



HABITAT AND BEHAVIORAL STUDY (ECOLOGICAL ROLE) OF PURPLE SUNBIRD (*Cinnyris asiaticus*)

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Abstract : This study has been undertaken to investigate the ecological role of *Cinnyris asiaticus* (Purple Sunbird). The small size, bright purple colour plumage, down-curved pointed bill with brush-tipped tubular tongue and short square tail are the characteristic features to recognize the *Cinnyris asiaticus*.

The study was carried out near rural, suburban and urban plains and hills of the Pune city (Maharashtra). Pune city is rich in avian fauna and represent huge bird diversity in its various regions. The thin forests, plains and green lands is the main habitat of all purple sunbirds. They can be found in the city area in the search of food and to find place to build their nests. They are the resident birds and do not move longer distances. They mostly live on tree branches in thin forests, gardens and green lands of Pune city. The bird mainly sucks nectar of flowers, but it also eats fruits, insects and worms. The bird sucks the nectar with the help of its brush-tipped tubular tongue. These birds can be seen in pairs (during breeding season) or have gregarious habit to live in groups in gardens and thin forests.

They show prominent sexual dimorphism. During breeding season, males are brightly purple in colour with a metallic glossy bluish tinge on their shoulders with a marron shiny patches can be seen on the collar of their stout neck. Non-breeding males have brown and black body feathers and yellow underside with a prominent black streak in the middle. Females have olive brown plumage above and yellow underside. They show courtship behavior where the male birds make specific mating calls to attract females during the breeding season. Male birds raise its heads, fans his tail and display his metallic glossy feathers along with yellow pectoral tufts. They mate by cloacal apposition. The nest is built by female sunbird and is made using the twigs, branches, cobwebs and barks of trees. The nest can be seen hanging downward from the tree branches in the gardens and also from the cable wires near residential buildings. The female lay two eggs in the nest. Parental care is found in sunbirds. The eggs are incubated by the female sunbird only. The male sunbird assists in feeding the chicks with worms and help them to fly along with female parent.

IndexTerms - *Cinnyris asiaticus*/Purple Sunbird, Habitat, ecological role, purple plumage, parenting, gardens, capture.

INTRODUCTION- Birds are cosmopolitan in nature and can be found everywhere. They play diverse ecological roles in the ecosystem being an important part of the food chain and food webs, acts as pollinating agents in terrestrial ecosystems on the earth. Bird diversity can be used as environmental monitoring tool to study species richness, diversity and impact of environmental degradation due to deforestation, pollution, urbanization, industrialization.

India has great bird diversity and represent about 1,364 bird species around the country. Purple sunbird are found throughout the Indian subcontinent and South east Asia. Many species are found in India such as Purple martin, Purple honeycreeper, Common starling, Violet-backed starling. In Pune city, Purple sunbird is mostly found everywhere. The study is done in Pune city (Maharashtra) which has huge bird diversity. Pune city geographic coordinates are **18 31' 0.2136" °N and 73 51' 22.5180" °E**. Pune city falls under hills and plains with grassland area with climate which is dry during summers and wet and humid during monsoon. In summer temperature ranges from 35 to 45°C. Pune city receive an annual rainfall of 741 mm per year. During winter, temperature greatly fluctuates from 8 to 20 °C. Pune city has numerous gardens, open grasslands, thin vegetation in rural, urban and suburban areas.

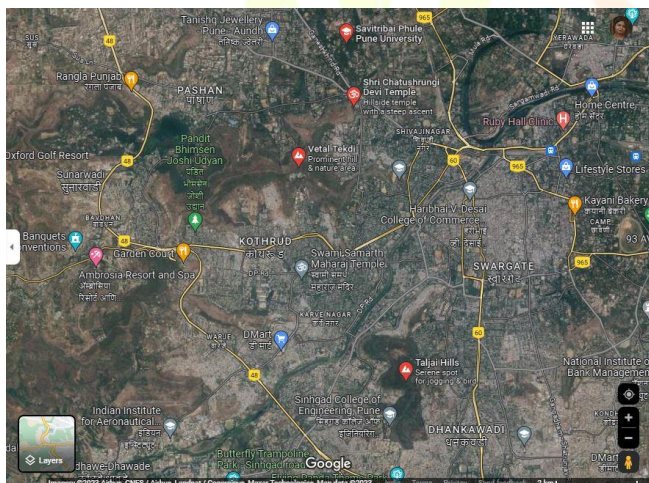
The study was done at Agriculture college ground, Pune University campus, Shri Chatushrungi Devi temple, Sambhaji Park, Vetal Hills Tekdi and Tiljai hills. Birds are diurnal in habitat, being most active in morning and evening time. The survey was one at morning and evening time. The purple sunbird was spotted at many places during the study. The different activities of the bird were noted and captured by the digital camera.

