AVIFAUNAL DIVERSITY IN AND AROUND BHASKEL DAM RESERVOIR OF NABARANGPUR, ODISHA.

‘Pramod Pal1, Abhilash Acharya1’ and Hemanta Kumar Sahu2.
1. M.Phil student, Department of Zoology, North Orissa University, Takatpur, Baripada, Odisha, India.
2. Associate Professor, Department of Zoology, North Orissa University, Takatpur, Baripada, Odisha, India.

Abstract

Birds are distributed all over the world occupying various habitats. Birds are important bio-indicators of nature so monitoring bird population is important. India’s biodiversity is very rich with many types of rare flora and fauna. The present study has been conducted to record the avifaunal diversity in and around the Bhaskel Dam reservoir in the Nabarangpur district of Odisha. Though many varieties of birds are seen in and around the dam no study has been conducted so far on the bird diversity of the area. After a study of about one year a total of 3,633 birds belonging to 150 species, 115 genera, 56 families and 19 orders were recorded. The Shanon-Weiner’s diversity index was found to be 4.724 and the Simpson’s diversity index was found to be 0.99 which signifies a good avifaunal diversity in the study area.

Introduction:-

Birds are one of the most successful group of organisms found on earth. These warm blooded vertebrates have adapted to a wide range of environmental conditions and they occupy diverse habitats. They are found on all the seven continents, including Antarctica. Birds play very important roles in various types of ecosystem as predators, scavengers, pollinators, seed dispersers and they are an important part of various food webs found in nature. Birds are ideal bio-indicators and useful models for studying a variety of environmental problems (Newton, 1995). Out of the 9,000 species of birds under 75 families found globally, India accounts for more than 1300 species under 48 families in 10 bio-geographic zones (Ali and Ripley, 1987). There are about 479 species of birds which are found in Odisha (Dev, 1997). The avifauna of Odisha has been mainly studied by Mukherjee (1952), Ripley (1979), Abdulali (1984), Sahu & Kar (1999), Sahu & Rout (2005), Gopi & Pandav (2007), and Das et al. (2010). Inspite of various studies conducted on avifaunal diversity some remote places of the state like the present study area does not have any specific records of bird species which are found here and therefore no conservation or public awareness initiatives are being taken.

The area where the present study has been conducted i.e., the Bhaskel Dam reservoir of Nabarangpur district of Odisha is a picnic spot and has forested areas as well as woodland regions around them, a variety of small mammals, reptiles and birds can be seen here. Though many varieties of birds are seen in and around the dam no study has been conducted so far on the avifaunal diversity of
the area and no steps have been taken in the conservation of the natural habitat around this dam. The present study has therefore been conducted to know the bird diversity and to create awareness about the importance of the study area.

Materials and Methods:--
Study area:-
The area where the present study has been conducted is the Bhaskel Dam reservoir (Latitude-19º-42′-30” N and Longitude-82º-08′-00” E) which is located in the Umerkote town of Nabarangpur district of the state of Odisha. The dam is about 1535 M long and about 22.86 M high. It has been built on the river Bhaskel which flows through Nabarangpur district. The dam is mainly used for irrigation and pisciculture. Bhaskel Dam reservoir is a place of tourist attraction and draws many people every year due to its beautiful surrounding which is covered with lush green vegetation. The climate is sub tropical to temperate. It is characterised by hot and dry summer, cool and humid monsoon and cold and dry winter. December is the coldest month with mean daily average temperature of 25ºC which reaches to a maximum of up to 40ºC in May. The rainfall this area receives is mainly from the Southwest monsoons which lasts from June to October. The average annual rainfall varies from 1030.21 mm to 1569.50 mm. Two types of soils are mainly found in the area i.e., Red and Laterite soil. The soil pH is neutral to alkaline and its salinity is mainly normal. The vegetation around the study area is mainly of three types; dry mixed deciduous forest, dry peninsular dry forest and dry teak forest. The flora of the study area is predominated by plants like Tamarind (Tamarindus indica), Kusum (Schleichera oleosa), Sal (Shorea robusta), Teak (Tectona grandis), Kendu (Diospyros melanoxylon), Kadamba (Neolamarckia cadamba), Amla (Phyllanthus emblica), Jamun (Syzygium cumini) and Bamboo (Bambusa vulgaris) etc. The present study is an attempt to record the various species of birds found in this area and to understand the ecological significance of this place.

