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Avifauna of Suburb of Mumbai, Palghar, Maharashtra

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ABSTRACT

In this paper an attempt is made by the author to quantify the results of his survey of the avifauna from the Palghar. Palghar is the suburb of Mumbai and fast growing semi-industrial city located about 90 kilometers north of Mumbai. This area is surveyed for avifauna in the last 20 years through the nature trails. The author has recorded 67 species of birds belonging to 12 Orders and 33 Families. The Order Passeriformes was found dominant having 16 families and 33 bird species. In the families the family Muscicapidae, Ardeidae and Accipitridae were found dominant with seven, six and six species respectively. In this paper an attempt is being made to enumerate the beautiful avifauna and to make authorities aware specially town planners about the rich heritage of this area and to plan scientifically the management of this fast growing suburb. The proper town planning of this semi-industrialial new Aadivashi district will boost not only the scenic beauty but also the revenue through the eco-tourism and in turn the living standarad of the people in general and Aadivashi tribal people in particular

KEYWORDS Avifauna, suburb, planning, Aadivashi

INTRODUCTION

Bird communities of residential and urban area contain higher bird densities than outlying natural areas, Graber and Graber (1963), Emlen (1974),With only forest edge communities supporting greater densities in temperate zones. In addition to the factors controlling natural communities, Lancaster and Rees (1979), the diversity of birds in urban areas is affected by the age of the neighborhood, Lucid (1974), type of housing, Geis (1974), and degree of urbanization, Batten (1972). Few studies have compared the avifauna of cities with that of outlying natural areas and have measured habitat structure in both communities.

The richness of India's biodiversity and its rapid erosion in the last few decades need no telling. Most ecosystems have been degraded, fragmented and depleted to an extent that their conservation requires intense and informed management. India has approximately 1300 species of birds constituting 13% of the world bird assembly and thus is an area of high avian diversity Grimmett et al., (1998). Birds are some of the most prominent species of the Earth's biodiversity and being sensitive to environmental changes. They act as key indicators for assessing the status of ecosystem health Taper et al. (1995); Olechnowski (2009). Assessing the bird diversity of a habitat over time and space is one of the key issues for avian community ecologists. Richness, abundance and community composition are often used by ecologists to understand the diversity of species in their natural occurrence Magurran, (2004). Of course, the Indian subcontinent, a part of the vast Oriental bio geographic regions, is very rich in biodiversity. It is estimated that freshwater wetland alone support 20% of the known range of biodiversity in India Deepa et al. 1999**.** It is being suggested that the avifauna are important for the ecosystem as they play various roles as scavenger, pollinators and predators of insect pest Padmavati et al. 2010**.** Surana *et al.* (2007) studied the birds of Chimdi Lake of Nepal. Singh *et al*. (1990) studied the ecology of birds of Kawar Lake in Bihar. Singh *et al*. (2016) studied the avifauna of Devkhop Lake of Palghar and enumerated 20 families. The bioindicators of different kind of environment like urbanization and industrialization disturbs the avian habitats Sharma (1982), Bhattacharjee *et al.* (1985).

The present study is carried out not only to enumerate birds of this fast growing suburb, but also to make the government authorities aware and specially the town planners to look into the rich heritage of this adivashi tribal dominant area and start planning for the better conservation and management of this beautiful area for the future of our society.

MATERIAL AND METHODS

Study area-

Palghar city is the suburb of Mumbai. Palghar is a semi-industrial city and located about 90 kilometers north of Mumbai. Palghar is the 36th district of Maharashtra which was carved out of India's most populous district of Thane on August 1, 2014.The semi-industrialised Palghar has good connectivity with western railway and highways within the State and outside the State. After bifurcation Palghar district includes tribal dominated tehsils (talukas) of Palghar, Jawhar, Mokhada, Talasari, Vikramgad, Wada, Dahanu and Vasai. Palghar has a tropical, very humid and warm climate all through the year. This study was conducted all around of Palghar, Maharashtra State, which is situated between Geographic coordinates of Latitude: 19°41′ 48′ N Longitude: 72°45′ 55′ E. Elevation above sea level: 17 m = 55 ft. Topography of Palghar is very beautiful. In the west surrounded by Arabian Sea and in the east by hilly tracks especially of Waghoba hill. Surya River is flowing in the east and satisfying the thirst of people of this area. In the vicinity there are good numbers of water bodies which are taking care of ground water table. Though carved out recently as the Aadivashi tribal district but very rich in natural resources including avifauna.

