

AVIAN DIVERSITY IN AGRICULTURAL WETLAND ECOSYSTEM: RECORDS FROM THAZHAKKARA PUNCHA, MAVELIKARA, KERALA



*Project Submitted to the University of Kerala in Partial Fulfillment of the
Requirements for the Degree of Bachelor of Science*

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CERTIFICATE



This is to certify that this project entitled "**Avian diversity in agricultural wetland ecosystem: Records from Thazhakkara Puncha, Mavelikara, Kerala**" is an authentic record of the work carried out byVISHNU . K . R..... B.Sc. Zoology (VI semester) student under my supervision and guidance and that no part of this report has been submitted earlier for any other degree or diploma.


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1. 
2. 

DECLARATION

I do hereby declare that this project entitled “**Avian Diversity in Agricultural Wetland Ecosystem: Records from Thazhakkara Puncha, Mavelikara, Kerala**” is the bonafide work carried out by me under the supervision and guidance of Ms. Somi Cherian, Assistant Professor, Department of Zoology, Bishop Moore College, Mavelikara for the partial fulfillment of the requirements for the degree of Bachelor of Science and that no part of this project work has been submitted earlier for award by any other degree, diploma or recognition of any university.

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INTRODUCTION

Wetlands are ecotones or transitional zones that occupy an intermediate position between dry land and open water. Wetland ecosystems are dominated by the influence of water, they possess characteristics of both terrestrial and aquatic ecosystems and properties that are uniquely of their own. The Ramsar Convention (1971) defines wetlands as: areas of marsh, fen, peat land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salty including areas of marine water, the depth of which at low tide does not exceed 6 meters. It may also incorporate riparian and coastal zones adjacent to the wetlands and islands or bodies of marine water deeper than 6 meters at low tide lying within the wetlands. The entire area of wetland in the world is estimated up to 7-10 million km² which is somewhat 5-8% of the total Earth's land surface.

Wetlands are among the most productive life support systems in the world and are of immense socio-economic and ecological importance to the mankind (Sabu & Ambat, 2009). The wetland systems directly and indirectly support lakhs of people, providing goods and services to them. Wetlands are valuable source of food, medicines and materials that support human populations and economies (Kler, 2002). Wetlands also provide opportunities for recreation, tourism, cultural practices and aesthetic appreciation. They help to check floods, prevent coastal erosion and mitigate the effects of natural disasters like cyclones and tidal waves. They store water for long periods. Their capacity during heavy rainfall to retain excess floodwater that would otherwise cause flooding results in maintaining a constant flow regime downstream, preserving water quality and increasing biological productivity for both aquatic life as well as human communities of the region. Inundated wetlands are very effective in storing rainwater and are the primary source for recharging ground water aquifers. They are frequently referred to as the "Kidneys of Earth" because they improve water quality by filtering out pollutants.

Wetlands are the major soul of ecosystem and biodiversity and often it is considered as a hotspot. They are the most productive and the most biologically diverse of all ecosystems, serving as home to a wide range of plants and animals (Zi-ling et al. 2021). There are a number of species which are endemic to wetlands and are hotspot of biodiversity. Wetlands provide home for a huge diversity of wildlife such as birds, mammals, fish, frogs, insects and plants (Buckton, 2007). Especially, wide varieties of migratory and domestic birds use wetland habitat either throughout their life or during certain part of their life (Weller, 1981). Freshwater wetlands hold more than 40% bird species of the entire world and 12% of all animal species

(Kirsten & Brander, 2004). Wetlands are important bird habitats and birds use them for feeding, roosting, nesting and rearing young (Weller, 1999 and Stewart, 2001). In a wetland ecosystem, the avifaunal biodiversity is affected by various factors including availability of food, size of the ecosystem, abiotic factors like rain etc. Most wetland contains different status of birds; they are resident species, migrants, local migrants, wetland birds, wetland associated terrestrial birds etc. The ecological balance of the wetland systems is greatly balanced by birds. Birds are well known bio-indicators and they have a significant role in ecosystem functioning and balancing. Thus, they are agents of nutrient cycles, pollination, seed dispersal, and controls population size of harmful insects, environmental sanitation through scavenging of carrion (Grimmett et al. 1999).

According to the National Wetland Inventory and Assessment compiled by the Indian space Research Organization, wetlands cover 152600 square kilometres which is 4.63% of the total geographic area of the country (National Wetland Atlas, SAC, 2011). The predominant wetland in India includes flood plains of major rivers, estuaries, saline expanses, freshwater lakes, backwaters, mangroves, tanks, marshes, swamps, paddy fields, and man-made water bodies like reservoirs. Kerala is one of the green states of India and is well known for its wetlands. The state consists of 160.6 thousand hectares (ha) of wetlands i.e, 4.13 per cent of the state. There are a total of 4,354 wetlands of which 2,592 are mainly wetlands with area less than 2.25 ha each. Rest of the 1762 wetlands is divided into two types- inland and coastal. Kerala has 169 natural coastal wetlands with a total area of 40.9 thousand ha. There are 1,593 inland wetlands with total area 117.1 thousand ha. The major wetland types are River/Stream (65162 ha), Lagoons (38442 ha), Reservoirs (26167 ha) and waterlogged (20305 ha). Compared to coastal land, the high land and middle land hold very few wetlands (EIACP PC Hub: Kerala State of Environment and Related Issues, 2022). Besides, Kerala contains a few wetlands of International/ National importance. These include Vembanad Kole wetland, Ashtamudi and Sasthamcotta lakes which are also designated as Ramsar sites of Kerala. The state has 14 districts. According to the National Wetland Atlas, four districts- Alappuzha, Ernakulam, Kollam and Thrissur can be called as wetland rich. Alappuzha has highest concentration with 26079 ha area under wetland and which means that 20.76% of the total geographic area of the Alappuzha district is wetland area. These wetland areas serve as important habitats and refuges for wide array of migratory and domestic bird species. The wetlands of Kuttanad, situated 2 to 4 feet below the sea level play a vital role in this district's demography and also provides habitats for various flora and fauna.

Wetlands are now considered sensitive habitats with diverse functions that are protected at federal, state and local levels. Human activities in wetlands may cause alterations of wetlands. The wetlands in Kerala also subjected to acute pressure owing to rapid developmental activities and indiscriminate utilization of land and water. Though there were no quantitative estimates on the rate of destruction of wetlands in Kerala, the qualitative degradation of the ecosystem is, more or less, well understood. Wetlands are mainly used for agriculture, aquaculture, reclamation for harbouring and industrial purposes, disposing the waste materials, discharging the industrial effluents and municipal waste water, wood seasoning, dumping dredged soil, coir retting and for fishing (Balachandran et al. 2002). Since the beginning of the 20th century a substantial area of wetlands has been lost due to engineering construction works, draining and conversion to arable land, exploitation of groundwater and dumping of refuse. Furthermore, many have been degraded through nutrient enrichment, the main sources being sewage effluents and agricultural fertilizer. These wetlands are under threat due to encroachment, silting, weed infestation, pollution, and indiscriminate development of aquaculture. The combined threat of these factors has given rise to problems such as decrease in biological diversity, deterioration of water quality, sedimentation and shrinkage in area. It has also led to decrease in migratory bird populations, fish and other faunal productivity and prolific growth of invasive aquatic weeds. Wetland degradation greatly influence the structure of bird community (Reginald et al. 2007). Of 1340 bird species found in India (Ali and Ripley, 1987; Manakandan & Pittie, 2001), 310 species are known to be dependent on wetlands (Kumar et al. 2005). Recently, water birds have become of interest as indicators of wetland quality and as parameters of restoration success and regional biodiversity. Having knowledge on diversity and composition of bird communities is also crucial to determine the health status the local ecosystem or regional landscapes (Jayson, 2018). Assessment of bird community is important tool in biodiversity conservation and identifications of conservation actions. (Joshi et al. 2022).

Assessment of the current status of wetlands and its biodiversity in our locality is crucial due to their ecological significance. It helps the public and authorities to develop appropriate management plans for the conservation. Thazhakara village is one of the 15 villages in Mavelikara Taluk. Around half portion of village is covered with paddy fields. Among them, famous and largest paddy field is “Thazhakara puncha”, which is located 500 meters away from the college campus and it supports rich avian fauna including migratory birds. There has been no effort to document the avifaunal diversity of the Thazhakkara Puncha. Thus the present study is an attempt to compile a document of avian diversity in Thazhakkara Puncha.

OBJECTIVES

1. To enlist the existing species of birds in Thazhakkara Puncha.
2. To describe and study the biology, ethology and ecological importance of identified birds.
3. To assess the status of avian fauna in the study area.
4. To identify the conservation problems faced by the wetland birds.

REVIEW OF LITERATURE

Kerala, located in the southwestern region of India, is known for its rich and diverse bird fauna, especially in its wetlands. Wetlands in Kerala are diverse and range from shallow freshwater marshes and swamps to mangrove forests and estuaries, providing a variety of habitats for birds. Several studies have been conducted on the wetland bird fauna of Kerala.

Arif and Prasanth (2009) reported 12 uncommon Species, Spotted Redshank, Northern Shoveller, Brown Skua and Pamarine Jaeger are new additions to the avifauna of Kadalundi. Wind-blown specimens of oceanic birds, during the south-west monsoon (June-August), are regular on the sea coast of Kerala. Another study by Praveen et al. (2011) documented the bird diversity and community structure in the mangrove forests of Kerala, identifying several key species such as the Indian Cormorant, Little Egret, and White-bellied Sea Eagle. The avifauna of Kuttanad was studied by Narayanan et.al. (2011). 225 taxa of birds belonging to 15 orders and 59 families were recorded. Among the birds recorded, 38% were migrants. Fifty-five species were found to breed in the area. Family Scolopaceidae showed maximum species diversity. European Roller *Coracias garrulus* recorded during this study is the first report of this species from Kerala. Ten globally threatened species were recorded. Kuttanad wetland shows greater species diversity, especially in the wetland birds, than the Kole wetlands of Kerala. Kumarakom heronry holds 8% of the biogeographical population of the Near Threatened Oriental Darter. Landscape alteration, hunting, felling of nesting trees and pesticides are the major detrimental factors for the survival of birds.