Methodology:--
Avifaunal diversity in and around the Bhaskel Dam reservoir was recorded from March 2016 to April 2017. Sampling was carried out for thirteen months to record seasonal variation in avifaunal diversity and vegetation. Regular field trips were made throughout this period to the study area. Visits were carried everyday during all the months of the study period to record the bird diversity. The birds were observed at most active period of the day, i.e., early morning from 06:00 to 09:00 hours and in the evening from 15:00 to 18:00 hours. However the observation was made throughout the day also. Nocturnal species were also recorded during the night time. Binocular Olympus 10*50 X, was used for close observation of birds. Apart from direct sightings the presence of birds was also confirmed by interviews with local forest staffs, villagers and hunters. The birds were identified and classified on the basis of standard field guides by Ali and Ripley (1987), Ali (2002). The birds checklist was prepared using standardized common and scientific names by Manakadan and Pittie (2001).

Data analysis:--
Bird diversity was calculated using both Shannon-Weiner and Simpson’s diversity indices. Shannon-Weiner diversity Index ‘H’ was calculated using the formula:

$$H' = - \sum_{i=1}^{R} p_i \ln p_i$$

Where, $p_i$ = Proportion of individual species and $R$ = total number of species of the community (number seen and heard).

Simpson’s diversity Index ‘D’ was calculated using the formula:
Where, \( n_i \) = the total number of birds of each individual species and \( N \) = the total number of birds of all species. The value of \( D \) ranges between 0 and 1. With this index, 1 represents infinite diversity and 0, no diversity.

The percentage occurrence of birds in each family was calculated using the following formula.

\[
\text{Percentage Occurrence} = \left( \frac{\text{No. of species of each Family}}{\text{Total no. of different species seen}} \right) \times 100
\]

**Results:**
A total of 3,633 birds belonging to 150 species, 115 genera, 56 families and 19 orders were recorded during the study period. Of the total birds, 134 (89.33\%) species were resident (R) and 16 (10.66\%) species were migratory (M) (Fig:2). According to the IUCN red list 96\% (n=144) species were listed as Least Concern, 2.66\% (n=4) species were Near Threatened, 0.66\% (n=1) was Vulnerable and 0.66\% (n=1) was Endangered (Fig:3). The birds were also categorised as common (C) 76.66\% (n=115), uncommon (UC) 14\% (n=21) and rare (R) 9.33\% (n=14) (Fig:4). Dietary pattern of birds showed that insectivores 36.66\% (n=55) were dominating bird community followed by Piscivores 14\% (n=21), omnivores 12\% (n=18), carnivores 12\% (n=18), frugivores 11.33\% (n=17), granivores 8.66\% (n=13) and nectarivores 4.66\% (n=7) respectively (Fig:5). Accipitridae and Aridae were the most dominant families with 6\% (n=9) species followed by Muscicapidae 5.33\% (n=8) species, Columbidae 4.66\% (n=7) Motacillidae, Strigidae and Sturnidae 4\% (n=6) etc (Table 2). To measure the avifaunal diversity both Shanon-Weiner’s and Simpson’s diversity indices were calculated. The Shanon-Weiner’s diversity index was found to be 4.724 and the Simpson’s diversity index was found to be 0.99 which signifies a good avifaunal diversity in the study area.

**Discussion:**
Most of the bird species recorded were common however some rare species like the Brown fish Owl, Indian eagle Owl, Steppe Eagle, Pallid Harrier, Green Munia, Grey Francolin and Black headed Ibis etc. were recorded around the Bhaskel Dam reservoir. The Steppe Eagle which is an endangered bird was seen only once, the Brown fish Owl was also seen once during the study period so further study should be conducted to know about the status of these birds in the area. Apart from the species recorded sporadic reports of Vultures also occurred though no direct sightings happened during the study period so further investigation is required to know the present status of Vultures and which species if any are present in the area.

