

## SOME OBSERVATIONS ON AVIFAUNA WITH RESPECT TO HABITAT IN UDAIPUR DISTRICT, RAJASTHAN

ARIJIT BANERJEE\*

### Introduction

The district of Udaipur lies in South Rajasthan. With a geographical area of 17,64,200 ha, Udaipur lies entirely in the Aravali Range - one of the oldest geological formations on this planet. The terrain varies from flat to undulating to precipitous slopes. Mean rainfall is approximately 600 mm. Summers are long, hot with temperature shooting up as high as 45°C. Winters are relatively short with temperature falling to 2°C. Rains are due to South-West monsoon distributed over the period June to September with a few light premonsoon showers. Other than the dry period of December to May, climate is as such bracing. The many lakes in the region provide a moderating effect on the climate.

### Forests

The forests of Udaipur are principally Tropical Dry Deciduous. In the North-West and South-East lie poor site quality Teak (*Tectona grandis*) forests with *Boswellia serrata* as the principal associate. In the rest of the area *Butea monosperma* forests form a biotic climax while dry *Euphorbia* scrub is a climatic climax. Other predominant species in the area include *Dendrocalamus strictus*, *Dalbergia paniculata*, *Dalbergia sissoo*, *Azadirachta indica*, *Madhuca latifolia*, *Lannea coromandelica* etc. Most of the hills as of today due to severe biotic pressure are degraded or barren and are rolling annual grasslands.

### Habitats

From an avifaunal perspective, habitats in the region that can be recognised broadly are :

Dry deciduous woodlands. Due to biotic pressure, these are 'habitat islands'.

- Grassland
- Scrubland
- Water bodies, including lakes, anicuts streams, etc.

### What determines habitat selection ?

Their volant nature gives birds supreme mobility and makes them far more equipped for habitat selection as per their specific needs than any other animal taxon, distinguished between proximate and ultimate factors involved in this choice of habitat. The phylogeny of habitat preferences on one hand determines and on other is determined by a birds' somatic structure, ethology and its ability to be naturally selected. Proximate stimuli may be landscape, foraging, nesting etc. opportunities, presence of predators or competitors or any other such factors. These factors may occur sequentially or as a synergistic complex.

Selection of a habitat varies in relative importance with residents and migrants. The choice of habitat affects the chances of survival and reproduction and is a result of natural selection.

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\* Deputy Conservator of Forests, Kota (Rajasthan).

*Some examples :* In the Udaipur region four species of Kingfishers are observed. The lesser Pied Kingfisher (*Ceryle rudis*) is seen exclusively around the lakes of Udaipur - where the water is still. The small Blue Kingfisher (*Alcedo atthis*) is seen fishing near stagnant and rocky pools during monsoons. The White Breasted Kingfisher (*Halycon smyrnensis*) appears to be a more adaptable species as it rarely chooses between lakes and streams. While the three above mentioned species are fairly common in open areas the Stork Billed Kingfisher (*Perargopsis capensis*) is a local winter migrant which prefers woody areas.

#### **Habitat selection with respect to a Dynamic habitat**

Plantation forestry in Udaipur is not very old and 30 year old plantations are the oldest ones standing. The existing natural forest have been continuously felled and lopped and today the erstwhile 'dense' forests have been replaced by grasslands of 'Savannah' type, scrub or barren rock. Since the mid 1980s plantation forestry having taken primary importance, so called 'forest' are emerging often due effective closure. So the available habitat of the area can be called 'Dynamic' in the sense that woodlands have given way to scrub, grassland and barren rock which again slowly are being reverted to optimally stocked high forests. Thus a gradient of habitat preferences can be observed specially with reference to species diversity. A typical example of this is the Red Whiskered Bulbul (*Pycnonotus jocosus*) which was once common here, is still found in the South-East of Udaipur but being a more woodland species is rarely seen in Udaipur today. The more adaptable Red Vented Bulbul (*Pycnonotus cafer*) is ubiquitous.

