



RESEARCH ARTICLE

OBSERVATION OF BIRDS DIVERSITY AT VINDHYACHAL FOREST RESERVE KHARGONE DISTRICT (M.P.)

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Abstract

The main aim of the present investigation was to study the Diversity of birds of vindhyachal forest reserve at khargone district (M.P.). Several species were closely observed in present study. The total diversity observed from all the four sites (Wachoo point at Mandleshwar, Jamghat Temple at main Vindhyachal, Double golai Balwada and Gavalan Pati Charbhuj temple Katkut) constitutes 63 bird species from 15 different orders. The highest numbers of birds were recorded at Gavalan Pati Charbhuj temple Katkut and the lowest diversity was seen at Double golai Balwada which is of 44 bird species only.

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Introduction:-

Birds are one of the most prominent species on the earth. They are the bio-indicators which can be used to access the health of any ecosystem. Because of this reason they are used to monitor the quality of any habitat or niche and hence they are the key elements of any ecosystem (Mariappan *et al.*, 2013). Birds are one of the most adaptive and widely spread organisms on the planet and the adaptation of birds totally depends upon their body mass and feeding habits and because of which they have followed human colonization. Due to a higher degree of adaptability of these few successful species, their density is much higher in the cities as compared to the more natural adjacent habitats (Seress and Liker, 2015).

The loss of biological diversity has been due the effects of such environmental phenomena, deterioration in water quality, increased sedimentation, marked shrinkage, and decrease in the diversity of migratory of fishes, bird populations and other aquatic fauna and the nuisance growth of aquatic weeds. Due to accelerated erosion of soil, decrease in the depth of the water bodies takes place. Soil erosion results in deforestation and other activities on catchments. Thus, present study “Diversity of birds of vindhyachal forest reserve at khargone district (M.P.)” was undertaken.

Material And Methods:-

Study area:

The Vindhyachal Forest Reserve area (Khargone District (M.P.), India was selected for present study. It is a complex, discontinuous [chain of mountain ridges](#), hill ranges, highlands and Forest in west-central India. The Vindhya Range is also known as Vindhyachal.

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Sampling Sites:

The Four sampling sites were selected in Vindhyachal Forest Reserve for present study. They were following.

1. Wachoo point at Mandleshwar:-
2. Jamghat Temple at main Vindhyachal:-
3. Double golai Balwada:-
4. Gavalan Pati Charbhuj temple Katkut:-

Methods:-

The data of bird counting from intensive studies and surveys have been used to present study and estimate their densities. Javed and Rahamani (1993) Diversity and density are very useful indicators for quality. Gibbons *et al.* (1993) Birds are may be identify by their calls or songs. Many persons are expertise to identify to birds in the field (Bibby *et al.*, 1998). Colin *et al.* (1993) for birds counting various methods are available. Effort for counting is usually limited and accurate census is very difficult to obtain in various available methods. Good study is depending on what type of data is required in the possible counting methods. A definite bird count method does not exist. In various birds counting methods, we used following three methods for present study, which are suitable for present study

1. Point count
2. Direct count (Individual species) method
3. Look and see method

Results:-

The Study at Vindhyachal Forest Reserve at Khargone District (M. P.) shows that 48 bird species were observed at Wachoo point at Mandleshwar and they belong to 13 orders (Table- 1): Accipitriformes (1), Anseriformes (1), Caprimulgiformes (3), Charadriiformes (2), Ciconiiformes (1), Columbiformes (2), Coraciiformes (1), Cuculiformes (2), Galliformes (1), Passeriformes (29), Pelecaniformes (3), Psittaciformes (1) and Strigiformes (1).

There were 53 bird species found at the Jamghat Temple at main Vindhyachal, which belonged to 14 Orders (Table- 2) which are Accipitriformes (3), Caprimulgiformes (1), Charadriiformes (3), Ciconiiformes (5), Columbiformes (2), Coraciiformes (1), Cuculiformes (3), Galliformes (1), Gruiformes (2), Passeriformes (25), Pelecaniformes (5), Psittaciformes (2), Strigiformes (2) and Suliformes (1).

