

RESUME

ECOLOGY AND BEHAVIOUR OF MALABAR TROGON, *HARPACTES FASCIATUS MALABARICUS*

The Malabar Trogon, *Harpactes fasciatus malabaricus* (Gould), Family: Trogonidae, Class: Aves, a typical forest bird locally known as *Theekakka* has not been attracted the attention avian biologists so far. Therefore, a detailed study of this species has been found to be worthy.

The main objectives of the present study are: (1) to study the population, abundance, habitat preference, food preference of the bird, and to asses the current distribution of Malabar Trogon in the study area, (2) to study the inter and intra relationship between the individuals and their behavioral patterns during their life cycle, and (3) to study the breeding biology of the bird.

The study is located in the Idamala- Pooyamkutty valley. The valley falls within the latitude 10° N and longitude 76° to 77° E with the elevation ranging from about 60 m to 1300 m above MSL. The extent of the study area is approximately 40 sq. Km.

The present study on Malabar Trogon was carried out for a period of three years from September 1996 to September 1999. Out of the 36 months, 8 months were spent for the study of distribution of Trogons in the forests of Idukki and Ernakulam Districts, Kerala. The remaining 18 months were used to study the ecology and behavior of Malabar Trogon in the study area.

Studies on foraging ecology, population, habitat preference and breeding biology were conducted in the localities namely Marottichal, Urulanthanny, Bhoothathankettu, and Chelamala forests. The Marottichal area is in the Thattakad bird sanctuary where monoculture teak and mahogany is interspersed with small patches of semi-evergreen forest. Urulanthanny is on the eastern boundary of the sanctuary where intact evergreen forest tract occurs. Bhoothathankettu is a disturbed moist deciduous forest type. Chelamala is on the left bank of the river Periyar, the vegetation is an emerging evergreen type.

The method used to study the population of Malabar Trogon was the line transects method. For this a straight line transect of 1000 m with a width of 20 m on either side were used. The transects were laid in the above localities. The point-centered quadrat was used to study the vegetation characteristics. The quadrates enumerated were laid on both sides of the transect intended for observation of Trogons. Information on the Density, tree height, tree girth at breast height and the extend of canopy are recorded at each point. Fortnightly insect sampling, data on new leaf formation and flowering of dominant trees were also recorded from the study area. The analysis of the data was carried out using the SPSS software.

When a foraging individual was encountered, it was followed for as long as it could be kept in sight to collect information on the food and foraging. All attempts to capture the prey, the substrate to which the bird was ~~directed~~ maneuver used for prey capture, and the height above the ground were noted for each prey attack. To record behavior, individual Trogons were followed in their territories. The behaviors are observed from various blinds. Paired Trogons were followed for the studies on the breeding biology of the bird.

From the vegetation studies it was apparent that the density, tree height, canopy cover and Simpson diversity values are higher in the Urulanthanny transect. The mean GBH of trees is high than the other two sites. This indicates that the vegetation in the Urulanthanny area is thick, and canopy covered than the other two sites, which are Marottichal and Bhoothathankettu.

The most abundant insect group recorded in the study area was Hymenoptera. The least abundant insect group was Hemiptera and Lepidoptera. The abundance of insects was high in monsoon and summer season. The leaves were abundant in monsoon and were positively correlated with the rainfall significantly. The flowers were abundant in the post monsoon and summer.

The distribution of Malabar Trogon is from sea level forest to the high altitude forests, except the shola-grass land. In the study area, Trogons preferred the Urulanthanny area of Thattakad Bird sanctuary than the other study sites selected. There was no seasonal fluctuation in the population of Trogons in the habitats studied. From the analysis, it was evident that the populations of Trogons remain unchanged from 1997-1999 in the sites selected. Above all, the

vegetation characteristics like density, thick and high canopy cover, and thick under strata determine the abundance of Trogons.

From the observations, it was apparent that Malabar Trogon belongs to the insectivorous guild. Food mainly consists of insects of orders Lepidoptera, Isoptera, Orthoptera, Coleoptera, Diptera, Hemiptera, Homoptera and Phasmida. The most favoured insect group recorded was Phasmida. Diptera and Homoptera were the least preferred insect group. Trogons were feed solitary in most of the time. But association with racket-tailed drongo, bonnet macaque, and dusky striped squirrel were also noticed.

