and horizontal prominence behind each excavation. The clypeus of the male is curved upward, a little in front and its sides are nearly straight and the front tibia is little elongate with rather small teeth. The head of female is almost semicircular in out line and the dorsal prothoracic prominence is slightly rounded.

*Distribution* : India : Rajasthan : Tal Chhapar Wildlife sanctuary, Churu (2 exs. 7th & 8th Oct. 2004, S.Kumar) and also recorded Arunachal Pradesh, Gujarat and Uttar Pradesh.

*Elsewhere* : Malay Peninsula, Myanmar, China and Indo-China.

### 9. *Onthophagus kuluensis* Bates

1891. *Onthophagus kuluensis* Bates, *Entom. Suppl.*, **34** : 12.

1931. *Onthophagus kuluensis* Arrow, *Fauna of British India including Ceylon and Burma* (Coleoptera : Lamellicornia : Coprinae), **3** : 292-293.

1963. *Onthophagus kuluensis* Balthasar, *Monographie der Scarabaeidae und Aphodiidae der Palaearktischen und Orientalischen Region* (Coleoptera : Lamellicornia), **2** : 409-410.

*Material examined* : 5 exs., 18.04.2004, R. Sewak.

*Diagnostic Characters* : Oval and moderately convex. The head is broad, the clypeus is nearly straight in front and separated from the frons by a straight carina. The front angles of the prothorax are blunt, lateral margin is feebly curved in front and the base is obtusely angulated in the middle. The male having a pair of nearly parallel horns, connected by a ridge and female with straight carina on vertex.

*Distribution* : India : Rajasthan : Tal Chhapar Wild Life Sanctuary, Churu (5 exs. 18-04-2004, R. Sewak).

*Elsewhere* : Arunachal Pradesh, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Uttranchal and Uttar Pradesh.

### SUMMARY

Total nine species belonging to five genera of sub family Coprinae under the family Scarabaeidae have been recorded from Tal Chhapar Wild Life Sanctuary, Churu district of Rajasthan. All the nine species *Gymnopleurus koenigi* Fabricius, *Copris repurtus* Walker, *Copris furciceps* Felsche, *Phalops cyanescens* D'Orbigny, *Caccobius torticornis* Arrow, *Onthophagus catta* Fabricius, *Onthophagus bonasus* Fabricius, *Onthophagus seniculus* Fabricius, *Onthophagus kuluensis* Bates have been recorded for the first time from Tal Chhapar Wild Life Sanctuary. All these species are belonging to tribe Scarabaeini and Coprini, and the representative of tribe Sisyphini and Panelini were not found. These species were collected from the dung of cow, buffalo, goat, sheep, cheetal and black buck.

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## HERPETOFAUNA

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### INTRODUCTION

The Thar desert is known for the diversity of reptiles and best known as land of reptiles. Tal Chhapar being the unique habitat of the Thar desert houses the most spectacular reptilian species like *Uromastix hardwicki* and *Echis carinatus*. It is a flat saline depression inundated with monsoon water and form a Tal i.e., wetland, it changes into a grassland later when water evaporates from this land. It is this unique transformation from wetland to grassland that invites both amphibians and reptiles for staying and breeding in the protected environment of Tal Chhapar Wildlife Sanctuary (TWLS) in Churu district, Rajasthan.

Literature reveals the contribution of different workers on various aspects of Reptiles and Amphibians from India (Boulenger 1882, Anandale 1907, Sarkar 1993, Smith 1931, 1935 and 1940, Murthy 1967-68, Myers 1968, Sharma 1998 to 2003 and Chanda 2002). Reptiles of Tal Chhapar viz: *Uromastix hardwicki* and *Varanus bengalensis* have been reported by Rahmani (1997).

Most of the species were closely observed and photographs (Plate 1.) taken and collected only when left by predating raptors.

### SYSTEMATIC ACCOUNT

Class AMPHIBIA

Order ANURA

Family RANIDAE

1. *Euphlyctis cyanophlyctis* (Schneider), 1799

2002. Chanda, *Hand Book-Indian Amphibians: i-viii*, pp. 98.

*Material examined* : 2 exs., Maharaja Gangsingh Talao, 7.x.2004, 1 ex., Bhansolao, Tal Chhapar WLS, 8.x.2004, coll. Sanjeev Kumar.

*Distribution* : All over India except Meghalaya.

*Elsewhere* : Nepal, Sri Lanka, Pakistan, Bangladesh and Thailand.

*Habit and Habitat* : Commonly known as skipper frog. This species is one of the commonest of Indian frogs, inhabiting all the habitats almost in all the seasons.

### Family BUFONIDAE

#### 2. *Bufo malenostictus* Schneider, 1799

2002. Chanda, *Hand Book-Indian Amphibians: i-viii*, pp. 25.

*Material examined* : 3 exs., Chadwas chowki, Tal Chhapar WLS, 10.x.2004, coll. Sanjeev Kumar.

*Distribution* : All over India.

*Elsewhere* : Myanmar, Sri Lanka, Sumatra, Java, Borneo, Bali, Malaysia, Indonesia and Philippines.

*Habit and Habitat* : Species is common in desert and semi desert areas. This is common and most widely distributed toad among the Indian Anurans. It is nocturnal in habit and found in damp places, inside holes, under logs and near human dwellings.