#### **Species diversity with respect to habitat**

Structural aspects of habitats can be used to predict diversity. These are correlated to the features of the habitat which birds use. In this context the concept of *Alpha* ( $\alpha$ ) and *Beta* ( $\beta$ ) diversities need to be explained.

*Alpha* ( $\alpha$ ) *Diversity* : This is the number of species that pack into an habitat. This bears a direct correlation to structural and resource diversity.

*Beta* ( $\beta$ ) *Diversity* : This is the rate at which species composition changes with changing habitat types.

The Aravallis in Udaipur are characterised by high Beta diversity as of now as newly emergent grasslands invite species which are different from woodland species. The Paradise Flycatcher - (*Tersiphone paradisi*) is a typical woodland species and is a rare sight with the rapid shrinkage of woodland. On the other hand the White Spotted Fantail Flycatcher (*Rhipidus albicollis abogularis*) being a shrub land species is more commonly sighted.

Munias seemingly exemplify recent range changes. The Green Munia (*Estrilda formosa*) and the White Throated Munia (*Lonchura asiatica*) are common inhabitants of Maize and Sugarcane fields. Increase in cultivation of tall grasses seems to have allowed range extension of the White Backed Munia (*Lonchura strata*) from Central M.P. and or, or Gujarat. The Indian Spotted Munia (*Lonchura punctulata*) is less commonly sighted and the Red Avadavat (*Estrilda amandava*) which is common in

North-western parts of the Aravallis, is still not frequent in sightings in the Udaipur region.

As of today, typically woodland species are confined to the patches of natural forests left and to the middle aged plantations. Raptors, by their local distribution provide some illustrations of habitat preferences. Roosting or hovering Black Winged Kites (*Elanus caeruleus*) are common in the grasslands. The Honey Buzzard (*Pernis ptilorhynchus*) - a local migrant is a woodland species and the Shikra (*Accipiter badus*) prefers Scrubland. Their relative sightings vary according to their habitat preferences and the availability of the same habitat.

#### Choice and use of habitat with respect to sex

It has been observed that in general, while males select only habitats, females select mates, habitats or both. This is somewhat reflected in the nesting behaviour of Weaver birds. The Baya (*Ploceus phillipinus*), and the Indian Streaked Weaver Bird (*Ploceus manyars*) differ in their choice of nesting sites. The males need yellow flowers as decoration-cum-display-but the degree of their somatic pigmentation determines their needs. There seems to be correlation in the relative choice of nesting sites in the two species but to draw positive conclusions, detailed studies are necessary. In either species it is the male that builds the nest. The latter prefers tall grasses as nest sites while the former prefers open tree country - Acacias and Palms.

#### Habitat structure and productivity

Bird species composition changes with habitat structure. Succession illustrates this typically. Both species-diversity and bird-diversity increase with seral stages. The retrogressive succession seen in Udaipur

region from high forest to savannah, does induce a change in species but to say empirically that diversity and density decrease would perhaps be wrong without conducting an indepth study. Productivity does affect habitat selection. The sacred groves in Udaipur region are characterised by mature fruit yielding species like *Ficus bengalensis*, *Ficus religiosa*, *Madhuca indica* etc. This is where frugivores like Grey Hornbills (*Tockus birostris*), Koel (*Eudynamis scolopacea*) are common. So is the Large Green Barbet (*Megalaima zeylanica*) and the Coppersmith (*Megalaima haemacephala*). In open rangeland, seedeaters like Munias, Bayas, Sparrows are predominant. The easy visibility and variety of prey allows a large variety of Raptors and Shrikes in these areas. Camouflage facilities and ample foraging facilities allow Partridges and Quails to occupy scrub and grassland habitat.

