

Original Research Article

Ecological notes on roosts of *Pteropus Giganteus* (Brunnich, 1782) in eastern Vidarbha, Maharashtra



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ABSTRACT

The Eastern part Vidarbha in Maharashtra state is sheltered by dense forest vegetation. It is enriched with massive amount of biodiversity of flora and fauna. The populations of *Pteropus giganteus* are found in a choice of places; they play a crucial role as forest pollinators and seed dispersers. As per IUCN (2008) listed as Least Concern. It is listed as vermin in Schedule V of the Indian Wildlife (Protection) Act. This species is listed on Appendix II of CITES meaning it is not currently threatened but could become so if protective measures are not taken. There is no official protection for Indian flying foxes in India. The roosts near the human habitat has found in immense risk of survival in their conventional camps. The present study was intended to recognize an assortment of roosting trees and surrounding ecological conditions of Indian flying foxes .

KEYWORDS

Ecology | Roosts | Indian Flying Foxes | Threats | Conservation

CITATION

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Introduction

The Indian flying foxes (fruit bat) are flying mammals with amazing ecological and economic importance throughout forest. India has 12 species of flying foxes, among them *Pteropus giganteus* are frequent in eastern Maharashtra. These are found on the bulky trees nearby villages. They spend daytime in sleeping, resting and grooming each other. At dusk, they fly off together to feed. Their good senses of smell and sight locate ripe fruit sources. After hours spent feeding, resting and digesting, they return to the colony at dawn. They provide vital role as forest pollinators and seed dispersers for the safeguarding and re-establishments of tropical forest diversity. They act as 'Key stone species' and stay the ecosystem in equilibrium. In spite of the high beneficial role of bats, in India they still have a negative public image. They are maltreated because of unawareness about their life history, behavior and their role in ecosystem. They are greatly susceptible to environmental disruption and the species has declined severely in response to anthropogenic activity. They are increasingly in threat locally by cutting down of roosting trees because of road development or other purposes. The species is also hunted in a number of locations for meat and for medicine. Many roost populations appear to be in severe decline. Several studies are carried out in eastern Vidarbha of Maharashtra by Bhandarkar and Paliwal (2013 a,b; 2014, 2017)

Material and Method

Direct roost count method was followed to estimate the population size of the colony. The population was counted prior to evening flight. In monsoon it was easy to count all the bats prior to evening flight. Most of the observations were done with the naked eyes. Binoculars were used to spot out the bats. Name of the roost trees, surrounding environment, threats and some anecdotal information about the roosts gathered from the villagers. The nature of the present study was conducted to record the roosts of Indian Flying fox and its ecological status.

Result and Discussion

Over 200 species of flying foxes are distributed

throughout the tropics and being frugivorous they play major role in pollination and seed dispersal (Mistry, 2000). *Pteropus giganteus* is a biggest flying mammal in India. It can be effortlessly identified by its elongated snout, fine developed nostrils and long black ears. In the present exploration, *Pteropus giganteus* roosts were observed and recorded usually sited in larger trees such as *Mangifera indica*, *Ficus religiosa*, *Eucalyptus spp*, *Arjuna terminalia*, *Ficus benghalensis*, *Terminalia arjuna*, *Tamarindus indica*. The colonies of *Pteropus giganteus* generally located in close proximity of water bodies, close association with human beings near villages. *Pteropus giganteus* roosts in trees and usually associated with forest fragments or linear patches of vegetation alongside the water bodies. A total of 5065 individuals were recorded in 15 colonies of *P. giganteus*. The colony size ranged from 45 to 1500 individuals of *Pteropus giganteus*. Out of 15 colonies, sum of 10 colonies were located nearby water bodies and rest of them located closest to agricultural field, road side and residential area. *Pteropus giganteus* selected larger and taller trees such as *Mangifera indica*, *Ficus religiosa*, *Eucalyptus spp*, *Ficus benghalensis*, *Terminalia arjuna*, *Tamarindus indica*. The probable reasons for selection of above roost trees are due to long lasting and stable nature. Further, the tall trees in fine uncovered areas may maintain their flights during take-off and landing. All the details of roosting sites, their ID, Name of roosting trees and Number of bats is mentioned in the Table No. 1 and the ecological notes and threats is mentioned in the table no. 2. Roosting sites of the Indian Flying fox is situated near water bodies and the villages nearby jungles. They always found near human proximity therefore their habitat require such type of environment but due to increasing population the roosting sites come under threats through direct interference by human surrounding the roost. There may be chances to cut the native trees due to ownership of the tree. Once their habitat destroyed by any cause their breeding habits affected, results in declination of their population, therefore it is important to conserve their original roosting areas and fi-