Class REPTILIA

Order SQUAMATA

Suborder SAURIA

Family GEKKONIDAE

#### 1. *Hemidactylus brooki* Gray 1845

1935. *Hemidactylus brooki* Smith, *Fauna Brit. Ind.*, 2 : p. 89.

*Material examined* : 1 ex., Dungolao Talao, Tal Chhapar WLS, 9.x.2004, coll. Sanjeev Kumar.

*Distribution* : India : Widely distributed in whole of the India.

*Elsewhere* : Sri Lanka, Borneo, Pakistan, Burma, South China West Indies, Tropical India.

**Habit and Habitat** : The species is very common. Head is large and triangular in appearance; body is covered with brownish black scales. Mostly found under the loose stones.

## 2. *Hemidactylus leschenaulti* Dum. and Bibr. 1836

1935. *Hemidactylus leschenaulti* Smith, *Fauna Brit. Ind.*, 2 : p. 97.

**Material examined** : 2 ex., Dungolao Talao, Tal Chhappar WLS, 9.x.2004, coll. Sanjeev Kumar.

**Distribution** : India : Widely distributed in whole of the India.

**Elsewhere** : Sri Lanka and Pakistan.

**Habit and Habitat** : The species is abundant. Head is large with a broad snout. Cross bands are present on the dorsal part of the body. Mostly found in rock crevices and in the wall cracks of old buildings.

## 3. *Hemidactylus flaviviridis* Ruppell, 1835

1935. *Hemidactylus flaviviridis* Smith, *Fauna Brit. Ind.*, 2 : p. 98.

**Material examined** : 1 ex., Forest Guest House, Tal Chhappar WLS, 8.x.2004, coll. Sanjeev Kumar.

**Distribution** : India : Whole of India.

**Elsewhere** : Sumatra to South China, Sri Lanka and Pakistan.

**Habit and Habitat** : The species is most common throughout its range.

## Family AGAMIDAE

### 4. *Uromastix hardwickii* (Daudin) Gray 1827

1935. *Uromastix hardwickii* Smith, *Fauna Brit. Ind.* 2 : p. 257.

**Material examined** : 1 ex., Tal Chhappar WLS, 8.x.2004, coll. Sanjeev Kumar.

**Distribution** : India : Whole of India but widely distributed in north India.

**Elsewhere** : Arabia, Pakistan and Iran.

**Habit and Habitat** : The species is most common. Commonly called spiny tailed lizard due to the spine like structures on its tail. It prefers to live near xerophytic vegetation. In

rainy season it makes fresh burrows digging with feet. Mostly sits in the burrow facing the blind end of the burrow and comes out for feeding only.

#### Family SCINCIDAE

##### 5. *Mabuya carinata* (Schneider) 1801

1935. *Mabuya carinata* Smith, *Fauna Brit. Ind.*, 2 : p. 277.

*Material examined* : 2 exs., Maharaja Gangsingh Talao, Tal Chhapar WLS, 7.x.2004, Observed by Sanjeev Kumar.

*Distribution* : India : Whole of India.

*Elsewhere* : Burma, Pakistan, Vietnam, Malaysia and Sri Lanka.

*Habit and Habitat* : The species is common everywhere. The dorsum is shining olive brown and bronzy in colour and the under surface is white or creamish. Mostly it is observed near small ditches of water or near moist places feeding on insects.

#### Family LACERTIDAE

##### 6. *Acanthodactylus cantoris cantoris* Gunthen 1864

1864. *Acanthodactylus cantoris cantoris* Gunthen, *Fauna Brit. Ind.*, 2 : p. 375.

*Material examined* : 1 ex., Near Forest Guest House, Tal Chhapar WLS, 9.x.2004, coll. Sanjeev Kumar.

*Distribution* : India : Rajasthan, Gujarat, Uttar Pradesh, Punjab and Haryana.

*Elsewhere* : Pakistan, Eastern Iraq, Saudi Arabia, Southern Afghanistan and Iran.

*Habit and Habitat* : The species is commonly available in sandy areas near xerophytic bushes where they live in burrows dug by themselves.

##### 7. *Ophisops jerdoni* Blyth 1853

1935. *Ophisops jerdoni* Smith, *Fauna Brit. Ind.*, 2 : p. 377.

*Material examined* : 4 exs., Near cemented water Tank, Tal Chhapar WLS, 9.x.2004, Observed by Sanjeev Kumar.

*Distribution* : India : Rajasthan, Tamil Nadu, Andhra Pradesh, Madhya Pradesh, Kutch.

*Elsewhere* : Pakistan.

*Habit and Habitat* : The species is commonly available in different localities of its range. Most of the examples of this species are small in size; moves very slowly on the ground near bushes.

Family VARANIDAE

8. *Varanus bengalensis* (Linnaeus) 1758

2002. *Varanus bengalensis* Sharma, *Fauna of India and adjacent countries – Reptilia ( Sauria)* Vol. II, 402 pp.

*Material examined* : 2 exs., Tal Chhapar WLS, 7.x.2004, Observed by Sanjeev Kumar.

*Distribution* : Whole of India.

*Elsewhere* : Burma, Sri Lanka and Pakistan.

*Habit and Habitat* : Population of this species has become exceedingly low. Most of the times the lizard stays under loose stones. The species exhibits feign death when approached very close or surrounded.

Suborder SERPENTES

Family BOIDAE

9. *Eryx johnii* (Russell) 1801

2003. Sharma, *Hand Book Indian snakes: i-viii*, pp. 54.

*Material examined* : 1 exs., Tal Chhapar WLS, 9.x.2004, coll. Sanjeev Kumar.

