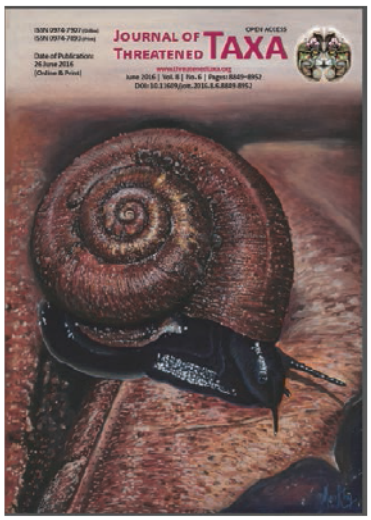

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SHORT COMMNUNICATION

A CHECKLIST OF AVIFAUNA FROM MALGAON-BAGAYAT AND MALVAN TOWNS OF SINDHUDURG DISTRICT, MAHARASHTRA, INDIA

Mayura Khot

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A checklist of avifauna from Malgaon-Bagayat and Malvan towns of Sindhudurg District, Maharashtra, India

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Abstract: The present work was carried out in Malgaon-Bagayat (16°09'04.35"N & 73°33'04.7"E) and Malvan Taluka (16°05'00"N & 73°30'00"E) of Sindhudurg District. The paper represents the first document on birds as there are no published records from Sindhudurg District. The study was conducted for a period of two years to explore the avifauna as no records have been published yet from this area. A total of 101 species of birds belonging to 17 orders and 45 families and were recorded in the study areas inhabiting different types of habitats. The Order Passeriformes contributed the maximum species (44.9%) followed by Pelecaniformes (9.2%), Charadriiformes (8.2%) and Accipitriformes (6.1%). The species such as the Asian Paradise Flycatcher, Common Hoopoe, and Pied Kingfisher were observed only once in the study area. The common occurrence of the Near Threatened Malabar Pied Hornbill in Bagayat signifies the ornithological importance of this site. Long-term studies on distribution and abundance are required to prepare a conservation plan for avifauna in Sindhudurg District. The data generated can be considered as baseline data for future conservation and management of existing species.

Keywords: Conservation, Malabar Pied Hornbill, Malgaon-Bagayat, Malvan, plantations, threats.

The Western Ghats (Sahyadris) constitute a 1,600km long system along the west coast originating from the north of the Tapi River and extending up to Kanyakumari at the southernmost tip of the Indian peninsula. The evergreen and moist deciduous forests of Western Ghats are found to hold the largest bird community. Covering an area of 1,60,000km^2, the ghats crosses six states: Gujarat, Maharashtra, Goa, Karnataka, Tamil Nadu and Kerala. The Western Ghats separates the inland Deccan Plateau from the coastal strip known as the Konkan region. The Konkan region being part of Maharashtra State comprises five districts i.e., Thane, Mumbai, Raigad, Ratnagiri and Sindhudurg of which Sindhudurg District is surrounded by the Arabian Sea on the west, Amboli Ghats and Belgaum on the south, Ratnagiri towards the north and the Sahyadri Hill ranges towards the east. Earlier the district was situated in Ratnagiri District but due to administrative convenience, industrial and agricultural development it was separated as Ratnagiri and Sindhudurg districts with effect from 01 May 1981. The district has its unique natural beauty with lush green rice fields, mango orchards, hill ranges, thick forests, large coastline, beaches, temples, historical forts, waterfalls which are important resources for tourist and also for variety of birds and animals. As birds form an important component in the natural ecosystem, they play a useful role in the control of insects, as scavengers, predators, seed dispensers and as pollinating agents. They are susceptible to landscape–level changes in the environment such as habitat fragmentation (Wilcove 1985) population level changes in breeding success and survival rates which may reflect changes in the

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environment (Baillie 1991).

In the late 19th century, studies on avifaunal diversity had received more attention by various workers such as Ali & Abdulali (1936–1939), Abdulali & Ali (1940), Abdulali (1973), Gole (1994, 1998), Bharucha & Gogate (1990), Mahabal (1989), Kurhade (1996, 2010), Ali S. (2002), Pande (2003) from Western Ghats and the south western parts of Maharashtra. Records published from the Konkan region and adjoining areas were supported by Vidal (1880), Soman (1963), Samant (1986), (Shanbhag et al. 2001), Prasad (2003) and (Mahabal et al. 2011). However, there is a lack of recent reports of avifauna from the Konkan region. Avifauna in Malvan Town and Bagayatwadi of Sindhudurg District have not been studied yet. Hence, the aim of the present study was to explore the avifauna around Malgaon Village of Bagayatwadi and Malvan towns from Sindhudurg district.