Apart from this the breeding and nesting status of birds along with the successful fledging rate is unknown. The attitude of the local human population towards the faunal diversity and their interaction with nature need to be better understood by further investigation.
| SL NO | FAMILY             | SC. NAME               | COMMON NAME                  | FEEDING HABIT | ABUNDANCE | STATUS | IUCN CATEGORY |
|-------|--------------------|------------------------|------------------------------|---------------|-----------|--------|----------------|
| 1     | Podicipedidae      | Tachybaptus ruficollis | Little Grebe                 | P             | C         | R      | Least Concern  |
| 2     | Anatidae           | Dendrocygna javanica   | Lesser whistling Duck        | P             | C         | M      | Least Concern  |
| 3     | Anatidae           | Nettapus coromandelinus| Cotton pygmy Goose           | P             | C         | R      | Least Concern  |
| 4     | Rallidae           | Amaurornis phoenicurus | White breasted Water Hen     | I,P           | C         | R      | Least Concern  |
| 5     | Rallidae           | Gallinula chloropus    | Common Moorhen               | I             | C         | R      | Least Concern  |
| 6     | Rallidae           | Porphyrio porphyrio    | Purple Moorhen               | I             | UC        | R      | Least Concern  |
| 7     | Rallidae           | Fulica atra            | Common Coot                  | O             | C         | M      | Least Concern  |
| 8     | Jacanidae          | Hydrophasianus chirurgus| Pheasant tailed Jacana      | O             | C         | R      | Least Concern  |
| 9     | Jacanidae          | Metopidius indicus     | Bronze winged Jacana         | O             | C         | R      | Least Concern  |
| 10    | Charadriidae       | Vanellus duvaucili     | River Lapwing                | I             | UC        | M      | Near Threatened |
| 11    | Charadriidae       | Vanellus indicus       | Red wattled Lapwing          | I             | C         | R      | Least Concern  |
| 12    | Charadriidae       | Vanellus malabaricus   | Yellow wattled Lapwing       | I             | UC        | R      | Least Concern  |
| 13    | Phalacrocoracidae  | Microcarbo niger       | Little Cormorant             | P             | C         | R      | Least Concern  |
| 14    | Phalacrocoracidae  | Phalacrocorax fuscicollis| Indian Cormorant            | P             | C         | R      | Least Concern  |
| 15    | Ardeidae           | Ixobrychus sinensis    | Yellow Bittern               | I,P           | C         | R      | Least Concern  |
| 16    | Ardeidae           | Ixobrychus cinnamomeus | Cinnamon Bittern             | P             | C         | R      | Least Concern  |
| 17    | Ardeidae           | Ixobrychus flavicollis | Black Bittern                | I,P           | C         | R      | Least Concern  |
| 18    | Ardeidae           | Nycticorax nycticorax  | Black crowned night Heron    | P             | C         | R      | Least Concern  |
| 19    | Ardeidae           | Ardeola grayii         | Indian pond Heron            | I,P           | C         | R      | Least Concern  |
| 20    | Ardeidae           | Bubulcus ibis          | Cattle Egret                 | I,P           | C         | R      | Least Concern  |
| 21    | Ardeidae           | Egretetta garzetta     | Little Egret                 | I,P           | C         | R      | Least Concern  |
| 22    | Ardeidae           | Mesopophyx intermedia  | Intermediate Egret           | I,P           | C         | R      | Least Concern  |
| 23    | Ardeidae           | Ardea alba             | Great Egret                  | I,P           | UC        | R      | Least Concern  |
| No. | Order       | Genus and Species                          | Common Name                  | Status          |
|-----|-------------|--------------------------------------------|------------------------------|-----------------|
| 24  | Ciconiidae  | *Ciconiidae*                               |                              |                 |
|     |             | *Anastomus oscitans*                       | Open billed Stork           | Least Concern   |
| 25  | Threskiornithidae | *Threskiornis melanocephalus* | Black headed Ibis | I*, P, UC, M, Near Threatened |
| 26  | Columbidae  | *Treron bicineus*                          | Orange breasted Green pigeon | Least Concern   |
| 27  | Columbidae  | *Treron phoenicoptera*                     | Yellow legged Green Pigeon  | Least Concern   |
