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### RESEARCH ARTICLE

#### AVIAN AND PLANT DIVERSITY AND THEIR INTER-RELATIONSHIP FROM TULJARAM CHATURCHAND COLLEGE CAMPUS, BARAMATI, DISTRICT PUNE (M.S.) INDIA

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#### Abstract

The Plant and bird diversity composition of Tuljaram Chaturchand College Campus was investigated to ascertain the ecological status. The study identified 740 plants. The plant species composition was dominated by major trees having 545 plants, followed by 178 shrubs, 12 herbs and 05 other grasses with parasitic plants. In relation with different plant species, the campus was found to attract 24 bird species. Asian Koel, Crows, Sparrows, Rock Pigeon, Red vented bulbul, Spotted owl, Green bee eater, Sun birds, Drongo, etc. they were dominantly found throughout the year. The college campus is very beautiful because of attraction of various birds and plants.

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#### Introduction:-

Ecological balance maintaining by plant and bird diversity also they are the indicator of health of the ecosystem. Bird diversity has a direct relationship with plant diversity. Plants provide a space to birds for nesting, feeding and breeding. Birds cannot tolerate even slight environmental disturbance because of their highly specific habitat requirements [1].

The birds are very sensitive to different human disturbances. Closer the human structures to bird habitats, fewer will be the abundance of different bird species [2]. It cause a negative effect on biodiversity, especially in term of irrecoverable habitat fragmentation and loss, extermination of native and migratory bird species [3]. Bird species play a significant role in ecosystem like many food webs, nutrient cycles etc. But the increase of human disturbances causes habitat loss of birds that's why bird diversity decreases day by day. An evaluation of abundance and diversity of bird species in any ecosystem serve as a good indication of the health of the environment in and around the ecosystem [4].

Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati is situated pune district 100 km away from pune city. Geographically it is located at the latitude 18.159340, longitude 74.579514. College has very attractive and beautiful campus with avian and plant diversity. It is spread over thirty eight acre area.

#### Materials and Methods:-

The campus of Tuljaram Chaturchand College, Baramati was surveyed for the period of one year (July 2020 to June 2021). The survey was conducted at campus between 7.00 am to 10.30 am. Bird species were observed with a binocular and naked eyes. Their photographs were taken using a digital camera. The birds were identified by

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referring to the classical literature and standard references [5, 6, 7]. Plants were identified in the field and photographs were taken for further identification and closer examination. Plant identification was carried with the help of Botany department of Tuljaram Chaturchand College, Baramati.

### Results:-

Tuljaram Chaturchand College campus was found to attract 24 bird species belonging to 15 families (Table 1). Asian Koel, Crows, Sparrows, Rock Pigeon, Red vented bulbul, Spotted owl, Green bee eater, Sun birds, Drongo, etc. they were dominant throughout the year. All 24 species of birds are the residential birds, observed during the study.

