



Observations of Avian Biodiversity on *Ficus benghalensis* Tree during Fruiting Season

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Abstract:

Present work was undertaken to study avian biodiversity on specific tree *Ficus benghalensis* during fruiting season. Observations were carried out at four sites in and around Nagpur during year 2012 and 2013. Observations indicated that most of local and few migratory birds were found foraging on fruit of *F. benghalensis*. It was observed that 7 orders, 20 families and 33 species were foraging on fruits. This native tree provides nutrition and energy to large number of birds. It is therefore suggested that conservation of existing trees belonging to species *F. benghalensis* and planting more trees is helpful in conserving avian biodiversity.

Key words:

Avian biodiversity, *Ficus benghalensis*, Foraging, Conservation.

Introduction:

Diet of birds may change according to availability of food sources. It may include insects like grasshoppers, fruits like berries, grapes, variety of seeds, nectar of some flowers and wild grains. In the spring-summer season the diet of various birds inhabitant of tropics, is based mainly on plant matter. Many fruits are evolved to be eaten and to disperse the seeds. Fruit eating animals carry the seeds away from the parent tree so the seeds have a chance to survive. In the tropics fruits are available throughout year. Birds and mammals can contribute to long distance seed dispersal of some plants (Dean et al.1990, Higgins et al. 2003). Depending on the bird species, the maturity of the fruit and the type of fruit, birds might eat the flesh, sip the juice or both. Small fruits can even be swallowed whole, and birds will visit fruit trees before they are fully ripe and as long as there are a few fruits available after the prime harvest season. Nagpur city in central India is one of the stopover of migratory birds. Nagpur is also abode of various local birds. Birds eat fruits of ficus species like Peepal (*Ficus religiosa*), Banyan (*Ficus benghalensis*), Umbar (*Ficus recemosa*) etc. Ficus species are keystone resource for birds (Francis A. et al.2013). Various birds get attracted towards these fruits but the bases for avian selection of fleshy fruit are poorly known. The literature suggests that nutritional quality and morphology such as fruit and seed size are important in fruit selection (Howe H.F.et al. 1980, and Martin T.E. 1985). *F. benghalensis* tree is commonly found in India. Phytochemical investigation has been carried out on various parts of *F. benghalensis* plant like bark (Shukla R. 2004 and





Sirisha N. et al. 2010), leaf (Bhaskara Rao K. V. et al., 2014), aerial root (Parmaeswari A. S. et al., 2011) etc. and these are effective antioxidant, and anti-inflammatory (Thakare V. 2010) respectively. Fruits contain antioxidant and free radical scavenging activity due to high phenolic compound (Verma N. et al. 2008). The aim of the present study is to make checklist of birds which are found foraging on fruit (*Ficus benghalensis*) endemic to India and to know the reason behind the interaction between fleshy fruit and occurrence of frugivorous birds.

Taxonomy of *Ficus benghalensis* L.

Kingdom -Plantae

Family - Moraceae

Genus - *Ficus*

Species-*benghalensis*

Other names- Vad, Bar, Banyan

Description

A large evergreen tree with branches spreading and reaching down to the ground numerous aerial roots which afterwards thicken and become trunks. Leaves are thickly leathery, oval-shaped with round tips, base of each leaf is heart shaped or rounded; blade 8-20cm; leaf stalk thick 2.5-5 cm. Fruiting takes place in pairs and the fruits are red when ripe. Leaf, latex, roots, and bark, are used in Ayurvedic medicines. Fruiting takes place for the period April-June as well as in October-November (Sahni K. C., 2000).

Material and method:

In the present study, four sites in Nagpur city (21° 09' N, 79° 09' E.) have been selected. Observation sites were selected on the basis of presence of birds which also coincided with fruiting of *Ficus benghalensis*. Feeding behavior of birds was observed for two years (2012-2013) in the months from April-June and also in October-November. Regular field visits were made throughout this period from 7 a.m. to 9 a.m. in the morning. Data on present bird species was collected by direct observation method with the help of Olympus Binocular 10*50 X. For photography Cannon camera – EOS 550 D, Lens 100-400 was used.

Study area-

To study food and feeding habit of birds of four sites in and around Nagpur were selected. The sites were selected on the basis presence of *F. benghalensis* tree. These sites are- 1. Gorewada forest, 2. L.I.T. College campus, 3. Telankedi garden, 4. Ambazari garden

Result and discussion:

According to the data from Table 1-it was observed that 7 orders, 20 families and 33 species were found foraging on *Ficus benghalensis* fruits. Out





of these most of the species are local and only few are migratory. It was observed that often preferred fruits are so abundant that there is little competition for it. It was noted that preferred fruits contain phenol and anthocyanin (Bandekar H. 2013), hence these fruits have antioxidant and free radical scavenging activity. Free radicals are found as by product of normal metabolic activity called oxidative stress (Alonso-Alvarez C., et al.2004).It was also reported that preferred food contains carbohydrates, proteins and small amount of fats. Anthocynin and polyphenol are predominantly found in fruit peel (Bandekar H. 2013). It was reported that birds actively select food containing anthocyanin over food without anthocyanin. Ripe fruit contains more anthocyanin than unripe fruit (Schaefer H.M. et al.). *Ficus benghalensis* fruits are found to be rich in mineral content, fiber and moisture and hence are good source of energy (Bandekar H.2013). Moisture content in fruit might help the birds to keep adequate fluid balance in the body during intense heat of the tropical region. High fiber content in fruit helps seeds to pass easily from digestive tract. It was also observed that large amount of fecal matter in the form of pellets was present under the huge *Ficus benghalensis* tree. It has been reported that *F. benghalensis* fruit contains macrominerals like calcium (1.76mg/g), sodium (0.40mg/g), and potassium (1.86mg/g) (Ruby J. 2000). Hence it was confirmed that these fruits serve important dietary source for of frugivorous birds. Moreover assuming that requirement for protein and calcium increase during breeding season *F. benghalensis* fruit foraging proves to be very beneficial for birds. Abundance of mature fruits in the summer and the autumn seasons suggests that these fruits serve as the primary source of energy.