Ajithkumar and Prasad (2013) investigated the bird diversity and distribution in the Vembanad-Kol wetland system, which is the largest brackish water lake in India. The study reported a total of 105 bird species, including 34 migratory species and 71 resident species. The study also highlighted the importance of the wetland as a feeding and breeding ground for many bird species. Munderi Kadavu is rich in avifaunal diversity. Roshnath and Shruthi (2015) reported a total of 82 species of birds from 36 families belonging to 13 orders were recorded in the wetland including wetland dependent species.

In addition to documenting species diversity, several studies have also focused on the ecology and conservation of wetland birds in Kerala. George (2017) studied ornithofauna of pokkali fields of Ernakulam District, Kerala. A total of 119 species of birds belonging to 18 orders and 45 families were recorded during the study. Among these 84 species were residents, 35 species were migrants. Among the migrants 30 species were transcontinental migrants and five were

local migrants. Three near threatened species namely Spot billed Pelican, Darter and Oriental White were also recorded. Udayakumar et al. (2019) assessed the conservation status of the Oriental Darter, a threatened species in Kerala, and recommended habitat restoration and protection measures to conserve the species.

A survey on the avian diversity in the wetlands and suburbs of Kollam district was carried out during December 2015 to March 2017 by Jasin et al. (2019) and they reported a total of 53 species of birds belonging to 34 families from 13 orders were recorded. 34 Species of these were residents, 14 were migrants and 5 were local migrants. Among the birds spotted, the White necked Stork assumes 'Vulnerable' status and Oriental White Ibis is 'Near Threatened', whereas all other birds recorded are of 'Least Concern' according to the IUCN status.

George et al. (2021) assessed the diversity and distribution of waterbirds in the Ponnani-Kadalundi estuary, a major estuarine system in Kerala. The study documented the presence of 77 bird species, including 37 resident species and 40 migratory species. The study also reported the importance of the estuary as a feeding and roosting ground for many bird species.

Recently, Sreehari K et al. (2023) studied the avian diversity of Chemmattamvayal Wetlands and adjacent areas, in Kasaragod District, Kerala State reported a total of 145 bird species, belonging to 17 orders and 50 families were recorded during the study. Among them, 42 species were winter migrants and 97 were seen throughout the year.

Overall, these studies highlight the importance of Kerala's wetlands for bird conservation, and provide valuable information for the management and conservation of wetland bird populations in the state. However, more research is needed to fully understand the ecological requirements and threats to wetland birds in Kerala, and to develop effective conservation strategies for these important species.

MATERIALS AND METHODS

STUDY AREA

The Thazhakkara Puncha (Fig.1) is located in the Thazhakkara Panchayat of Alappuzha district, Kerala. It spreads across quadrants of the wards 3, 18, 20 and 21. The wetland lies at around (9.246109⁰N, 76.557226⁰E) 2Km from the Mavelikara city. The area boasts of approximately 800 ha of land majorly occupied with paddy field. The site was visited during the paddy growing season through the final stages nearing harvest. During the consecutive visits, the field's demography changed through months from January to March. The field is lined with lush Acacia trees at its southern most bank. Further to the North-eastern junction between the field and the bank lies the 'Manjaali Pond'. The sustaining of the wetland habitat within the paddy field is primarily owed to the harmonious coexistence of the pond and chaals, which facilitate the irrigation and drainage of the agricultural wetland ecosystem. The field also boasts of 'Makrimada Viewpoint' towards the terminal Eastern portions as well.

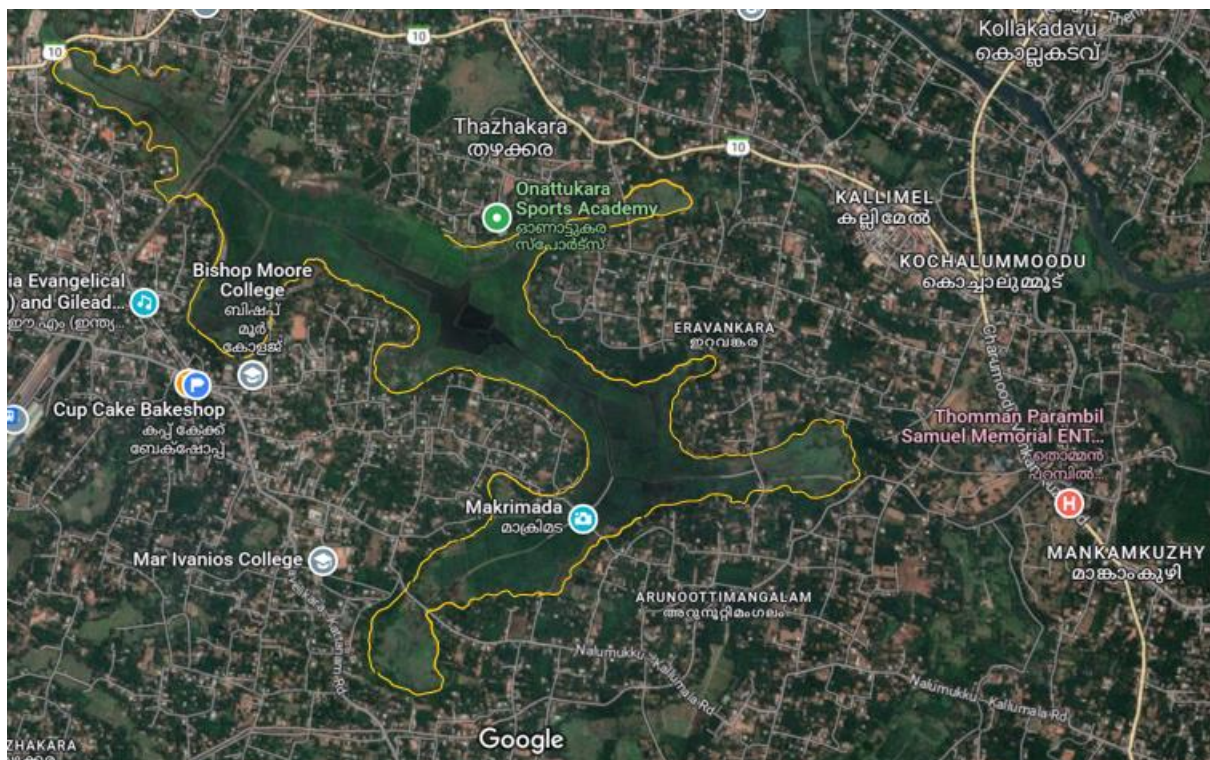


Fig 1. Satellite view of Thazhakkara Pancha



Image 1-4 Different regions of the Study Area

DATA COLLECTION

Direct visual observation method was conducted once a week and observation were made in the morning (7:00 am to 10:00 am). The study was conducted for a period of three months from January to March 2023. The whole data was collected by regular observation and bird watching through means of walking on fixed routes. The birds were observed by using binocular and photographs also taken. On the basis of observations and photographs, the birds were identified (Ali, 2002 & Praveen & Nameer, 2021) and their status were recorded. In few occasions, birds' calls were used for the identification and recorded for tabulation and analysis. Based on personal observations and information from suitable documents (Grimmett et al. 1998; Ali, 2002; Birdlife International 2014 [www. birdlife.org](http://www.birdlife.org)) the birds were classified under resident (R), local migratory (LM) and migratory (M) categories. The habitat and feeding guild status were recorded on the basis of direct observation and literature. The IUCN status of the birds was recorded from IUCN red list of species (2013 www.iucnredlist.org).

RESULT AND DISCUSSION

Wetlands support a wide variety of birds due to their ecological significance, high nutritional value, and productivity. Wetlands are crucial bird habitats that offer a variety of migratory birds and residential birds with ideal breeding, staging and nesting grounds. Present study analysed the diversity of avian fauna in Thazhakkara Puncta and the threats faced by the avian fauna.

Species Composition

A total of 56 bird species belonging to 27 families and 9 orders were identified and recorded from the study area (Table-1&3 and Fig.2). The order Ciconiformes had the highest number of families 10 and species 20 and the order Passeriformes had 8 families and 22 species. This was followed by Anseriformes and Coraciiformes with 2 families each. The Cuculiformes, Psittaciformes, Apodiformes, Columbiformes, Gruiformes had one family each. The family Corvidae had the highest number of species (8) of the total number of bird species observed in the study area. The Ardeidae family had species (7), Passeridae had species (4), Rallidae had species (3), Alcedinidae, Meropidae, Scolopacidae, Charadriidae, Phalacrocoridae, Cisticolidae, Pycnonotidae, Sturnidae, Muscicapidae, Cuculidae, Threskiornithidae had 2 individual species, the families Anatidae, Megalaimidae, Psittaculidae, Apodidae, Columbidae, Ciconidae, Laridae, Accipitridae, Ahingidae, Hirudinidae, Syluividae had one species each.

IUCN Status

According to the International union for conservation of Nature and Natural resources (IUCN) Red Data List, out of 56 species recorded from the study area 2 species are near threatened (Table-2 and Fig.3); they are Darter and Black-headed ibis. They may face extinction in the near future but does not currently qualify for threatened status. The IUCN emphasizes the importance of re-evaluating near-threatened taxa at regular intervals. And the remaining 54 species are least concerned. Although majority of the bird species recorded were under the Least Concern category of IUCN Red Data List, there is the need to ensure that the birds are conserved so that the local population will not decline.