S. No.	Place of Roost	Ecological notes and Threats
1	Mangali Bandh, Dist. Bhandara	14 trees of <i>Mangifera indica</i> in Amrai situated at farmland and roadside recorded in 2014, Trees now cut down by owners of farmland, and colony is disturbed by road side activities.
2	Usgaon Chandori, Dist. Bhandara	This roost is always found near lake and road, disturbed by regular traffic activities, villagers also used crackers to put to flight due to their noisy sound. Farmer can cut the roosting trees in future. Evidences happened for poaching. Usually found Electrocutation.
3	Ashok Lay Land, Gadegaon, Dist. Bhandara	Ashok Lay-Land is a leading Truck manufacture Company, spreads in an average area of about 300 acre. Total 37 (2014) bats were present on the giant Nilgiri tree (<i>Eucalyptus</i>), an evergreen tropical tree near a pond. The site had dense vegetation and wet-land which is suitable for their conservation.
4	Bodra Lake Bodra, Dist. Bhandara	Bodra place situated near the lake; the site is at another end with dense vegetation of Mango trees. This site has only 45 pteropus. Took history from some villagers, they were not interested about them, but according to some old villagers, there were many more bats before a decade. Less disturbed place.
5	Police Station, Pouni, Dist. Bhandara	Bats were present at the Nilgiri and Akash neem tree at Police Station compound at Pouni. About 345 Pteropus bat were present entangled on trees. The roost harbors abundantly on bareheaded tree. The roost is situated in market near Bhai Lake. The colony is disturbed by daily activities in market and station.
6	Shantinagar Lake, Bhandara	The giant roost located on impoundment on Shantinagar Lake near Pragati colony in Bhandara city. The roost is on two old mango trees from last 50 years. The site is not much densely covered by vegetation and the lake was completely dried and may be a dead Lake, a small water pool found on the other side. The construction of a building was going on near the site. In future the roost may completely eliminate due to the close construction of roost. It is found that the people of Shantinagar sometime torture them to leave this place. But due to the motivation by us, they understand the significance of bat; they will try to motivate others to ovoid torturing bats.
7	Pimpalgaon Kohali Dist. Bhandara	Some agriculture disturbances might be due to agricultural activities. The roost has been present last from 20 years. No special threat found for this site.
8	Chincholi Lake Chincholi, Dist. Bhandara	This area is remote and most of covered by dense forest covers. The first roost was recorded by us in Chicholi village at Chicholi Lake, on impoundment, road side and around agriculture field. On four mango trees, about 360 bats were counted. Chicholi site roost existing last from 50 years and is situated near Bhondki forest area. No special threats occurred.
9	Sundartola Toli, Dist. Bhandara, MS	The roost is on the waste land on two Arjun trees. About 175 bats were counted during study period. No specific anthropogenic threat occurs, but some disturbances occur due to encroachment on bare land. The adjacent areas are lake and road side. The site is established about 50 years ago.
10	Asalpani Amrai, Dist. Bhandara	No specific threat to the site but road activities disturbing the roost. We motivate local people to help to conserve them.
11	Itiadh Dam Reservoir, Dist. Gondia	The trend of population size of the roost showed an increasing trend during the study period. The site is far away from the human habitation but some time. The roost was disturbed by the tourists. The ban on activities by Tourists will help to manage this population and conserve them.
12	Wadegao Keshori Dist. Gondia	People were surprisingly commented with negative approach. Some habitats were destructed due to their noisy sound. The flock of 300 bats was drive away by villagers many times. Conservation of such tall mango tree is essential.
13	Chutia, Dhabe Pauni Navegao National Park, Dist. Gondia	It is situated in dense forest region of Navegao National park, it is protected. About 100 bats were killed in acute mass death, reported in 2009 due to extreme heat wave. Some anecdotal information of evidences of poaching of bats occurred.
14	Baghnadi, Chattisgarh, Near Gondia district	There are total 07 tree in the dense vegetation was occupied by bats as roost. In the preliminary observation bats disturbed some time from the loud sound by visitors while playing and cooking activities. According to some anecdotal information as well as warden and official of department also stated that the population of this bat was more than three thousand in this site before three to four year ago. Electrocutation is major threat.
15	Market lake Bramhapuri, Dist. Chandrapur	The bats were observed in 2014. The roost is situated in the market placed, always found disturbed. The roost is not safe for further proliferation of the population. The roost will be disappearing in near future.