Sr No.	Common name	Scientific name	Family	Order
1	Golden Oriole	<i>Oriolus oriolus</i> (Linn.)	Oriolidae	Passeriformes
2	Black Drongo	<i>Dicrurus adsimilis</i> (Bechst)	Dicruridae	Passeriformes
3	Brahminy Myna	<i>Sturnus pagodarum</i> (Gmelin)	Sturnidae	Passeriformes
4	Indian Myna	<i>Acridothera tristis</i> (Linn.)	Sturnidae	Passeriformes
5	House crow	<i>Corvus splendens</i> (Vicillot)	Corvidae	Passeriformes
6	Red vented Bulbul	<i>Pycnonotus cafer</i> (Linn.)	Pycnonotidae	Passeriformes
7	Common Babbler	<i>Turdoides caudatus</i> (Dumont)	Timaliidae	Passeriformes
8	Ashy wren warbler	<i>Prinia socialis</i> (Sykes)	Cisticolidae	Passeriformes
9	Tailor bird	<i>Orthotomus sutorius</i> (Pennant)	Cisticolidae	Passeriformes
10	Indian Robin	<i>Saxicoloides fulicatus</i> (Linn)	Muscicapidae	Passeriformes
11	Magpie Robin (dayal)	<i>Copsychus saularis</i> (Scopoli)	Muscicapidae	Passeriformes
12	White eye	<i>Zosterops palpebrosa</i> (Temminch)	Zosteropidae	Passeriformes
13	House Sparrow	<i>Passer domesticus</i> (Linn)	Passeridae	Passeriformes
14	Spotted Munia	<i>Lonchurapunctulata</i> (Linn)	Estrildidae	Passeriformes
15	Indian Baya/Weaver bird	<i>Ploceus philippinus</i> (Linn)	Ploceidae	Passeriformes
16	Purple sunbird	<i>Nectarinia asiatica</i> (Latham)	Nectariniidae	Passeriformes
17	Crimson breasted Barbet	<i>Megalaima haemacephala</i> (Muller)	Megalaimidae	Piciformes
18	Maratha Woodpecker	<i>Dendrocopos mahrattensis</i> (Latham)	Picidae	Piciformes
19	Blue Rock Pigeon	<i>Columba livia</i> (Gmelin)	Columbidae	Columbiformes
20	Rose ringed Parakeet	<i>Pittaculaea eupatria</i> (Linn)	Pittaculidae	Pittaciformes
21	Crow Pheasant	<i>Centropus sinensis</i> (Stephens)	Cuculidae	Cuculiformes
22	Indian Koel	<i>Eudynamis scolopacea</i> (Linn)	Cuculidae	Cuculiformes
23	Spotted owl	<i>Athene brama</i> (Temminck)	Strigidae	Strigiformes
24	Green bee eater	<i>Merops orientalis</i>	Meropidae	Coraciiformes

**Table 1:-** List of various birds observed during study.

The composition of plant diversity Tuljaram Chaturchand College campus is presented in (Table 2 & 3). Plant species composition was found dominated by trees constituting 545 plant species, followed by shrubs having 178 plant species, herbs with 12 plant species and Grasses with 5 species.

Sr. No.	Botanical name	Common Name	Family	Total count of plant
1.	<i>Acacia auriculiformis</i> A. Cunn. Ex. Benth.	Australian Babal	Fabaceae	12 T
2.	<i>Achrassapota L.</i>	Chikku	Sapotaceae	03T
3.	<i>Adathodavasica</i> Nees	Adulsa	Acanthaceae	03 S
4.	<i>Aegle marmelos</i> (L.) Corr.	Bel	Rutaceae	01T