Habitat Status

Out of 56 species, 29 birds depend on wetland as their habitat (Table-2 and Fig.4). They used wetland resources for variety of activities such as foraging, nesting, and loafing. Egrets, Herons, Darters, Ibis, Sandpipers, Cormorants, Kingfishers, and Ducks are the major wetland birds. The remaining 27 species were terrestrial. Field observations revealed that most of the

terrestrial birds also use wetlands as a source of drinking water, feeding, resting, shelter and social interactions.

Migratory Status

Wetlands of Kerala are on the Central Asian-Indian Flyway. Hence, the wetlands of Kerala are a major wintering site for a huge number of migratory birds. During the observation, it was noticed that out of 56 species, 10 species were migrants. 10 species were local migrant and the remaining 36 species were resident (Table-2 and Fig.5). Migrants includes blue-tailed bee-eater, wood sand piper, green sand piper, little grebe, black headed ibis, orange-headed thrush, barn swallow, and yellow wagtail. Local migrants include lesser whistling duck, chestnut-headed bee-eater, painted stork, darter, great cormorant, grey heron, cattle egret, little egret, glossy ibis, jungle myna. Resident birds were higher in number.

Feeding Guild Status

The foraging nature of the listed bird species mainly includes carnivorous (C), insectivorous (I), omnivorous (O), frugivorous (F) and mixed guild (MG) types. The majority of the bird species came under the category insectivore (20 sp.) followed by carnivore (14 sp.) species. 12 bird species are omnivores, 4 species are frugivores and 1 species is mixed guild (Table-2 and Fig.4). The presence of a higher number of insectivorous bird species is related to the abundance of insects associated with the wetland area. The presence of a higher number of carnivorous bird species is related to the abundance of fish. The birds that come under Phalacrocoracidae family mainly feed on fish.

Threats to Avifauna Observed at the Site

Following threats has been observed at Thazhakkara Puncta for the avifauna.

Habitat destruction: The harvesting and utilization of the natural resources by human beings, especially agricultural development and waste disposal are the leading causes of habitat destruction.

Fishing: Fishing practices by local community creates interruption in feeding and breeding of birds.

Grazing of livestock: Over grazing, results in flushing of nests by rain due to availability of less hay material for nesting birds. Unavailability of hay causes exposure which allows the

birds of prey to approach the eggs or chicks of breeding birds (Khan, 1992). Free roaming of livestock in the sanctuary area was a great threat for the survival of birds' species.

Application of pesticides and agro-chemical fertilizers: Pesticides and agro-chemical fertilizers have been playing a very pivotal role in the degradation of the land and the water bodies. It also indirectly affects the flora and fauna.

Table 1. Check list of birds recorded from Thazhakkara Puncha

Order	Family	Common Name	Scientific Name	Local Name
Anseriformes	Anatidae	Lesser Whistling Duck	<i>Dendrocygna javanica</i>	ചുളൻ എരണ്ട
	Megalaimidae	White-Cheeked Barbet	<i>Megalaima viridis</i>	ചിന്നകുട്ടുറുവൻ
Coraciiformes	Alcedinidae	Pied Kingfisher	<i>Ceryle rudis</i>	പുള്ളി മീൻകൊത്തി
		White-Breasted Kingfisher	<i>Halcyon smyrnensis</i>	മീൻകൊത്തി ചൂത്തൻ
	Meropidae	Blue-Tailed Bee-Eater	<i>Merops philippinus</i>	വലിയ വേലിത്തത്ത
		Chestnut-Headed Bee-Eater	<i>Merops leschenaulti</i>	ചെന്തലയൻ വേലിത്തത്ത
Cuculiformes	Cuculiade	Greater Coucal	<i>Centropus sinensis</i>	ഉപ്പൻ
		Asian Koel	<i>Eudynamys scolopaceus</i>	നാട്ടുകുയിൽ
Psittaciformes	Psittaculidae	Rose-Ringed Parakeet	<i>Psittacula krameri</i>	മോതിരത്തത്ത
Apodiformes	Apodidae	Asian Palm Swift	<i>Cypsiurus basasiensis</i>	പനങ്കുള്ളൻ
Columbiformes	Columbidae	Rock Pigeon	<i>Columba livia</i>	അമ്പലപ്രാവ്
Gruiformes	Rallidae	White-Breasted Waterhen	<i>Amaurornis phoenicurus</i>	കുളക്കൊഴി
		Purple Swamphen	<i>Porphyrio porphyrio</i>	നീലകോഴി
		Watercock	<i>Gallicrex cinerea</i>	തീരപ്പൊരികണ്ണൻ
Ciconiiformes	Ciconidae	Painted Stork	<i>Mycteria leucocephala</i>	വർണ്ണകൊക്ക്
	Scolopacidae	Wood Sand Piper	<i>Tringa glareola</i>	പുള്ളിക്കാട കൊക്ക്
		Green Sand Piper	<i>Tringa ochropus</i>	കരിമ്പൻ കാട കൊക്ക്
	Charadriidae	Little Ringed Plover	<i>Charadrius dubius</i>	ആറ്റുമണൽ കോഴി
		Red Wattled Lapwing	<i>Vanellus indicus</i>	ചെങ്കണ്ണി തിത്തിരി
	Laridae	Whiskered Tern	<i>Chlidonias hybrida</i>	കരി ആള
	Accipitridae	Brahminy Kite	<i>Haliastur indus</i>	കൃഷ്ണപ്പരുന്ത്

	Podicipedidae	Little Grebe	<i>Tachybaptus ruficollis</i>	മുങ്ങാങ്കോഴി
	Ahingidae	Darter	<i>Anhinga melanogaster</i>	ചേരങ്കോഴി
	Phalacrocoracidae	Great Cormorant	<i>Phalacrocorax carbo</i>	വലിയ നീർക്കാക്ക
		Little Cormorant	<i>Microcarbo niger</i>	ചെറിയ നീർക്കാക്ക
	Ardeidae	Indian Pond Heron	<i>Ardeola grayii</i>	കുളക്കൊക്ക്
		Purple Heron	<i>Ardea purpurea</i>	ചായമുണ്ടി
		Grey Heron	<i>Ardea cinerea</i>	ചാരമുണ്ടി
		Cattle Egret	<i>Bubulcus Ibis</i>	കാലിമുണ്ടി
		Intermediate Egret	<i>Ardea intermedia</i>	ചെറുമുണ്ടി
		Great Egret	<i>Ardea alba</i>	പെരുമുണ്ടി
		Little Egret	<i>Egretta garzetta</i>	ചിന്നമുണ്ടി
	Threskiornithidae	Black-Headed Ibis	<i>Threskiornis melanocephalus</i>	വെള്ള അരിവാൾക്കൊക്ക്
		Glossy Ibis	<i>Plegadis falcinellus</i>	ചെമ്പൻ അരിവാൾക്കൊക്ക്
Passeriformes	Corvidae	Large-Billed Crow	<i>Corvus macrorhynchos</i>	ബലിക്കാക്ക
		House Crow	<i>Corvus splendens</i>	കാവതിക്കാക്ക
		Ashy Wood Swallow	<i>Artamus fuscus</i>	ഇണകാത്തേവൻ
		Rufous Treepie	<i>Dendrocitta vagabunda</i>	ഓലേഞ്ഞാലി
		Black-Hooded Oriole	<i>Oriolus xanthornus</i>	മഞ്ഞക്കറുപ്പൻ
		Greater Racket-Tailed Drongo	<i>Dicrurus paradiseus</i>	കാട്ടുമുഴക്കി
		Ashy Drongo	<i>Dicrurus leucophaeus</i>	കാക്കത്തമ്പുരാൻ
		Black Drongo	<i>Dicrurus macrocercus</i>	ആനറാബി
	Muscicapidae	Orange-eaded Thrush	<i>Geokichla citrina</i>	കുറിക്കണ്ണൻ കാട്ടുപുള്ള
		Oriental Magpie-Robin	<i>Copsychus saularis</i>	മണ്ണാത്തിപ്പുള്ളി
	Sturnidae	Jungle Myna	<i>Acridotheres fuscus</i>	കിന്നരിമൈന
		Common Myna	<i>Acridotheres tristis</i>	നാട്ടുമൈന
	Hirundinidae	Barn Swallow	<i>Hirundo rustica</i>	വയൽകോതി ക്കരിക
	Pycnonotidae	Red-Vented Bulbul	<i>Pycnonotus cafer</i>	നാട്ടുമുൾമുൾ
		Red whiskered Bulbul	<i>Pycnonotus jocosus</i>	ഇരട്ടത്തലച്ചി മുൾമുൾ
	Cisticolidae	Zitting Cisticola	<i>Cisticola juncidis</i>	പോത്തപൊട്ടൻ
		Plain Prinia	<i>Prinia inornata</i>	വായക്കുരുവി
	Sylviidae	Common Babbler	<i>Turdoides caudata</i>	കരിയിലക്കിളി
	Passeridae	Yellow Wagtail	<i>Motacilla flava</i>	മഞ്ഞ വാലുകുലുക്കി
		Forest Wagtail	<i>Dendronanthus indicus</i>	കാട്ടു വാലുകുലുക്കി
		White-Rumped	<i>Lonchura striata</i>	ആറുക്കറുപ്പൻ

		Munia		
		Paddy Field Pipit	<i>Anthus rufulus</i>	വയൽവരമ്പൻ

Table 2. IUCN, Habitat, Migrant and Guild status of birds recorded from Thazhakkara Puncha