Study Area

The Sindhudurg District is situated between 15.37^0–16.40^{0}N & 73.19^0–74.18^{0}E. It covers an area of about 5,207km^2 and coastline of about 121km. The district name has been adopted from the Sindhudurg fort constructed by Shivaji Maharaj in 1664 . It was declared as “tourism district” by the Government of Maharashtra in 1997. Being a coastal district, the climate is generally moist and humid and the temperature varies with a minimum of 16.3^{0}C to a maximum of 33.8^{0}C. The average rainfall is 3,287mm (http://sindhudurg.nic.in). The forest of Sindhudurg is semi-evergreen, dry deciduous and moist deciduous (Punde 2008). The Sindhudurg fort, scenic beaches, dolphin watches, houseboat stays, and marine sanctuary at Malvan attract many tourists every year. Apart from tourism it is famous for major crops like Rice, Mango, Coconut, Cashew and Kokam which supports good employment business for local people. The district comprises eight talukas such as Devgad, Vaibhavwadi, Kankavli, Malvan, Vengurla, Kudal, Savantwadi and Dodamarg. The study was conducted in Malvan Taluka which consists of two sites, Malvan town and Bagayatwadi of Malgaon village (Fig. 1). Malvan town is situated about 1.5km opposite the Sindhudurg fort island with an open coastal ecosystem dominated by rocky islands, rocky and sandy beaches. The town hosts human settlements with coconut plantations (32%), upland with/without shrub (36%), forest cover (15%), agricultural land (8%), mudflat (4%), rocky islands (1%), mangrove area (1%) and remaining with fallow land, irrigation tanks and water bodies (ICMAM Report 2001). The Malgaon village is situated 18km away from

Image 1. *Pundanus* sp. vegetation

Malvan town which covers an area of about 1154ha comprising twelve small settlements (http://www.malgaon-malvan.mahapanchayat.gov.in). The study was conducted in one of the small settlements namely Bagayatwadi (16^{0}09’04.35’’N & 73^{0}33’04.7’’E) situated in Malgaon village covering an area of about 2.36km^2 and Malvan town 16^{0}05’00’N & 73^{0}30’00’E with an area of about 13.42km^2. The vegetation of Bagayat is semi-evergreen with cultivations whereas dry deciduous in the open hill plains. The Bagayat has a flowing stream which arises from Gad River with its edges covered with dense patches of *Pundanus* spp. vegetation (Image 1). Agricultural crops mainly cultivated are Rice, Nachani, Groundnut, Mustard seeds, Horse gram, Green gram, Black gram grown in the summer season whereas Long bean, Snake gourd, Pumpkin, Cucumber, Ladies finger, Bitter gourd and Melon in the rainy season. The dominant vegetation type is *Acacia auriculiformis*, and scattered trees of *Cocos nucifera*, *Artocarpus integrifolia, Eugenia jambolana, Ficus bengalensis, Tectona grandis, Psidium guajava*, *Garcinia indica, Bombax malabaricum, Cinnamomum temala, Ficus tsjakela, Aegle marmelos, Ocimum tenuiflorum, Azadirachta indica*, and plantations like *Anacardium occidentale* and *Mangifera indica*. Shrubs such as *Carissa carandas, Hibiscus rosa–sinensis, Mimosa pudica, Zizyphus rogosa, Adhatoda vasica, Loranthus longiflorus* are naturally present on the road side and also planted by villagers. Spices including Black pepper, Cinnamon, Nutmeg, and Clove are also grown and naturally present in the study area.

Material and Methods

The study was conducted seasonally for a period of two years from November 2011 to November 2013. Field surveys were carried out in winter, summer

