

OBSERVATIONS ON FOOD AND ROOSTING HABITS OF INDIAN SHORT-NOSED FRUIT BAT *CYNOPTERUS SPHINX* (VAHL) (CHIROPTERA: PTEROPODIDAE) AT THE I.I.Sc. CAMPUS, BANGALORE

Riki Krishnan

Indian Academy of Sciences, C.V. Raman Avenue, PO. 8005, Sadashivnagar, Bangalore, Karnataka 560080, India.

Phytophagous bats are mainly distributed in the tropics. Fruit bats live primarily on fruits, seeds and flower buds. Some fruit bats also feed on nectar affecting pollination and seed dispersal. During this processes many commercially important plant species are being pollinated.

An attempt was made to conduct a study on *Cynopterus sphinx* at the Indian Institute of Science campus. Its roosting habits, daily and monthly fluctuations in the number of individuals present in each roost, plant species dependent on and birth of new individuals in different colonies were observed. Various bat researchers have recorded the seasonal variation of bats rather than their population (Bhat, 1994; Balasingh *et al.*, 1993) and the roosting place (Brosset, 1962).

The study was conducted from December 1996 to August 1997. The I.I.Sc. campus encompasses an area of 135ha and has both native and exotic species of trees. The study area has more vegetation cover than other areas surrounding Bangalore City.

The counting of individuals in all the colonies was done on alternate days in the first two weeks of each month. Two counts were made on each day; half an hour before sunrise (0630-0730 hr) and half an hour before sunset (1815-1830 hr). Altogether 144 counts were carried out.

Plant parts such as fruits, leaves and seeds were found below day roosts. A general search was conducted within the campus to find the distribution of plants that they feed on.

The arrival of young individuals was recorded during this study. This was noticed when the mother fruitbat constantly groomed herself during mid afternoon at the day roost.

Observations

Roost site: Studies have reported the roosting of *C. sphinx* in palmyra trees such as *Borassus flabellifer* (Palmyra Palms), *Coccothrinx argenta* (Silver Thatched Palm), *Corypha umbracifera* (Valipot palm), *Sabal palmetto* (Cabbage Palm), *Roystonea regia* (Chinese Fan Palm), banana leaves and also within the clusters of *Philodendron giganteum* (Bhat 1994). It was reported to roost under the foliage of *Polyalthia longifolia* var. *pendula* and *Polyalthia vernomia*. There have been few records of this species living in old buildings (Brosset, 1962). In this study *C. sphinx* was observed to roost generally in window eaves of buildings rather than palm trees present in the study area.

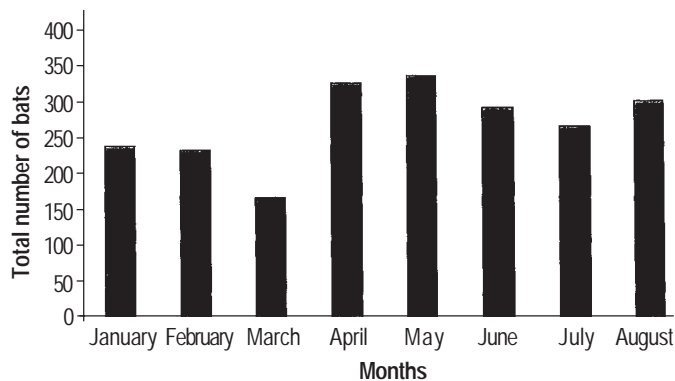
Local movement: This study was carried out for a period of nine months. All roosts in one building were considered as one colony. A total of six department buildings -- Mechanical Workshop, Biochemistry, Inorganic and Physical Chemistry, Physics, Malwad House and New Bungalow -- were observed. The distances between each of the roosting colonies, i.e., IPC, Biochem and Mech Work shop were about 500-750m. The other three colonies were parallel to the department, separated by a main building called the Faculty Hall and a large park (Arg marg). The distances between the Physics building, Malwad house and New bungalow were 300-700m separated by trees and a building. The number of roosts within each colony had a range of 4-10 window eaves. In each window eave the number of fruit bats present had a range of 2-8 individuals. Presumably all individuals which move out of each colony or window eave return to the same roosting site.