Table 1: Roost wise ecological notes and threats

the benefits occurring due to their seed spreading habits. The disturbance to traditional roosts has resulted in bats finding alternate roosts nearby or farther away (Molur And Walker, 1998). Therefore the conservation of the roost tree is essential. If we conserve the habitat or IFF, we may conserve our nature through natural propagation of

the seed plants. For further conservation of the roost habitat the Government must take decision towards this. The plantation of indigenous and religious plant is essential that IFF can harbor their family with succession. The thorough nurturing of IFF is essential from the childhood education, it need some fact stories must be included

S. No.	Place of Roost	Roost ID (GPS)	Name of Roosting trees	Number of Bats
1	Mangali Bandh, Dist. Bhandara	20°57'14.63''N 79°49'02.38''E	Mangifera indica	250
2	Usgaon Chandori, Dist. Bhandara	21°10'54.57''N 79°51'01.77''E	Ficus religiosa, Azadirachta indica	150
3	Ashok Lay Land, Gadegaon, Dist. Bhandara	21°04'47.26''N 79°47'07.67''E	Eucalyptus spp	100
4	Bodra Lake Bodra, Dist. Bhandara	21°06'29.89''N 79°57'58.16''E	Mangifera indica	45
5	Police Station, Pouni, Dist. Bhandara	20°47'33.08''N 79°38'06.79''E	Eucalyptus spp & Akash Neem (Millingtonia hortensis)	345
6	Shantinagar Lake, Dist. Bhandara	21°10'44.93''N 79°39'49.33''E	Mangifera indica	255
7	Pimpalgaon Kohali, Dist. Bhandara	20°45'16.15''N 79°54'48.55''E	Mangifera indica	70
8	Chincholi Lake Chincholi, Dist. Bhandara	21°28'08.56''N 79°42'07.78''E	Mangifera indica	360
9	Sundartola Toli, Dist. Bhandara	21°33'29.72''N 79°44'00.54''E	Arjuna terminalia	175
10	Asalpani Amrai, Dist. Bhandara	21°30'10.01''N 79°40'56.38''E	Mangifera indica	230
11	Itiadh Dam Reservoir, Dist. Gondia	20°47'56.80''N 80°09'56.18''E	Terminalia arjuna, Ficus benghalensis, Ficus religiosa, Mangifera indica	900
12	Wadegao Keshori, Dist. Gondia	20°71'59.29''N 80°09'49.61''E	Mangifera indica	300
13	Chutia, Dhabe Pauni, Navegao National Park, Dist. Gondia	20°54'27.69''N 80°11'38.18''E	Terminalia arjuna, Tamarindus indica	350
14	Forest Department Baghnadi, Chattisgarh, Near Gondia district	21°07'21.00''N 80°44'97.57''E	Ficus religiosa, Mangifera indica, Ficus benghalensis, Terminalia arjuna	1500
15	Market lake Bramhapuri, Dist. Chandrapur	20°61'22.05''N 79°86'53.90''E	Ficus religiosa	35

Table 2: Number of Bats with their location and roosting trees

in the syllabus from higher secondary education. Last but not the least, Research on population ecology and its scientific documentation is essential for further conservation.

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