

Avifauna Associated with Palash (*Butea monosperma*), State Flower of Uttar Pradesh, India

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ABSTRACT- *Butea monosperma* is a moderate sized deciduous tree, which is widely distributed throughout India, Burma and Ceylon, popularly known as 'dhak' or 'palash', commonly known as 'Flame of forest'. Bearing many qualities it is rightly selected as the State Flower of Uttar Pradesh as well as Jharkhand. The study was undertaken during January 2015-2017 in Jhansi, Uttar Pradesh, India. For this study 15 sites were selected in Jhansi area. Observations were done from 6:00 am to 10:00 am and 3:00 pm to 7 pm. Direct observations were made using Bushnell Falcon 10x50 mm Binocular. The study was supported with photographs taken by 7 D Canon SLR Camera. Observations indicated that the bird species were attracted towards the flowers of Palash. The birds were also used the trees of nesting and roosting. A total of 70 bird species belonging to 27 families were associated with Palash either for feeding, nesting or roosting. The maximum species (12) belonged to the family Corvidae followed by Sturnidae (6), Columbidae (5), Musciapidae (5) and Sylviidae (5). It was concluded that the State flower of Uttar Pradesh is obligatory for the local bird community. Initiatives have been taken to create awareness amongst the local people with the help of press media. The conservation of the existing plant species and the plantation of more trees, particularly in educational institutes are important. *Butea monosperma* is very dry resistant and helps in controlling soil erosion. Therefore, planting and managing the tree will be beneficial for local farmers also.

Key-words- Bird species, *Butea monosperma*, Conservation, Palash

INTRODUCTION

India has a total area of about 3,029 million hectares with this it is considered to be one of the 12 mega biodiversity centers. It has origins and diversity of several plant species in the world [1]. Plants have deeply influenced the ethnicity and civilization of man in many countries, including India. These links can be traced from the prehistoric times in an almost uninterrupted line. Many flowers, fruits or complete plants are themselves worshipped or considered sacred [2]. The Palash tree is considered sacred by both the Hindus and the Buddhists [3]. *Butea monosperma* is a moderate sized deciduous tree which is widely distributed throughout India, Burma and Ceylon, popularly known as 'dhak' or 'palash', commonly known as 'Flame of forest'.

Palash is a medium sized dry season deciduous tree, growing to 15 m tall. It finds use both medicinally and commercially with each part of the plant having utility. This plant species has been found to display a wide variety of biological activities. The literature shows tremendous scope for the use of plant *Butea monosperma* as an alternative therapy in the treatment and prevention of various diseases and disorders. The plant contains various phyto-constituents like Glycosides, saponins, gums, mucilage and fatty acids and reducing sugars [4]. The flowers were reported to possess astringent, sweet cooling, constipating, aphrodisiac, haemostatic, diuretic, febrifuge and tonic. They are useful in vitiated conditions of pitta and kapha, diarrhea, hemorrhoids, menorrhagia, fever, leprosy, skin diseases, swelling, hyperdispesia, arthritis, burning sensation, bone fracture [5]. It is used for timber, resin, fodder, medicine, and dye. The wood is dirty white and soft and, being durable underwater, is used for well curbs and water scoops. Good charcoal can be made from it so bearing so many qualities it is rightly selected as the State Flower of Uttar Pradesh as well as Jharkhand, India. The leaves are usually very leathery and not eaten by cattle [6].

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During the winters, the leafless tree flowers abundantly and is very conspicuous in the forest. Birds are the chief bountiful amounts of nectar, and exhibiting diurnal anthesis [7].

MATERIALS AND METHODS

Study Area

The study was undertaken during January 2015 to March 2017 in Jhansi, Uttar Pradesh, India. Jhansi is situated between the rivers Pahuj and Betwa between North longitudes 24°11' and 25°57' and East latitudes 78°10' and 79°25'. It has an average elevation of 284 metres (935 feet). Jhansi district is rocky with undulating topology; a

pollinators. The large and bright orange-red coloured flowers show characteristics of bird pollination with

lower proportion of its Total Geographical Area is under agriculture i.e 70%. Approximately 7% of the area is under forest, a bulk of which is degraded forest. The district also has a lower proportion of wastelands (16.95% hectare) being classified as "land with scrubs" [8]. The average annual rainfall is 850.1 mm. The climate is sub-humid and it is characterized by a hot dry summer and cold winter.