The foraging behavior of Trogon showed some interesting features. The sexes showed seasonal variation as well as difference in foraging height. Foraging heights of males ranges between 5 –10 m whereas for females it was between 3.5 – 7 metre. The mean foraging heights of males were always higher than the females. Foraging heights for both male and female birds were found to be different for seasons, and they preferred the under storey during the rainy season compared to the other seasons.

The feeding sites of Trogons identified were trunk, twig, leaves, ground, and air. The attack methods identified were hang, leap, sally strike, sally glide, sally stall, flush pursue, and picking. Trogons showed no difference between sexes in the foraging maneuvers, all the five methods were adopted by both sexes. The percentages of utilization of different foraging maneuvers in the five different substratums were found different between the two sexes. The food handling techniques adopted by the Trogon was engulf, gulp, snap, mash, shake, and beat.

The self maintenance activities of Malabar Trogon identified were preening, bill cleaning, head scratching, wing stretching, leg stretching, body shaking, tail shaking, feather fluffing, bathing, and oiling. During stretching activity a wing and a leg on the same side of the bird were extended downwards and backwards from the body and usually occurred after a long rest. Beak wiping took place after the feeding activity to remove foreign material from the beak and fascial bristles. Trogons have two levels of head scratching, the basic level and extended level. The head scratching was achieved by bringing a leg over a lowered wing from behind to enable the claws to scratch the head, this is

called indirect method. Preening activities of Malabar Trogon lasted more than a minute and usually occurred in the morning, after bathing and rains. The oiling of Trogons takes place mainly in the early morning hours, after bathing, and during daytime rest. Trogons bathe on the wing, dropping repeatedly into water. Bathing is correlated with the availability of water and seemed not to be a daily requirement for the bird. Fluffing was observed after bathing and rains.

Malabar Trogon is a territorial bird and maintains its territory year round. Male and female birds defended the territory. Female birds were not participated in the territory defense fight. The territories of Malabar Trogon guaranteed essential cover, nesting facilities and food for the young, protection of the nest, female, and young against the despotism of other males. The size of the territory varies from site to site depending upon the vegetation of the area. Malabar Trogon usually reacts to other animals by flying out of cavities, calling and physically attacking and or chasing them. The behavior responses of Trogons identified were mobbing, chasing, hiding, alarm call and moving out of cavities. They have no fixed roosting place and roosting time, but roosting site located in the territory. There was no intra pair fighting.

The song of the Trogons was correctly reported for the first time. The vocal repertoire of Trogon consists of six calls: social contact call is 'que' repeated three to five times. Their territorial call identified was 'que' with high intensity. Churrrrr was the alarm call. Begging call of juvenile was an undeveloped 'que' of low intensity. Tu-u was the breeding call uttered by the paired birds that were in love. Some times only one. 'Churrrrr- rr was the roosting call produced by the bird while they went for roosting.

The observation on breeding biology clearly showed that Malabar Trogon is monogamous. There was no courtship displays noticed in Trogons during the study period. The breeding season of Malabar Trogon lasted for a little over 9 months between September to May. The Malabar Trogon is a cavity nesting species. They breed only in dead and decaying trunks of trees. Trogons carving their nest cavities at heights upto 22.85-m. The male appeared to choose the nest site. Both the birds participated in the nest building. The completed chamber is roughly cylindrical in shape, with neatly finished walls. Malabar Trogon laid two eggs, a clutch size characteristic of the Trogonidae. The interval between egg laying occurs was observed 24 hrs. Only one clutch in a season observed for a pair, a second or replacement clutch was not attempted after the

first one is lost. The eggs were rounded-ovate and glossy white in colour. The size of four eggs average 28 x 23 mm. The weight of the egg measured was 6.300 gm. The incubation period was 19 days and the brooding period was estimated to 17 days. The males advance the incubation and brooding. However, during the night female takes over the incubation and brooding, the male roost nearby. The juveniles after leaving the nest were dependent on the parents observed for 187 days.

The information summarized above is entirely fresh contributions on the little known species, the Malabar Trogon and to the field of Ornithology.