| 28  | Columbidae  | *Streptopilia orientalis*                  | Oriental Turtle Dove        | Least Concern   |
| 29  | Columbidae  | *Spilopilia chinensis*                     | Spotted Dove                | Least Concern   |
| 30  | Columbidae  | *Streptopilia decaocto*                    | Eurasian Collared Dove      | Least Concern   |
| 31  | Columbidae  | *Chalcophaps indica*                       | Emerald Dove                | Least Concern   |
| 32  | Columbidae  | *Columbia livia*                           | Common Rock Pigeon          | Least Concern   |
| 33  | Psittaculida| *Psittacula eupatria*                      | Alexandrine Parakeet        | Least Concern   |
| 34  | Psittaculida| *Psittacula krameri*                      | Rose ringed Parakeet        | Least Concern   |
| 35  | Psittaculida| *Psittacula cyanocephala*                 | Plum headed Parakeet        | Least Concern   |
| 36  | Cuculidae   | *Clamator jacobinus*                       | Pied Cuckoo                 | Least Concern   |
| 37  | Cuculidae   | *Hierococcyx varius*                       | Common Hawk Cuckoo          | Least Concern   |
| 38  | Cuculidae   | *Eudynamys scolopaceus*                    | Indian Koel                 | Least Concern   |
| 39  | Cuculidae   | *Phaenicophas leucopsilura*                | Sirkeer Malhoka             | Least Concern   |
| 40  | Cuculidae   | *Centropus sinensis*                       | Greater Coucal              | Least Concern   |
| 41  | Accipitridae| *Milvus migrans*                           | Pariah Kite                 | Least Concern   |
| 42  | Accipitridae| *Elanus caeruleus*                         | Black Winged Kite           | Least Concern   |
| 43  | Accipitridae| *Accipiter badius*                         | Shikra                       | Least Concern   |
| 44  | Accipitridae| *Pernis ptilorhynchus*                     | Oriental Honey Buzzard      | Least Concern   |
| 45  | Accipitridae| *Circus melanoleucos*                      | Pied Harrier                | Least Concern   |
| 46  | Accipitridae| *Circus macrourus*                         | Pallid Harrier              | Near Threatened |
| 47  | Accipitridae| *Spilornis cheela*                         | Crested serpent             | Least Concern   |
|   | Order          | Family          | Species              | Common Names                                      | Status          | Code | Category |
|---|----------------|-----------------|----------------------|--------------------------------------------------|-----------------|------|----------|
| 48 | Accipitridae   | Circaetus       | gallicus             | Short toed Eagle                                 | Least Concern   | Ca   |          |
| 49 | Accipitridae   | Aquila          | nipalensis           | Steppe Eagle                                     | Endangered      | Ra   | M        |
| 50 | Falconida      | Falco           | tinnunculus          | Common Kestrel                                    | Least Concern   | C    | M        |
| 51 | Falconida      | Falco           | peregrinus           | Peregrine Falcon                                  | Least Concern   | UC   | M        |
| 52 | Strigidae      | Otus            | lettia               | Barred Scops Owl                                  | Least Concern   | Ra   |          |
| 53 | Strigidae      | Glaucidium      | radiatum             | Least Concern                                     | Least Concern   | Ca   |          |
| 54 | Strigidae      | Ninox           | scutulata            | Least Concern                                     | Least Concern   | Ca   | R        |
| 55 | Strigidae      | Athene          | brama                | Least Concern                                     | Least Concern   | Ca,I | R        |
| 56 | Strigidae      | Bubo            | zeylonensis          | Least Concern                                     | Least Concern   | Ca,P | R        |
| 57 | Strigidae      | Bubo            | bengalensis          | Least Concern                                     | Least Concern   | Ca   | R        |
| 58 | Tytonidae      | Tyto            | alba                 | Least Concern                                     | Least Concern   | Ca   | R        |
| 59 | Caprimulgidae  | Caprimulgus     | asiaticus            | Least Concern                                     | Least Concern   | I    | C        |
| 60 | Caprimulgidae  | Caprimulgus     | indicus              | Least Concern                                     | Least Concern   | I    | C        |
| 61 | Alcedinidae    | Alcedo          | athis                | Least Concern                                     | Least Concern   | P    | R        |