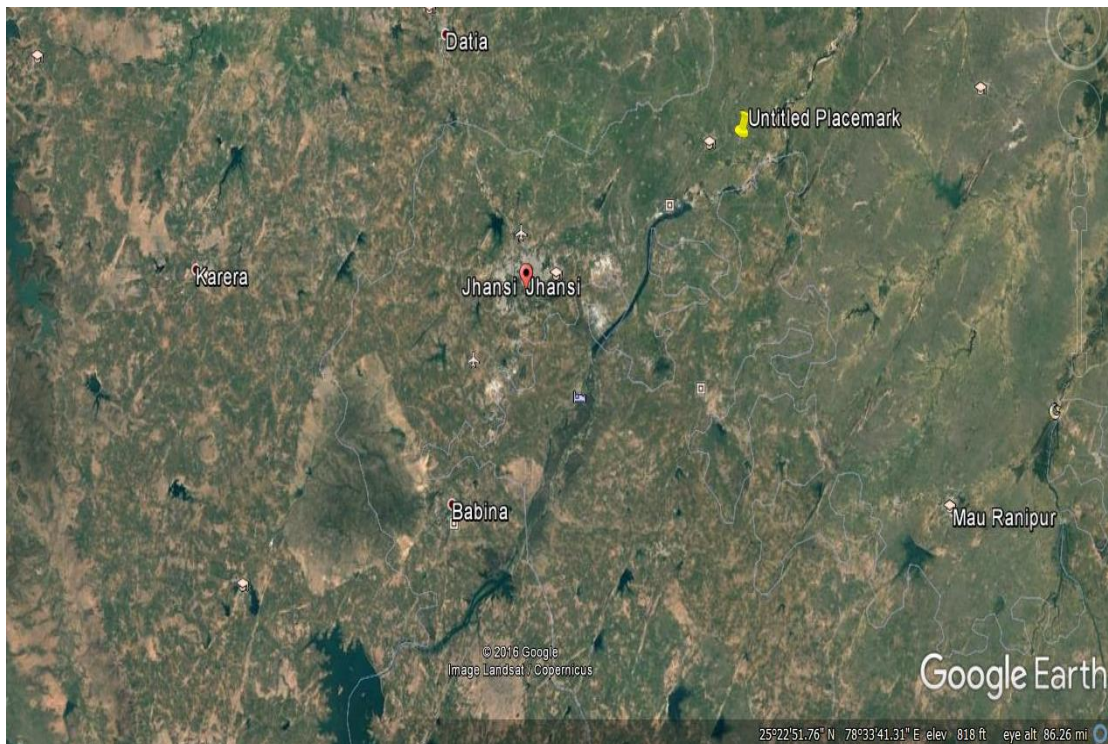


Fig 1: Map of study area (Source: Google Earth)

METHODOLOGY

For the study 15 sites were selected in Jhansi. From February to April observations were done from 6:00 am to 10:00 am and 3:00 pm to 7 pm. The direct observations were

made using Bushnell Falcon 10x50 mm Binocular. The study was supported with photographs taken by 7 D Canon SLR Camera. The birds were identified using standard field guide books [9-11].

RESULT AND DISCUSSION

Observations indicated that the bird species were attracted towards the flowers of Palash tree. They fed on nectar from open keel and foraged on the flowers. The birds were also used the trees for nesting and roosting purposes. A total of 70 bird species belonging to 27 families (Table 1) were

associated with Palash either for feeding, nesting or roosting (Fig. 2a-2t). The maximum species (12) belonged to family Corvidae followed by Sturnidae (6), Columbidae (5), Musciapidae (5) and Sylviidae (5).