Method

The entire study was conducted by nature trails all around the Palghar. The Observations were recorded by using Nikon Action 10x50 binocular and relevant photographs were taken by Canon 700 D. Birds were identified with the help of noting standard methods given by Ali & Ripley (1969, 1995), Ali (1996, 2002) and Grimmett *et al*. (1999).

RESULT AND DISCUSSION

Birds are considered as useful biological indicators because they are ecologically versatile and live in all kinds of habitats as herbivores or carnivorous. They are susceptible to the change in wetlands or other ecosystem. Some birds are migratory, which are responsible for fluctuation in the population of birds that occurs during different season of the year, which may help to know whether an area is normal or getting polluted, as total absence of birds from any other may be considered as pollution indicator, Borale *et al.* (1994).

In the present study a total of 67 birds belong to 12 orders and 33 families were recorded in 20 years of casual nature trails from Palghar city and surrounding areas (table 1). This is the first record of avian biodiversity of Palghar city. Palghar city exhibits qualitative variation in avifauna.

Table 1: Scientific check list of Avifauna of Palghar city.

Order	Family	Scientific name	Common Name
Passeriformes	Muscicapidae	Saxicolodies fulicatus	Indian Robin
		Erithacus svecicus	Blue throat
		Copsychus saularis	Magpie Robin
		Orthotomus sutorius	Tailor Bird
		Prinia sylvatica	Jungle Wren-Warbler
		Cercomela fusca	Brown Rock Chat
		Acrocephalus dumetorum	Blyth's Reed Warbler
	Motacillida	Motacilla flava	Yellow Wagtail
		Motacilla cinere	Grey Wagtail
		Anthus novae-seelandiae	Paddy field Pipit
	Sturnidae	Acridotheres tristis	Common Myna
		Sturnus contra	Pied myna
		Sturnus roseus	Rosy Pastor
	Nectariniidae	Nectarinia asiatica Latham	Purple Sun Bird
	Hirundinidae	Hirundo daurica	Redrumped Swallows
	Pycnonotidae	Pycnonotus cafer	Red Vented Bulbul
	Dicruridae	Dicrurus macrocecur	Black Drongo
	Corvidae	Corvus splendens	House Crow
		Corvus macrorhynchos	Jungle Crow
	Monarchidae	Terpsiphone paradisi	Asian Paradise Flycatcher
	Campephagidae	Tephrodornis virgatus	Large Wood Shrike
	Artamidae	Artamus fuscus	Ashy Swallow Shrike
	Irenidae	Aegithina tiphia	Common Iora
	Ploceidae	Lonchura malabarica	Whitethroated Munia
		Ploceus philippinus	Baya
	Oriolidae	Oriolus oriolus	Golden Orioles
	Alaudidae	Mirafra assamica	Bush Lark
		Eremopterix grisea	Ashycrowned Finch-Lark
		Mirafra erythroptera	Redwinged Bush Lark
		Galerida malabarica	Malabar Crested Lark
		Eremopterix nigriceps	Blackcrowned Finch-Lark
	Laniidae	Lanius schach	Rufousbacked Shrike
		Lanius excubitor	Grey Shrike
Ciconiiformes	Ardeidae	Egretta garzetta	Little Egrets
		Mesophoyx intermedia	Median Egret
		Bubulcus ibis	Cattle Egrete
		Ardeola grayii	Pond Heron
		Ardea cinerea	Grey Heron
		Nycticorax Nycticorax	Night Heron
	Phalacrocoracidae	Phalacrocorax niger	Little Cormorant
	Ciconiidae	Anastomus oscitans	Asian Open bill Stork
		Mycteria leucocephala	Painted Stork
Apodiformes	Apodidae	Cypsiurus parvus	Palm Swift
Cuculiformes	Cuculidae	Centropus sinensis	Coucal
Falconiformes	Accipitridae	Gyps bengalensis	Indian Whitebacked Vulture
		Milvus migrans	Pariah Kite
		Elanus caeruleus	Black Winged Kite
		Accipiter nisus	Asiatic Sparrow Hawk?
		Accpiter badius	Indian Shikra
		Circus aeruginosus	Marsh Harrier
Coraciiformes	Meropidae	Merops orientalis Latham	Green Bee Eater
	Upupidae	Upupa epops	Common Hoopoe
	Coraciidae	Tockus birostris	Grey hornbill
		Coracias benghalensis	Indian roller
	Laridae	Sternm aurantia	Indian River Tern
Galliformes	Phasianidae	Francolinus pictus	Painted Partridge
		Francolinus pondicerianus	Grey Partridge
Columbiformes	Columbidae	Columba livia	Blue rock Pigeon
		Streptopelia chinensis	Spotted Dove
		Streptopelia senegalensis	Indian Little Brown Dove
Psittaciformes	Psittacidae	Psittacula krameri	Roseringed Parakeet
Gruiformes	Rallidae	Amaurornis phoenicures	Indan Whitebreasted Waterhen
Charadriiformes	Charadriidae	Tringa hypoleucos	Sand Piper
		Vanellus indicus	Red-Wattled Lapwing
		Gallinago Gallinago	Fantail Snipe
	Haematopodidae	Haematopus ostralegus	Oyster Catcher
Piciformes	Capitonidae	Megalaima haemacephala	Crimson Throated Barbet