*Distribution* : INDIA : Rajasthan, Gujarat, Andhra Pradesh, Uttar Pradesh, Punjab, Maharashtra and Tamil Nadu.

*Habit and Habitat* : Commonly observed in its range. Found in deep burrows on a plain surface.

Family ELAPIDAE

10. *Bungarus caeruleus* (Schenider) 1801

2003. Sharma, *Hand Book-Indian snakes: i-viii*, pp.188.

*Material examined* : 1 exs., Tal Chhapar WLS, 9.x.2004, Observed by Sanjeev Kumar.

*Distribution* : INDIA : Rajasthan, Gujarat, Andhra Pradesh, Uttar Pradesh, Punjab, Haryana, Orissa, Maharashtra, Karnataka, Tamil Nadu and Kerala.

*Habit and Habitat* : This snake is becoming rare on account of habitat loss. Strictly nocturnal. Main food comprises frogs, toads and small lizards. Mostly it is found in rocky areas, marshes and gardens.

### 11. *Naja naja naja* (Linnaeus) 1758

2003. Sharma, *Hand Book-Indian snakes* : i-viii, pp. 196.

*Material examined* : 1 exs., Tal Chhapar WLS, 7.x.2004, Observed by Sanjeev Kumar.

*Distribution* : India : Rajasthan, Gujarat, Andhra Pradesh, Uttar Pradesh, Madhya Pradesh, Goa, Punjab, Haryana, Orissa, Maharashtra, Karnataka, Tamil Nadu, West Bengal, Kashmir, Bihar and Kerala.

*Habit and Habitat* : Species is common throughout its range. Basically it appears in day times in lonely vegetated areas but also observed in Agricultural fields. Mostly the snake stays in the rodent holes.

### 12. *Naja naja oxiana* (Eichwald) 1831

2003. Sharma, *Hand Book-Indian snakes*: i-viii, pp. 197

*Material examined* : 1 ex., Tal Chhapar WLS (Area bordering salt works), 8.x.2004, Observed by Sanjeev Kumar.

*Distribution* : India : Rajasthan, Gujarat, Andhra Pradesh, Uttar Pradesh, Madhya Pradesh, Goa, Punjab, Haryana, Orissa, Maharashtra, Karnataka, Tamil Nadu, West Bengal, Kashmir, Bihar and Kerala.

*Habit and Habitat* : The species is common throughout its range. Basically it appears in day times in lonely vegetated areas but also observed in Agricultural fields. Mostly the snake stays in the rodent holes.

## Family VIPERIDAE

### 13. *Echis carinatus* (Schneider) 1801

2003. Sharma, *Hand Book-Indian snakes*: i-viii, pp. 223.

*Material examined* : 1 ex., Tal Chhappar WLS, 8.x.2004, coll. Sanjeev Kumar.

*Distribution* : INDIA : Whole of India.

*Habits and Habitat* : Though the snake is available every where in its range, but no where common. Its food comprises Amphibians, small lizards, squirrels and insects. It is basically a nocturnal species but some times found during day time while in search of food.

### SUMMARY

Two species of amphibians under two families and two genera; eight species of lizards under five families and five genera and five species of snakes under three families and four genera were observed and recorded from Tal Chhappar Wildlife Sanctuary.

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## AVES

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### INTRODUCTION

Tal Chhapar Wildlife sanctuary has been identified as an important bird area with IBA Site Code : IN-RJ-22. Tal Chhapar sanctuary is known since the time of Maharajas of Bikaner as a shooting reserve of Blackbuck, *Antelope cervicapra* and Demoiselle Crane, *Grus virgo*. Ali (1979) reported that the studies on the ecology as well as ethology of birds in different habitats would give valuable input for forest management. Review of literature reveals that only few studies were carried out on avifauna of Tal Chhapar Sanctuary (Rahamani, 1984 & 1997; Sharma and Singh, 1989). The present study was made to describe the birds of Tal Chhapar Sanctuary. The study was conducted during 2004. Birds were identified based on physical features with the help of field guides and reference books (Ali and Ripley, 1983; Grimmett *et al.*, 1998). Classification followed here is that of Manakadan and Pittie (2001).

In the present study a total of 95 species of birds belonging to 15 Orders under 39 Families were recorded from the sanctuary.

### SYSTEMATIC LIST

#### CICONIIFORMES

#### ARDEIDAE

1. Little Egret, *Egretta garzetta* (Linnaeus, 1766) Aq
2. Grey Heron, *Ardea cinerea* Linnaeus, 1758 Aq
3. Large Egret, *Casmerodius albus* (Linnaeus, 1758) Aq
4. Cattle Egret, *Bubulcus ibis* (Linnaeus, 1758)

#### THRESKIORNITHIDAE

5. Black Ibis, *Pseudibis papillosa* (Temminck, 1824) Aq

## ANSERIFORMES

## ANATIDAE

6. Bar-headed Goose, *Anser indicus* (Latham, 1790) Aq
7. Brahminy Shelduck, *Tadorna ferruginea* (Pallas, 1764) Aq
8. Spot-billed Duck, *Anas poecilorhyncha* J.R. Forester, 1781 Aq
9. Northern Shoveller, *Anas clypeata* Linnaeus, 1758 Aq