5.	<i>Allamandacathartica</i> L.	Golden trumpet	Apocynaceae	01T
6.	<i>Alstonia scholaris</i> . (L.) R.Br.	Saptaparn	Apocynaceae	42T
7.	<i>Annona reticulata</i> L.	Ramphal	Annonaceae	03T
8.	<i>Anthocephaluscadamba</i> (Roxb.) Miq.	Kadamb	Rubiaceae	05T
9.	<i>Araucaria heterophylla</i> (salisb.) Franco	Christmas	Araucariaceae	01T
10.	<i>Asparagus racemosus</i> Willd.	Shatavari	Asparagaceae	02H
11.	<i>Azadirachta indica</i> Juss.	Neem	Meliaceae	49T
12.	<i>Bambusaarundinacea</i> (Retz.) Willd.	Bamboo	Poaceae	04G
13.	<i>Bauhinia purpurea</i> L.	Orchid tree	Leguminosae	03T
14.	<i>Bauhinia racemosa</i> Lam.	Orchid tree	Leguminosae	01T
15.	<i>Bougainvillea spectabilis</i> Willd.	Kagadiful	Nyctaginaceae	46S
16.	<i>Butea monosperma</i> (Lam.)Taub	Palas	Fabaceae	01T
17.	<i>Caesalpinia pulcherrima</i> (L.) Sw.	Sankasur	Fabaceae	07S
18.	<i>Callistemon lanceolatus</i> (Sm.) Sweet.	Bottlebrush	Myrtaceae	02 S
19.	<i>Carica papaya</i> L.	Papaya	Caricaceae	02T
20.	<i>Caryotaurens</i> L.	Kithul	Arecaceae	02T
21.	<i>Cassia auriculata</i> L.	Ranawara	Fabaceae	01S
22.	<i>Cassia fistula</i> L.	Golden shower	Fabaceae	02T
23.	<i>Casuarinaequisetifolia</i> L.	Suru	Casuarinaceae	01T
24.	<i>Chlorophytumlaxum</i> R.Br.	Bichetii grass	Asparagaceae	01G
25.	<i>Cocusnucifera</i> L.	Coconut	Arecaceae	02T
26.	<i>Cycascircinalis</i> L.	Queen sago	Cycadaceae	05S
27.	<i>Dalbergiasisso</i> Roxb. Ex. DC	Sisu	Fabaceae	02T
28.	<i>Delonixregia</i> (Hook.) Raf.	Gulmohar	Fabaceae	08T
29.	<i>Dombeyaacuteangula</i> Cav.	Bois Bete	Malvaceae	08S
30.	<i>Dracaena fragrans</i> (L.) Ker.Gawl.	Mass Cane	Asparagaceae	01S
31.	<i>Dypsislutescens</i> (H.Wendl) Beentje& J. Dransf.	Butterfly palm	Arecaceae	98 T
32.	<i>Emblica officinalis</i> Gaertn.	Awala	Phyllanthaceae	01T
33.	<i>Eucalyptus globulus</i> Labill.	Nilgiri	Myrtaceae	02T
34.	<i>Ficusbenghalensis</i> L.	Wad	Moraceae	02T
35.	<i>Ficusbenjamina</i> L.	Benjamin fig	Moraceae	05T
36.	<i>Ficuselastica</i> Roxb.	Rubber tree	Moraceae	01T
37.	<i>Ficusracemosa</i> L.	Cluster fig tree	Moraceae	01T
38.	<i>Ficusreligiosa</i> L.	Pimpal	Moraceae	01T
39.	<i>Hamelia patens</i> Jacq.	Firebush	Rubiaceae	11S
40.	<i>Hibiscus rosasinensis</i> L.	Jaswand	Malvaceae	10S
41.	<i>Ixoracoccinea</i> L.	Jungle geranium	Rubiaceae	05S
42.	<i>Jatrophaacurcas</i> L.	Moglierand	Euphorbiaceae <sup>1</sup>	09S
43.	<i>Lantana camara</i> L.	Tantani	Verbenaceae	01S
44.	<i>Lawsoniaainermis</i> L.	Hina	Lythraceae	01T
45.	<i>Mangifera indica</i> L.	Amba	Anacardiaceae	07T
46.	<i>Millingtoniahortensis</i> L.	Buch	Bignoniaceae	01T
47.	<i>Mimusopselengi</i> L.	Bakul	Sapotaceae	32T
48.	<i>Moringaoleifera</i> Lam.	Shevaga	Moringaceae	01T
49.	<i>Murrayapaniculata</i> L.	Kunti	Rutaceae	01S
50.	<i>Neriumindicum</i> Mill.	Kaneri	Apocynaceae	10S
51.	<i>Peltophorumpterocarpum</i> (DC.) Baker.	Copper pod	Fabaceae	02T
52.	<i>Pithecellobiumdulce</i> (Roxb.) Benth.	Vilayati chinch	Fabaceae	01T
53.	<i>Plectranthusscutellarioides</i> (L.) R.Br.	Painted nettle	Lamiaceae	10H