A total of 44 bird species were observed at the Double golai Balwada. These species belonged to 14 orders (Table- 3) and the composition of each order was Accipitriformes (3), Anseriformes (1), Caprimulgiformes (1), Charadriiformes (3), Ciconiiformes (2), Columbiformes (2), Coraciiformes (2), Cuculiformes (1), Galliformes (1), Gruiformes (1), Passeriformes (18), Pelecaniformes (5), Psittaciformes (2) and Strigiformes (2).

The recorded species number was highest at Gavalan Pati Charbhuj temple Katkut which is of 60 bird species, belonging to 15 different orders (Table- 4). These are as follows Accipitriformes (3), Anseriformes (2), Caprimulgiformes (3), Charadriiformes (3), Ciconiiformes (2), Columbiformes (2), Coraciiformes (2), Cuculiformes (3), Galliformes (1), Gruiformes (2), Passeriformes (28), Pelecaniformes (5), Psittaciformes (2), Strigiformes (2) and Suliformes (1).

The total diversity observed from all the four sites (Wachoo point at Mandleshwar, Jamghat Temple at main Vindhyachal, Double golai Balwada and Gavalan Pati Charbhuj temple Katkut) constitutes 63 bird species from 15 different orders. The highest numbers of birds were recorded at Gavalan Pati Charbhuj temple Katkut and the lowest diversity was seen at Double golai Balwada which is of 44 bird species only.

Table 1:- Showing Diversity of Wachoo point at Mandleshwar.

Order	English Name	Scientific Name	Family
Accipitriformes	Black Kite	<i>Milvus migrans</i>	Accipitridae
Anseriformes	Indian Spot-billed Duck	<i>Anas poecilorhyncha</i>	Anatidae
Caprimulgiformes	Jungle Nightjar	<i>Caprimulgus indicus</i>	Caprimulgidae
Caprimulgiformes	Indian House Swift	<i>Apus affinis</i>	Apodidae

Caprimulgiformes	Common Swift	<i>Apus apus</i>	Apodidae
Charadriiformes	River Lapwing	<i>Vanellus duvaucelii</i>	Charadriidae
Charadriiformes	Red-wattled Lapwing	<i>Vanellus indicus</i>	Charadriidae
Ciconiiformes	Greater Adjutant	<i>Leptoptilos dubius</i>	Ciconiidae
Columbiformes	Rock Pigeon	<i>Columba livia</i>	Columbidae
Columbiformes	Laughing Dove	<i>Streptopelia senegalensis</i>	Columbidae
Coraciiformes	Common Kingfisher	<i>Alcedo atthis</i>	Alcedinidae
Cuculiformes	Asian Koel	<i>Eudynamys scolopaceus</i>	Cuculidae
Cuculiformes	Indian Cuckoo	<i>Cuculus micropterus</i>	Cuculidae