| 62 | Alcedinidae    | Halcyon         | smyrnensis           | Least Concern                                     | Least Concern   | P    | R        |
| 63 | Alcedinidae    | Ceryle          | rudis                | Least Concern                                     | Least Concern   | P    | UC       |
| 64 | Alcedinidae    | Pelargopsis     | capensis             | Least Concern                                     | Least Concern   | P    | UC       |
| 65 | Meropidae      | Merops          | orientalis           | Least Concern                                     | Least Concern   | I    | C        |
| 66 | Meropidae      | Merops          | leschenaultia        | Least Concern                                     | Least Concern   | I    | C        |
| 67 | Meropidae      | Merops          | philippinus          | Least Concern                                     | Least Concern   | I    | C        |
| 68 | Megalaimidae   | Psilopogon      | zeylanicus           | Least Concern                                     | Least Concern   | F    | C        |
| 69 | Megalaimidae   | Psilopogon      | asiaticus            | Least Concern                                     | Least Concern   | F    | C        |
| 70 | Megalaimidae   | Psilopogon      | haemacephalus        | Least Concern                                     | Least Concern   | F    | C        |
| 71 | Coraciidae     | Coracias        | benghalensis         | Least Concern                                     | Least Concern   | I    | C        |
| 72 | Upupidae       | Upupa           | epops                | Least                                             | Least           | I    | C        |
| No. | Order            | Genus            | Species                  | Suborder  | Family       | Status          
|-----|------------------|------------------|--------------------------|-----------|--------------|----------------- 
| 73  | Picidae          | Jynx             | torquilla                |         |             |                  
| 74  | Picidae          | Dinopium         | benghalense              | F,I      |             |                  
| 75  | Picidae          | Dendrocopos      | macei                    | F,I      |             |                  
| 76  | Picidae          | Leiopicus        | marattensis              | F,I      |             |                  
| 77  | Picidae          | Chrysocolaptes   | guttaeustatus            | F,I      |             |                  
| 78  | Bucerotidae      | Anthracoceros    | albirostris              | F,I      |             |                  
| 79  | Bucerotidae      | Ocyperos         | bivirostris              | F,I      |             |                  
| 80  | Hirundinidae     | Hirundo          | rustica                  | I        |             |                  
| 81  | Hirundinidae     | Hirundo          | smithii                  | I        |             |                  
| 82  | Hirundinidae     | Cecropis         | daurica                  | I        |             |                  
| 83  | Hirundinidae     | Cecropis         | striolata                | I        |             |                  
| 84  | Alaudidae        | Mirafra           | erythroptera             | I        |             |                  
| 85  | Timaliidae       | Pierithius        | rufiventer               | I        |             |                  
| 86  | Timaliidae       | Dumetia           | hyperythra               | I        |             |                  
| 87  | Dicruridae       | Dicurus           | macrocercus              | I        |             |                  
| 88  | Dicruridae       | Dicurus           | caerulescens             | I        |             |                  
| 89  | Dicruridae       | Dicurus           | hottentottus             | I        |             |                  
| 90  | Dicruridae       | Dicurus           | paradiseus               | I        |             |                  
| 91  | Sturnidae        | Acridotheresfuscus|                       | O        |             |                  
| 92  | Sturnidae        | Acridotheresginginianus|                   | O        |             |                  
| 93  | Sturnidae        | Gracula           | religiosa                | O        |             |                  
| 94  | Sturnidae        | Gracupica         | contra                   | O        |             |                  
| 95  | Sturnidae        | Sturnia           | malabarica               | O        |             |                  

