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An Overview Of Bird Diversity At Sarah Tucker College Campus

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ABSTRACT:
Birds play a very important part in our ecosystem as pollinators, seed dispersers, and help in the formation of new hybrid varieties. The present study was designed to access the population status and diversity of birds for each group that resides on the Sarah Tucker College campus. Using the quadrant sample method, the entire college campus was divided into five quadrants for this study. This bird census took place over three months, from August to October 2022. During the study 1659 individual number of birds was recognized at 5 sites, and 27 species of birds were reported under 8 orders with 17 families and comprise both resident and migratory birds and their conservation status was noted. Site 3 had the greatest number of birds (428) because there were so many trees there. Site 5 has the least amount of bird diversity (274), which can be attributed to human activity. The feeding status was also analyzed; the highest number of omnivores 11, the lowest number of piscivores 1. Diversity indices was calculated with the help of PAST software and MS Excel. This study indicates that our college campus is considered an ecosystem's enriched region.

KEYWORDS: Ecosystem, hybrid, avian diversity, quadrant sample, conservation status, diversity indices.

INTRODUCTION:

Birds are the important components of the ecosystem playing a major role as pollinators, consumers and disperser of plant seeds and predators of insects (Mac Arthur, 1961). A number of environmental factors are known to influence the population of birds. Birds of diverse families and species are responsible for cross fertilization of flowers, many of them possess special adaptation in their tongue and bill for sucking honey and carrying the pollen (Salim Ali, 2002). In the dissemination of seeds and the distribution of the plant life, birds play a predominant role in the ecosystem (Salim Ali, 2002). Seeds defecated by birds are known to germinate quickly and produce healthier and stronger plants as the gastric fluids play their role on the seeds (Ridely,1930). Avian diversity is important in the maintenance of a balanced sustainable ecosystem. Therefore, to know about the avian diversity in the tropical plain is a thirst on zoology graduates to take conservation management and action plans.

STUDY AREA:

The study area Sarah Tucker College is an age-old institution (126 years). The campus is located (Latitude 8° 25' North to 8° 53' South, Longitude 77° 10' East to 77° 35' West) about 8 kms south of Tirunelveli. It is located 7 K.ms from Tirunelveli. The college campus spreads over an extensive 41 acres of land. The study was made by following Quadrant sample method (Sundayal and Sharma, 1996, Metz, 1991). By this method, the entire college campus was divided into 5 sites. The location of each of the quadrant is shown below,

No1: Surrounding of bank to New Auditorium
No2: Surrounding of New Auditorium to Chapel.
No3: Surrounding of Chapel to A.V.T Hostel
No4: BJ Hostel to Canteen.
No5: Surrounding of Canteen to Vehicle stand.

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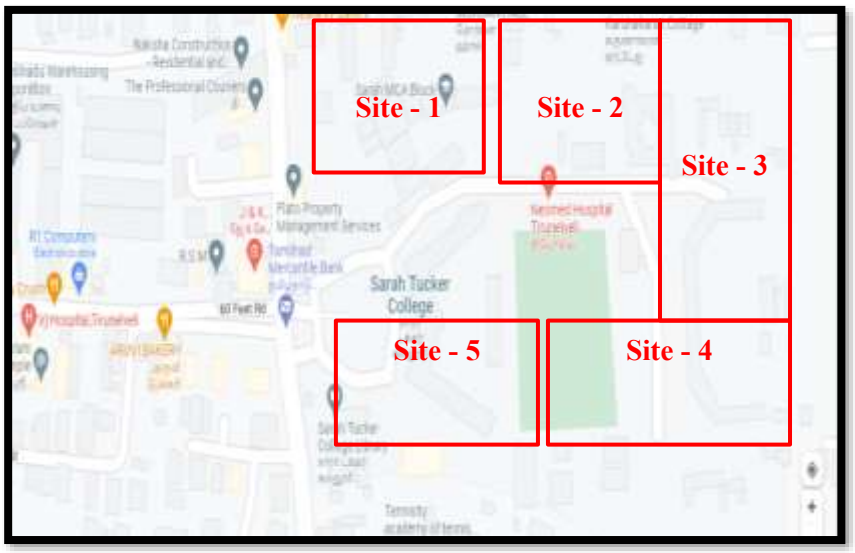

MATERIALS AND METHODS:
A survey on the avian fauna distribution was conducted for a period of about three months from August 2022 to October 2022. Random sampling of the area has been followed for the present study. The following details were recorded by the team with site division simultaneously. Extended watches were made by the team members in each quadrate for about one continuous hour in the morning and evening thrice in a week. Point count method was carried out to detect the birds by sight and sound, during 7.30 am to 09.00 am in the morning and from 3.30 pm to 05.00 pm in the evening.
The bird species sighted during the extended watches were photographed and identified with the help of the book of Indian birds by Salim Ali (2002), Birds of India, Pakistan, Nepal, Bangladesh, Sri Lanka and the Maldives by Grimmest et.al., (1998) and also from related websites (CABI, iNaturalist), free encyclopaedia & through internet.