## FALCONIFORMES

## ACCIPITRIDAE

10. Egyptian Vulture, *Neophron percnopterus* (Linnaeus, 1758)
11. Indian White-backed Vulture, *Gyps bengalensis* (Gmelin, 1788)
12. Long-billed Vulture, *Gyps indicus* (Scopoli, 1786)
13. Cinereous Vulture, *Aegypius monachus* (Linnaeus, 1766)
14. Red-headed Vulture, *Sarcogyps calvus* (Scopoli, 1786)
15. Short-toed Snake-Eagle, *Circaetus gallicus* (Gmelin, 1788)
16. Crested Serpent-Eagle, *Spilornis cheela* (Latham, 1790)
17. Western Marsh-Harrier, *Circus aeruginosus* (Linnaeus, 1758) Wd
18. Hen Harrier, *Circus cyaneus* (Linnaeus, 1766)
19. Montagu's Harrier, *Circus pygargus* (Linnaeus, 1758)
20. Tawny Eagle, *Aquila rapax* (Temminck, 1828)
21. Steppe Eagle, *Aquila nipalensis* Hodgson, 1833
22. Eastern Imperial Eagle, *Aquila heliaca* Savigny, 1809

## FALCONIDAE

23. Lesser Kestrel, *Falco naumanni* Fleischer, 1818
24. Common Kestrel, *Falco tinnunculus* Linnaeus, 1758
25. Peregrine Falcon, *Falco peregrinus* Tunstall, 1771

## GALLIFORMES

## PHASIANIDAE

26. Grey Francolin, *Francolinus pondicerianus* (Gmelin, 1789)  
 27. Jungle Bush-Quail, *Perdica asiatica* (Latham, 1790)  
 28. Indian Peafowl, *Pavo cristatus* (Linnaeus, 1758)

## GRUIFORMES

## GRUIDAE

29. Demoiselle Crane, *Grus virgo* (Linnaeus, 1758)

## RALLIDAE

30. White-breasted Waterhen, *Amaurornis phoenicurus* (Pennant, 1769) Aq

## CHARADRIIFORMES

## CHARADRIIDAE

31. European Golden Plover, *Pluvialis apricaria* (Linnaeus, 1758) Aq  
 32. Little Ringed Plover, *Charadrius dubius* Scopoli, 1786 Aq  
 33. Red-wattled Lapwing, *Vanellus indicus* (Boddaert, 1783) Wd

## SCOLOPACIDAE

34. Eurasian Curlew, *Numenius arquata* (Linnaeus, 1758) Aq

## RECURVIROSTRIDAE

35. Black-winged Stilt, *Himantopus himantopus* (Linnaeus, 1758) Aq

## BURHINIDAE

36. Stone-Curlew, *Burhinus oedicephalus* (Linnaeus, 1758)

## GLAREOLIDAE

37. Indian Courser, *Cursorius coromandelicus* (Gmelin, 1789)

## COLUMBIFORMES

## PTEROCLIDIDAE

38. Black-bellied Sandgrouse, *Pterocles orientalis* (Linnaeus, 1758)

## COLUMBIDAE

39. Blue Rock Pigeon, *Columba livia* Gmelin, 1789  
 40. Little Brown Dove, *Streptopelia senegalensis* (Linnaeus, 1766)  
 41. Spotted Dove, *Streptopelia chinensis* (Scopoli, 1786)  
 42. Red Collared-Dove, *Streptopelia tranquebarica* (Herman, 1804)  
 43. Eurasian Collared-Dove, *Streptopelia decaocto* (Frivaldszky, 1838)

## PSITTACIFORMES

## PSITTACIDAE

44. Rose-ringed Parakeet, *Psittacula krameri* (Scopoli, 1769)

## CUCULIFORMES

## CUCULIDAE

45. Asian Koel, *Eudynamis scolopacea* (Linnaeus, 1758)  
 46. Greater Coucal, *Centropus sinensis* (Stephens, 1815)

## STRIGIFORMES

## STRIGIDAE

47. Spotted Owlet, *Athene brama* (Temminck, 1821)

## CAPRIMULGIFORMES

## CAPRIMULGIDAE

48. Common Indian Nightjar, *Caprimulgus asiaticus* Latham, 1790

## APODIFORMES

## APODIDAE

49. House Swift, *Apus affinis* (J. E. Gray, 1830)

## CORACIIFORMES

## ALCEDINIDAE

50. White-breasted Kingfisher, *Halcyon smyrnensis* (Linnaeus, 1758) Wd

## MEROPIDAE

51. Small Bee-eater, *Merops orientalis* Latham, 1801  
 52. Blue-tailed Bee-eater, *Merops philippinus* Linnaeus, 1766 Wd

## CORACIIDAE

53. European Roller, *Coracias garrulus* Linnaeus, 1758  
 54. Indian Roller, *Coracias benghalensis* (Linnaeus, 1758)

## UPUPIDAE

55. Common Hoopoe, *Upupa epops* Linnaeus, 1758

## PICIFORMES

## PICIDAE

56. Yellow-fronted Pied Woodpecker, *Dendrocopos mahrattensis* (Latham, 1801)  
 57. Lesser Golden-backed Woodpecker, *Dinopium benghalense* (Linnaeus, 1758)