Common Name	IUCN Status	Habitat Status	Migrant Status	Feeding Guild
Lesser Whistling Duck	LC	W	LM	O
White-Cheeked Barbet	LC	T	R	F
Pied Kingfisher	LC	W	R	C
White-Breasted Kingfisher	LC	W	R	C
Blue-Tailed Bee-Eater	LC	W	M	I
Chestnut-Headed Bee-Eater	LC	T	LM	I
Greater Coucal	LC	T	R	I
Asian Koel	LC	T	R	O
Rose-Ringed Parakeet	LC	T	R	F
Asian Palm Swift	LC	T	R	I
Rock Pigeon	LC	T	R	O
White-Breasted Waterhen	LC	W	R	O
Purple Swamphen	LC	W	R	O
Watercock	LC	W	R	O
Painted Stork	LC	W	LM	C
Wood Sand Piper	LC	W	M	I
Green Sand Piper	LC	W	M	I
Little Ringed Plover	LC	W	M	I
Red Wattled Lapwing	LC	W	R	MG
Whiskered Tern	LC	W	M	C
Brahminy Kite	LC	W	R	C
Little Grebe	LC	W	M	C
Darter	NT	W	LM	C
Great Cormorant	LC	W	LM	C
Little Cormorant	LC	W	R	C
Indian Pond Heron	LC	W	R	C
Purple Heron	LC	W	R	C
Grey Heron	LC	W	LM	C
Cattle Egret	LC	W	LM	I
Intermediate Egret	LC	W	R	C
Great Egret	LC	W	R	C
Little Egret	LC	W	LM	C
Black-Headed Ibis	NT	W	M	C
Glossy Ibis	LC	W	LM	O
Large-Billed Crow	LC	T	R	O
House Crow	LC	T	R	O
Ashy Wood Swallow	LC	T	R	I

Rufous Treepie	LC	T	R	O
Black-Hooded Oriole	LC	T	R	F
Greater Racket-Tailed Drongo	LC	T	R	I
Ashy Drongo	LC	T	R	I
Black Drongo	LC	T	R	I
Orange-headed Thrush	LC	T	M	O
Oriental Magpie-Robin	LC	T	R	I
Jungle Myna	LC	T	LM	O
Common Myna	LC	T	R	O
Barn Swallow	LC	T	M	I
Red-Vented Bulbul	LC	T	R	O
Red Whiskered Bulbul	LC	T	R	O
Zitting Cisticola	LC	T	R	I
Plain Prinia	LC	T	R	I
Common Babbler	LC	T	R	I
Yellow Wagtail	LC	W	M	I
Forest Wagtail	LC	T	R	I
White-Rumped Munia	LC	T	R	F
Paddy Field Pipit	LC	W	R	I

Table 3. Bird order and family relative abundance at the Thazhakkara Puncha

Order	No. of Family	%	No. of Species	%
Anseriformes	2	7.4	2	3.57
Coraciiformes	2	7.4	4	7.14
Cuculiformes	1	3.7	2	3.57
Psittaciformes	1	3.7	1	1.78
Apodiformes	1	3.7	1	1.78
Columbiformes	1	3.7	1	1.78
Gruiformes	1	3.7	3	5.35
Ciconiiformes	10	37.03	20	35.71
Passeriformes	8	29.62	22	39.28
Total	26	100	56	100

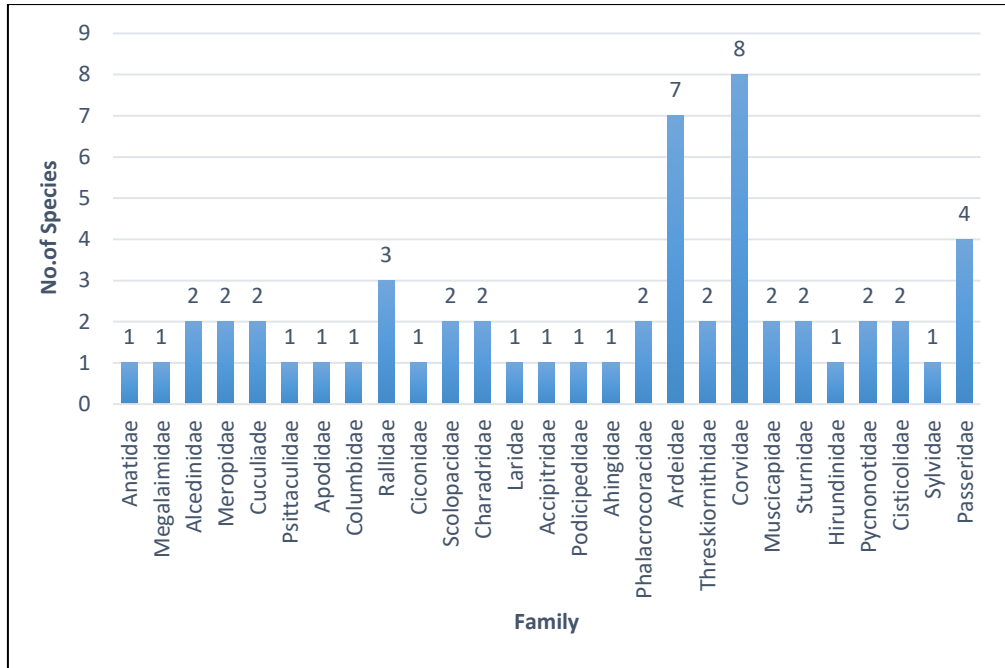


Fig 2. Avian Species Composition based on Family

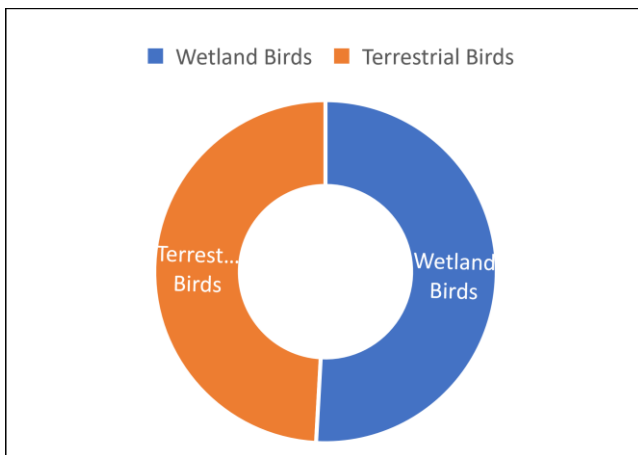


Fig 3. IUCN Status of avian fauna in Thazhakkara Puncha

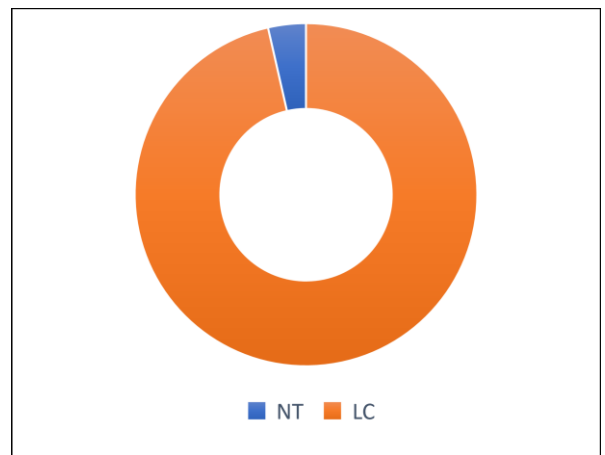


Fig 4. Habitat Status of avian fauna in Thazhakkara Puncha

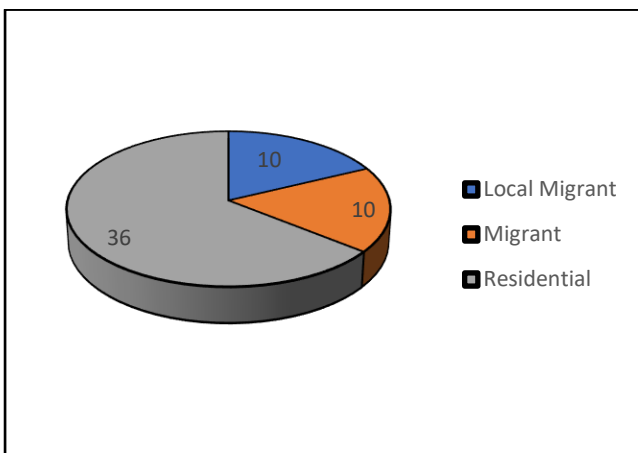


Fig 5. Migrant Status of avian fauna in Thazhakkara Puncha

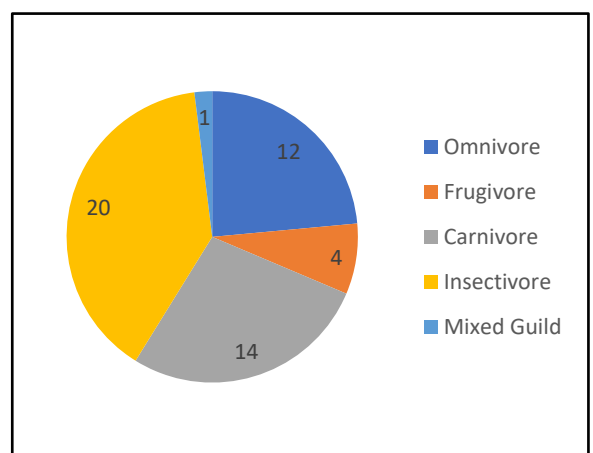


Fig 6. Feeding Guild Status of avian fauna in Thazhakkara Puncha

DESCRIPTION OF BIRDS OBSERVED

1. Lesser whistling duck *Dendrocygna javanica* (Horsefield)

Order: Anseriformes Family: Anatidae

Habitat: nocturnal feeders that are often found in wet paddy fields and wetlands. **Morphology:** The crown is darker in color and the primary feathers consist of vanes forming an extension of hairs producing whistling sound during flight. Sexual dimorphism is absent. **Food and nutrition:** They feed on plants from the aquatic vegetation around and grains too. They have been recorded to feed on insects and molluscs and other small invertebrates as well. **Behavior:** Nesting sites are usually tree holes lined with grass.