Table 1: List of Birds associated with Palash

S. No	Common Name	Zoological Name	Local name	Family	R/M	AC	IUCN Status
1.	Common Kingfisher	<i>Alcedo atthis</i>	Chhota Kilkila	Alcedinidae (1)	R	FC	LC
2.	White breasted Kingfisher	<i>Halcyon smyrnensis</i>	Kilkila	Halcyonidae (1)	R	C	LC
3.	Green bee-eater	<i>Merops orientalis</i>		Meropidae (1)	R	C	LC
4.	Painted Stork	<i>Mycteria leucocephala</i>	Janghil/Dokh		R	C	NT
5.	Asian Open bill-Stork	<i>Anastomus oscitans</i>	Ghungil	Ciconiidae (2)	R	FC	LC
6.	Cattle Egret	<i>Bubulcus ibis</i>	Surkhia bagla		R	C	LC
7.	Purple Heron	<i>Ardea purpurea</i>	Lal anjan	Ardeidae (3)	R	C	LC
8.	Indian Pond Heron	<i>Ardeola grayii</i>	Andha bagla		R	C	LC
9.	Lesser Golden- backed Woodpecker	<i>Dinopium benghalense</i>	Kathfudwa	Picidae (1)	R	C	LC
10.	Brown-headed Barbet	<i>Megalaima zeylanica</i>	Bada basanta	Megalaimidae (2)	R	FC	NA
11.	Coppersmith Barbet	<i>Megalaima haemacephala</i>	Chota basanta		R	C	LC
12.	Indian Grey Hornbill	<i>Ocyrceros birostris</i>	Dhanesh	Bucerotidae (1)	R	FC	LC
13.	Common Hoopoe	<i>Upupa epops</i>	Hudhud	Upupidae (1)	R	C	LC
14.	Indian Roller	<i>Coracias benghalensis</i>	Neelkanth	Coraciidae (1)	R	C	LC
15.	Pied Cuckoo	<i>Clamator jacobinus</i>	Kala Papiya	Cuculidae (3)	R	FC	LC
16.	Common Hawk Cuckoo	<i>Hierococcyx varius</i>	Papiya		R	FC	LC
17.	Asian Koel	<i>Eudynamys scolopacea</i>	Koel		R	C	LC
18.	Greater Coucal	<i>Centropus sinensis</i>	Mahoka	Centropodidae (1)	R	C	LC
19.	Rose-ringed Parakeet	<i>Psittacula krameri</i>	Tota	Psittacidae (2)	R	C	LC
20.	Plum-headed Parakeet	<i>Psittacula cyanocephala</i>	Tuiya tota		R	FC	LC
21.	Laughing dove	<i>Streptopelia senegalensis</i>	Chhota fakta		R	C	LC
22.	Red collared dove	<i>Streptopelia tranquebarica</i>	Lali pohu		R	FC	LC
23.	Spotted dove	<i>Streptopelia chinensis</i>	Chitroka fakhta	Columbidae (5)	R	C	LC
24.	Eurasian collared dove	<i>Streptopelia decaocto</i>	Panduk		R	C	LC
25.	Yellow- footed Green- Pigeon	<i>Treron phoenicoptera</i>	Harilal		R	C	LC
26.	Shikra	<i>Accipiter badius</i>	Chipka	Accipitridae (1)	R	C	LC
27.	Spotted owl	<i>Athene brama</i>	Chughad	Strigidae (2)	R	C	LC
28.	Jungle owl	<i>Glaucidium radiatum</i>	Jangali Chughad		R	C	LC
29.	Rufous –backed Shrike	<i>Lanius schach</i>	Kajala latora	Laniidae (2)	R	C	LC
30.	Bay-backed Shrike	<i>Lanius vittatus</i>	***		R	FC	LC
31.	Indian Treepie	<i>Dendrocitta vagabunda</i>	Mahalat		R	C	LC
32.	Eurasian Golden Oriole	<i>Oriolus oriolus</i>	Peelak		R	C	LC
33.	Black- headed Oriole	<i>Oriolus xanthornus</i>	***		R	FC	LC
34.	House Crow	<i>Corvus splendens</i>	Kowwa		R	C	LC