54.	<i>Polyalthialongifolia</i> (Sonner.) Thw.	Ashoka	Annonaceae	57T
55.	<i>Prosopis cineraria</i> L.	Shami	Fabaceae	01T
56.	<i>Psidiumguajava</i> L.	Peru	Myrtaceae	01S
57.	<i>Rauvolfia serpentine</i> L.	Sarpgandha	Apocynaceae	01S
58.	<i>Ravenalamadagascariensis</i> J.F.Gmel.	Traveller's palm	Strelitziaceae	03T
59.	<i>Rosa indica</i> L.	Gulab	Rosaceae	05S
60.	<i>Roysteniaregia</i> H.B.&K	Royal palm	Arecaceae	28T
61.	<i>Russeliaequisetiformis</i> Schlecht& Cham	Fountain bush	Plantaginaceae	01S
62.	<i>Samaneasaman</i> (Jacq.) Merr.	Rain tree	Fabaceae	12T
63.	<i>Santalum album</i> L.	Chandan	Santalaceae	01T
64.	<i>Sapinduslaurifolius</i> Vahl.	Ritha	Sapindaceae	02T
65.	<i>Securinegaleucopyrus</i> (Willd.) Muell.-Arg.		Phyllanthaceae	12S
66.	<i>Spathodeacompanulata</i> P. Beauv.	Pichkari	Bignoniaceae	01T
67.	<i>Swieteniamahagoni</i> L.	Mohagani	Meliaceae	03T
68.	<i>Syzygium cumini</i> L.	Java plum	Myrtaceae	02S
69.	<i>Tabernaemontanadivaricata</i> (L.)R.Br.	Tagar	Apocynaceae	17S
70.	<i>Tamarindus indica</i> L.	Chinch	Fabaceae	08T
71.	<i>Tecomastans</i> L.	Yellow trumpetbush	Bignoniaceae	10S
72.	<i>Terminaliacatappa</i> L.	Jangalibadama	Combretaceae	11T
73.	<i>Thujaoccidentalis</i> L.	Morpankhi	Cupressaceae	04T
<b>Total number of all plants</b>				<b>614</b>

Table No. 2:- List of plants in main campus of college.

Sr. No.	Botanical name	Common Name	Family	Total count of plant
1.	<i>Alstoniascolaris</i> (L.) R.Br.	White Cheesewood	Apocynaceae	55T
2.	<i>Azadirachta indica</i> Juss.	Neem	Meliaceae	14T
3.	<i>Ficusracemosa</i> L.	Umabar	Moraceae.	01T
4.	<i>Limnoniaacidissima</i>	Elephant-Apple	Rutaceae	01T
5.	<i>Spathodeacompanulata</i> P. Beauv.	Pichkari	Bignoniaceae	55T
<b>Total number of all plants</b>				<b>126</b>

Table No. 3:- List of plants in Gymkhana of college.

### Discussion:-

Maximum number of bird species was observed at study area in winter season as compare to the summer and monsoon. This may be due to availability of food and climatic conditions for nesting, roosting and boosting for most of the bird species in winter season. Similar observation was also made by [8].

The bird species diversity might be related to the availability of food, habitat condition and breeding season of the species. The distinct seasonality of rainfall and seasonal variation in the abundance of food resources result in seasonal changes in the species abundance of birds [9, 10]. Some species of birds such as house crows, house sparrows and common mynas were observed in very high abundance due to conversion of nearby land into residential areas, hotels and restaurants and observed to affect other species such as little egret, night heron by predation and competition [11]. The composition of the vegetation that forms a major element of their habitats responsible for the distribution and abundance of many bird species. As vegetation changes because of complex geographical and environmental gradients, a particular bird species number may appear, increase or decrease in number and disappear as the habitat changes [12].

**Conclusion:-**

Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati Campus is rich in biodiversity composition due to planned management strategies of college authorities. The college campus is re-established by landscape of indigenous and exotic plant species. Construction processes in the college campus area are also destroying the plant diversity which is a home for the bird species but authorities planted indigenous and exotic plants at open space.

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