## PASSERIFORMES

## ALAUDIDAE

58. Black-crowned Sparrow-Lark, *Eremopterix nigriceps* (Gould, 1839)  
 59. Desert Finch-Lark, *Ammomanes deserti* (Lichtenstein, 1823)  
 60. Common Crested Lark, *Galerida cristata* (Linnaeus, 1758)  
 61. Eastern Skylark, *Alauda gulgula* Franklin, 1831

## HIRUNDINIDAE

62. Dusky Crag-Martin, *Hirundo concolor* Sykes, 1833 Wd  
 63. Common Swallow, *Hirundo rustica* Linnaeus, 1758 Wd  
 64. Wire-tailed Swallow, *Hirundo smithii* Leach, 1818 Wd

## MOTACILLIDAE

65. White Wagtail, *Motacilla alba* Linnaeus, 1758 Wd  
 66. Large Pied Wagtail, *Motacilla maderaspatensis* Gmelin, 1789 Wd  
 67. Yellow Wagtail, *Motacilla flava* Linnaeus, 1758 Wd  
 68. Grey Wagtail, *Motacilla cinerea* Tunstall, 1771 Wd  
 69. Brown Rock Pipit, *Anthus similis* Jerdon, 1840  
 70. Water Pipit, *Anthus spinoletta* (Linnaeus, 1758) Wd

## CAMPEPHAGIDAE

71. Small Minivet, *Pericrocotus cinnamomeus* (Linnaeus, 1766)

## PYCNONOTIDAE

72. Himalayan Bulbul, *Pycnonotus leucogenys* (Gray, 1835)

73. Red-vented Bulbul, *Pycnonotus cafer* (Linnaeus, 1766)

## IRENIDAE

74. Marshall's Iora, *Aegithina nigrolutea* (Marshall, 1876)

## LANIIDAE

75. Rufous-backed Shrike, *Lanius schach* Linnaeus, 1758

76. Great Grey Shrike, *Lanius excubitor* Linnaeus, 1758

## MUSCICAPIDAE

## TURDINAE

77. Oriental Magpie-Robin, *Copsychus saularis* (Linnaeus, 1758)

78. Indian Robin, *Saxicoloides fulicata* (Linnaeus, 1776)

79. Black Redstart, *Phoenicurus ochruros* (Gmelin, 1774)

80. Common Stonechat, *Saxicola torquata* (Linnaeus, 1766)

## TIMALIINAE

81. Common Babbler, *Turdoides caudatus* (Dumont, 1823)

82. Large Grey Babbler, *Turdoides malcolmi* (Sykes, 1832)

83. Jungle Babbler, *Turdoides striatus* (Dumont, 1823)

## SYLVIINAE

84. Rufous-fronted Prinia, *Prinia buchanani* Blyth, 1844

85. Plain Prinia, *Prinia inornata* Sykes, 1832

86. Common Tailorbird, *Orthotomus sutorius* (Pennant, 1769)

## NECTARINIIDAE

87. Purple Sunbird, *Nectarinia asiatica* (Latham, 1790)

## ESTRILDIDAE

88. White-throated Munia, *Lonchura malabarica* (Linnaeus, 1758)

## PASSERIDAE

## PASSERINAE

89. House Sparrow, *Passer domesticus* (Linnaeus, 1758)

## STURNIDAE

90. Common Myna, *Acridotheres tristis* (Linnaeus, 1766)

91. Bank Myna, *Acridotheres ginginianus* (Latham, 1790)

## DICRURIDAE

92. Black Drongo, *Dicrurus macrocercus* Vieillot, 1817

93. Lesser Racket-tailed Drongo, *Dicrurus remifer* (Temminck, 1823)

## CORVIDAE

94. House Crow, *Corvus splendens* Vieillot, 1817

95. Jungle Crow, *Corvus macrorhynchos* Wagler, 1827

Aq = Aquatic; Wd = Wetland Dependant

## RESULT AND DISCUSSION

The Tal Chhapar Wildlife Sanctuary in the true desert district Churu is not only known for blackbucks but also very popular among bird watchers, especially those having interest in raptors (Plate 1 & 2). It is one of the protected areas in the Thar desert, Rajasthan. Species not seen earlier in the Thar are being seen recently which is indicative of climatic changes in the region. It is a paradise for raptors because it harbours a very rich prey diversity and population of some of the important reptile species like *Uromastyx hardwickii* and *Varanus bengalensis* in the protected area. It being a *Tal*, a flat saline depression, holds water during good monsoon years. It is situated in the northwestern Rajasthan and located on the migratory route of many birds especially Harriers. Many critically endangered and vulnerable raptors can be seen here every year (Table 1). Besides, wetland birds also congregate here during winter months (*Anser indicus* and the *Anas clypeata* in particular). The area gets crowded with wintering *Grus virgo* in and near the vicinity of the sanctuary. In recent years due to blockage of water channels of the Gopalpura hills and illegal establishment of salt works in the peripheral belt of the sanctuary, not alone the water quantity has decreased but also human intervention has caused much disturbance in the region coupled with many other problems threatening the very existence of the protected area. Livestock grazing and intrusion of domestic dogs are some of the serious issues for the faunal elements of the sanctuary.