In this context it would be worthwhile to take the illustration of the Purple Sunbird - *Nectarina asiatica* - it is typically prominent in spring when most forest species like *Butea monosperma*, *Erythrina indica*, *Cassia fistula* etc are in flower. Its only competitor is perhaps the Indian White Eye (*Zosterops palpebrosa*). The frequency of sightings of both these species decreases with the end of flowering of the above mentioned species proving that productivity and habitat occupancies are interlinked.

*The Edge effect* : Typically, edges or ecotones are areas of higher and varied productivity. Species diversity of such areas is invariably richer. This is where woodland, rangeland and scrubland species mix. It is here where Grey Partridges (*Francolinus pondicerianus*), Grey Jungle Fowl (*Gallus sonnerati*) and Indian Pea Fowl (*Pavo cristatus*) retreat for additional cover. Typical edge species include Golden Orioles

- *Oriolus oriolus*, Indian Tree Pie (*Dendrocitta vagabunda*), Coucal (*Centropus sinensis*) etc. In the edge an increase in incidents of nest parasitism and nest predation is also noticed.

### Habitat selection and competition

Higher productivity is usually accompanied by higher competition. Competition tends to reduce food availability. This competition may be interspecific or intergeneric. An example of the former is the Brain Fever Bird (*Cuculus varius*) which competes with the Indian Cuckoo (*Cuculus micropterus*), pushing the former into a more foliar habitat. Same is the case with the aggressive Black Drongo (*Dicrurus adsimilis*) and the White Bellied Drongo (*Dicrurus caerulescens*).

### Waterlands of Udaipur

The lakes of Udaipur along with the many small and large anicuts and reservoirs are excellent habitat for a number and

variety of Waterfowl, most of which are migratory. Though differences in habitat preferences are visible, so far as nesting/foraging sites are concerned, the tremendous pressure of hunting, pollution and tourism has reduced the number of migrants over the years. Habitat study of these Waterfowl calls for intensive and species oriented studies. This topic thus has not been dwelt with in this article.

### Conclusion

Succession and natural selection go hand in hand. In the Southern Aravallis, through the years there has been a change in habitat conditions and as a resultant, change in species diversity and local behavioural adaptations. Today the rolling hilly pastures serve as a habitat for a variety of rangeland birds. With more and more new, mixed plantations coming up, it will be worthwhile to observe changes in species diversity, behaviour etc along with the change in habitat.

### SUMMARY

The Southern Aravallis in terms of bird habitat have over the years been a 'dynamic habitat'. While today rangeland species dominate in numbers, the 'habitat islands' of woodlands prove to be a home for a variety of avifauna. Contrary to the common postulation that with the increase in seral stages, the variety of species increases, despite retrogressive evolution, species variety has not been affected except in composition. The new plantations in Udaipur will prove to be new niches for a variety of woodland species.

जिला उदयपुर, राजस्थान के पक्षियों के प्राकृतावास के विषय में कुछ पर्यवेक्षण

अजीत बनर्जी

### सारांश

पक्षि प्राकृतावास की दृष्टि से दक्षिण अरावली प्रदेश विगत वर्षों में गतिशील-प्राकृतावास रहा है। यद्यपि आकल घास प्रदेशीय जातियों की संख्या की दृष्टि से प्राधान्य है, वृक्षवान भूमियों के "प्राकृतावास द्वीप" अब भी कई प्रकार के पक्षियों का घर बने हुए हैं। इस सामान्य सिद्धान्त के प्रतिकूल कि संश्रृंगिज अवस्थाएं बढ़ते जाने के साथ पश्चगामी उद्विकास होने पर भी जातियों की किस्में बढ़ती जाती हैं, यहाँ पर उनकी रचना को छोड़कर जातियों की किस्मों पर कोई कुप्रभाव पड़ा नहीं पाया गया। उदयपुर में लगाए जा रहे नए रोपवन वन में मिलने वाली जातियों की कई किस्मों के लिए नए क्षेत्र सिद्ध होंगे।

### References

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