

# Roost Site Selection of Indian Flying Fox (*Pteropus giganteus*) in Girva Tehsil of Udaipur District, Rajasthan, India

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**Abstract:** *Pteropus giganteus* is among the largest flying bat species of the world and play important role in pollination and seed dispersal. It prefers roost on tall trees. We conducted the this study from November, 2007 to February, 2009 to assess the roost site selection of *P. giganteus* in Girva tehsil of Udaipur district, Rajasthan, India. Road surveys were performed to identify the roosting sites. After identification of roosting sites, name of the sites, number of bats and other characteristics were noted. During the study, a total of 14 roosting sites were identified where bats were rooted on trees. Trees were belonged to eight species and five families. Presence of high tree densities and numerous waterbodies in the tehsil might be a reason for a sound number of the species.

**Keywords:** Indian flying fox, *Pteropus giganteus*, Udaipur, Rajasthan, Roosting

## 1. Introduction

Members of Pteropodidae are popularly known as the Flying Foxes or Old World Fruit Bats. Pteropodids are strictly vegetarian, foraging for fruit, nectar and pollen using their sight and sensitive olfactory system. Members of Pteropodidae service the ecosystem they inhabit by playing important role as pollinators and seed dispersers (Fenton, 2001; Koopman, 1994; Neuweiler, 2000; Nowak, 1999). *Pteropus giganteus* occurs in tropical region of South-Central Asia, from Pakistan to China, and as far South as the Maldiv Island (Nowak, 1999). The Indian flying fox roosts in large, established colonies on open tree branches, especially in urban areas or in temples. It prefers to roost on tall trees with small diameters, especially canopy trees and prefers to be in close proximity to bodies of water, human residences, and agricultural land. This habitat selection is highly dependent on food availability. Flying foxes (genus *Pteropus*) are declining world-wide (Mildenstein et al. 2005; Stier & Mildenstein 2005) due to growing human population for food and housing that cause destruction of bat latens and consequent demands habitat (Fujita 1991; Mickleburgh, Hutson & Racey 2002). Roosts of Indian flying fox were also observed in forest plantations of *Casurina* species, *Acacia* species, and indigenous tree species like *Ficus*, *Bauhinia*, rain tree (*Samanea saman*), and Indian date (*Tamarindus indica*) (Chakravarthy et al., 2008). *Pteropus giganteus* in Pakistan is reported from Sialkot, Lahore, Marala, Renala Khurd, Said Pur (Punjab), Jacoabad, Shahpur, Karachi (Sindh), and Islamabad (Roberts, 1997).

The primary objective of this study was to identify the roosting sites of *Pteropus giganteus* in Girva tehsil of Udaipur district, Rajasthan, India.

## 2. Materials and methods

Udaipur district is one of the 33 districts of the state of Rajasthan, western India. The district is a part of the Mewar region of Rajasthan. This district comprises of 15

tehsils (administrative division of a district) namely Badgaon, Bhindar, Girva, Gogunda, Jhadol, Kanor, Kherwara, Kotra, Lasadiya, Mavali, Rishabhdeo, Salumbar, Semari, Sarada, and Vallabhnagar. Girva is located in the Aravalli hills and is the administrative headquarter of Udaipur district. The annual average rainfall in Girva tehsil is 608 mm, with an average of 32 rainy days per year.

The study was carried out for a period of 15 months, i.e., from November, 2007 to February, 2009. During the study, road survey were performed to identify the roosting sites of the species were identified. After identification, the similar sites were visited once a week for further observation. Bats were observed and their number was counted by direct sighting with the help of binocular. Observation was carried out between 5.30 PM to 8.00 PM on every visit. Tree height was estimated by taking a consensus of two or three observer estimates.

## 3. Results

In the study, *P. giganteus* was found to be roosted on 14 trees belonging to 8 species and five families. Host trees and details are presented in Table 1 and Table 2. The roosting trees include *Azadirachta indica* (n=05), *Mangifera indica* (n=02), *Tamarindus indica* (n=02), *Saraca indica* (n=1), *Cassia fistula* (n=1), *Ficus religiosa* (n=01), *Ficus bengalensis* (n=01), *Syzygium cumini* (n=01). Roost tree species belonged to 05 families include Fabaceae (n=3), Myrtaceae (n=1), Moraceae (n=2), Anacardiaceae (n=1), and Meliaceae (n=1). The most preferred trees (n=5) for roost were belonged to the family Meliaceae (Table 2).

## 4. Discussion

Although fruit bats have received international conservation attention as forest pollinators and seed dispersers, especially in tropical, rain, and cloud forests, from past two decades and their populations are still declining throughout their range (Fujita, 1988, 1991; Power et al., 1996; Wiles et al., 1997).

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During the present survey, the roosting sites of *P. giganteus* were observed near water bodies and were well surrounded by dense vegetation, possibly sheltering the bats from wind, cold climate, and sun at warmer hours of the day (Pers. Observ.).

During the study, a sound number of *P. giganteus* was found in girva tehsil because trees densities in Girva tehsil was possible high in the study area as this area falls in the hills of Aravalli range. Big-crowned with profuse branches, non-thorny and their large sized leaves provide sufficient shade, safety, and shelter to them. Such trees are present everywhere singly or in groves in Girva tehsil. Drinking water is also not a problem for such bats in study area because of presence of numerous waterbodies such as Fateh sagar, Pichola jheel, Roop sagar, Dudh talai, Bari-ka-talab. Thus, all of these favorable factors might be responsible

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**Table 1:** Host trees of Indian Flying Fox (*Pteropus giganteus*) in Girva tehsil of Udaipur District

S. No.	Location	Roosting tree	Estimated population
1.	Gulab bagh	<i>Azadirachta indica,</i>	>502
2.		<i>Mangifera indica,</i>	>298
3.		<i>Tamarindus indica,</i>	>400
4.		<i>Cassia fistula,</i>	>91
5.		<i>Saraca indica</i>	>96
6.	Samor bagh	<i>Syzygium cumini</i>	>701
7.		<i>Mangifera indica</i>	>790
8.	Chetak	<i>Tamarindus indica</i>	>580
9.		<i>Azadirachta indica</i>	>405
10.	Hospital	<i>Azadirachta indica</i>	>516
11.	Paduna village	<i>Azadirachta indica</i>	>146
12.	Tidi medi village	<i>Ficus benghalensis</i>	>390
13.	Ubheshwer	<i>Ficus religiosa</i>	>97
14.	Patia village	<i>Azadirachta indica</i>	>152

**Table 2:** Roost Details of Indian Flying Fox (*Pteropus giganteus*) in Udaipur District

S. No.	Family	Roost species	Common name	Quantity	Height	Roost tree serve as food	Average bat count
1.	Meliaceae	<i>Azadirachta indica</i>	Neem tree	5	Tall	+	1721
2.	Anacardiaceae	<i>Mangifera indica</i>	Mango, aam	2	Tall	+	1094
3.	Fabaceae	<i>Tamarindus indica</i>	Imli	2	Tall	+	980
4.	Fabaceae	<i>Cassia fistula</i>	Amaltas	1	Medium	+	91
5.	Fabaceae	<i>Saraca indica</i>	Sita Ashok	1	Medium	-	96
6.	Myrtaceae	<i>Syzygium cumini</i>	Jamun	1	Tall	+	701
7.	Moraceae	<i>Ficus religiosa</i>	Peepal	1	Tall	+	97
8.	Moraceae	<i>Ficus bengalensis</i>	Barh	1	Tall	+	152