FEEDING GUILD:
During species identification, each bird was assigned to a feeding guild based on preferred diet. Guilds are communities of species utilizing particular resources in a similar manner (Mac Nally, 1994). Analysis of guilds provides information on how other guild members are likely to respond to changes in a particular habitat. Seven major feeding guilds were distinguished: insectivorous (IN), frugivorous (FR), omnivorous (OM), piscivores (PI), granivorous (GR), combination of frugivores & insectivores (FI) and combination of frugivores, insectivores & granivores (FIG).

STATISTICAL ANALYSIS:
Statistical Analysis was calculated in order to know the species diversity in Sarah Tucker College campus.
1.Species Richness: It is the total number of the species recorded in a particular area.
2.Relative Abundance: It is the number of birds of particular species as a percentage of the total bird population of given area. It is given by: **Pi=Ni\Nx100**
3.Species Diversity: Species diversity was calculated by Shannon-Winner Index(H') as: **H'= ∑ piInpi**

RESULTS:
Lists of bird species with common name, scientific name, ICUN status and residential status of identified birds in the study area were given in Table 1. Total no of birds observed and their diversity in the study area are present in Figure - 1. The status of bird species available in each order are depicted in Figure – 2. Migratory status of the identified bird species was seen in Figure – 3. Feeding habits of identified avian fauna are depicted in Figure – 4. Shannon Weiner's Index of the Campus Avian Fauna were given in Table -2.

Table 1: List of birds identified in the study area with their status

S. No	Order	Family	Vernacular Name	Scientific Name	IUCN Status	Residential Status
1	Columbiformes	Columbidae	Mourning dove	Zenaida macroura	LC	M
2			Zebra dove	Geopelia striata	LC	R
3			Homing pigeon	Columbia livia	LC	M
4			Black Imperial pigeon	Ducula melanochora	LC	R
5			Spotted dove	Spilopelia chinensis	LC	R

6	Cuculiformes	Cuculidae	Greater coucal	Centropus sinensis	LC	R
7			Asian koel	Eudynamys scolopaceous	LC	R
8	Psittaciformes	Psittaculidae	Rose – ringed parakeet	Psittacula krameria	LC	R
9			Common parakeet	Melopsittacus undulates	LC	M
10	Passeriformes	Sturnidae	Common myna	Acridotheres tristis	LC	M
11			Brahminy starling	Sturnia pagodarum	LC	R
12		Leiothrichidae	Yellow billed babbler	Turdoides affinis	LC	R
13			Jungle babbler	Turdoides striata	LC	R
14		Pittidae	Indian pitta	Pitta brachyura	LC	R
15		Corvidae	Common crow	Corvus splendens	LC	R
16		Passeridae	House sparrow	Passer domesticus	LC	R
17		Estrildidae	Scaly breasted munia	Lonchura punctulata	LC	R
18		Turdidae	Common black bird	Turdus simillimus	LC	R
19		Mimidae	Blue mocking bird	Melanotis caerulescens	LC	R
20		Pycnotidae	Red vented bulbul	Pycnotus cafer	LC	R
21		Dicruridae	Black drongo	Dicrurus macrocerus	LC	M
22	Galliformes	Phasianidae	Peacock	Pavo cristatus	LC	R
23			Common quail	Coturnix coturnix	LC	M
24			Peahen	Pavo cristatus	LC	R
25	Pelecaniformes	Threskiornithidae	Black headed Ibis	Threskiornis melanocephalus	LC	R
26	Piciformes	Picidae	Pileated woodpecker	Dryocopus pileatus	LC	R
27	Stringiformes	Stringidae	Little owl	Athene noctua	LC	R

Abbreviations: R – Resident, M – Migrant, LC - Least Concern.

Figure 1: Total No. of identified birds in the study area.

