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Current status of Avifauna of three wetlands around Ahmadabad, Gujarat

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Abstract: ***The current avifaunal survey is carried out for three wetlands around Ahmedabad city. Gujarat state is very well situated on the international migration routes of bird species. There are two famous wetlands around Ahmadabad namely Nalsarovar and Thol bird sanctuary which supports the local and migratory bird's species. The current study focused on lesser known wetlands but is of ecological importance. The study reveals that bio-diversity strength of two out of three wetlands is in decline state due to anthropological pressure. Birds are very good indicators for the changing ecological scenario and thereby the result helps us to construct conservation strategies for local management plans. The species diversity has been recorded for these wetland sites and analyzed to visualize current scenario of bird species.***

Keywords: Avifauna, Ahmedabad, wetlands

I. INTRODUCTION

India has around 67,429 wetlands, covering an area of about 4.1 million hectares. Out of these, 2,175 are natural and 65,254 are manmade. Wetlands in India (excluding rivers), account for 18.4% of the country's geographic area, of which 70% is under paddy cultivation. [9] [10] Wetlands in India provide a unique habitat to many aquatic flora and fauna as well as numerous birds including migratory species. Out of 310 species of wetland birds found in India almost half are migratory which visit India from cold areas of different parts of China, Russia, central Asia, and from across the entire range of the Himalaya. [5]

Larger wetlands have the potential to support more species as they usually have higher habitat heterogeneity and therefore more breeding and foraging grounds [11] Historical and current rates of land modification have resulted in the loss of more than half of the wetlands worldwide. [12]

These water birds were found to utilize different wetland habitats and depend on a mosaic of microhabitats extensively for their survival. In the present study, irrigated agricultural fields surrounding the lake with scattered trees probably provided shelter and suitable foraging grounds, nesting and roosting on the emergent and fringed vegetation for the wetland birds [8]

An assessment of abundance and diversity of bird species in any ecosystem serves as a good indication of the health of the environment in and around the ecosystem. [3][7] We admire birds for their beauty, songs, and the grace of their ability to fly, but are birds important to the ecosystem? Birds are also excellent indicators of environmental health. They are a critical element to nearly every ecosystem on earth, and their fate is intertwined with ours. [6]

In this study overall, 133 species were recorded with 107 genera belongs to 54 families from all three wetland sites.

Study area:

The study carried out on highly potential but neglected wetlands of Adhana, Lavarpur and Goblaj villages. These wetlands are shallow water reservoirs and popular habitats for Avifauna around Ahmedabad city. The study area is situated at 23o06'35.3"N72o23'45.1"E Adhana village, Lavarpur village 23°10'46.5"N 72°41'54.3"E and 22°48'1"N72°36'38"E Goblej village. The area of wetlands is 7.05 hectare (Adhana), 3.44 hectare (Goblej) and 2.14 hectare (Lavarpur).

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II. Materials and Methods

Field visits were carried out for the period of nearly three years (June 2015-January 2018) in each season. Birds were observed and identified using binoculars (10x50), telescopes, and field guides. [1][2][4] The observation list also includes those birds, which are not strictly water-birds that are known to depend on water ecosystems for resources, and therefore included in the analyses. The data are noted down in the field notebooks in tabular manner. In the laboratory all such data are transferred to the computer in excel files for better statistical analysis.

III. Result and Discussion

To get clear view of diversity of bird species the field data are analyzed for three different categories as mentioned as [A], [B] and [C] here after. The result is also shown with the help of graphical representation.

[A] Comparative Status of bird species at three water bodies:

As shown in fig. 1 there are maximum number of species are found at Goblej pond i.e. 133 species where as at Adhana and Lavarpur lowest species count is observed i.e. only 29 and 14 respectively. It is interesting to note that only 12 bird species are found common in all three sites. They are namely: **Common Marshy /Aquatic birds:** *Anas clypeata* (Northen shoveloer), *Fulica atra* (Eurasian coot), *Himantopus himantopus* (Black-winged stilt), *Sarkidiornis melanotos* (Comb duck), *Tachybaptus ruficollis* (Little grebe).

Common Terrestrial birds:

Bubulcus ibis (Cattle egret), *Corvus splendens* (House crow), *Dicrurus macrocercus* (Black drongo), *Ploceus philippinus* (Baya weaver), *Pycnonotus cafer* (Red vented bulbul), *Streptopelia decaocto* (Eurasian collared dove), *Turdoides caudata* (Common babbler).

