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## Preferred Food plants of *Ratufa indica* (Erxleben, 1777): A fragmented species of Rodentia

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### ABSTRACT

The Indian giant squirrel (*Ratufa indica*) is a rodent which is endemic to the peninsular part of India and forest patches of Odisha. A survey was carried out in the year 2019-2020 to observe the preferred food plants of *R. indica*. The results revealed that about 11 plant species come under its most preferred food plants. Present study highlights the importance of enumerated food plant species for making conservation strategies of *R. indica*.

### INTRODUCTION

The genus *Ratufa* was described by Gray in 1867 (Bahuguna and Singh 2019) which represents the order Rodentia. Globally four species come under this genus (Thorington and Hoffman 2005). They are *R. affinis*, *R. bicolor*, *R. macroura* and *R. indica*. The Indian giant squirrel, *Ratufa indica* (Plate 1.4) is an arboreal and diurnal mammal which is endemic to India (Nayak and Patra 2015). It is widely distributed in the evergreen to mixed dry and moist

deciduous forests of Western Ghats (Mehta et al. 2012), Eastern Ghats and Central Indian Hills (Gurjar et al. 2013). They are mainly seen in deciduous, mixed deciduous and evergreen forests of peninsular regions including Kerala, Karnataka, Odisha and North Eastern parts like Assam, Satpura hill range of Madhya Pradesh and Maharashtra (Rout and Swain 2005; Kumara and Singh 2006; Srinivas et al. 2008; Baskaran et al. 2011; Prakash et

al. 2011). In Odisha, they are recorded to be seen in Simlipal Biosphere Reserve, Kuldiha Wildlife Sanctuary, Balasore (Nayak and Patra 2015), Kapilash Wildlife Sanctuary, Dhenkanal (Palei et al. 2017), Karlapat Wildlife Sanctuary, Kalahandi (Pradhan et al. 2017) and Khurda Forest Division. It is a large sized squirrel having multi-coloured skin tone including grey, black, reddish brown and golden colours. The dentition having a pair of constantly growing incisors gives them a typical rodent appearance. They generally inhabit in the top canopies of large trees and seldom come to the ground (Baskaran et al. 2011). It is mostly active in the early hours of morning and evening. It also raises a general alarm when any suspect is sighted (Nayak and Patra 2015). Odisha, being a native place for these species requires strict conservation strategies for maintaining a steady population of the species. This paper highlights the most preferred food plants of Indian giant squirrel, *Ratufa indica* and its future conservation strategies.

## METHODOLOGY

Our study was carried out in between the month of November 2019-March 2020 (Plate 1, 1-2). The aim of the study was to document the most preferred food plants of the Indian giant squirrel. As a part of the study we travelled to different forest patches of Odisha and collected data from Dr. Sanjeet Kumar, CEO, Ambika Prasad Research Foundation, Odisha and other forest personnels of different forest divisions of the state. Due to its diurnal nature, data collection was done during early hours of morning and in the evening. The data collection was done by primary and secondary methods. Primary data collection involves the direct observation

of the animal by the help of binocular while consuming different plant parts. The barking and gnawing sound of the squirrel helped to find it among the canopies. Secondary means of data collection included interviewing the local people about the animal's food habits. A data sheet was prepared for proper documentation which included the plant name, local name, family, habit of the species and the consumed plant parts. The identification of the preferred food plants was done by Dr. Sanjeet Kumar.

## RESULT AND DISCUSSION

From the survey it was found that, being completely herbivorous in habitat the species mainly depends on the fruit, pulp, bark, seeds, and flowers of the fodder plant species. It was noted that the most preferred fodder plant species are *Bombax ceiba* L. (Simili), *Protium serratum* Wall. ex Colebr. (Rimuli), *Putranjiva roxburghii* Wall. (Putranjiva), *Azadirachta indica* A. Juss. (Nimba), *Mimusops elengi* L. (Baula), *Mangifera indica* L. (Amba), *Terminalia alata* Wall. (Asana), *Schleichera oleosa* (Lour) Merr. (Kusuma), *Shorea robusta* Gaertn. (Sal), *Aegle marmelos* (L) Correa. (Bela; Plate 1.3), *Diospyros melanoxylon* Roxb. (Kendu) etc. All the fodder plants mentioned above are trees in habit belonging to different families like Malvaceae, Burseraceae, Putranjivaceae, Meliaceae, Sapotaceae, Anacardiaceae, Combretaceae, Sapindaceae, Dipterocarpaceae, Rutaceae, Ebenaceae etc. It was also observed that major preferences are stem pulp, fruit, bark and sometimes tender leaves. All the food plant species are details in Table 1. They are large trees in habit and timber yielding.