35.	Jungle Crow	<i>Corvus macrorhynchos</i>	Kala kowwa		R	C	LC
36.	Small minivet	<i>Pericrocotus cinnamomeus</i>	Saheli		R	FC	LC
37.	White- browed fantail	<i>Rhipidura aureola</i>	***		R	FC	LC
38.	Black drongo	<i>Dicrurus macrocerus</i>	Bhujanga	Corvidae (12)	R	C	LC
39.	Ashy Drongo	<i>Dicrurus leucophaeus</i>	Bhujanga		M	FC	LC
40.	Common Iora	<i>Aegithina tiphia</i>	Shaubeegi		R	FC	LC
41.	Common Woodshrike	<i>Tephrodornis pondicerianus</i>	Keroula		R	FC	LC
42.	Asian Paradise-Flycatcher	<i>Terpsiphone paradisi</i>			R	FC	LC
43.	Oriental Magpie-Robin	<i>Copsychus saularis</i>	Dhaiyar		R	C	LC
44.	Indian Robin	<i>Saxicoloides fulicata</i>	Kalchuri		R	C	LC
45.	Black Redstart	<i>Phoenicurus ochruros</i>	Thirthira		M	FC	LC
46.	Pied Bushchat	<i>Saxicola caprata</i>	***	Musciapidae (5)	R	C	LC
47.	Indian Chat	<i>Cercomela fusca</i>	Dauma		R	FC	LC
48.	Brahminy Starling	<i>Sturnus pagodarum</i>	Brahmini myna		R	C	LC
49.	Rosy Starling	<i>Sturnus roseus</i>	Gulabi myna		M	FC	LC
50.	Asian Pied Starling	<i>Sturnus contra</i>	Ablak myna		R	C	LC
51.	Chest-nut tailed Starling	<i>Sturnus malabarica</i>	Pawai		M	UC	LC
52.	Common Myna	<i>Acridotheres tristis</i>	Desi myna	Sturnidae (6)	R	C	NA
53.	Bank myna	<i>Acridotheres ginginianus</i>	Ganga myna		R	C	LC
54.	Great Tit	<i>Parus major</i>	Ramgangra	Paridae (1)	R	FC	LC
55.	Red-vented Bulbul	<i>Pycnonotus cafer</i>	Bulbul	Pycnonotidae (1)	R	C	LC
56.	Ashy Prinia	<i>Prinia socialis</i>	Kali phutki		R	C	LC
57.	Jungle Prinia	<i>Prinia sylvatica</i>	Tot-rungi	Cisticolidae (3)	R	FC	LC
58.	Plain Prinia	<i>Prinia inornata</i>	Phutki		R	C	LC
59.	Oriental White-eye	<i>Zosterops palpebrosos</i>	Baboona	Zosteropidae (1)	R	C	LC
60.	Common Tailorbird	<i>Orthotomus sutorius</i>	Darzee		R	C	LC
61.	Yellow- eyed Babbler	<i>Chrysomma sinense</i>	Gulab-chasm		R	C	LC
62.	Common Babbler	<i>Turdoides caudatus</i>	Genga/dumri		R	FC	LC
63.	Jungle Babbler	<i>Turdoides striatus</i>	Sat bhaina	Sylviidae (6)	R	C	LC
64.	Large Grey Babbler	<i>Turdoides malcolmi</i>	Sat bhaina		R	C	LC
65.	Lesser whitethroat	<i>Sylvia curruca</i>	Chia		M	C	LC
66.	Purple Sunbird	<i>Nectarinia asiatica</i>	Phul soohgni	Nectariniidae (1)	R	C	LC
67.	House Sparrow	<i>Passer domesticus</i>	Gauriya		R	C	LC
68.	Chestnut-shouldered Petronia	<i>Petronia xanthocollis</i>	Jangli chiria		R	FC	LC
69.	Baya Weaver	<i>Ploceus philippinus</i>	Baya/son chiri	Passerinae (4)	R	C	LC
70.	Indian Silverbill	<i>Lonchura malabarica</i>	Charga		R	C	LC

R- Residential; C- Common; FC- Fairly common; UC- Uncommon; LC- Least concern; NT- Near-threatened