**Table 1. List of Endangered, Vulnerable, Threatened species of Tal Chhaper Wildlife Sanctuary**

FAMILY	SPECIES NAME	STATUS (IUCN)
<b>ACCIPITRIDAE</b>	<i>Gyps bengalensis</i> (Gmelin,1788)*	Critically Endangered
	<i>Gyps indicus</i> (Scopoli, 1786)*	Critically Endangered
	<i>Aquila heliaca</i> Savigny, 1809*	Vulnerable
	<i>Sarcogyps calvus</i> (Scopoli, 1786)	Near Threatened
	<i>Aegyptius monachus</i> (Linnaeus, 1766)	Near Threatened
<b>FALCONIDAE</b>	<i>Falco naumanni</i> Fleischer, 1818*	Vulnerable

\* Globally Threatened

### SUMMARY

A total of 95 avian species under 15 orders have been recorded in the present study. Out of 95 species of birds, 13 are aquatic and 12 are wetland dependant. The sanctuary can serve as a good site for conservation of vulnerable, threatened and endangered avian species, especially raptors.

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## MAMMALIA

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### INTRODUCTION

The present knowledge on mammals of India is available from the 397 species of mammals reported by Alfred, *et al.* (2002, 2006 a, 2006 b). 87 species of mammals belonging to 55 genera under 27 families are known from the state of Rajasthan [Alfred and Agrawal (1996), Agrawal (1967), Bahadur (1925), Sharma (1995 and 1999), Bate and Harrison (1997), Biswas and Ghosh (1968), Ghosh (1976), Prakash (1959, 1974, 1975, 1994 and 1995), Roberts (1977); Berkmueller *et al.* (1989), Chaudhary (1997 & 2000), Jain (2001), Sippy and Kapoor (2001) and Rathore and Kumar (2006)]. Mammals associated with wetlands have been studied by Haque and Vijayan (1988), Kumar (2005) and Kumar and Rathore (2007).

The knowledge on mammals of Tal Chhapar, Churu is available from Rahamani (1997). Sharma (1999) have also reported *Canis lupus*, *Antelope cervicapra*, *Millardia meltada*, *Millardia gleadowi* from Churu, Rajasthan. A population of more than 1000 *Antelope cervicapra* has also been recorded from the wildlife sanctuary. The other mammals reported from the sanctuary are *Canis aureus*, *Vulpes bengalensis*, *Vulpes vulpes pusilla*, *Felis chaus* and *Lepus nigricollis dayanus* whereas *Gazella bennettii* is rarely seen in Tal Chhapar proper but present in the surrounding sand dunes (Rahamani, 1997). The present account enlists 13 mammalian species from the Tal Chhapar, Churu, Rajasthan (Plate-1). The species were mainly observed during 2004 while undertaking the faunal survey of the wildlife sanctuary. The classification and conservation status is followed after Ellerman (1961), Ellerman and Morrison-Scott (1951), Honaki *et al.* (1982), Alfred, *et al.* (2002 and 2006 a).

Abbreviations used in the text : Lrnt = Lower Risk Near Threatened; LRlc = Lower Risk Least Concern; VU = Vulnerable, EN = Endangered; CR = Critically Endangered; DD = Data Deficient; IWPA = Indian Wildlife (Protection) Act, 1972; CITES = Convention on International Trade in Endangered Species of Wild Fauna and Flora; CAMP = Conservation Assessment and Management Plan of Biodiversity Conservation Prioritization Project; IUCN = International Union for Conservation of Nature and Natural Resources.

**SYSTEMATIC LIST**

Order CARNIVORA

Family CANIDAE

Genus *Canis* Linnaeus, 1758

1. *Canis aureus* Linnaeus, 1758 Asiatic Jackal

Genus *Vulpes* Frisch, 1775

2. *Vulpes bengalensis* (Shaw, 1800) Indian Fox

3. *Vulpes vulpes* (Linnaeus, 1758) Common Red Fox

Family FELIDAE

Subfamily FELINAE

Genus *Felis* Linnaeus, 1758

4. *Felis chaus* Schreber, 1777 Jungle Cat

5. *Felis silvestris* Schreber, 1775 Desert Cat

Family HERPESTIDAE

Subfamily HERPESTINAE

Genus *Herpestes* Illiger, 1811

6. *Herpestes edwardsii* (E. Geoffrey Saint-Hilaire, 1818) Indian Grey Mongoose

Family BOVIDAE

Subfamily ANTILOPINAE

Genus *Antilope* Pallas, 1766

7. *Antilope cervicapra* (Linnaeus, 1758) Black Buck

Genus *Gazella* Blainville, 1816

8. *Gazella bennettii* (Sykes, 1831) Indian Gazella

Subfamily BOVINAE

Genus *Boselaphus* Blainville, 1816

9. *Boselaphus tragocamelus* (Pallas 1766) Blue Bull

Order RODENTIA

Suborder SCIUROGNATHI

Family SCIURIDAE

Subfamily SCIURINAE

Genus *Funambulus* Lesson, 1835

10. *Funambulus pennantii* Wroughton, 1905 Northern Palm Squirrel

Family MURIDAE

Subfamily GERBILLINAE

Genus *Meriones* Illiger, 1811

11. *Meriones hurrianae* (Jordon, 1867) Indian Desert Gerbil

Genus *Tatera* Lataste, 1882

12. *Tatera indica* (Hardwicke, 1807) Indian Gerbil

Order LAGOMORPHA

Family LEPORIDAE Fischer, 1817

Genus *Lepus* Linnaeus, 1758

13. *Lepus nigricollis dayanus* Cuvier, 1823 Indian Hare or Black-naped Hare

## SYSTEMATIC ACCOUNT

Order CARNIVORA

Family CANIDAE

Genus *Canis* Linnaeus, 1758

1. *Canis aureus* Linnaeus, 1758 Asiatic Jackal

1758. *Canis aureus* Linnaeus. *Syst., Nat.*, 10<sup>th</sup> ed., 1 : 40.