It was noted that they have numerous medicinal properties as well.

### CONCLUSION

The present study gives a base line data on the behavior of Indian giant squirrel. After the work it was concluded that the population of the species has declined in all habitats in the state. Hence urgent need to make plant on its conservation. The

studies bring attention towards the plantation of most preferred food plants in the present habitat of Indian giant squirrel in Odisha state. It is found that among all plant parts used by the Indian giant squirrel as fodder most preferred part is the bark. So the larger trees included in the fodder plant species of the Indian giant squirrel should be given more importance.

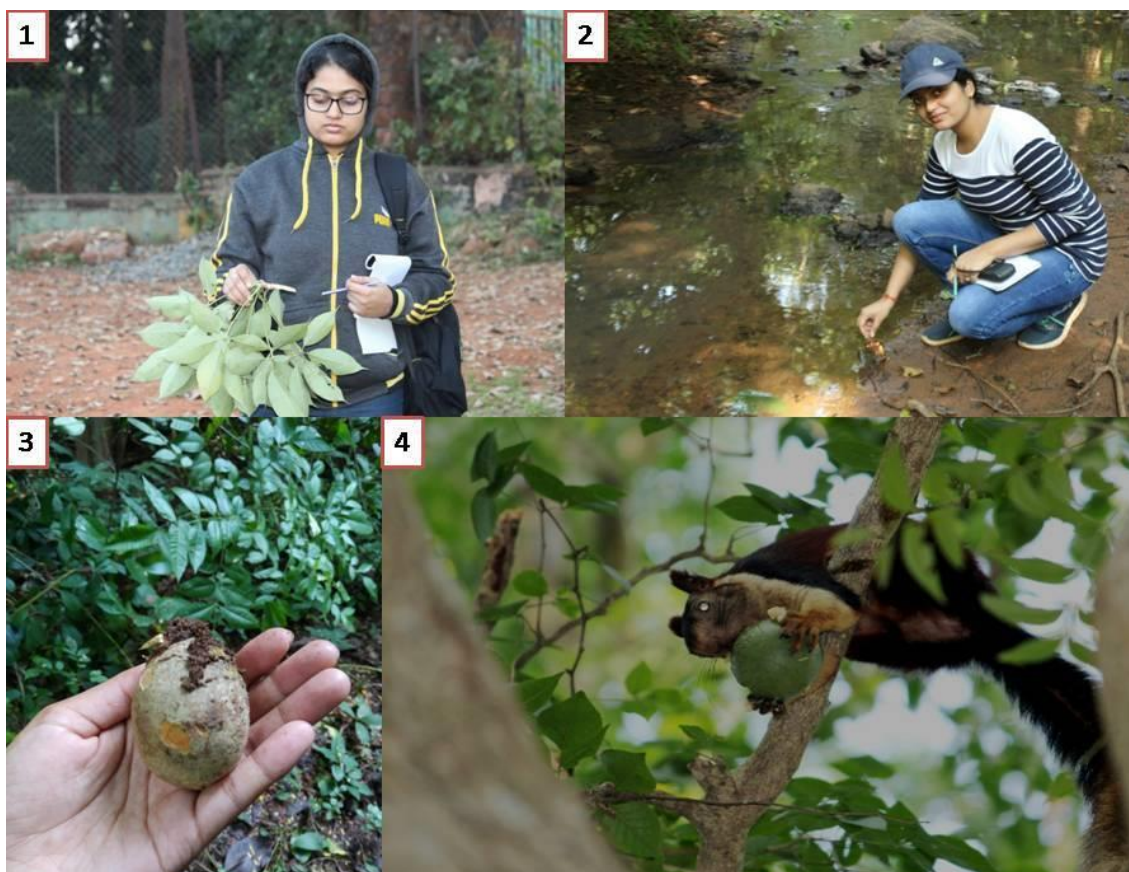
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### REFERENCES