2. White-Cheeked Barbet *Megalaima viridis* (Boddaert)

Order: Anseriformes Family: Megalaimidae

Habitat: Often seen in ghats and forested areas. **Morphology:** They are greenish in color and have heads that are brownish and streaked with white color. The white streak gives it a capped appearance. The bill is pale pinkish in shade. **Food and nutrition:** Mainly being frugivore they often feed on raw fruits and are also known to feed on insects and small worms. **Behavior:** Often are aggressive towards smaller barbets that make nests in small holes.

3. Pied Kingfisher *Ceryle rudis* (Linnaeus)

Order: Coraciiformes Family: Alcedinidae

Habitat: A bird with a cosmopolitan distribution found mainly in wetlands, valleys and paddy fields. **Morphology:** they consist of a black and white mask with a supercilium over their heads. Underparts are barred in black. **Food and nutrition:** They feed mainly on fish they catch by diving into the waterbodies. Crustaceans and large aquatic insects are also fed on. **Behavior:** Breeding is from February to April. Nests are hole excavated in trees.

4. White-breasted Kingfisher *Halcyon smyrnensis* (Linnaeus)

Order: Coraciiformes Family: Alcedinidae

Habitat: It is often found on riverbanks, wetlands, paddy fields, grooves, open jungles, lakes and clearings.

Morphology: The adult has a bright blue-black wings and tail. Its head, shoulders, flanks and lower belly are chestnut. It has an orange bill and a white patch from the throat through the breast. In flight, large white patches are visible on the blue and black wings. **Food and nutrition:** Food includes large

crustaceans, fishes, insects, lizards, centipedes and even small birds and snakes. **Behavior:** The breeding season lasts from March to July, eggs laid in small tunnels, mud banks of rivers and sometimes in decaying trees. Males and females show parental care.

5. Blue-tailed Bee-eater *Merops philippinus* (Linnaeus)

Order: Coraciiformes Family: Meropidae

Habitat: Many populations are seen seasonally in many parts but breeding colonially in small areas across their range, mostly in river valleys. **Morphology:** Bee eaters are richly colored slender birds. It is predominantly green; its face has a narrow blue patch with a black eye stripe and a yellow and brown throat. The tail is blue in color. **Food and nutrition:** They are omnivorous and feed on frogs, worms, snails, tadpoles, larval insects, crustaceans, adult insects and birds. **Behavior:** They are migratory birds and nest usually heronry colonies in paddy fields and other wetlands.

6. Chestnut-headed Bee-eater *Merops leschenaulti* (Vieillot)

Order: Coraciiformes Family: Meropidae

Habitat: Found mostly near tropical woodlands and waterbodies. **Morphology:** The head crest and lower face are bright chestnut in color. The wing coverts are met with a continued lore. Underparts are lighter and beak long and pointy. Wings and tail ends are darker showing a gradient. **Food and nutrition:** They feed on plants from the aquatic vegetation around and grains too. They have been recorded to feed on insects and mollusks and other small invertebrates as well. **Behavior:** They nest colonially and make a long tunnel.

7. Greater Coucal *Centropus sinensis* (Stephens)

Order: Cuculiformes Family: Cuculidae

Habitat: It usually found in mangroves, shrublands, grasslands near rivers, marshes or creeks. **Morphology:** They are very large crow like with a long tail and coppery brown wings and found in a wide range of habitats. They have a familiar deep resonant call. **Food and nutrition:** They are carnivorous. **Behavior:** They are most active in the warm hours of the morning and in the late afternoon. An attractive feature of coucal is they communicate with each other using various calls.

8. Asian Koel *Eudynamys scolopaceus* (Linnaeus)

Order: Cuculiformes Family: Cuculidae

Habitat : The Asian koel is a bird of light woodland and cultivation, shrubby areas with scattered trees, gardens, plantations, and urban areas.. **Morphology:** The Asian koel is a large, long-tailed,

cuckoo. Adult males glossy black with dull lime-green bill; females and immatures blackish brown with white dots on the wings and strong streaking on head and throat. Adults have ruby-red eyes.

Food and nutrition: The Asian koel is omnivorous, consuming a variety of insects, caterpillars, eggs and small vertebrates. Adults feed mainly on fruit. **Behaviour:** The Asian koel is a brood parasite, and lays its single egg in the nests of a variety of birds, including the jungle crow, and house crow.

9. Rose-ringed Parakeet *Psittacula krameri* (Scapoli)

Order: Psittaciformes Family: Psittaculidae

Habitat: It inhabits areas nearer to human inhabitations. **Morphology:** Being sexually dimorphic, the males have a red-black ring while females and the juvenile show no neck rings. **Food and nutrition:** They are herbivores existing on berries and pea wherever they are available. **Behavior:** wild species have a call that is loud. They are non-migratory in nature. They are non-monogamous and show no life-long mating.

10. Asian palm swift *Cypsiurus basasiensis* (J. E. Gray)

Order: Apodiformes Family: Apodidae

Habitat: This bird is of open country and is often associated with oil palms. **Morphology:** Body is pale brown. The wings during flight resemble a boomerang. Underside is lighter than the wings. With a slender body, tail is forked. **Food and nutrition:** Majorly live on insects most of that they catch while in flight. Seeds are also fed on sometimes. **Behavior:** most of their life is spent in the air, with the minimal amount of insects they catch and eat.

11. Rock Pigeon *Columba livia* (Gmelin)

Order: Columbiformes Family: Columbidae

Habitat: They inhabit in urban areas, farmland, and rocky Cliffs. **Morphology:** The rock pigeon is 11-13 inches in length with a wingspan of 20-26 inches. It is a plump bird with a rounded tail, pointed wings, and small red to pink to greyish-black legs and feet. It has round eyes surrounded by a ring of skin and a small bill with a cere or fleshy covering on the upper part of its bill. **Food and nutrition:** They are mainly granivorous in feeding habits. **Behaviour:** A male pigeon courts his mate by bowing, cooing, inflating his throat, and strutting in a circle around the female.

12. White-breasted Waterhen *Amaurornis phoenicurus* (Pennant)

Order: Gruiformes Family: Rallidae

Habitat: they are most seen in marshes and paddy fields. They also inhabit brackish waters and also sea shores. **Morphology:** they sport dark-grey upperparts and white head neck and breast. The lower belly and tail region are brownish red. The toes are long and yellow. The beak is yellow. **Food and**

nutrition: They forage along the waterbodies for insects such as beetles, fishes and aquatic invertebrates are also recorded. They also eat grains and seeds. **Behavior:** Nesting is usually after monsoon has started in June. They are secretive but mostly seen at dawn.

13.Purple Swamphen *Porphyrio porphyrio* (Horsefield)

Order: Gruiformes Family: Rallidae

Habitat: They usually found around freshwater swamps, streams and marshes. **Morphology:** The Purple Swamphen is a large rail. It is mainly dusky black above, with a broad dark blue collar, and dark blue to purple below. The bill is red and robust, and the legs and feet orange-red. **Food and nutrition:** They are usually seen feeding on soft shoots and also small animals such as frogs and snails. **Behavior:** Swamphens are proficient swimmers, but prefer to wander on the edges of the water, among reeds and on floating vegetation.

14.Watercock *Gallicrex cinerea* (Horsefield)

Order: Gruiformes Family: Rallidae

Habitat: The watercock species inhabit reedbeds, wetlands, marshes, swamps, flooded pasture, flooded meadows, irrigated lands and flooded agricultural fields. **Morphology:** The watercock is medium sized bird with marked sexual dimorphism. The watercock males have black-gray plumage and extended red frontal shield and red horn. **Food and nutrition:** The watercock species feed on small fish, invertebrates, aquatic insects, terrestrial insects, worms and mollusks. **Behavior:** The nest is built on the ground as a raised platform of plant material, hidden among reeds or long-grass.

15.Painted Stork *Mycteria leucocephala* (Pennant)

Order: Ciconiiformes Family: Ciconidae

Habitat: Prefer wetlands and freshwater areas. **Morphology:** The bill is a heavy one with a downward curve. The head is bare and orange/reddish in color. Tertials are long and tipped in pink and they extend to the back. The rest of the body is white. **Food and nutrition:** They feed on plants from the aquatic vegetation around and grains too. They have been recorded to feed on insects and molluscs and other small invertebrates as well. **Behavior:** Nesting sites are usually trees.

16.Wood Sandpiper *Tringa glareola* (Linnaeus)

Order: Ciconiiformes Family: Scolopacidae

Habitat: found greatly in tundra and upland habitats. They are migratory in nature and fly to warmer southern areas including the South-Asian countries. Estuaries are a major habitat where are found in

flocks. **Morphology:** A slender bird with large bill with longer legs. **Food and nutrition:** Being omnivorous and opportunistic, they predate on both vertebrates and invertebrates, fruits and crops. A major food behavior shown is being scavengers i.e., they feed on leftovers and already dead organisms. **Behavior:** They are migratory birds.

17.Green Sandpiper *Tringa ochropus* (Horsefield)

Order: Ciconiiformes Family: Scolopacidae

Habitat: A migratory bird, it is distributed across Europe and Southeast Asia and India. Mostly inhabit the shorelines of wetlands and paddy field cultivations. **Morphology:** dark green-brownish back with a white breast. The underside is white and beaks are pointy. Head is small with eyes encircling a lighter brown ridge. Small lighter spots can be easily seen which form the basis for identification. **Food and nutrition:** feeding routine includes invertebrates that are dug from the mud and eaten. **Behavior:** Being migratory, they often lay 2-4 eggs in nests of other birds and it takes about three weeks for the eggs to hatch out.

18.Little ringed Plover *Charadrius dubius* (Scopoli)

Order: Ciconiiformes Family: Charadriidae

Habitat: Rivers and tanks. They are also found in wetlands at the banks. **Morphology:** A quail that has a pigeon like bill. The upper part is brown and underparts are white. The forehead is white and the forecrown is black. **Food and nutrition:** Feed on insects and their larvae. They graze near wetlands due to the abundance of such animals there. **Behavior:** Clutch is two to three eggs. They are migratory and the juvenile can swim.