i. Common Kingfisher



ii. Black drongo



iii. Asian Open bill-Stork



iv. Oriental Magpie-Robin



v. Cattle Egret



vi. Indian Chat



vii. Purple Heron



viii. Brahminy Starling



ix. Indian Pond Heron



x. Chestnut-tailed Starling



xi. Indian Roller



xii. Common Myna



xiii. Greater Coucal



xiv. Asian Pied Starling



xv. Coppersmith Barbet



xvi. Bank myna



xvii. Rose-ringed Parakeet



xviii. Asian Koel



xix. Plum-headed Parakeet



xx. Red-vented Bulbul



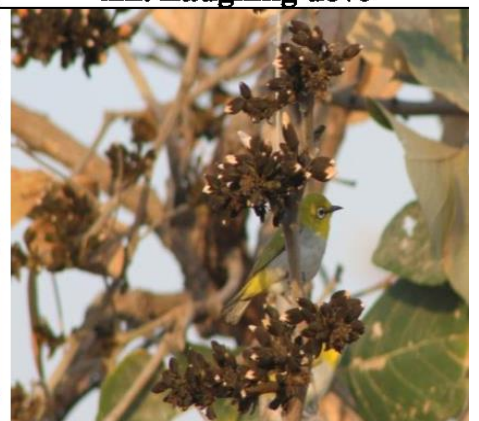
xxi. Laughing dove



xxii. Ashy Prinia



xxiii. Shikra



xxiv. Oriental White-eye



xxv. Rufous –backed Shrike



xxvi. Common Tailorbird



xxvii. Indian Treepie



xxviii. Indian Silverbill



xxix. Spotted Owlet



xxx. Jungle babbler



xxxii. House Crow



xxxiii. Large Grey Babbler



xxxiiii. Jungle Crow



xxxv. Lesser whitethroat



xxxvi. Asian Paradise flycatcher



xxxvii. Green Bee-Eater

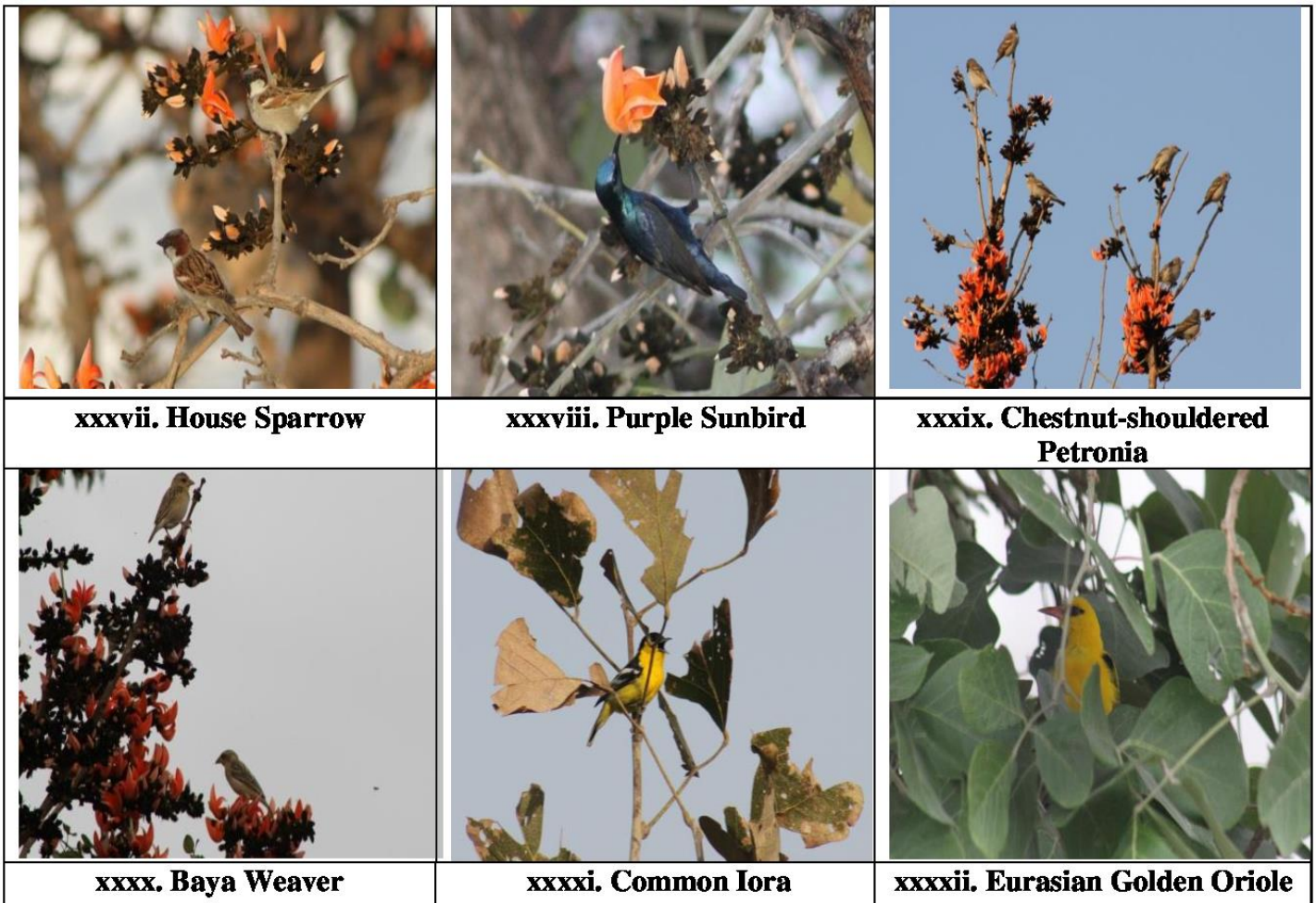


Fig 2(i-xxxxii): Bird species associated with Palash (*Butea monosperma*)