**ISSN: 2320-5407** 
**Int. J. Adv. Res. 5(7), 368-381**
|    | Family            | Species                          | Scientific Name        | Status     |
|----|-------------------|----------------------------------|------------------------|------------|
| 96 | Sturnidae         | Sturnia pagodarum                | Brahminy Starling      | Least Concern |
| 97 | Corvidae          | Dendrocitta formosae             | Tree pie               | Least Concern |
| 98 | Corvidae          | Corvus splendens                 | Common crow            | Least Concern |
| 99 | Corvidae          | Corvus macrorhynchos             | Jungle crow            | Least Concern |
| 100| Tephrodornithidae | Tephrodornis pondicerianus       | Indian Woodshrike       | Least Concern |
| 101| Campephagidae     | Coracina macei                   | Indian large cuckoo-shrike | Least Concern |
| 102| Campephagidae     | Pericrocotus speciosus           | Indian Scarlet Minivet | Least Concern |
| 103| Aegithinidae      | Aegithina tephia                 | Common Iora            | Least Concern |
| 104| Chloropseida      | Chloropsis jerdoni               | Jerdon's Chloropsis    | Least Concern |
| 105| Chloropseida      | Chloropsis aurifrons             | Gold fronted Chloropsis| Least Concern |
| 106| Pycnonotidae      | Pycnonotus cafer                 | Red vented Bulbul      | Least Concern |
| 107| Pycnonotidae      | Pycnonotus jocosus               | Red whiskered Bulbul   | Least Concern |
| 108| Pycnonotidae      | Pycnonotus atriceps             | Black headed Bulbul    | Least Concern |
| 109| Pellorneiidae     | Pellorneum ruficeps              | Spotted Babbler        | Least Concern |
| 110| Sylviidae         | Chrysomma sinense                | Yellow eyed Babbler    | Least Concern |
| 111| Leiothrichidae    | Turdoides striata                | Jungle Babbler         | Least Concern |
| 112| Muscicapidae      | Ficedula parva                   | Red breasted Flycatcher| Least Concern |
| 113| Muscicapidae      | Cyornis poliogenys               | Brook’s Flycatcher     | Least Concern |
| 114| Muscicapidae      | Cyornis rubeculoides             | Blue throated Flycatcher| Least Concern |
| 115| Muscicapidae      | Eumyias thalassinus              | Verditer Flycatcher    | Least Concern |
| 116| Muscicapidae      | Copsychus saularis               | Magpie Robin           | Least Concern |
| 117| Muscicapidae      | Copsychus fulicatus              | Indian Robin           | Least Concern |
| 118| Muscicapidae      | Saxicola caprata                 | Pied Bushchat          | Least Concern |
| 119| Muscicapidae      | Copsychus malabaricus            | Indian Shama           | Least Concern |
| 120| Cisticolidae      | Prinia socialis                  | Ashy Grey              | Least Concern |
| No. | Family               | Species                          | Common Name                        | Status | IUCN     | Concern     |
|-----|----------------------|----------------------------------|------------------------------------|--------|---------|-------------|
| 121 | Cisticolidae         | Orthotomus sutorius              | Indian Tailor Bird                 | I      | C       | Least Concern |
| 122 | Acrocephalidae       | Acrocephalus dumetorum           | Blyth’s Reed Warbler               | I      | C       | Least Concern |
| 123 | Turdidae             | Geokichal citrine                | Orange headed Thrush               | I      | C       | Least Concern |
| 124 | Stenostiridae        | Calicicapceylonensis             | Grey headed Flycatcher             | I      | Ra      | Least Concern |
| 125 | Rhipiduridae         | Rhipidura albicollis             | White throated Fantail             | I      | Ra      | Least Concern |
| 126 | Paridae              | Machlolophus spilonotus          | Yellow cheeked Tit                 | I      | C       | Least Concern |
| 127 | Sittidae             | Sitta cinnamoventris            | Chestnut bellied Nuthatch          | O      | C       | Least Concern |
| 128 | Motacillidae         | Anthus trivialis                | Indian Tree Pipit                  | I      | C       | Least Concern |
| 129 | Motacillidae         | Motacilla cinerea               | Grey Wagtail                       | I      | C       | M Least Concern |
| 130 | Motacillidae         | Motacilla maderaspatensis       | Large pied Wagtail                 | I      | C       | Least Concern |
| 131 | Motacillidae         | Motacilla flavia                | Yellow Wagtail                     | I      | C       | M Least Concern |
| 132 | Motacillidae         | Motacilla alba                  | White Wagtail                      | I      | C       | M Least Concern |
| 133 | Motacillidae         | Dendronanthus indicus           | Forest Wagtail                     | I      | C       | M Least Concern |
| 134 | Dicaeidae            | Dicaeum agile                   | Indian thick billed Flower Pecker  | N      | C       | M Least Concern |
| 135 | Nectariniidae        | Leptocoma zeylonica             | Indian purple rumped Sunbird       | N      | C       | M Least Concern |
| 136 | Nectariniidae        | Cinnyris jugularis              | Yellow bellied Sunbird             | N      | UC      | M Least Concern |
| 137 | Nectariniidae        | Cinnyris asiaticus              | Purple Sunbird                     | N      | C       | M Least Concern |
| 138 | Nectariniidae        | Arachnothera longirostra        | Little Spider Hunter               | I,N    | UC      | M Least Concern |
| 139 | Zosteropidae         | Zosterops palpebrosus           | Indian White Eye                   | I,N    | UC      | M Least Concern |
| 140 | Passeridae           | Passer domesticus               | House Sparrow                      | G      | C       | M Least Concern |
| 141 | Ploceidae            | Ploceus philippinus             | Baya Weaver                        | G,I    | C       | M Least Concern |
| 142 | Estrildidae          | Amandava Formosa                | Green Munia                        | G      | UC      | M Vulnerable  |
Table 2: Avifaunal distribution based on percentage occurrence in families