Galliformes	Indian Peafowl	<i>Pavo cristatus</i>	Phasianidae
Galliformes	Black Drongo	<i>Dicrurus macrocercus</i>	Dicruridae
Passeriformes	White-spotted Fantail	<i>Rhipidura albogularis</i>	Rhipiduridae
Passeriformes	House Crow	<i>Corvus splendens</i>	Corvidae
Passeriformes	Large-billed Crow	<i>Corvus macrorhynchos</i>	Corvidae
Passeriformes	Indian Paradise-flycatcher	<i>Terpsiphone paradisi</i>	Monarchidae
Passeriformes	Purple Sunbird	<i>Cinnyris asiaticus</i>	Nectariniidae
Passeriformes	Black-throated Sunbird	<i>Aethopyga saturata</i>	Nectariniidae
Passeriformes	Red Munia	<i>Amandava amandava</i>	Estrildidae
Passeriformes	House Sparrow	<i>Passer domesticus</i>	Passeridae
Passeriformes	White Wagtail	<i>Motacilla alba</i>	Motacillidae
Passeriformes	Common Rosefinch	<i>Carpodacus erythrinus</i>	Fringillidae
Passeriformes	Jungle Prinia	<i>Prinia sylvatica</i>	Cisticolidae
Passeriformes	Common Tailorbird	<i>Orthotomus sutorius</i>	Cisticolidae
Passeriformes	Barn Swallow	<i>Hirundo rustica</i>	Hirundinidae
Passeriformes	Dusky Crag Martin	<i>Ptyonoprogne concolor</i>	Hirundinidae
Passeriformes	Tickell's Leaf Warbler	<i>Phylloscopus affinis</i>	Phylloscopidae
Passeriformes	Common Babbler	<i>Argya caudata</i>	Leiothrichidae
Passeriformes	Jungle Babbler	<i>Turdoides striata</i>	Leiothrichidae
Passeriformes	Common Starling	<i>Motacilla alba</i>	Sturnidae
Passeriformes	Jungle Myna	<i>Acridotheres fuscus</i>	Sturnidae
Passeriformes	Spot-winged Starling	<i>Saroglossa spilopterus</i>	Sturnidae
Passeriformes	Indian Robin	<i>Saxicoloides fulicatus</i>	Muscicapidae
Passeriformes	Oriental Magpie Robin	<i>Copsychus saularis</i>	Muscicapidae
Passeriformes	Blue-throated Flycatcher	<i>Cyornis rubeculoides</i>	Muscicapidae
Passeriformes	Taiga Flycatcher	<i>Ficedula albicilla</i>	Muscicapidae
Passeriformes	Black Redstart	<i>Phoenicurus ochruros</i>	Muscicapidae
Passeriformes	White-tailed Stonechat	<i>Saxicola leucurus</i>	Muscicapidae
Passeriformes	Pied Wheatear	<i>Oenanthe pleschanka</i>	Muscicapidae
Passeriformes	Black-throated Thrush	<i>Turdus atrogularis</i>	Turdidae
Pelecaniformes	Indian Pond Heron	<i>Ardeola grayii</i>	Ardeidae
Pelecaniformes	Cattle Egret	<i>Bubulcus ibis</i>	Ardeidae