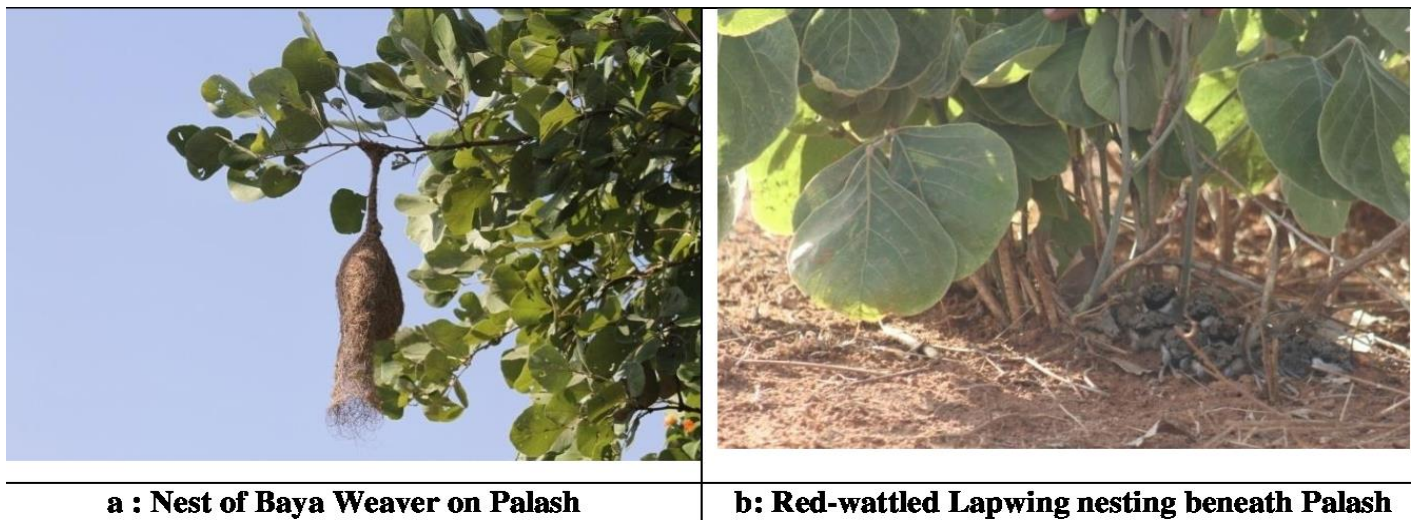


Fig 3(a-b): Palash used as nesting sites by bird species

The birds fed not only on nectar but foraged on bees, butterflies and other insects that were attracted to the bright fresh flowers of Palash. According to a study, Dapke *et al.*, *Butea monosperma* plant was found to be requisite for local and migratory bird in Nagpur city. Possibly it provided immunological support and reduced oxidative stress produced due to various physiological activities ^[12]. Oxidative flavonoids are found in *Butea monosperma* flowers. Flavonoids in food are important for birds as they act as antioxidants and restore intracellular immunity ^[13]. Birds such as cattle egrets and herons utilized the palash trees for roosting while Baya weaver, owlets and Lapwings were seen nesting (Fig. s3a & b). It was concluded that the State flower of Uttar Pradesh is obligatory for the local bird community. Initiatives have been taken to create awareness amongst the local people with the help of press media. The conservation of the existing plant species and the plantation of more trees particularly in educational institutes are important. This will be beneficial in promoting the State Flower as well as the students will learn about the avian diversity supported by a single tree. *Butea monosperma* is very dry resistant tree and helps in controlling soil erosion. Therefore planting and managing the tree will be beneficial for local farmers also.

CONCLUSIONS

This study was concluded that biological interactions are a central aspect of the biological diversity. It has no much sense to study a single species without taking into account the rest of the species occurring in that habitat and how they interact. The overall goal of the study associated with Palash tree is to enhance biodiversity and the abundance of avian species. This is especially important in the selected study areas with frequent droughts. Such regions are often particularly intended to enhance the abundance of pollinators such as bees, butterflies and birds, through the provision of food resources, for example nectar-rich flowers of Palash. Such pollinators and pest predators are important in the context of agricultural production. Birds can also benefit from high insect numbers attracted to *Butea monosperma* as they are good food resource for birds. The plantation and management of *Butea monosperma* will be beneficial for the birds, invertebrates and the local farmers.

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