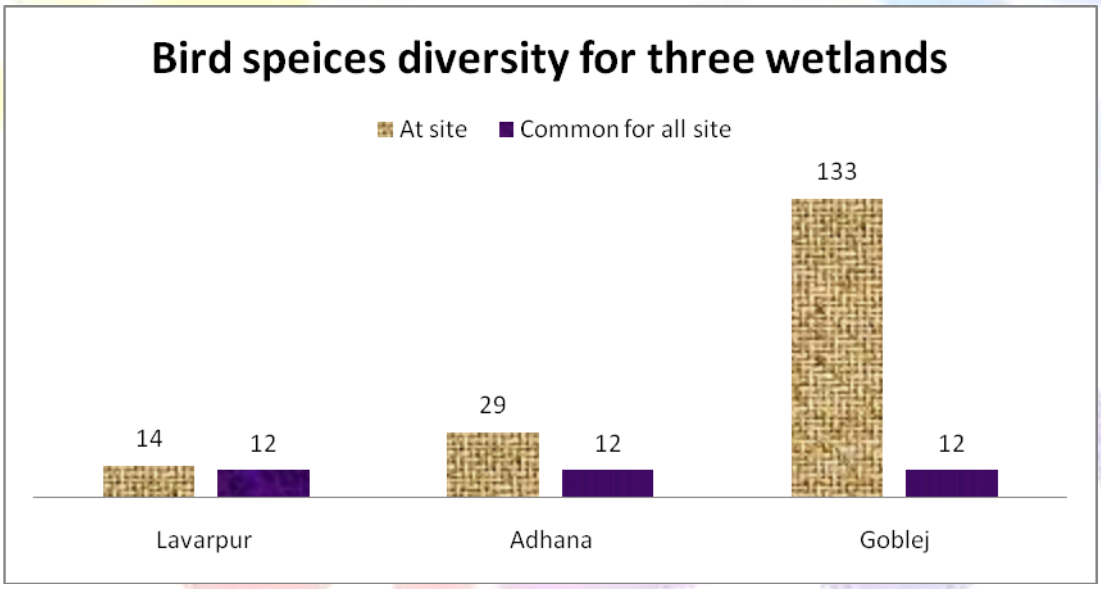

Fig.1 Comparative status of bird species at different study sites.

[B] Bird count diversity:

The study shows that there are variations in number of species at each site. Thereby they are also analyzed in terms of their number diversity. To simplify they are divided into various number ranges and discussed as under. It is also shown in fig.2 by graphical representation. The list of 133 species is given in Table 1 as annexure-1.

B-1. Count more than 400: Total species 01

Fulica atra (Eurasian coot)

B-2 Count between, 100 to 200: Total species 04

Columba livia (Rock dove), *Pastor roseus* (Rosy starling), *Ploceus philippinus* (Baya weaver), *Turdoides caudata* (Common babbler).

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B-3 Count between, 25 to 50: Total species 18

Acridotheres ginginianus (Bank myna), *Acridotheres tristis* (Common myna), *Anser anser* (Greylag geese), *Aytha fulgula* (Tufted duck), *Bubulcus ibis* (Cattle egret), *Corvus splendens* (House crow), *Dicrurus macrocercus* (Black drongo), *Egretta garzetta* (Little egret), *Gallinula chloropus* (Common moorhen), *Merops orientalis* (Green bee-eater), *Passer domesticus* (House sparrow), *Phalacrocorax fuscicollis* (Indian cormorant), *Porphyrio porphyrio* (Western swamp hen), *Psittacula krameri* (Rose-Ringed parakeet), *Pycnonotus cafer* (Red vented bulbul), *Tadorna ferruginea* (Ruddy shelduck), *Turdoides malcolmi* (Large grey babbler), *Turdoides striata* (Jungle babbler).

B-4 Count between, 10 to 20: Total species 38

Amaurornis phoenicurus (White-breasted waterhen), *Anas poecilorhyncha* (Indian spot-billed duck), *Anas querquedula* (Gargeny), *Apus nipalensis* (House swift), *Ardea alba* (Great egret), *Ardea cinerea* (Grey heron), *Ardea purpurea* (Purple heron), *Ardeola grayii* (Indian pond heron), *Cecropis daurica* (Red-rumped swallow), *Centropus sinensis* (Greater coucal), *Cinnyris asiaticus* (Purple sunbird), *Copsychus saularis* (Orienatal magpie robin), *Cuculus micropterus* (Indian cuckoo), *Dendrocygna javanica* (Lesser whistling duck), *Eremopterix griseus* (Ashy-crowned sparrow lark), *Francolinu pondicerianus* (Grey francolin), *Grus antigone* (Saras crane), *Grus grus* (Common crane), *Hirundo rustica* (Barn swallow), *Ixobrychus sinensis* (Yellow bittern), *Merops persicus persicus* (Blue-cheeked bee-eater), *Mesophoyx intermedia* (Intermediate egret), *Metopidius indicus* (Bronze-winged jacana), *Motacilla alba* (White wagtail), *Motacilla cinerea* (Grey wagtail), *Motacilla flava* (Western yellow wagtail), *Pavo cristatus* (Indian peafowl), *Petrochelidon fluvicola* (Streak-throated swallow), *Pseudibis papillosa* (Indian black ibis), *Pycnonotus leucotis* (White eared bulbul), *Sarkidiornis melanotos* (Comb duck), *Saxicoloides fulicatus* (Indian robin), *Spillopelia senegalensis* (Laughing dove), *Sturnia pagoda rum* (Brahminy starling), *Tachybaptus ruficollis* (Little grebe), *Threskiornis melanocephalus* (Black-headed ibis), *Vanellus indicus* (Red-wattled lapwing), *Vanellus malabaricus* (Yellow-wattled lapwing).