The order Passeriformes was found dominant having 16 families followed by orders Coraciformes(4),Ciconiiformes(3),Charadriiformes(2),Piciformes(1),Columbiformes(1),Apodiformes(1), Cuculiformes (1), Falconiformes (1), Galliformes (1),Gruiformes(1) and Psittaciformes (1).Fig.2.

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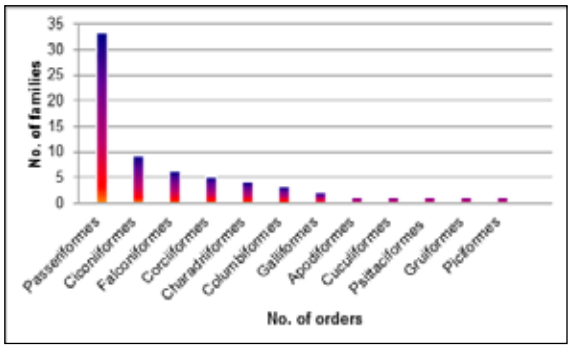
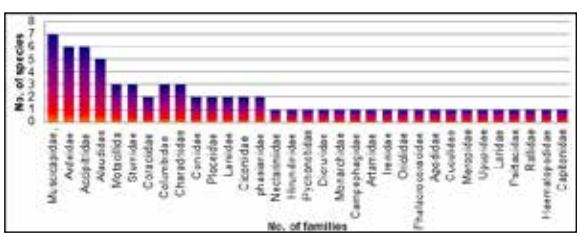
Fig. 2. The Order wise distribution of bird families of Palghar city.



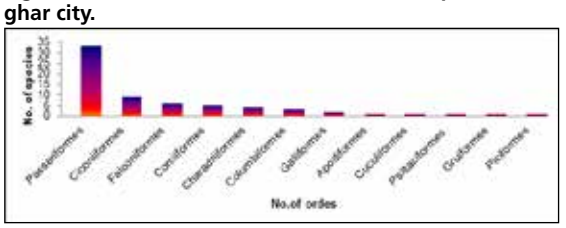
The family Muscicapidae, Ardeidae and Accipitridae were found dominant with seven, six and six species respectively indicating the terrestrial habitat moderately support birds life followed by Alaudidae(5), Motacillida (3), Sturnidae (3), Coraciidae (2), Columbidae (3), Charadriidae(3), Corvidae (2), Ploceidae (2), Laniidae (2), Ciconiidae (2), phasianidae (2), Nectariniidae (1), Hirundinidae (1), Pycnonotidae(1), Dicruridae (1), Monarchidae (1), Campephagidae (1), Artamidae (1), Irenidae (1), Oriolidae (1), Phalacrocoracidae (1), Apodidae (1),Cuculidae(1),Meropidae(1),Upupidae(1),Laridae(1),Psittacidae,(1),Rallidae(1),Haematopodidae(1) and Capitonidae (1) Fig.3.

Fig. 3. The Family wise distribution of bird species of Palghar city.



On the basis of orders Passeriformes order (33 species) was maximum recorded which followed by orders Ciconiiformes (9 species), Falconiformes (6 species), Coraciformes (5 species) , Charadriiformes(4 species), Columbiformes (3 species), Galliformes (2 species), Apodiformes (1 species), Cuculiformes(1 species), Psittaciformes (1 species), Gruiformes(1 species) and Piciformes (1 species).Fig.3.

Fig.3.The Order wise distribution of bird species of Palghar city.