19.Red-wattled Lapwing *Vanellus indicus* (Boddaert)

Order: Ciconiiformes Family: Charadriidae

Habitat: They are usually found in well-watered open country, ploughed fields, grazing land, and margins and dry beds of tanks and puddles. It is also found in forest clearings around rain-filled depressions. **Morphology:** The wings and back are light brown with a purple to green sheen, on the head a bib exists that runs to the back. A prominent white patch alternated between the base plumage. **Food and nutrition:** they eat earthworms and insects and their larvae. They graze near wetlands due to the abundance of such animals there. **Behavior:** They show winter migration where they move to lower plains. Some fly southwards during winters from south-Asian countries. Nests are made up of pebbles surrounding a depression in the ground.

20. Whiskered Tern *Chlidonias hybrida* (Pallas)

Order: Ciconiiformes Family: Laridae

Habitat: Habitats are usually wetlands and areas partially submerged in water with small masses of lands in between. **Morphology:** A dark smoky-grey body and white cheeks sporting a pink-reddish pointed beak and a black head. The underparts of the bird are ashy and darker than the wings. Overall tapered sideways and has active soaring wings with white and grey hues. Tail is square. Juvenile birds have a checkered back. **Food and nutrition:** Often feed on small fishes, amphibians, insects and crustaceans found in the area it inhabits. **Behavior:** Nesting is floating type. The eggs are protected aggressively after laying. Intruders are met with attack composed of calling other individuals to help in chasing off the intruders showing altruism between them.

21. Brahminy Kite *Haliastur indus* (Boddaert)

Order: Ciconiiformes Family: Accipitridae

Habitat: They are found mainly on the coast and in inland wetlands, where they feed on dead fish and other prey. **Morphology:** have a reddish-brown body plumage contrasting with their white head and breast which make them easy to distinguish from other birds of prey. **Food and nutrition:** Brahminy kites are carnivores and scavengers. They are primarily scavengers and feed mainly on dead fish and crabs, especially in wetlands and marshland, but occasionally hunt live prey such as hares, bats, and flying insects. **Behavior:** The breeding season in South Asia is from December to April. Young birds may indulge in play behavior.

22. Little Grebe *Tachybaptus ruficollis* (Pallas)

Order: Ciconiiformes Family: Podicipedidae

Habitat: They are abundant in heavily vegetated areas of freshwater lakes. **Morphology:** They are small water birds that sport a pointed beak. The adults are darker in color with a rufous neck and a bright yellow gape. Winter plumages are darker and the rear looks like a powder puff. **Food and nutrition:** They prey on aquatic invertebrates underwater. **Behavior:** They form nests at the edge of ponds and lakes. The eggs are covered by vegetation when the adults go to forage for food. The species usually breed during rainy season.

23. Darter *Anhinga melanogaster* (Pennant)

Order: Ciconiiformes Family: Anhingidae

Habitat: The oriental darter is mainly found in freshwater lakes, swamps, reservoirs and slow-moving streams. **Morphology:** Large bird with long slender neck. The crown and neck are brown and there is a dark line over the eye and throat and a line runs along the sides of the neck. The tail is

long and made up of stiff feathers. **Food and nutrition:** Mainly feed on medium sized fishes, aquatic vertebrates and large invertebrates of comparable size. **Behavior:** The breeding season is dependent on region and weather. These birds are not a migrant. Usually a solitary bird, forming pairs only while breeding. The main feature is the long darting neck that it used to snap at fish.

24.Great Cormorant *Phalacrocorax carbo* (Linnaeus)

Order: Ciconiiformes Family: Phalacrocoracidae

Habitat: The great cormorant birds are seen in both inland and coastal water bodies. They are found in estuaries, lagoons, creeks, tidal flats, marshes, swamps, fish ponds, lakes and streams.

Morphology: The great cormorant is a large bird. These cormorant birds are black with a longish tail. Adults have white patches on the thighs and on the throat in the breeding season. They may have a yellow throat-patch. It has a large and angular head. A large and thick beak and thick neck.

Food and nutrition: Being carnivores, they mainly eat numerous kinds of fish, and when fishing in freshwater, will also eat crustaceans, amphibians, and insects. **Behavior:** Great Cormorants form flocks year-round, even in nesting areas, but they seldom gather in large flocks like Double-crested. They spend most of the day quietly perched out of the water, preening, stretching, and resting.

25.Little cormorant *Microcarbo niger* (Vieillot)

Order: Ciconiiformes Family: Phalacrocoracidae

Habitat: They inhabit wetlands like small ponds, lakes and some tidal estuaries. **Morphology:** They have a narrower and longer bill than the greater cormorant. The breeding adult boasts a glistening blue plumage. White spots also are visible on the body. The eyes and the face are dark so is the gular skin. **Food and nutrition:** They mainly rely on fish as food. **Behavior:** They have low pitched calls near their nest made while roosting.

26.Indian pond Heron *Ardeola grayii* (Sykes)

Order: Ciconiiformes Family: Ardeidae

Habitat: Also called the paddy bird, they can be found near small water bodies like ponds and puddles after rainy seasons. The wetlands are also a major site of their sight. **Morphology:** stocky in nature, they have short beaks. The flight may lead to misidentification due to the transformation to dull colors. The backs are dark and breeding plumage is different from the non-breeding birds. **Food and nutrition:** Fishes are caught either using vegetation as islands or dive deep. Frogs and other fishes are also part of the feeding. **Behavior:** Breeding starts at the onset of monsoons.

27. Purple Heron *Ardea purpurea* (Linnaeus)

Order: Ciconiiformes Family: Ardeidae

Habitat: Habitat include marshes and lakes with extensive Reed beds. They are shown to mostly prefer more open wetlands. **Morphology:** It is a slender necked, lanky bird with purple upper parts, black crown with long drooping black crest. Pale yellow eyes, orange -yellow legs and feet are the identification marks of a Purple Heron. **Food and nutrition:** They hunt for prey including fishes, rodents, frogs, and insects they catch the prey either by stalking them or standing waiting in ambush. **Behavior:** They are colonial breeders and build a bulky nest out of dead reeds or in dense vegetation.

28. Grey Heron *Ardea cinerea* (Linnaeus)

Order: Ciconiiformes Family: Ardeidae

Habitat: They are mostly found in wetland areas and. Seen around lakes, rivers, ponds, marches and sea coasts also. **Morphology:** Standing at 100 cm tall, they are large birds with grey ashy plumage. A black supercilium stretches over the head and terminates in the crest. In front of the neck, lie bluish-black streaks. Beak is pinkish yellow and straight which changes color during breeding season. **Food and nutrition:** They often feed on small mammals such as rodents and water voles and rabbits are occasionally fed on. Fish, amphibians and crustaceans are also eaten. **Behavior:** They live in colonies and nest high on trees or wetlands.

29. Cattle Egret *Bubulcus Ibis* (Linnaeus)

Order: Ciconiiformes Family: Ardeidae

Habitat: It inhabits on grasslands, meadows, dry agricultural fields. Flood plains, swamps, marshes etc. **Morphology:** I It is a white bird with buff plumes in breeding season. In breeding plumage they have golden plumes on their head, chest and back. **Food and nutrition:** They are insectivores feeding. They feeds locust , grasshoppers and mammals like rodents, frogs, fish as well as small species of birds. **Behavior:** They are diurnal feeders, feeding day by day and sleeping at night. They are highly sociable animals. Cattle egrets are migratory birds. They wander extensively so it is difficult to find where they migrated. They are solitary birds.

30. Intermediate Egret *Ardea intermedia* (Horsefield)

Order: Ciconiiformes Family: Ardeidae

Habitat: They usually inhabit shallow coastal or fresh water, including flooded fields. **Morphology:** It is about 90 cm tall with all white plumage, generally dark legs and a thickish yellow

bill. Breeding birds may have a reddish or black bill, greenish yellow gape skin, more loose filamentous plumes on their breast. Yellow or pink on their upper legs. **Food and nutrition:** Intermediate egret species feed on small fish, frogs, crustaceans, aquatic insects, terrestrial insects, small reptiles and small birds and mammals. **Behavior:** It often nests in colonies with other herons, usually on platforms of sticks in trees or shrubs.

31.Great Egret *Ardea alba* (Horsefield)

Order: Ciconiiformes Family: Ardeidae

Habitat: Mostly inhabit in marshes, rivers, and tidal estuaries, swamps, agriculture lands, flooded grasslands. **Morphology:** Large almost entirely white heron with contrasting black feet and long black legs. They are the largest of the egrets. **Food and nutrition:** Mostly feed fishes, crustaceans, frogs, salamander. In open fields may catch grasshoppers, rodents. **Behavior:** They usually nest in colonies with other heron species in a wooded swamps and wetlands. Feeds activity at dawn and dusk waiting motionlessly to catch prey.

32.Little Egret *Egretta garzetta* (Linnaeus)

Order: Ciconiiformes Family: Ardeidae

Habitat: They usually inhabit shallow, fresh water, brackish and saline water bodies. **Morphology:** It is small white heron with attractive white plumes on crest, back and chest. The legs are black and the beak too. **Food and nutrition:** These species feed on fish, frog, mollusks, crustaceans, aquatic insects, terrestrial insects, small reptiles and small birds. **Behavior:** Little egret breeds in colonies with other herons. Nest is placed on the ground or in reedbeds, in up to 20m above the ground or in bushes, always near water or on it.

33.Black-headed Ibis *Threskiornis melanocephalus* (Horsefield)

Order: Ciconiiformes Family: Threskiornithidae

Habitat: found in natural and manmade habitats such as freshwater and saltwater marshes. They can also be sighted at lakes, ponds and wetlands such as paddy fields. **Morphology:** the white plumage of the body is decorated with a naked black neck and head. Beak is black and downward curved. The tail feathers that turn greyish during breeding season. Sexes are identical but the juveniles are distinct from the adults. **Food and nutrition:** They feed on flying insects especially bees, wasps and hornets, butterflies, dragonflies and beetles. They are omnivorous. **Behavior:** They are terrestrial and migratory birds. Their nesting is in burrows into soil or sand.