B-5 Count between, 5 to 9: Total species 33

Acrocephalus stentoreus (Clamorous reed warbler), *Actitis hypoleucos* (Common sandpiper), *Alcedo atthis* (Common kingfisher), *Anas clypeata* (Northen shoveloer), *Anastomus oscitans* (Asian openbill), *Aquila pennatus* (Booted eagle), *Buteo rufinus* (Long-Legged Buzzrd), *Butorides virescens* (Little Green Heron), *Circus aeruginosus* (Marsh harrier), *Coracias benghalensis* (Indian roller), *Corvus macrorhynchos* (Large-billed crow), *Elanus axillaris* (Black-shouldered kite), *Eudynamyss colopaceus* (Asian koel), *Halcyon smyrnensis* (White throated kingfisher), *Himantopus himantopus* (Black-winged stilt), *Hirundo smithii* (Wired tailed swallow), *Lanius vittatus* (Bay-backed shrike), *Leptocoma zeylonica* (Purple rumped sunbird), *Limosa limosa* (Black-tailed godwit), *Milvus migrans* (Black kite), *Mycteria leucocephala* (Painted stork), *Platalea leucorodia* (Eurasian spoonbill), *Rhipidura aureola* (White browed fantail), *Saxicola torquatus* (Common stonechat), *Streptopelia decaocto* (Eurasian collared dove), *Streptopelia tranquebarica* (Red collared dove), *Tephrodornis pondicerianus* (Common woodshrike), *Trianga erythropus* (Spotted red shank), *Trianga glareola* (Wood sandpiper), *Trianga totanus* (Common Red shank), *Tringa ochropus* (Green sandpiper), *Tringa stagnatilis* (Marsh sandpiper), *Upupa epops* (Common hoopoe).

B-6 Count less than 4: total species 39

Accipiter badius (Shikra), *Aegithina tiphia* (Common iora), *Anhinga melanogaster* (Darter), *Anthus campestris* (Pipit), *Anthus rufulus* (Paddy field pipit), *Athene brama* (Spotted owlet), *Burhinus oedicnemus harterti* (Eurasian thick-knee/curlew), *Calidris minuta* (Little stint), *ceryle rudis* (Pied kingfisher), *Charadrius alexandrinus* (Kentish plover), *Charadrius dubius* (Little Ringed Plover), *Chlidonias hybrida* (Whiskered tern), *Ciconia episcopus* (White neck stork), *Coturnix coturnix* (Common Quail), *Dendrocitta vagabunda* (Indian tree pie), *Dinopium benghalense* (Black-rumpedflameback), *Esacus recurvirostris* (Great thick-knee/stone curlew), *Ficedula parva* (Red breasted flycatcher), *Galerida cristata* (Crested lark), *Glareola lactea* (Small pranticole), *Gyps bengalensis* (White backed vulture), *Idun acaligata* (Booted warbler), *Lanius isabellinus* (Isabelline shrike), *Lanius schach* (Long-tailed shrike), *Luscinia svecica* (Blue throat), *Megalaima haemacephala* (Coppersmith barbet), *Oriolus oriolus* (Eurasian golden oriole), *Pelecanus onocrotalus* (Great white pelican), *Pericrocotus cinnamomeus* (Small minivet), *Phoenicurus phoenicurus* (Common redstart), *Prinia hodgsonii* (Grey-breasted prinia), *Prinia socialis* (Ashy prinia), *Rostratula benghalensis* (Greater painted-snipe), *Saxicola caprata* (Pied bushchat), *Saxicola rubicola* (European stonechat), *Sterna aurantia* (Indian river tern), *Sylvia curruca* (Lesser whitethroat), *Terpsiphone paradisi* (Asian paradise flycatcher), *Turnix suscitator* (Barred button quail).