Similar type of study was carried out by Singh et al. (2016), where they observed beneficial aspect of garbage dump of Palghar in terms of avifauna and recorded 33 species of birds belonging to 21 families. Singh (2016- in press) studied the avifauna of Waghoba forest of Palghar and recorded 77 species belonging to 31 families. Vikas kumar (2015), recorded 99 birds species in Vansda National Park, Gujarat. Terdalkar *et al*. (2005) listed 45 species of birds belonging to 18 families around Bhatye estuary, Ratnagiri. Prashant *et al*. (1994) in their study of coastal area of Nellore district recorded 78 species of birds. Kurhade (1991**)** recorded 51 bird species in Ahmednagar district. Vyawahare (1991) listed 245 bird species in Dhule district of Maharashtra.

Field observations disclosed that vegetation in residential areas occurred in small patches. These patches were in the form of trees, shrubs or herbaceous plants, each of which appeared as a vertically isolated stratum lacking other vegetation above or below. High densities of birds may be attributed to the age and stability of the study areas which probably resulted in more vegetation regrowth, more colonization by urban species, and more complete synanthropy (the dependent settling of wild species in human habitations, Tomialojc (1970). Dominance by a few species that can rapidly colonize and reproduce in artificial habitats is characteristic of urban bird communities in North America, Woolfenden and Rohwer(1969), Emlen (1974), Lancaster and Rees (1979). Habitat patchiness may be an important factor affecting bird species diversity in urban areas (Hohtola 1978). The patch repeated most often in Oxford was dense grass lawns. Suburban lawns have higher net productivity and food utilization by birds than other grassland habitats, and act as areas of concentrated food supply capable of supporting high densities of birds (Falk 1976).

The present work is an attempt to establish the richness of this fast growing suburb and semi-industrialised new Aadivashi district in respect of avifauna which are excellent indicators of ecological health. From the above results it could be made out that the availability of water, safe habitat and food sources for both common and migratory birds in and around the city are important for the occurrence and abundance of avian population. This study suggests that vegetative cover in urban/ suburban areas should be increased, not by isolated plantings of landscape shrubs, but by recreating or preserving natural islands of complete habitat profiles consisting of vegetative cover in each layer. The aim of this paper is to make aware the government authorities and specially the town planners to look into the rich heritage of this Aadivashi tribal dominant district and strive for the synergism of natural beauty with the town planning so that both man and wildlife (nature) can coexist without conflict.

CONCLUSION

Around 67 species of birds belonging to 12 orders and 33 families were recorded in the study area which has its own importance. The proper and honest management of this fast growing suburb and semi-industrialised new Aadivashi district will further boost not only the scenic beauty but also the revenue through the eco-tourism and in turn the living standarad of the people in general and Aadivashi tribal people in particular.

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REFERENCE

1. Ali, S. & Ripley, S.D. 1969: Handbook for the Birds of India and Pakistan. Volume 1 to 10, Oxford University Press, New Delhi.
2. Ali, S. & Ripley, S.D. 1995: A Pictorial Guide to the Birds of the Indian Subcontinent. B.N.H.S., Oxford University Press New Delhi.
3. Ali, S. 1996: The Book of Indian birds. Bombay Natural history Society, Bombay.
4. Ali, S. 2002: The Book of Indian Birds (13th Ed.). Bombay Natural history Society.
5. Oxford University Press New Delhi.
6. Batten, L. A. 1972. Breeding bird species diversity in relation to increasing urbanization. Bird Study 19:157-166.
7. Bhattacharjee, P.C., Hazarika, B.C. 1985: Roosting sites and roosting birds at Gauhati Muncipal area. In Second International symposium on life sciences. November, 14-16, NEHU, Shillong.
8. Borale, R.P., Patil, V. & Vyawahare, and P.M. 1994: Study of population of local and migratory birds observed in and around Dhule, Maharashtra. Pavo, *India Journal of Ornithology, 32:* 81–86.