Pelecaniformes	Little Egret	<i>Egretta garzetta</i>	Ardeidae
Psittaciformes	Rose-ringed Parakeet	<i>Psittacula krameri</i>	Psittaculidae
Strigiformes	Jungle Owlet	<i>Glaucidium radiatum</i>	Strigidae

Table 2:- Showing Diversity of Jamghat Temple at main Vindhyachal.

Order	English Name	Scientific Name	Family
Accipitriformes	Black Kite	<i>Milvus migrans</i>	Accipitridae
Accipitriformes	Oriental Honey Buzzard	<i>Pernis ptilorhynchus</i>	Accipitridae
Accipitriformes	Bonelli's Eagle	<i>Aquila fasciata</i>	Accipitridae
Caprimulgiformes	Indian House Swift	<i>Apus affinis</i>	Apodidae
Charadriiformes	River Lapwing	<i>Vanellus duvaucelii</i>	Charadriidae
Charadriiformes	Red-wattled Lapwing	<i>Vanellus indicus</i>	Charadriidae
Charadriiformes	Grey Plover	<i>Pluvialis squatarola</i>	Charadriidae
Ciconiiformes	Greater Adjutant	<i>Leptoptilos dubius</i>	Ciconiidae
Ciconiiformes	Woolly-necked Stork	<i>Ciconia episcopus</i>	Ciconiidae
Columbiformes	Rock Pigeon	<i>Columba livia</i>	Columbidae
Columbiformes	Laughing Dove	<i>Streptopelia senegalensis</i>	Columbidae
Coraciiformes	Common Kingfisher	<i>Alcedo atthis</i>	Alcedinidae
Cuculiformes	Asian Koel	<i>Eudynamis scolopaceus</i>	Cuculidae
Cuculiformes	Indian Cuckoo	<i>Cuculus micropterus</i>	Cuculidae
Cuculiformes	Greater Coucal	<i>Centropus sinensis</i>	Cuculidae
Galliformes	Indian Peafowl	<i>Pavo cristatus</i>	Phasianidae
Gruiformes	Common Coot	<i>Fulica atra</i>	Rallidae
Gruiformes	Common Crane	<i>Grus grus</i>	Gruidae
Gruiformes	Black Drongo	<i>Dicrurus macrocercus</i>	Dicruridae
Passeriformes	House Crow	<i>Corvus splendens</i>	Corvidae
Passeriformes	Large-billed Crow	<i>Corvus macrorhynchos</i>	Corvidae
Passeriformes	Indian Paradise-flycatcher	<i>Terpsiphone paradisi</i>	Monarchidae
Passeriformes	Purple Sunbird	<i>Cinnyris asiaticus</i>	Nectariniidae
Passeriformes	Black-throated Sunbird	<i>Aethopyga saturata</i>	Nectariniidae
Passeriformes	Red Munia	<i>Amandava amandava</i>	Estrildidae
Passeriformes	House Sparrow	<i>Passer domesticus</i>	Passeridae
Passeriformes	White Wagtail	<i>Motacilla alba</i>	Motacillidae
Passeriformes	Common Rosefinch	<i>Carpodacus erythrinus</i>	Fringillidae
Passeriformes	Jungle Prinia	<i>Prinia sylvatica</i>	Cisticolidae
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Passeriformes	Common Babbler	<i>Argya caudata</i>	Leiothrichidae
Passeriformes	Jungle Babbler	<i>Turdoides striata</i>	Leiothrichidae
Passeriformes	Common Starling	<i>Sturnus vulgaris</i>	Sturnidae
Passeriformes	Jungle Myna	<i>Acridotheres fuscus</i>	Sturnidae
Passeriformes	Spot-winged Starling	<i>Saroglossa spilopterus</i>	Sturnidae
Passeriformes	Indian Robin	<i>Saxicoloides fulicatus</i>	Muscicapidae
Passeriformes	Oriental Magpie Robin	<i>Copsychus saularis</i>	Muscicapidae
Passeriformes	Blue-throated Flycatcher	<i>Cyornis rubeculoides</i>	Muscicapidae
Passeriformes	Taiga Flycatcher	<i>Ficedula albicilla</i>	Muscicapidae
Passeriformes	Black Redstart	<i>Phoenicurus ochruros</i>	Muscicapidae
Pelecaniformes	Indian Pond Heron	<i>Ardeola grayii</i>	Muscicapidae
Pelecaniformes	Cattle Egret	<i>Bubulcus ibis</i>	Ardeidae
Pelecaniformes	Little Egret	<i>Egretta garzetta</i>	Ardeidae
Pelecaniformes	Black Bittern	<i>Ixobrychus flavicollis</i>	Ardeidae

Pelecaniformes	Great Egret	<i>Ardea alba</i>	Ardeidae
Psittaciformes	Rose-ringed Parakeet	<i>Psittacula krameri</i>	Psittaculidae
Psittaciformes	Alexandrine Parakeet	<i>Psittacula eupatria</i>	Psittaculidae
Strigiformes	Jungle Owlet	<i>Glaucidium radiatum</i>	Strigidae
Strigiformes	Indian Scops Owl	<i>Otus bakkamoena</i>	Strigidae
Suliformes	Little Cormorant	<i>Microcarbo niger</i>	Phalacrocoracidae

Table 3:- Showing Diversity of Double golai Balwada.