RESEARCH METHODOLOGY

Study area includes the following

1. **Agriculture college ground-** It is situated on the Ganeshkhind road at the Shivaji Nagar, Pune. The Agriculture college ground has large 80 acres campus full with trees, gardens, college building, entomology museum, in-house crops (kharif and rabi crops); grown there. The agriculture college coordinates are 18.8640⁰N and 73.5235⁰E.
2. **Pune University Campus-** Savitribai Phule University is situated close to the center of the city. It is spread over 411 acres area in the neighborhood of Ganeshkhind. It is located in dense urban area surrounded by the residential complexes. The University coordinates is 18.5530⁰N and 73.8265⁰E.
3. **Shri Chatushrunji Devi Temple-** The chatushrunji temple is a Hindu temple in the city of Pune, Maharashtra, India. The temple is located on the slope of a hill on Senapati Bapat Road. It is a mountain with four peaks that has lots of greenery and trees. The temple coordinates are 18.5391⁰N and 73.8284⁰E.
5. **Sambhaji Park-** the Sambhaji Park is located on Jangli Maharaj Road, Pune. The park houses a mini fort with green and well maintained landscaped gardens and aquarium containing ornamental fishes. It is tourist spot for nature lovers and an inhabitant for resident birds. The park coordinates are 18.6466 N and 73.9924 E.
6. **Vetal Hills Tekdi-** the Vetal Hill Tekdi is a prominent hill in the Pune city. The hill is the highest point within the city limits with an elevation of 8 meters. It has mountain range of Western Ghats enriched with flora and fauna diversity. The coordinates of Vetal Hill Tekdi is 18.5225⁰N and 73.8154⁰E.
7. **Taljai Hills-** the Taljai Hills is a hill with thick and dense forests in Parvati, Panch Gaon in Pune. It has abundant wildlife and green scenery to attract many people to visit this place. The Talaji Hills coordinates is 18.4780⁰N and 73.844⁰E.

METHODOLOGY- The study was conducted by visiting all the study areas at morning and evening time. While visiting the sites, the various observations including the habit, habitat, nests, sexual dimorphism, parental care of the purple sunbird was noted down. The survey was carried for a period of one and half month from mid-April 2023 to start of June 2023 before the onset of Monsoon. This period is the breeding period of the purple sunbird, where all of their different activities were noticed, recorded and captured by Digital Camera.



Study area (Google map).



Habitat of Purple Sunbird



Male Purple Sun bird sitting on a tree branch



Bird sucking nectar



Sexual dimorphism in Purple Sunbird

Male in breeding season

Female



Nest made of cobwebs, dried twigs and vegetation and Parental care in Purple Sunbird



Birds' nest hanging from cable wire near residential building

RESULTS AND DISCUSSION

Purple sunbird is very common sighted bird in gardens, thin forests, grasslands, rural, urban and suburban areas of Pune region. It is mostly active in morning and evening time of the day. It can be seen sitting on tree branches, flying in the air, nesting and feeding the chicks. The bird is small in size about 10-12 cms. It has purple black feathers on its body with metallic blue tinge. It has a sharp down-curved bill with tubular tongue to suck nectar. It also eats berries, insects, worms. The male and female are separate with distinct sexual dimorphism. The males are brightly purple coloured with blue collar band on neck and marron patches on throat and chest. The females are olive brown above and yellow on the underside. Courtship is a ritual where male raises his head, fans his short tail and exposes his feathers and pectoral tufts to attract females. The male also makes mating calls during breeding season. Mating is done by cloacal apposition. Nesting behaviour is also seen in purple sunbird where female build nest made of cobwebs, tree twigs, branches, leaves and barks. Parental care is also observed where female took several flights in search of food and water and male also help in feeding their juveniles.

Purple sunbird being the secondary or tertiary consumer in grassland and forest ecosystem plays an integral part of the food chain and food web of terrestrial ecosystems on land. Due to their habit of sucking nectar, it also helps in the pollination of the flowers grown in gardens, forests and open grass or crop fields.

It also helps in checking the insect population in control. It also assists in seed dispersal activities.

CONCLUSION

From the present study I conclude that the main habitat of Purple Sunbird is gardens, open grass lands and thin forests. Pune is the home to several species of birds due to favourable climatic conditions and greenery. But due to rapid deforestation, urbanization, industrialization and increasing pollution and decreasing vegetation, the avian fauna of the Pune city is under threat. Clearing of forests for agriculture and building of housing societies and industrial setups poses great damage to natural habitats and ecology of the birds. Thus, it is high time to control deforestation, pollution and environment degradation in order to save our resident birds of Pune city.

ACKNOWLEDGMENT

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