*Distribution* : INDIA : Almost throughout the country.

*Elsewhere* : Afghanistan, Central South-western and South Asia, North and East Africa, South-eastern Europe, Iran, Nigeria, Tangania, Thailand, Transcaucasus, Sri Lanka.

*Remarks* : Often seen across the sanctuary especially at dawn and dusk.

*Status* : IWPA: Schedule II, Part II; CAMP: LRlc (Nationally); CITES: Appendix III.

Genus *Vulpes* Frisch, 1775

2. *Vulpes bengalensis* (Shaw, 1800) Indian Fox

1800. *Canis bengalensis* Shaw, *Gen. Zool. Syst. Nat. Hist.*, 1(2), Mammalia p. 330.

*Distribution* : India : Throughout India.

*Elsewhere* : Nepal and Pakistan.

*Remarks* : Commonly seen.

*Status* : IUCN : DD; IWPA : Schedule II, Part II; CITES: Appendix III.; CAMP : LRnt (Nationally); DD (Globally).

3. *Vulpes vulpes* (Linnaeus, 1758) Common Red Fox

1758. *Canis vulpes* Linnaeus, *Syst. Nat.*, 10<sup>th</sup> ed., 1 : 40.

*Distribution* : India : Gujarat, Himachal Pradesh, Kashmir, Punjab, Rajasthan, Sikkim, Uttar Pradesh.

*Elsewhere* : Throughout Palaearctic region, North America, Australia, Continental Asia, Europe, Indo-China, Japan, Palaearctic Africa.

*Remarks* : Occasionally seen in the sanctuary.

*Status* : IWPA : Schedule II, Part II; CITES: Appendix III; CAMP : LRnt (Nationally); DD (Globally).

Family FELIDAE

Subfamily FELINAE

Genus *Felis* Linnaeus, 1758

4. *Felis chaus* Schreber, 1777 Jungle Cat

1777. *Felis chaus* Schreber, *Die Säugethiere*, 2(13) : pl. 1101B (1777): text, 3(24) : 414 (1777).

1832. *Felis kutas* Pearson, *J. Asiat. Soc. Bengl.*, 1 : 75 (Medinapur, West Bengal, India).

*Distribution* : India : South of Krishna river in South India, Bihar, Gujarat, Madhya Pradesh, Orissa, Rajasthan, Jammu & Kashmir, Sikkim, Uttar Pradesh and West Bengal.

*Elsewhere* : Afganistan, Algeria, Arabia, Benin, China, Egypt, Iran, Iraq, Israel, Kenya, Malawi, Morocco, Mozambique, Myanmar, Nepal, Pakistan, Sri Lanka, Syria, Thailand, Vietnam, Yemen, Zambia, Zimbabwe and CIS countries.

*Remarks* : Occasionally seen in the sanctuary area.

*Status* : IWPA : Schedule II, Part II; CITES : Appendix II; CAMP : LRnt (Nationally); DD (Globally).

### 5. *Felis silvestris* Schreber, 1775 Desert Cat

1775. *Felis silvestris* Schreber, *Die säugethiere*, 2 (15) : pl. 107 (1775); Text 3 (23) : 397 (1777).

*Distribution* : India : North-western and central India.

*Elsewhere* : Afganistan, Algeria, Angola, Arabia, Botswana, Chad, China, Egypt, Ethiopia, France, Germany, Guinea, Iran, Iraq, Israel, Italy, Kazakhstan, Libya, Malawi, Mali, Mauritania, Morocco, Mozambique, Namibia, Pakistan, Poland, Senegal, South Africa, Spain, Sudan, Syria, Tanzania, Tunisia, Turkistan, United Kingdom, Zambia, Zimbabwe. Introduced to Australia, Brazil, Canada and Madagasca.

*Remarks* : Rarely seen in the sanctuary.

*Status* : IWPA : Schedule I, Part I; RDB: EN.; CITES: Appendix II; CAMP : LRnt (Nationally); DD (Globally).

### Family HERPESTIDAE

### Subfamily HERPESTINAE

### Genus *Herpestes* Illiger, 1811

### 6. *Herpestes edwardsii* (E. Geoffrey Saint-Hilaire, 1818) Indian Grey Mongoose

1818. *Ichneumon edwardsii* E. Geoffroy Saint-Hilaire. *Descrip de L'Egypte*, 2 : 139.

1874. *Herpestes ferrugineus* Blanford, *Proc. zool. Soc. Lond.*, pp. 661 (Larkhana, Sind, Pakistan).

*Distribution* : India : Throughout India. Gujarat, Rajasthan, Himachal Pradesh.

*Elsewhere* : Afganistan, Bahrain, Indonesia, Pakistan, Iraq, Iran, Japan, Kuwait, Malaysia, Nepal, Saudi Arabia and Sri Lanka.

*Remarks* : Commonly seen throughout the sanctuary.

*Status* : IWPA : Schedule II, Part II; CITES : Appendix III; CAMP : LR1c (Nationally); DD (Globally).