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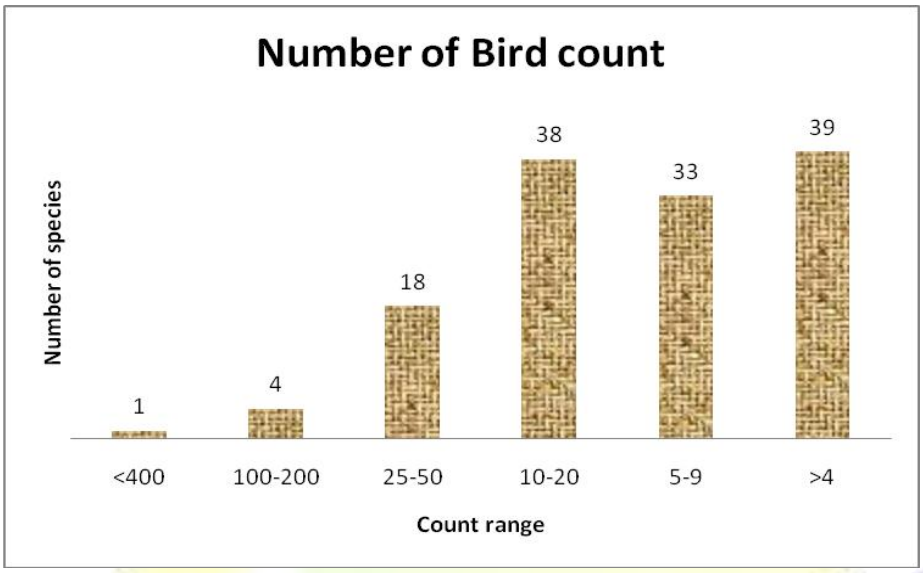

Fig. 2. Average Number of Bird species counts in general for all three sites.

[C] Habitat wise Bird distribution:

Out of 133 species of birds spreads over in study area, there are 103 birds are found on terrestrial habitat which is near the marshy lands where as 30 species of birds prefer marshy land or aquatic bodies. Here the species of marshy/aquatic habitats is given as under.

They are namely: *Actitis hypoleucos* (Common sandpiper), *Amaurornis phoenicurus* (White-breasted waterhen), *Anas clypeata* (Northen shoveloer), *Anas poecilorhyncha* (Indian spot-billed duck), *Anas querquedula* (Gargeny), *Anastomus oscitans* (Asian openbill), *Anhinga melanogaster* (Darter), *Anser anser* (Greylag geese), *Ardea cinerea* (Grey heron), *Ardea purpurea* (Purple heron), *Ardeola grayii* (Indian pond heron), *Aytha fulgula* (Tufted duck), *Butorides virescens* (Little Green Heron), *Charadrius alexandrinus* (Kentish plover), *Charadrius dubius* (Little Ringed Plover), *Dendrocygna javanica* (Lesser whistling duck), *Gallinula chloropus* (Common moorhen), *Metopidius indicus* (Bronze-winged jacana), *Mycteria leucocephala* (Painted stork), *Pelecanus onocrotalus* (Great white pelican), *Phalacrocorax fuscicollis* (Indian cormorant), *Platalea leucorodia* (Eurasian spoonbill), *Porphyrio porphyrio* (Western swamp hen), *Rostratula benghalensis* (Greater painted-snipe), *Sarkidiornis melanotos* (Comb duck), *Tachybaptus ruficollis* (Little grebe), *Tadorna ferruginea* (Ruddy shelduck), *Trianga glareola* (Wood sandpiper), *Tringa ochropus* (Green sandpiper), *Tringa stagnatilis* (Marsh sandpiper).

IV. Conclusion

- Maximum numbers of bird species (133) are seen at Goblej wetlands.
- Bird diversity is scanty at Lavarpur and Adhana wetlands. Due to the high anthropogenic activities, negligence of wetlands and development around these wetlands.
- There are 103 species are found near the wetland area as terrestrial species.
- 30 species of birds have been observed in aquatic or marshy habitats.
- Out of 133 species, 12 species are found common at all there wetlands.
- Goblej and Adhana wetlands have 29 common species.
- Goblej and Lavarpur wetlands have 14 common species.
- Adhana and Lavarpur wetlands have 12 common species.
- *Fulica atra* (Eurasian coot) is observed as highest number of birds at each site.
- There are total 39 species which represented by only less than 4 count.
- Illicit cutting of the vegetation surrounding the wetland may pose the threat to the species diversity in future.
- The Goblej wetland is now facing the pressure of industrial developmental activities, and it needs utmost attention for the conservation of the biodiversity.
- A strong conservation action plan should be needed to increase bird diversity in all three wetlands sites.
- Creating awareness amongst the local residents regarding conservation of such wetlands for their future benefits.

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