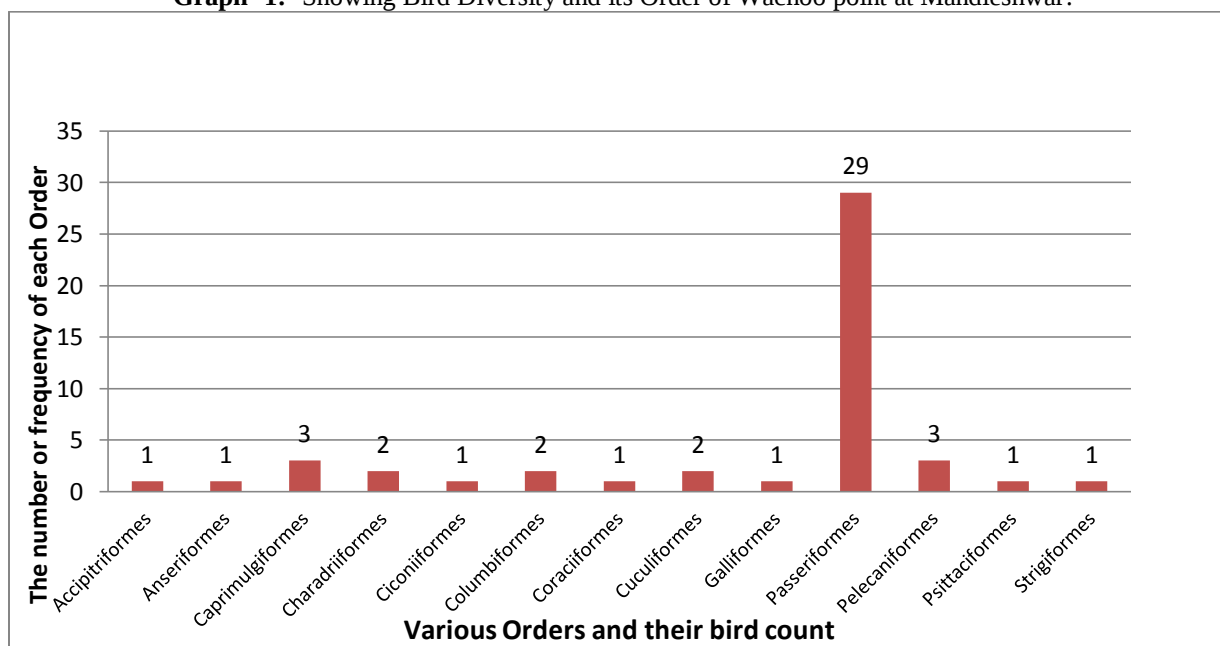
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Accipitriformes	Bonelli's Eagle	<i>Aquila fasciata</i>	Accipitridae
Anseriformes	Indian Spot-billed Duck	<i>Anas poecilorhyncha</i>	Anatidae
Caprimulgiformes	Indian House Swift	<i>Apus affinis</i>	Apodidae
Charadriiformes	River Lapwing	<i>Vanellus duvaucelii</i>	Charadriidae
Charadriiformes	Red-wattled Lapwing	<i>Vanellus indicus</i>	Charadriidae
Charadriiformes	Grey Plover	<i>Pluvialis squatarola</i>	Charadriidae
Ciconiiformes	Greater Adjutant	<i>Leptoptilos dubius</i>	Ciconiidae
Ciconiiformes	Woolly-necked Stork	<i>Ciconia episcopus</i>	Ciconiidae
Columbiformes	Rock Pigeon	<i>Columba livia</i>	Columbidae
Columbiformes	Laughing Dove	<i>Streptopelia senegalensis</i>	Columbidae
Coraciiformes	Common Kingfisher	<i>Alcedo atthis</i>	Alcedinidae
Coraciiformes	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	Alcedinidae
Cuculiformes	Asian Koel	<i>Eudynamis scolopaceus</i>	Cuculidae
Galliformes	Indian Peafowl	<i>Pavo cristatus</i>	Phasianidae
Gruiformes	Common Crane	<i>Grus grus</i>	Gruidae
Passeriformes	Black Drongo	<i>Dicrurus macrocercus</i>	Dicruridae
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Passeriformes	Black-throated Thrush	<i>Turdus atrogularis</i>	Turdidae
Passeriformes	Ashy Minivet	<i>Pericrocotus divaricatus</i>	Campephagidae
Passeriformes	Ashy Drongo	<i>Dicrurus leucophaeus</i>	Dicruridae
Passeriformes	Indian Pond Heron	<i>Ardeola grayii</i>	Ardeidae
Pelecaniformes	Cattle Egret	<i>Bubulcus ibis</i>	Ardeidae
Pelecaniformes	Little Egret	<i>Egretta garzetta</i>	Ardeidae
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Pelecaniformes	Great Egret	<i>Ardea alba</i>	Ardeidae
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Table 4:- Showing Diversity of Gavalan Pati Charbhuja temple Katkut.