34. Glossy ibis *Plegadis falcinellus* (Linnaeus)

Order: Ciconiiformes Family: Threskionithidae

Habitat: They are mostly found in brackish waters and saltwater lakes, marshes, pond edges, sewages and shallow rivers also. **Morphology:** The body is mid-sized. Adults and juveniles are different. The non breeders are dull colored and the adults have brownish bill, dark facial skin. The feathers are shiny ergo the name glossy. **Food and nutrition:** Diet comprises majorly insects and some annelids such as leeches. Mollusks are also occasionally eaten with fishes. **Behavior:** Being nomadic, they undertake flights back and forth between breeding and non-breeding seasons.

35. Large-billed Crow *Corvus macrorhynchos* (Wagler)

Order: Passeriformes Family: Corvidae

Habitat: widespread in the Asian continent, it is cosmopolitan and can be extensively found in woodlands, gardens and areas with least trees. **Morphology:** Dark greyish plumage and raven like appearance makes it look stocky. Long bill and upper beak is arched. Tails, neck head are glossy black. Overall size ranges between 46-59cm. **Food and nutrition:** Being opportunistic and pretty adjustable as to eat whatever is available and edible. They feed on anything that they find edible and can be quite complete in nature as well. **Behavior:** Usually seen singly or in pairs, the range of vocalizations are many that can help them communicate better. Nesting is usually a platform of twigs or sticks.

36. House Crow *Corvus splendens* (Vieillot)

Order: Passeriformes Family: Corvidae

Habitat: The habitat is associated with human settlement. **Morphology:** a slender bird with a length of about 40 cm. black-brown eyes and black head with grey neck or collars. Relatively large bill with longer legs and, they weigh about 245 to 371g. They form nests with sticks telephone lines and tv antennae. **Food and nutrition:** Being omnivorous and opportunistic, they predate on both vertebrates and invertebrates, fruits and crops. **Behavior:** house crow distribution is cosmopolitical and they are found to show parental care. Female crows incubate eggs at night and male crows fetch food for the mother and the chicks thereafter

37. Ashy Woodswallow *Artamus fuscus* (Vieillot)

Order: Passeriformes Family: Corvidae

Habitat : Wood swallows are found in cultivated areas, in forest clearings and often in areas with tall palm trees. **Morphology:** The ashy wood swallow is a medium-sized wood swallow with dark

slaty gray head with dark mask. The upperparts are ashy gray. The mantle has a maroon tinge. There is a narrow pale band on the rump. The underparts are pale pinkish gray. The wings of the wood swallow are long and in flight appear very broad at the base. **Food and nutrition:** The diet of the ashy wood swallow consists mainly of insects. **Behavior:** It may sit huddled side-by-side in groups on high vantage points and hawk flying insects in the air.

38.Rufous Treepie *Dendrocitta vagabunda* (Latham)

Order: Passeriformes Family: Corvidae

Habitat: These are mostly found in areas where the shrubs form an open platform, agricultural areas and forests and gardens as well. **Morphology:** both sexes are alike. Neck and head are black while the remainder of the body is cinnamon in color. The tails are long and have an alternating white and dark band pattern. With stout bill and black legs, they have a bright rufous mantle. **Food and nutrition:** They are omnivores. **Behavior:** Known for their calls that are often a major identification criterion. Bob-o-link and ko-tree calls are most frequent.

39.Black-headed oriole *Oriolus xanthornus* (Linnaeus)

Order: Passeriformes Family: Corvidae

Habitat: Yellow wagtail likes damp marshes, meadows and farmland. **Morphology:** Yellow wagtail is a slender, long tailed, long-legged bird. The bird is of yellow and green color. During breeding season, the male has yellow colored under parts and a green back. **Food and nutrition:** They are insectivorous, they eat insects. **Behavior:** Yellow wagtail nest on the ground either in feather and grass lined scrapes or on grass.

40.Greater racket-tailed Drongo *Dicrurus paradiseus* (Linnaeus)

Order: Passeriformes Family: Corvidae

Habitat: They are widespread species found in great number in hilly areas. They have a general distribution across all places. **Morphology:** This Asian bird is the largest of the drongo species. Black-blue in general plumage. A crest of curled feathers form a curve and end in the back of the head. The tail rackets are twirled. **Food and nutrition:** These mainly feed on insects and eat fruits also. They often times feed on nectar too. **Behavior:** They can easily imitate raptor calls. They form a definite pattern of mixing flocks, long with babblers.

41.Ashy Drongo *Dricurus leucophaeus*(Vieillot)

Order: Passeriformes Family: Corvidae

Habitat: The Ashy Drongo is commonly found in South and South East Asia i.e., the hills of tropical Southern Asia from eastern Afghanistan east to southern China, Japan, Indonesia but also

coastal areas lining mangroves. And also inhabits forests and woodlands in winter. **Morphology:** Their body is mainly dark grey in color. Sporting bright-crimson eyes, plumage is entirely ashy grey rather dark on throat and underparts with long and forked tail, legs black. No spot at base of bill and vivid red irises is a distinct feature. **Food and nutrition:** They are insectivorous i.e., consume vast number of insects, dragonflies, moths, beetles, winged termites, ants, grasshoppers, crickets etc. **Behavior:** The breeding season is May to June with three or four reddish or brown eggs with speckles are laid in a cup nest in a trees. They are usually solitary.

42.Black Drongo *Dicrurus macrocercus* (Vieillot)

Order: Passeriformes Family: Corvidae

Habitat: These birds inhabit tropical southern Asia and the areas that line Iran and, Sri Lanka, China, Indonesia, India, Bangladesh. **Morphology:** Their body is glossy black and a forked tail. The major difference from Ashy Drongo is that of the iris' color which is dark brown in Black Drongo and crimson in Ashy Drongo. Sexes are similar and are quite indistinguishable. **Food and nutrition:** Major source of feed are insects and small pests such as dragonfly, termites, cicadas, beetles and moths among others. They may also eat animals they can prey on while flying. **Behavior:** sometimes found in small groups. Breeding season is majorly monsoon.

43.Orange-headed thrush *Geokichla citrina* (Horsefield)

Order: Passeriformes Family: Muscicapidae

Habitat: Can be found in evergreen wetlands and marshlands with moist conditions. **Morphology:** The head is entirely orange with a off white-grey underwing. The bill is slate colored and the feet have brown fronts and posterior pinkish shade. **Food and nutrition:** They feed on a wide range of insects and small animals. They are omnivores. **Behavior:** Nesting sites are usually tree holes. The clutch consists of three to five eggs that hatch out in 13 to 14 days. Nest building is undertaken by both parents.

44.Oriental magpie-robin *Copsychus saularis* (Horsefield)

Order: Passeriformes Family: Muscicapidae

Habitat: Found in open woodland and cultivated areas often close to human habitations. **Morphology:**The male has black upperparts, head and throat apart from a white shoulder patch. The underparts and the sides of the long tail are white. Females are greyish black above and greyish white. **Food and nutrition:** mainly insects and other invertebrates. Although mainly insectivorous, they are known to occasionally take flower nectar, geckos, leeches, centipedes and even fish. **Behavior:** breeding season, male magpie robins are found indulging in cumbersome puffing out

of the chest, pointing bill skyward, and strutting in front of rivals. The male robins strenuously protect their territory during the breeding season.

45.Jungle Myna *Acridotheres fuscus* (Waggle)

Order: Passeriformes Family: Sturnidae

Habitat: distributed across the Indian subcontinent in patches. It is absent in most arid regions. Other countries of habitation include Bangladesh, Nepal etc. **Morphology:** They have grey plumage, the head is darker and the wings are studded with white patches. There is a tuft of feathery hair over the beak. Bill and legs are bright yellow. **Food and nutrition:** feeding habit includes association with grazing animals that have insects and ticks on their bodies. They may also hunt for and feed on mice and small rodents as well. **Behavior:** They show secondary nesting activity, inhabiting holes in trees and man made nests.

46.Common Myna *Acridotheres tristis* (Linnaeus)

Order: Passeriformes Family: Sturnidae

Habitat: they are extensively native to Asia and Indian subcontinent found in woodlands and open fields. **Morphology:** Common Myna has brown body, black hooded head and the bare yellow patch behind the eye. The bill is bright yellow and one patch behind the eye exists. They are paler than their southern Indian counterparts. **Food and nutrition:** They are omnivorous and feed on insects and spiders and crustaceans. **Behavior:** They pair for life. Nests are built in gutters and drainpipes and sewers leading to clogging.

47.Barn Swallow *Hirundo rustica* (Horsefield)

Order: Passeriformes Family: Hirundinidae

Habitat: distribution is cosmopolitan. They migrate during the winters. **Morphology:** Males and females are similar, but the distinction is by the tail streamers. Body is blue with white underparts such as the breast. **Food and nutrition:** Feeding in open areas, they are insectivorous in nature. **Behavior:** males create nest and advertise them to females to form courtship with them and bring up chicks.

48.Red-vented Bulbul *Pycnonotus cafer* (Linnaeus)

Order: Passeriformes Family: Pycnonotidae

Habitat: They are usually found in most open forests and cultivated lands such as paddy. They may also be present in dry shrub forests as well. **Morphology:** The crest above the head gives it a squarish appearance. The body is usually darker shades of brown with scaly patterns. The rump is

white and they are measured at 20 cm. **Food and nutrition:** they have been shown to feed on fruits and flower petals and nectar as well. Insects and occasionally house geckos have been seen being fed by them. **Behavior:** often seen fluttering among dry foliage, they are migratory in nature.