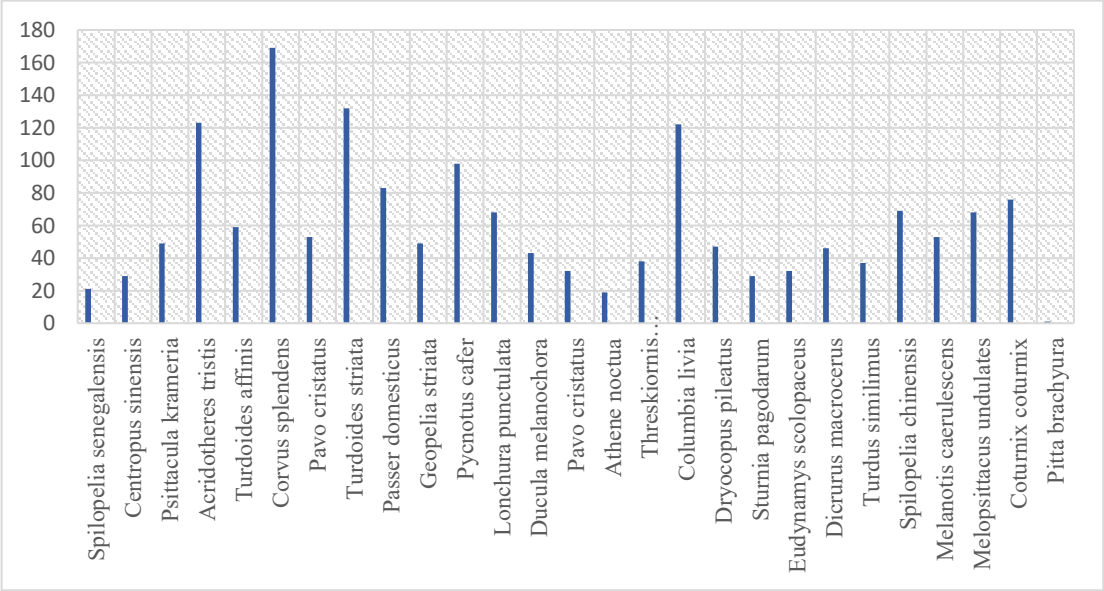

Figure 2: Status of Birds based on Orders in the study area

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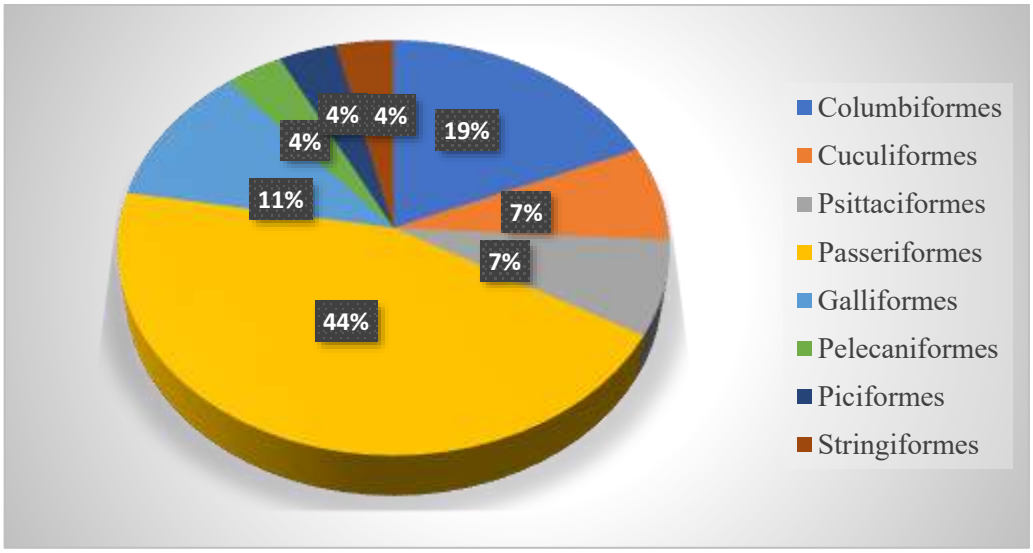