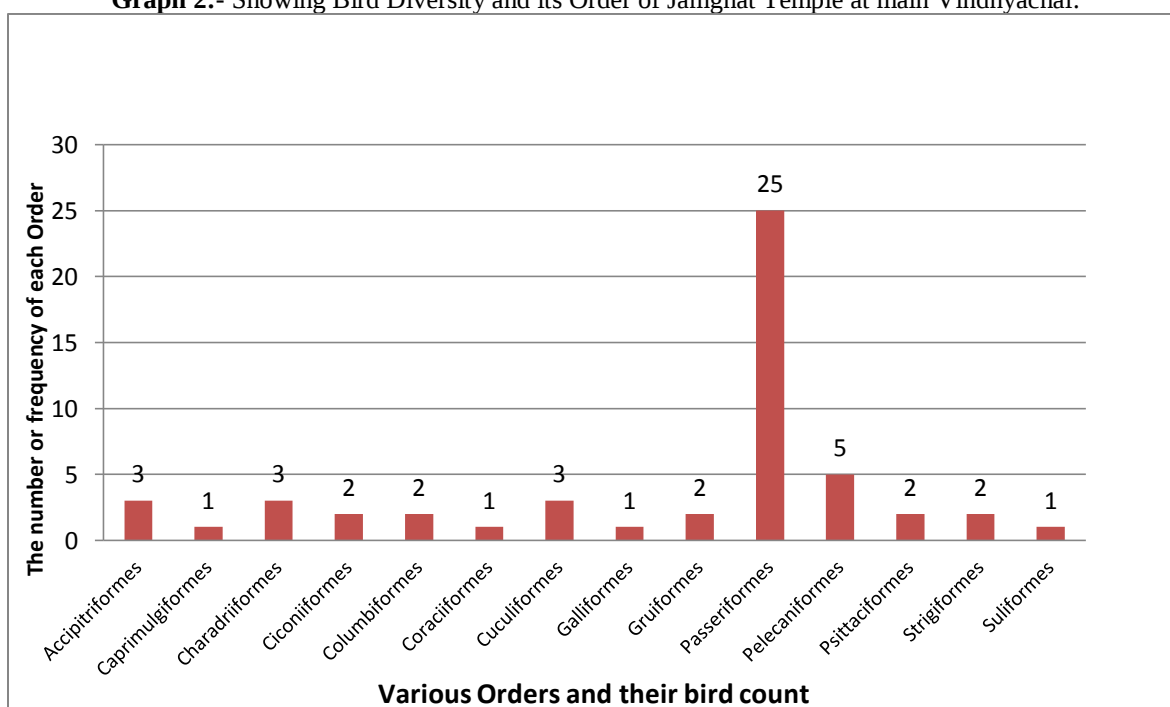
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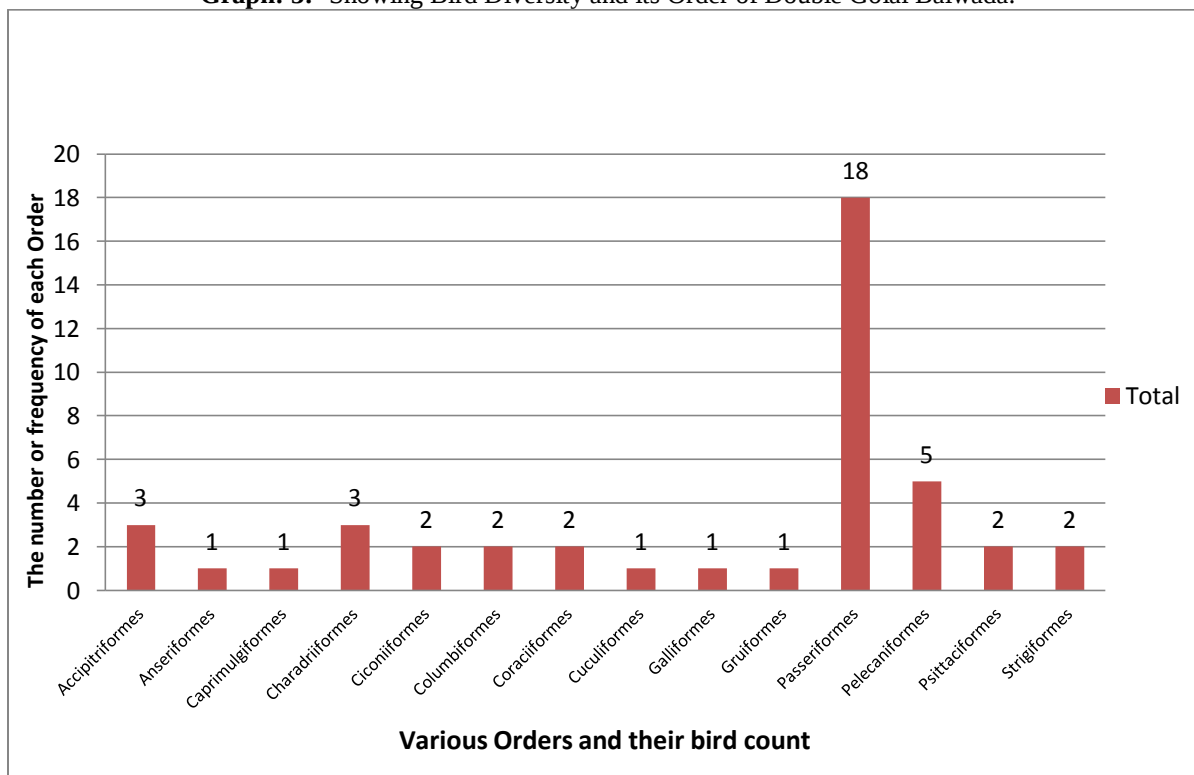
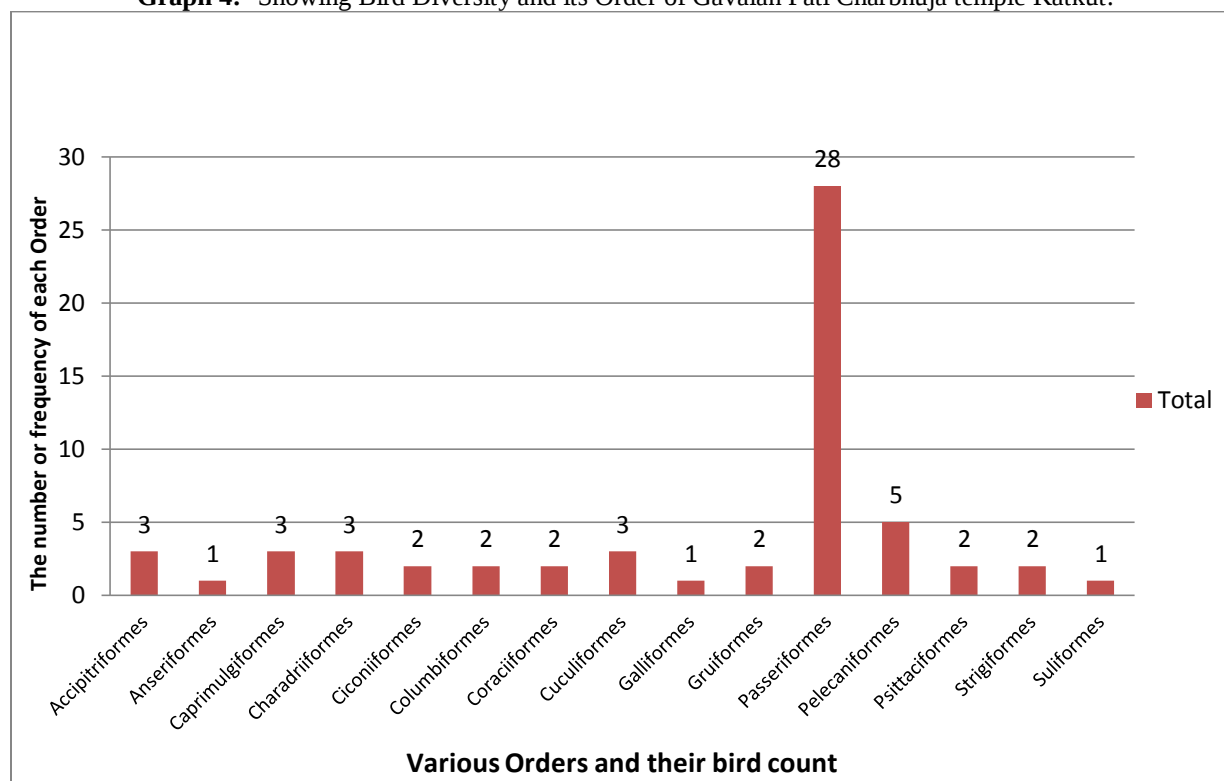
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Pelecaniformes	Black Bittern	<i>Ixobrychus flavicollis</i>	Ardeidae
Pelecaniformes	Great Egret	<i>Ardea alba</i>	Ardeidae
Psittaciformes	Rose-ringed Parakeet	<i>Psittacula krameri</i>	Psittaculidae
Psittaciformes	Alexandrine Parakeet	<i>Psittacula eupatria</i>	Psittaculidae
Strigiformes	Jungle Owlet	<i>Glaucidium radiatum</i>	Strigidae
Strigiformes	Indian Scops Owl	<i>Otus bakkamoena</i>	Strigidae
Suliformes	Little Cormorant	<i>Microcarbo niger</i>	Phalacrocoracidae