49.Red whiskered Bulbul *Pycnonotus jocosus* (Linnaeus)

Order: Passeriformes Family: Pycnonotidae

Habitat: Red whiskered bulbuls prefer to live in lightly wood areas, more open country with bushes and shrubs. They can also be sighted in agricultural areas. **Morphology:** the base plumage is commonly black or grey. They have a distinct crest on the top of their head. Wings are rather short and rounded and the tails are long. The bill is small and slender with bristles at the base of upper mandible. **Food and nutrition:** feeding is mostly directed towards small insects and flower buds and small fruits. **Behavior:** they move rapidly and are restless. Clutch consists of two to four eggs that are pinkish in color and may be streaked with reddish spots. They are non-migratory.

50.Zitting cisticola *Cisticola juncidis* (Horsefield)

Order: Passeriformes Family: Cisticolidae

Habitat: This species is found mainly in grassland habitats, often near water. **Morphology:** It is brown above, heavily streaked with black markings. The underparts are whitish, and the tail is broad, white-tipped and flicked frequently, giving rise to the alternative name for the species. **Food and nutrition:** It forage among grasses and gleans preys from bases of clumps of grasses. It occasionally hawks flying insects. **Behavior:** sometimes found in small groups. Breeding season is majorly monsoon.

51.Plain prinia *Prinia inornata* (Gmelin)

Order: Passeriformes Family: Cisticolidae

Habitat : These species are found in wet lowland grassland, open woodland, scrub and sometimes gardens. **Morphology :** These warblers have short rounded wings, a longish tail, strong legs and a short black bill. In breeding plumage, adults are grey-brown above, with a short white supercilium and rufous fringes on the closed wings. The underparts are whitish-buff. The sexes are identical. **Food and nutrition :** It eats small invertebrates, chiefly insects and their larvae, and small spiders, also eats flower nectar. **Behaviour:** The plain prinia builds its nest in a shrub or tall grass and lays three to six eggs. They are mainly resident, migration being limited to local cold weather movements.

52. Common Babbler *Turdoides caudata* (Dumont)

Order: Passeriformes Family: Sylviidae

Habitat: They are seen in semi-desert, dry plains, stony lower hills, xerophytic thorn scrub-jungle, scrubland, sandy floodplains. **Morphology:** these have crown and upperparts dark with brown-edged dark brown streaks, becoming more diffuse on rump; buffy-gray edges on mid-brown upperwing, and grayish-buff tail with dense but indistinct brown barring around shaft of central feathers; lores and cheeks pinkish-tan. **Food and nutrition:** Common Babblers feed on pearl millet, wheat and rice grains shed on the ground but rarely attack standing crops. **Behavior:** Like most other babblers, the common babbler is found in small parties of six to twenty. They are vociferous, moving on the ground often with members keeping watch from the tops of bushes.

53. Yellow Wagtail *Motacilla flava* (Linnaeus)

Order: Passeriformes Family: Passeridae

Habitat: Yellow wagtail likes damp marshes, meadows and farmland and spend much of its time running about on the ground, chasing insects disturbed by the feet of livestock. **Morphology:** Yellow wagtail is a slender, long tailed, long-legged bird. The bird is of yellow and green color. During breeding season, the male has yellow colored under parts and a green back. **Food and nutrition:** They are insectivorous, they eat insects, and their favorite foods include damselflies, beetles, flies, worms and spiders. **Behavior:** Yellow wagtail nest on the ground either in feather and grass lined scrapes or on grass.

54. Forest wagtail *Dendronanthus indicus* (Gmelin)

Order: Passeriformes Family: Passeridae

Habitat: It is usually found in open areas of the woodland such as clearings. In winter it is found mainly in well-shaded forest habitats or along paths in coffee plantations and clearings in forests. **Morphology:** The forest wagtail is a slender bird with a long tail. The back and crown are olive brown, and the wings are black with two yellow wing bars and white tertial edges. **Food and nutrition:** The Forest Wagtail feeds on invertebrates such as Hymenoptera, Coleopteran, small grasshoppers, butterflies, cicadas and other insects. It also catches spiders, small molluscs and worms. It forages on the forest floor and on large branches in trees. **Behavior:** Most species are either sedentary or migratory. Due to wider progression of human farming, their area has also increased. They form an extended relationship with cattle whereby feeding on ticks and mites on their bodies.

55. White-rumped munia *Lonchura striata* (Linnaeus)

Order: Passeriformes Family: Passeridae

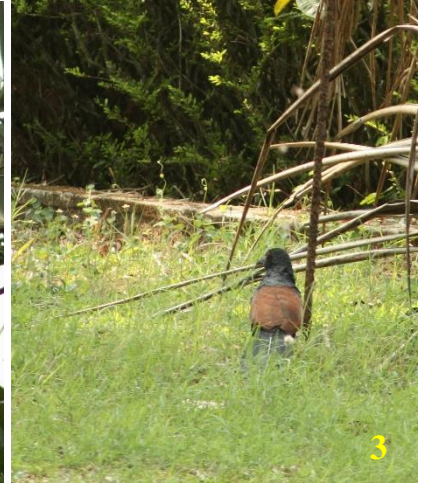
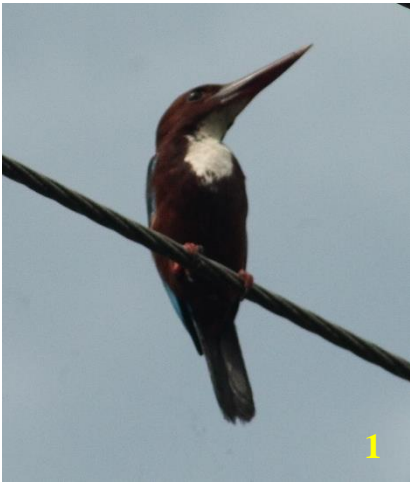
Habitat: Commonly found in open fields and grasslands. Areas with extensive shrubs are also inhabited by them. **Morphology:** Both sexes are alike and the adults are brown in breast and above that. Males have a bulky beak with a striated. The rump is white. **Food and nutrition:** A major part of their diet has been seen to be obtained from algae such as spirogyra which extensively grows in paddy fields. They also eat insects that pose as pests and also cereals, millets and similar grains of seeds. **Behavior:** a very special feature is the mating ritual dance done by the male.

56. Paddy field pipit *Anthus rufulus* (Vieillot)

Order: Passeriformes Family: Passeridae

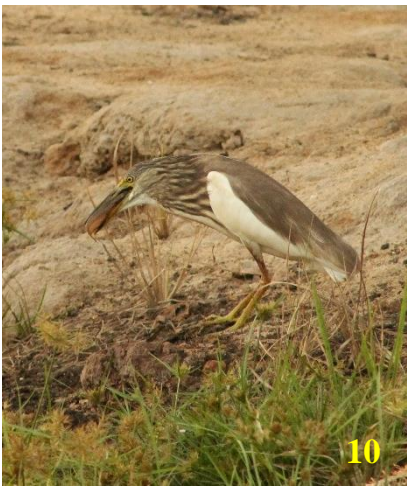
Habitat: It is common in open habitats such as wetlands, farms, fields, and even large parks. **Morphology:** This is a large pipit, mainly streaked grey-brown above and pale below with breast streaking. It is long legged with a long tail and a long dark bill. Sexes are similar. Young birds are more richly colored below than adults and have the pale edges to the feathers of the upper parts more conspicuous with more prominent spotting on the breast. **Food and nutrition:** They feed principally on small insects but consumes larger beetles, tiny snails, worms etc. while walking on the ground, and may pursue insects like mosquitoes or termites in the air. **Behavior:** A widespread species found in open habitats, especially short grassland and cultivation with open bare ground. It runs rapidly on the ground, and when flushed, does not fly far. It is a resident (non-migratory) breeder.

PLATE-1



**1. *Halcyon smyrnensis* 2. *Merops leschenaultia* 3. *Centropus sinensis*
4. *Porphyrio porphyrio* 5. *Tringa glareola* 6. *Vanellus indicus*
7. *Haliastur indus* 8. *Anhinga melanogaster* 9. *Microcarbo niger***

PLATE-2



10. *Ardeola grayii* 11. *Ardea purpurea* 12. *Ardea cinerea* 13a. *Ardea alba*
b. *Ardea intermedia* 14. *Egretta garzetta* 15. *Threskiornis melanocephalus*
16. *Plegadis falcinellus* 17. *Corvus splendens* 18. *Dendrocitta vagabunda*

PLATE-3



19. *Oriolus xanthornus* 20. *Dicrurus paradiseus* 21. *Dicrurus macrocercus*
22. *Geokichla citrina* 23. *Copsychus saularis* 24. *Acridotheres tristis*
25. *Hirundo rustica* 26. *Pycnonotus cafer* 27. *Turdoides caudata*

PLATE-4



28.*Motacilla flava* **29.***Dendronanthus indicus* **30.***Anthus rufulus*
31.Flock of Egrets and Ibis

CONCLUSION

Wetlands are natural ecosystems which are essential for maintaining ecological equilibrium. They are useful to man in many ways. However, years of uncontrolled encroachment have degraded many wetlands. The surveillance conducted on the avian diversity in Thazhakkara Puncha, an agricultural wetland ecosystem, from January to March 2023 revealed the presence of many resident, migrant and local migrant birds. A total of 56 bird species belonging to 27 families and 9 orders were observed. Out of 56 species, 36 species were residents, 10 were migrants and 10 were local migrants. It's a home for two NT bird species-Darter and Black-headed Ibis. But anthropogenic activities cause serious threats to the diversity of fauna here. It is highly recommended that strict laws have to be enacted and actions taken in order to conserve the ecosystem and organisms of this area. The study revealed that this area provides rich habitats for many birds and other animals. Our invaluable resource- wetlands are to be protected. Planned restoration is a useful tool to protect, improve, increase wetlands and return them to their natural state thus ensuring continuing environmental health.

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