9. Deepa, R.S., Ramachandra, T.V. 1999: Impact of urbanization in the interconnectivity of wetlands. Paper presented at the National Symposium on Remote Sensing Applications for Natural Resourses: Retrospective and Perspective (XICXXI), Indian Society of Remote Sensing, Banglore.
10. Emien, J. T. 1974. ha urban bird community in Tucson, Arizona: derivation, structure, regulation. Condor 76:184-197.
11. Falk, J. H. 1976. Energetics of a suburban lawn ecosystem. Ecology 57:141-150.
12. Graberr,. R. and J. W. Graber.1 963. A comparative study of bird populations in Illinois, 1906-l 909 and 1956-1958. Bull. Ill. Nat. Hist. Surv. 28:383-528.
13. Grimmett R, Inskipp C, Inskipp T. Christopher Helm 1998, London.
14. Grimmett, R., Inskipp, C., Inskipp, T. & Byers, C. 1999: Pocket Guide to the Birds of the Indian Subcontinent.Oxford University Press Publications, 384 pp.
15. Geis, A. D. 1974. Effects of urbanization and type of urban development on bird populations, p. 97-105. In J. H. Noyes and D. R. Propulske [eds.], Wildlife in an urbanizing environment. Univ. Massachusetts, Amherst.
16. Hohtola, E. 1978. Differential changes in bird community structure with urbanisation: a study in central Finland. Omis Stand. 9:94-100.
17. .Kurhade, S.M. 1991: The birds of Ahmednagar (M.S.) *Pavo, India Journal of Ornithology, 29:*15–21.
18. Lancasterr,. K., Anc W. E. Rees. 1979. Bird communities and the structure of urban habitats. Can. J. Zool. 57:2358-2368.
19. Lucid, V. J. 1974. Bird utilization of habitat in residential areas. Ph.D. diss., Virginia Polytechnic Institute, Blacksburg, VA.
20. Magurran, A.E. 1988: Ecological Diversity and its Measurement. Princeton University Press, Princeton, NJ, 192pp
21. Olechnowski, B.F. 2009: An examination of songbird avian diversity, abundance trends, and community composition in two endangered temperate ecosystems: riparian willow habitat of the Greater Yellowstone Ecosystem and a restored tall grass prairie ecosystem, Neal Smith National Wildlife Refugelowa State University. Iowa State University
22. Padmavati, A., Alexandar, R., & Anbarashan, M. 2010: *Our Nature*, 8: 247-253.
23. Prashant, J. J., Rao, V. V. & Nagulu, (1994): Checklist of water birds in two different habitats in Nellore Dist. Andhra Pradesh, *Pavo*, 63-73.
24. Sharma, I.K. 1982: Adverse effects of air, water and soil pollutions on flora and fauna of towns and villages of Western Rajasthan. In Symposium on environment consciousness, problems of pollution and conservation in Rajasthan. October 1-3.
25. Singh, J.P. & Roy, S.P. 1990: Some aspects of ecology of birds of Kawar Lake, (Bihar). *Journal of Freshwater Biology, 2:*175-188.
26. Singh, R.B., Desale, A.A., Keni, S.J. & Gupta, R. 2016. Notes on the avifauna in and around Devkhop lake of Palghar, India. *Biodiversity Journal, 7*(3):359-364.
27. Singh, R.B., Desale, A.A., Keni, S.J. & Gupta, R. 2016. Beneficial aspects of garbage dumping ground of Palghar in terms of avifauna. *Paripex – Indian Journal of Research 5*(11): 451-453.
28. Singh, R.B. 2016-in press. Beautiful avifauna of Waghoba forest of Palghar Maharashtra. *Paripex – Indian Journal of Research*.
29. Surana, R, Subba, B.R, Limbu, K.P. 2007: Avian diversity during rehabilitation stage of Chimdi Lake, Sunsari, Nepal .*Our Nature, 5:* 75-80.
30. Taper, M.L., Bohning- Gaese, K. & Brown, J.H. (1995): Individualistic responses of bird species to environmental change. Oecologia 101: 478–486.
31. Terdalkar, Sameer, Kulkarni, A.S. & Berde V.S., 2005: Avian diversity in and around mangroves of Bhatye estuary, Ratnagiri, Maharashtra, India. *Journal Aquatic Biology, 20:* 79–83.
32. Tomialojcl,. 1970. Quantitative studies on the synanthropic avifauna of Legnica and its environs. Acta Omithol. 12:293-392.
33. Vikas, K., 2015: Biodiversity of Avian fauna of Vansda National park, Gujarat: conservation issues. *Nature Environment and Pollution Technology, 14:* 709–714.
34. Vyawahare, P.M. 1991: Checklist of birds from Dhule 363 district Maharashtra, India. *Pavo, India Journal of Ornithology, 29:* 77–106.
35. Woolfending,. E., and S. A. Rohwer.1 969. Breeding birds in a Florida suburb. Bull. Fla. State Mus. 13:1-83.