| SL NO | FAMILIES OF BIRDS RECORDED | PERCENTAGE OCCURRENCE |
|-------|-----------------------------|------------------------|
| 1     | Podicipedidae               | 0.66                   |
| 2     | Anatidae                   | 1.33                   |
| 3     | Rallidae                   | 2.66                   |
| 4     | Jacanidae                  | 1.33                   |
| 5     | Charadriidae               | 2                      |
| 6     | Phalacrocoracidae          | 1.33                   |
| 7     | Ardeidae                   | 6                      |
| 8     | Ciconiidae                 | 0.66                   |
| 9     | Threskiornithidae          | 0.66                   |
| 10    | Columbidae                 | 4.66                   |
| 11    | Psittaculidae              | 2                      |
| 12    | Cuculidae                  | 3.33                   |
| 13    | Accipitridae               | 6                      |
| 14    | Falconidae                 | 1.33                   |
| 15    | Strigidae                  | 4                      |
| 16    | Tytonidae                  | 0.66                   |
| 17    | Caprimulgidae              | 1.33                   |
| 18    | Alcedinida                 | 2.66                   |
| 19    | Meropidae                  | 2                      |
| 20    | Megalaimidae               | 2                      |
| 21    | Coraciidae                 | 0.66                   |
| 22    | Upupidae                   | 0.66                   |
| 23    | Picidae                    | 3.33                   |
| 24    | Bucerotidae                | 1.33                   |
| 25    | Hirundinidae               | 2.66                   |
| 26    | Alaudidae                  | 0.66                   |
| 27    | Timaliidae                 | 1.33                   |
| 28    | Dicruridae                 | 2.66                   |
| 29    | Sturnidae                  | 4                      |
| 30    | Corvidae                   | 2                      |
| 31    | Tephrodornithidae          | 0.66                   |
| 32    | Campephagidae              | 1.33                   |
| 33    | Aegithinidae               | 0.66                   |
| No. | Family            | Value |
|-----|------------------|-------|
| 34  | Chloropseidae    | 1.33  |
| 35  | Pycnonotidae     | 2     |
| 36  | Pellornidae      | 0.66  |
| 37  | Sylviidae        | 0.66  |
| 38  | Leiothrichidae   | 0.66  |
| 39  | Musicapidae      | 5.33  |
| 40  | Cisticolidae     | 1.33  |
| 41  | Acrocephalidae   | 0.66  |
| 42  | Turdidae         | 0.66  |
| 43  | Stenostridae     | 0.66  |
| 44  | Rhipiduridae     | 0.66  |
| 45  | Paridae          | 0.66  |
| 46  | Sittidae         | 0.66  |
| 47  | Motacillidae     | 4     |
| 48  | Dicaeidae        | 0.66  |
| 49  | Nectariniidae    | 2.66  |
| 50  | Zosteropidae     | 0.66  |
| 51  | Passeridae       | 0.66  |
| 52  | Ploceidae        | 0.66  |
| 53  | Estrildidae      | 2     |
| 54  | Fringillidae     | 0.66  |
| 55  | Phasianidae      | 2.66  |
| 56  | Turnicidae       | 0.66  |