Figure 3: Migratory status of the identified bird species

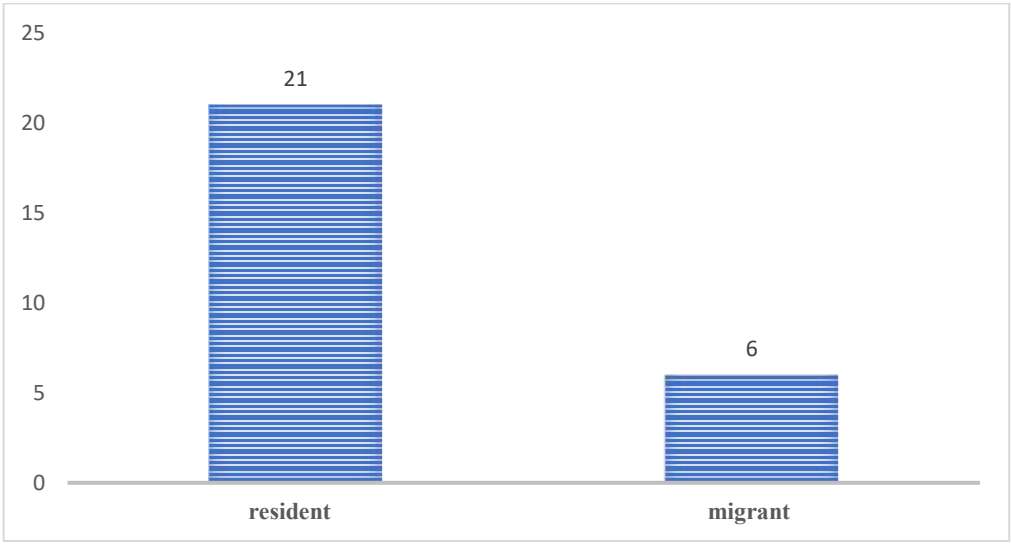

Figure 4: Feeding habits of identified avian fauna

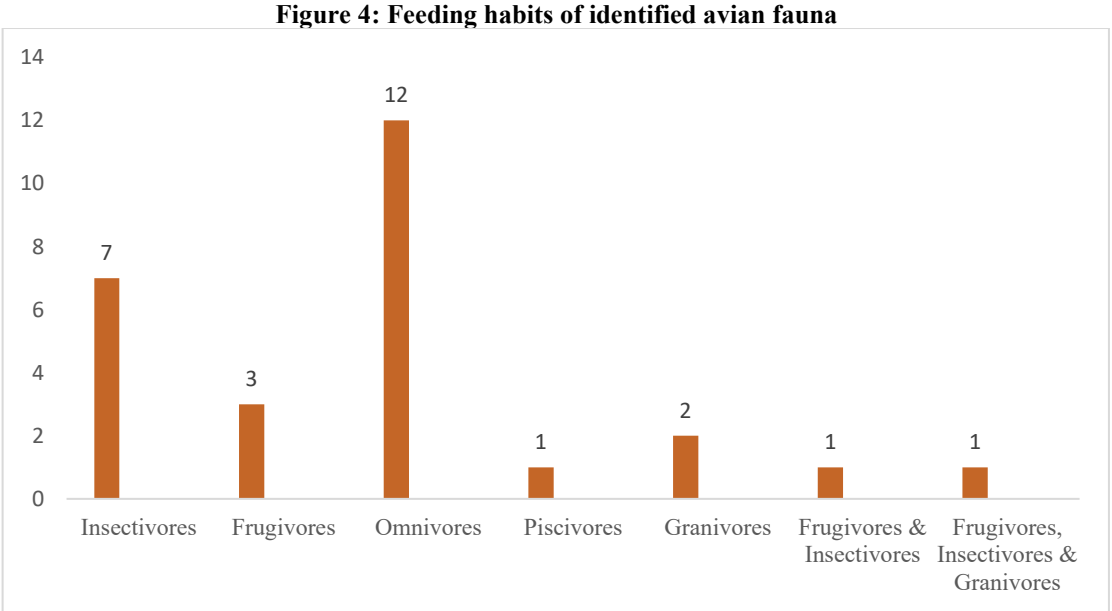

Table 2: Shannon Weiner's Index of the Campus Avian Fauna

S. NO	PLACE	SITE	RICHNESS	SHANNON WEINER INDEX	SIMPSONS DIVERSITY INDEX	EVENNESS
1	**College Campus**	**1**	**275**	**3.023**	**0.9429**	**0.7907**
2		**2**	**349**	**3**	**0.9411**	**0.8035**
3		**3**	**425**	**3.033**	**0.941**	**0.7988**
4		**4**	**364**	**3.02**	**0.9382**	**0.7881**
5		**5**	**272**	**2.986**	**0.9405**	**0.7921**

DISCUSSION:

Sarah Tucker College Campus attracts many avian diversities. During the study period, a total of 1659 birds, belonging to 27 species, 17 families and 8 orders were recorded. It was revealed that the order Passeriformes found to dominant by 44% followed by Columbiformes which contributed 19%, Galliformes contributed 11%, Cuculiformes and Psittaciformes which contributed 7% and other orders Pelecaniformes, Piciformes & Stringiformes contributed 4% each. All the 27 birds identified comes under the Least Concern (LC), IUCN category, of which 21 were resident and 6 were migrant. Migratory birds fly hundreds and thousands of kilometers to find the best ecological conditions and habitats for feeding, breeding and raising their young (Ali, S. and Ripley, D. 1983). Of all the 5 sites, Site 3 had the greatest number of birds (428) because there were so many trees there. The areas which are rich in trees provides habitat to birds for building their nests (Varadharajan Gokula & Lalitha Vijayan, 2000). Site 5 has the least amount of bird diversity (274), which can be attributed to human activity. The concept of "using birds as indicators for recognizing land ecosystems rich in biological diversity" has now gained a wide global acceptance (Connell et al., 2000). The feeding status was also analyzed; the highest number of omnivores 11, the lowest number of piscivores 1. This study indicates that our college campus is considered an ecosystem's enriched region.

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