Table. 1- Avian Biodiversity foraging on *Ficus benghalensis* during fruiting season.

Order	Family	Species	Status
Psittaciformes	Psittacidae	Blossom Headed	R
		Slaty Headed Parakeet	R
		Rose Ringed Parakeet	R
Cuculiformes	Cuculidae	Asian Koyal	R
Columbiformes	Columbidae	Spotted dove	R
		Laughing dove	R
		Yellow footed green	R
Coraciiformes	Bucerotidae	Indian Grey Hornbill	R
Piciformes	Picidae	Flame backed	R
Strigiformes	Strigidae	Spotted owlet	R
Passeriformes	Sturnidae	Common Myna	R
		Brahminy Myna	R
		Indian Pied Starling	R
		Chestnut Tailed	R





		Rosy Starling	M
	Pycnonotidae	Red Vented Bulbul	R
	Timaliidae	Yellow Eyed Babbler	R
		Large Grey Babbler	R
	Aegithinidae	Common Iora	R
	Corvidae	House Crow	R
		Jungle Crow	R
		Drongo	R
		Treepie	R
	Laniidae	Long Tailed Shrike	R
	Tephrodornithidae	Common wood shrike	R
	Passeridae	sparrow	R
	Megalaimidae	Coppersmith barbet	R
	Zosteropidae	Oriental White Eye	R
	Oriolidae	Golden Oriole	R
	Campephagidae	Cuckooshrike	R
	Rhipiduridae	White browed faintail	R
		White throated faintail	R
	Monarchidae	Asian paradise	RM

R-Resident, M-migrant, RM-Resident Migrant (Ref- "Birds of the Indian Subcontinent" 2nd Edi, By- Richard Grimmett, Carol Inskipp and Tim Inskipp)

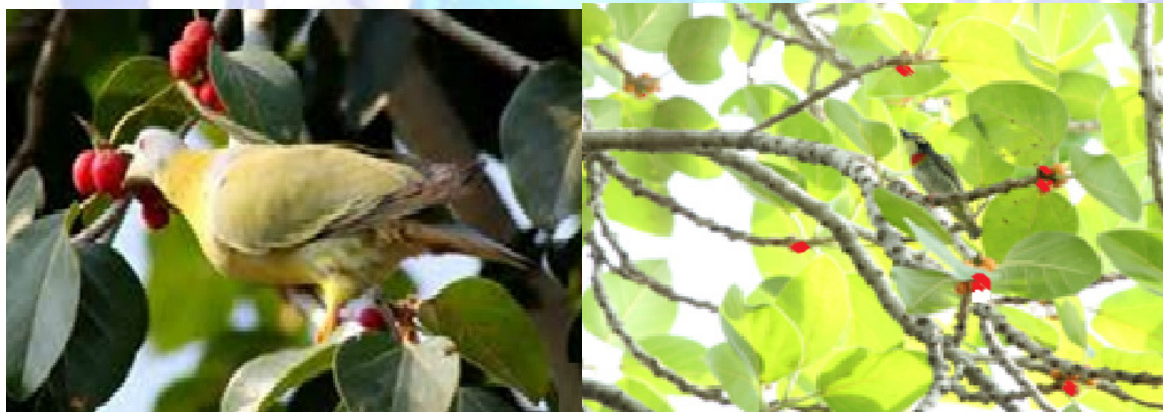


Figure 1:- Birds photographed while foraging on *Ficus benghalensis* fruits

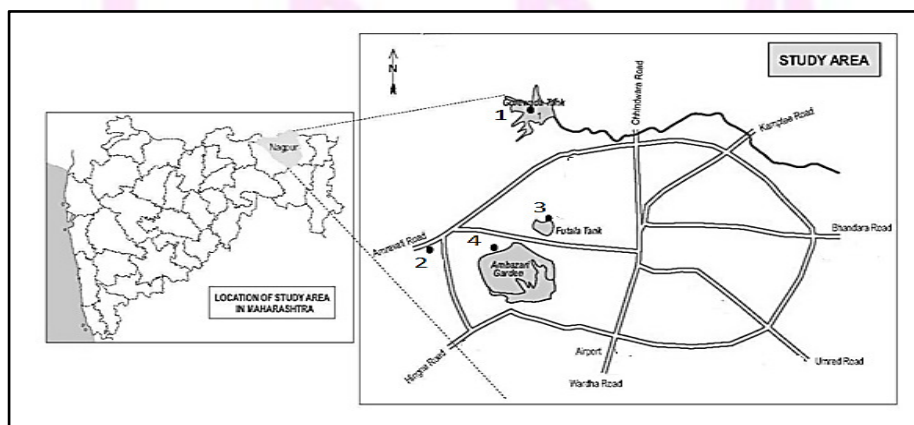


Figure. 2- Location of study in and around Nagpur



Conclusion:

Ficus benghalensis fruits are important source of energy during summer and autumn seasons. They contain anthocyanin, a powerful antioxidant to reduce oxidative stress. They also provide energy and macrominerals to foraging bird species. Hence it is recommended that plantation of *F. benghalensis* tree should be considered on priority basis in urban planning and development.

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