**Abbreviations:**  
R- Resident, M- Migratory, C- Common, UC- Uncommon, Ra- Rare, LC- Least Concern, NT- Near Threatened, VU- Vulnerable, EN- Endangered, I- Insectivores, P- Piscivores, Ca- Carnivores, O- Omnivores, F- Frugivores, G- Granivores, N- Nectarivores
Fig 1: Location map showing Bhaskel Dam Reservoir in Umerkote town, Nabarangpur district of Odisha.

Fig 2: Avifaunal distribution (in percent) based on abundance

Fig 3: Avifaunal distribution based on IUCN category
Conclusion:-
The present study which recorded 150 species of birds reflects a moderately healthy overall biodiversity for the study location. But it must be mentioned that the study location under present investigation are facing anthropogenic disturbances in the forms of urbanization, mining activities, livelihood dependence (mainly in the form of cattle grazing and fuel wood collection). To add salt to the wound poaching of birds is a major issue for this area like most other parts of India. Natural calamities like forest fire also have disastrous effects on wildlife from the present study location. To conclude it may be noted that the area was studied for short time span, a more intensive study would surely result in identifying more bird species. The impact of anthropogenic alteration of the habitats in and around the present study location also needs intensive studies.

Acknowledgements:-
The authors are grateful to all the staffs of the forest department of Nabarangpur district and also to various residents of Umerkote town and Nabarangpur district for their cooperation and help during the study period.

References:-
1. Abdulali, H., (1984). Seasonality and occurrence of birds in the Eastern Ghats. J. Bombay Nat. Hist. Soc. 81 (1): 191.
2. Ali, S., (2002). The Book of Indian Birds (13th revised edition) Oxford University Press, New Delhi.
3. Ali, S. and Ripley, S.D., (1987). Compact handbook of the birds of India and Pakistan. Bombay: Oxford University Press.
4. Das, S. K., Dash, N., Ahmed, R. A., & Debata, S., (2010). Birds of North Orissa University campus at the base of Similipal Biosphere Reserve, Orissa, India. Newsletter for Birdwatchers 50 (2): 25–29.
5. Dev. U.N., (1997). A profile of Birds of Orissa, Reference Orissa, A.N. Tiwari, Enterprising Pub., 596 p.
6. Gopi, G. V., & Pandav, B., (2007). Avifauna of Bhitarkanika mangroves, India. Zoos’ Print Journal 22 (10): 2839–2847, 2847i–ii.
7. Manakadan, R. and Pittie, A. (2001). Standardized common and Scientific names of the birds of the Indian Sub Continent. Buceros. 6(1): 1-37.
8. Mukherjee, A. K., (1952). On a collection of birds from the Simlipal Hills, Mayurbhanj District, Orissa. Records of the Indian Museum 50 (2): 157–172.
9. Newton, I., (1995). The contribution of some recent research on birds to ecological understanding. J. Anim. Ecol., 64, 675–696.
10. Ripley, S. D., (1979). Changes in the bird fauna of a forest area; Simlipal Hills, Mayurbhanj District, and Dhenkanal District, Orissa. J. Bombay Nat. Hist. Soc. 75 (3): 570-574.
11. Sahu, H. K. & Kar, S. K., (1999). Study in population status of aquatic birds in Nalaban sanctuary, Chilika lake, Orissa. Pranikee. 19 & 20: 11–15.
12. Sahu, H. K., & Rout, S. D., (2005). Checklist of waterbirds in Mayurbhanj district, Orissa. Zoos’ Print Journal 20 (9): 1992–1993.