There was a considerable variation among colonies during the different months as shown in Figure 1. There was a progressive decrease in the total number of individuals in the colonies from December (313) to March (168), after which the number climbed up during the month of April (328) and May (339). After May the number of individuals decreased to 295 in July, and shot up again to 314 in August. The variation in the total number of individuals of the six colonies appears to be related to the reproductive activity of these fruit bats. This species is reported to breed during the month of March. It was observed that during this period the female bats migrate to safer places such as attics in buildings near day roosts. There was a sudden increase in the numbers during the month of April and May, when the roosting window eaves consisted of young juveniles and adults. On return to their day roosts, juveniles were seen crawling on different individuals within the roost. This type of behavior was noticed in two colonies within the study area, during mid afternoon and early dusk hours.

Predation by birds: During the post-breeding season, bird of prey (Shikra) attacked day roosts in various times of the day. On two occasions it was seen that Common Crows attacked the entire colony, within seconds the group would fly towards the

Table 1. Fruit plants of *Cynopterus sphinx* at the I.I.Sc. campus.

<i>Clusia rosea</i>	<i>Ficus racemosa</i>	<i>Ficus bengalensis</i>
<i>Pheonix</i> sp.	<i>Diospyros montana</i>	<i>Guazuma ulmifolia</i>
<i>Syzygium jambus</i>	<i>Muntingia calabura</i>	<i>Musa paradisiaca</i>
<i>Arachas zaposa</i>	<i>Santalum album</i>	<i>Mangifera indica</i>
<i>Psidium guajava</i>	<i>Terminalia catappa</i>	

**Figure 1. Seasonal variation of fruit bats**

nearby tree. It was also recorded that the Shikra had attacked the roosting site continuously on three occasions. It was successful on two occasions killing young juveniles and injuring a large adult fruit bat.

Feeding activity: Feeding activity was noticed after sunset. Bats would fly to a chosen fruit tree, pluck a fruit or seed and return to their respective roost to consume them. This was seen only during a partly cloudy or rainy day. A total of 14 plant species (Table 1) were identified from the collection below day roosts. Plant species such as *Muntingia calabura*, *Musa paradisiaca*, *Santalum album* were seen to be constant throughout the year. The food sources were usually present 45-450m away from each of the colonies. The seeds found below the roost were collected and identified periodically. No count was made on the amount of seeds of a particular plant species.

References

- Bhat, H.R. (1994).** Observation on food and feeding behavior of *C. Sphinx*, Vahl., Chiroptera, Pteropodidae at Pune. *Mammalia* 58: 363-370.
- Brosset, A. (1962).** The bats of Central and Westem India Pt 1. *Journal of the Bombay Natural History Society* 59: 1-57.
- Balasingh, J. (1993).** Tent roosting by *Cynopterus sphinx* Vahl (1797) in southern India. *Current Science* 65(5): 418.

ETHNOMEDICINE OF GADIA LOHARS OF RAJASTHAN

N.K. Sharma

Department of Botany, Government P.G. College, Kota, Rajasthan, India.

Gadia Lohars or “Blacksmiths in carts” are one of the most well known nomadic tribes of Rajasthan. Even to date, they proudly mention the association of their forefathers with the brave Maharana Pratap, the gallant ruler of Mewar. After the death of Maharana Pratap, they took a vow to leave their homes and to lead a nomadic life until the fort of Chittor was liberated again. This tribe has still refused to settle down at one place inspite of the efforts of the government of Rajasthan.

Owing to their association with carts and their profession as blacksmiths, they are called *Gadia Lohars*. For the most part of the year they are confined to the outskirts of the cities and towns, but before the arrival of monsoon, they shift to rural areas and prepare agricultural implements for the peasant community. During the monsoon, they stay in rural areas, and as soon as it is over, they start for another place.

Jhalawar District is situated between 23°45'-24°55'N and 75°51'-76°95'E, having an area of 6323.13sq.km located in the southeastern part of the state adjacent to the northern edge of Deccan Plateau. The average annual rainfall is 925mm. The temperature fluctuates between 39°C (during January) to 47.5°C (during May and June).

Gadia Lohars reach an area before the onset of rainy season. Once the season commences, they remain confined to the outskirts of towns and villages of districts Jhalrapatan, Asnawar, Baknai, Raipur, Eklara, Khanpur and Manoharthans. I visited these places during the rainy season to study their ethnobotanical practices (Table 1).

Medical beliefs

Ojhas or Bhopas used to be medical practitioners of the tribe, (twenty to twenty five years back). Of late, the Patel or the head of the community performs this duty. However, sons and grandsons of Ojhas also assist the Patels as they possess some medical knowledge learnt in the family. Since they are in continuous touch with urban life these days they are gradually losing their touch with the knowledge of herbal medicines. Some of them

Received 29 March 2001

Accepted 1 July 2001