- Bahuguna A and Singh A. (2019). Molecular characterization by using 12SrRNA and Cytochrome b for identification of species genus *Ratufa* (Rodentia: Scuridae) including *Ratufa indica*, endemic species of India. Mitochondrial DNA Part B Resources. 4(2): 3085-3091.
- Baskaran N, Venkatesan S, Mani J, Srivastava SK and Desai AA. (2011). Some aspects of the ecology of the Indian Giant Squirrel *Ratufa indica* (Erxleben, 1777) in the tropical forests of Mudumalai Wildlife sanctuary, Southern India and their conservation Implication. Journal of Threatened Taxa. 3(7): 1899-1908.
- Gurjar RL, Kumbha AS, Jena J, Yogesh JK, Drave C, Singh RP and Mitra A. (2013). Population density of Indian giant squirrel *Ratufa indica centralis* (Ryley, 1913) in Satpura National Park, Madhya Pradesh, India. Lymphatic Research and Biology. 3(7):1086-1092.
- Kumara HN and Singh M. (2006). Distribution and relative abundance of giant squirrel and flying squirrel in Karnataka, India. Mammalia. 70:40-47.
- Nayak BK and Patra AK. (2014). Feeding and Nesting ecology of Indian Giant Squirrel *Ratufa indica* (Erxleben, 1777) in Kuldiha wildlife Sanctuary, Balasore, Odisha, India and Its conservation. International Journal of Bioassays. 4(3): 3741-3746.
- Palei NC, Palei HS, Rath BP and Mishra AK. (2017). Fodder plants of Indian Giant Squirrel (*Ratufa indica*) in Kapilash Wildlife Sanctuary, Odisha, India. *e-planet*. 15(2):155-160.
- Pradhan AK, Shrotriya S, Rout SD and Dash PK. (2017). Nesting and feeding habits of the Indian Giant Squirrel (*Ratufa indica*) in Karlapat Wildlife Sanctuary, India. Animal

- Biodiversity and Conservation 40(1): 63-69.
- Prakash S, Mishra AK and Raziuddin M. (2011). Studies on the nesting habits of Indian Giant Squirrel *Ratufa indica centralis* Ryley 1913 in Dalma Wildlife Sanctuary, Jharkhand, India. Columban Journal of Life Sciences. 12: 9-18.
- Rout SD and Swain D. (2005). Status of Indian Giant Squirrel (*Ratufa indica*) in Similipal Tiger Reserve, Orissa, India. Indian Forester. 131(10):1363-1372.
- Srinivas V, Venugopal PD and Ram S. (2008). Site occupancy of Indian Giant Squirrel *Ratufa indica* (Erxleben) in Kalakad-Mundanthurai Tiger Reserve, Tamilnadu, India. Special editing: Arboreal squirrel. Current Science. 95(7): 889-897.
- Thorington J and Hoffmann RS. (2005). Family Sciuridae. In Wilson DE & Reeder DM. (eds.) Mammal Species of the World. Third Edition. The Johns Hopkins University Press, Baltimore. 754-818.



**Plate 1:** Survey and food plants of Indian giant squirrel, 1-2) Survey for data collection, 3) Eaten fruits of *A. marmelos*, 4) Indian Giant squirrel consuming the fruits of *A. marmelos*

**Table 1:** Preferred food plants of Indian giant squirrel (*Ratufa indica*)

<b>Botanical name</b>	<b>Odia name</b>	<b>Family</b>	<b>Habit</b>	<b>Parts used</b>
<i>Bombax ceiba</i> L.	Simili	Malvaceae	Tree	Stem pulp & leaves
<i>Protium serratum</i> (Wall. ex Colebr)	Rimuli	Burseraceae	Tree	Leaves
<i>Putranjiva roxburghii</i> Wall.	Putranjiva	Putranjivaceae	Tree	Bark
<i>Azadirachta indica</i> A. Juss.	Nimba	Meliaceae	Tree	Leaves
<i>Mimusops elengi</i> L.	Baula	Sapotaceae	Tree	Fruits
<i>Mangifera indica</i> L.	Amba	Anacardiaceae	Tree	Tender leaves
<i>Terminalia alata</i> Wall.	Asana	Combretaceae	Tree	Stem pulp
<i>Schleichera oleosa</i> (Lour) Merr.	Kusuma	Sapindaceae	Tree	Stem pulp & tender leaves
<i>Shorea robusta</i> Gaertn.	Sal	Dipterocarpaceae	Tree	Bark
<i>Aegle marmelos</i> (L.) Correa.	Bela	Rutaceae	Tree	Fruit
<i>Diospyros melanoxylon</i> Roxb.	Kendu	Ebenaceae	Tree	Stem pulp