## Family BOVIDAE

## Subfamily ANTILOPINAE

Genus *Antilope* Pallas, 17667. *Antilope cervicapra* (Linnaeus, 1758) Black Buck

1758. *Capra cervicapra* Linnaeus, *Syst. Nat.*, 10<sup>th</sup> ed., 1 : 69 (Inland of Trivandrum, Kerala, India).

**Distribution** : India : Punjab, Rajasthan, Gujarat, Bihar, Assam in the east and up to Kanyakumari in south.

**Elsewhere** : Pakistan. Introduced population in Nepal, Texas (U.S.A.) and Argentina.

**Remarks** : A sizeable population is present in the sanctuary. Killing of blackbug fawns by village dogs *Canis familiaris* is very common and a serious threat to the existing population of blackbucks. The blackbuck is the keystone species of the sanctuary and frequently migrate during summer especially in the drought years in the region..

**Status** : IUCN : VU; IWPA: Schedule I; Part I; RDB : VU; CITES: Appendix III; CAMP : LR1c (Nationally); DD (Globally).

Genus *Gazella* Blainville, 18168. *Gazella bennettii* (Sykes, 1831) Indian Gazella

1831. *Antilope bennetti* Sykes, *Proc. zool. Soc. Lond.*, 1830-31 : 104 (Deccan, India).

**Distribution** : India : Andhra Pradesh, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Punjab, Tamil Nadu, Uttar Pradesh and Rajasthan.

**Elsewhere** : E. Iran to Pakistan.

**Remarks** : Occasionally seen inside the sanctuary. Migrate mostly from near by areas.

**Status** : IUCN : LRcd; IWPA : Schedule I, Part I; RDB : VU; CAMP : LR1c (Nationally); DD (Globally).

## Subfamily BOVINAE

Genus *Boselaphus* Blainville, 18169. *Boselaphus tragocamelus* (Pallas 1766) Blue Bull

1766. *Antilope tragocamelus* Pallas, *Misc. Zool.*, p. 5.

**Distribution** : India : From base of Himalayas to Andhra Pradesh, Bihar, Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Punjab, Rajasthan and Uttar Pradesh.

*Elsewhere* : Nepal and Pakistan. Introduced into Texas (U.S.A.).

*Remarks* : Commonly seen throughout the Tal Chhapar sanctuary. A sizable population was seen near the water holes along with calves.

*Status* : IUCN : LRcd; IWPA : Schedule III; CAMP : LR1c (Nationally); DD (Globally).

Order RODENTIA

Suborder SCIUROGNATHI

Family SCIURIDAE

Subfamily SCIURINAE

Genus *Funambulus* Lesson, 1835

10. *Funambulus pennantii* Wroughton, 1905 Northern Palm Squirrel

1905. *Funambulus pennantii* Wroughton, *J. Bombay nat. Hist. Soc.*, 16 : 411 (Mandvi Taluka, Surat, Gujarat, India).

*Distribution* : India : Andaman Islands, Assam, Bihar, Delhi, Gujarat, Haryana, Jammu & Kashmir, Madhya Pradesh, Maharashtra, Meghalaya, Orissa, Punjab, Rajasthan, Sikkim, Uttar Pradesh and West Bengal.

*Elsewhere* : Afganistan, Pakistan, Iran, Nepal and Bangladesh.

*Remarks* : Most commonly found around *Prosopis juliflora* inside forested zone and human habitations in and around the Sanctuary.

*Status* : IWPA : Schedule IV; CAMP : LR1c (Nationally); DD (Globally).

Family MURIDAE

Subfamily GERBILLINAE

Genus *Meriones* Illiger, 1811

11. *Meriones hurrianae* (Jordon, 1867) Indian Desert Gerbil

1867. *Gerbillus hurrianae* Jordon, *Mamm. India*, p. 186.

*Distribution* : India : Gujarat, Haryana, Punjab and Rajasthan.

*Elsewhere* : Afghanistan, Iran and Pakistan.

*Remarks* : They were mostly sighted in the marginal land of the sanctuary.

*Status* : IWPA : Schedule V; CAMP : LR1c (Nationally); DD (Globally).

Genus *Tatera* Lataste, 188212. *Tatera indica* (Hardwicke, 1807) Indian Gerbil

1807. *Dipus indicus* Hardwicke, *Trans. Linn. Soc. London*, 8 : 279.

*Distribution* : India : Andhra Pradesh, Bihar, Goa, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal.

*Remarks* : They were sighted throughout the sanctuary with numerous burrows especially on the elevated mud bunds in the region.

*Status* : IWPA : Schedule V; CAMP : LR1c (Nationally); DD (Globally).

## Order LAGOMORPHA

## Family LEPORIDAE Fischer, 1817

Genus *Lepus* Linnaeus, 175813. *Lepus nigricollis* Cuvier, 1823 Indian Hare or Black-naped Hare

1874. *Lepus dayanus* Blanford, *Proc. zool. Soc.*, 663 (Sukkur, Sind, Pakistan).

*Distribution* : India : Throughout India.

*Elsewhere* : Bangladesh, Bhutan, Indonesia, Pakistan and Sri Lanka.

*Remarks* : Commonly found throughout the sanctuary. Variation in their length and shade of the coat was noticed.

*Status* : IWPA : Schedule IV; CAMP : LR1c (Nationally); DD (Globally).

## SUMMARY

The paper records the sighting of thirteen species of mammals under 11 genera belonging to 7 families of 3 orders. These animals are partially or substantially depended on the grassland and water bodies within the protected area for various needs and remain closely associated with them.

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