Graph- 1:- Showing Bird Diversity and its Order of Wachoo point at Mandleshwar.



Graph 2:- Showing Bird Diversity and its Order of Jamghat Temple at main Vindhyachal.



Graph 3:- Showing Bird Diversity and its Order of Double Golai Balwada.**Graph 4:-** Showing Bird Diversity and its Order of Gavalan Pati Charbhuj temple Katkut.

Images of various recorded species:



Black Kite



Oriental Honey Buzzard



Bonelli's Eagle



Indian Spot-billed Duck



Indian House Swift



Jungle Nightjar



Common Swift



River Lapwing



Red-wattled Lapwing



Grey Plover



Greater Adjutant



Woolly-necked Stork



White-throated Kingfisher



Indian Peafowl



Rock Pigeon



Asian Koel



Common Crane



Laughing Dove



Indian Cuckoo



Common Coot



Common Kingfisher



Greater Coucal



Black Drongo



House Crow



Black-throated Sunbird



Jungle Babbler



Large-billed Crow



Red Munia



Indian Robin



Indian Paradise-flycatcher



House Sparrow



Oriental Magpie Robin



Purple Sunbird



Common Tailorbird



White-spotted Fantail



Ashy Minivet



Barn Swallow



Jungle Myna



Ashy Drongo



Dusky Crag Martin



Spot-winged Starling



White Wagtail



Tickell's Leaf Warbler



Blue-throated Flycatcher



Common Rosefinch



Common Babbler



Taiga Flycatcher



Jungle Prinia



Common Starling

**Black Redstart****Black Bittern****Alexandrine Parakeet****Indian Pond Heron****Great Egret****Jungle Owlet****Cattle Egret****Rose-ringed Parakeet****Indian Scops Owl****Little Egret****Little Cormorant****Discussion:-**

The results show that forty eight bird species were recorded at Wachoo point at Mandleshwar which belongs to 13 orders. The order Passeriformes was dominant with highest number of species. Gajera *et al.* (2013) reported 252

bird species in their study site which belonged to 13 different orders which is a sign that these regions are very rich in bird diversity. Lodhi *et al.* (2018) also studied few waterfowl with related to bird diversity and conservation in Gwalior region and reported a checklist of Twenty eight bird species belonging to eleven orders. There were 53 bird species which were found at the Jamghat Temple at main Vindhyaachal, which belonged to fourteen orders while order Passeriformes was dominant with twenty five species in it.

Forty four bird species were observed at the Double golai Balwada. These species belonged to 14 orders and the order Passeriformes was dominant with eighteen species in its category. Rawal *et al.* (2016) reported total fifteen bird species of avian fauna at Kunda reservoir and these belonged to six orders and the order Passeriformes was dominant with four species. Bird diversity of fifty eight species was recorded at Indore city and the order Passeriformes was dominant with thirty five bird species (Gaur *et al.*, 2019). The recorded bird species number was sixty bird species, belonging to fifteen different orders. Among them the orders Passeriformes consist of twenty eight species.

In our study at Vindhyaachal Forest Reserve at Khargone District (M. P.) order Passeriformes was dominant in the entire four study site with twenty nine (Wachoo point at Mandleshwar), twenty five (Jamghat Temple at main Vindhyaachal), eighteen (Double Golai Balwada) and twenty eight (Gavalan Pati Charbhuj temple Katkut).

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