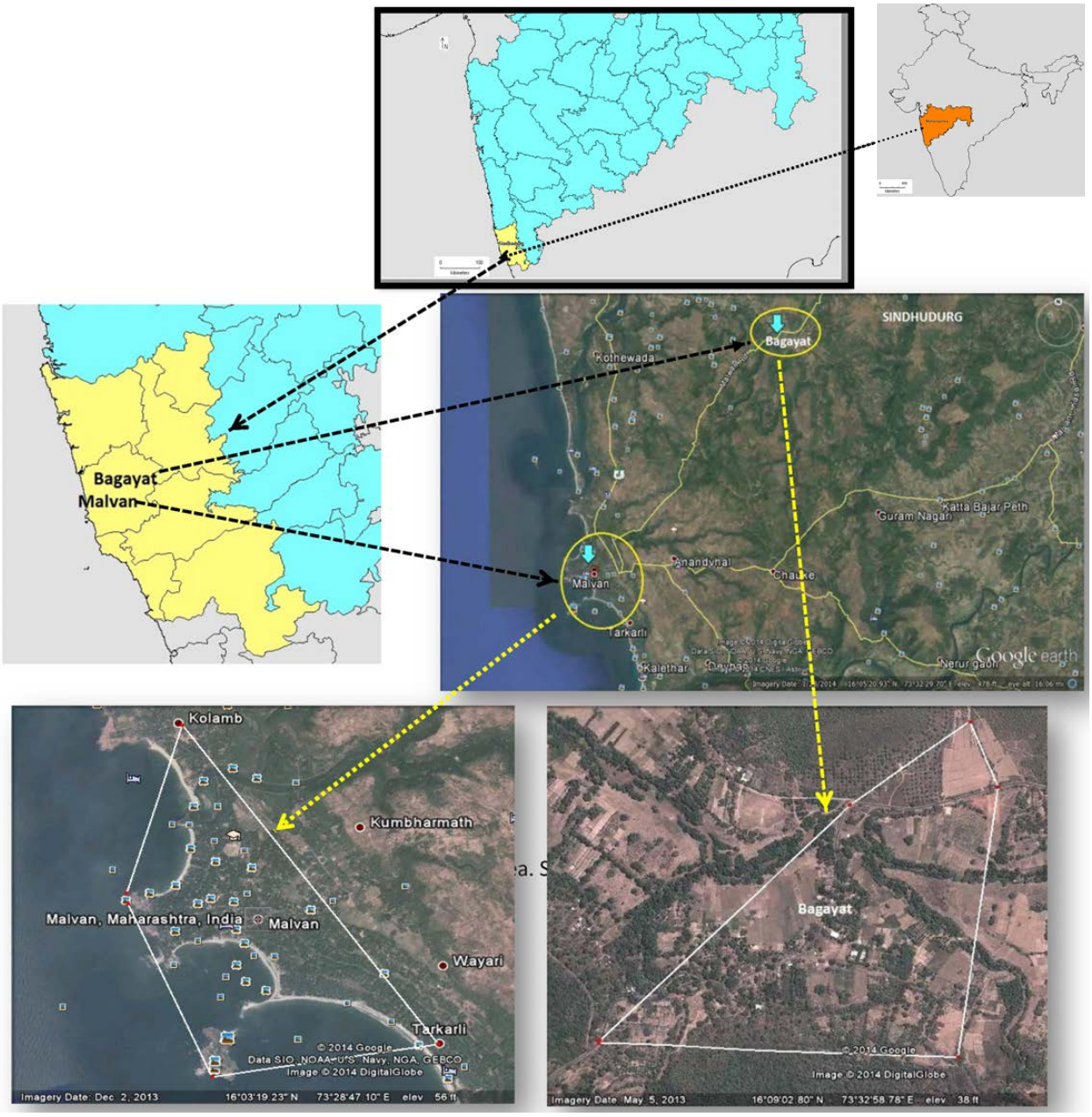

Figure 1. Study area (Source: Google Earth)

and the monsoon season seven days in a month from morning 0630 to 1100 hours and from evening 1600 to 1900 hours. Observations were done by direct sighting and photographs were taken with a Cannon SX520 HS camera with 20X optical zoom. Identification was done with the help of a standard field guide (Grimmet et al. 2011). Different habitats as well as nesting sites were also noted. Percentage occurrence of families was calculated by the method of Basavarajappa (2006). Species richness was calculated by recording the number of bird species observed in each habitat of the study area. The status of birds were classified as Resident (R), Winter visitor (WV) and Former range (FR) based on Grimmet et al. (2011).

Results and Discussion

The present study records a total of 101 species of birds belonging to 45 families from Malvan and Bagayat (Table 1; Images 2–14). Out of a total of 101 species, 89 were resident, 11 were winter visitor and 1 was former range. Order Passeriformes showed the maximum species diversity followed by Pelecaniformes, Charadriiformes and Accipitriformes (Table 2). Based on IUCN 2014 Red

Table 1. Checklist of birds from Malgaon-Bagayat and Malvan town of Sindhudurg District (classification as per Manakadan & Pittie 2004).

	Common name	Scientific name	Habitat	Status	IUCN status
	Accipitridae				
1	Brahminy Kite	*Haliastur indus* (Boddaert, 1783)	Ri, RS, Tc	R	LC
2	Black Kite	*Milvus migrans* (Boddaert, 1783)	RS, OfG, AH	R	LC
3	Crested Serpent Eagle	*Spilornis cheela* (Latham, 1790)	OfG, Ts	R	LC
4	Crested Hawk Eagle	*Nisaetus cirrhatus* (Gmelin, 1788)	OfG	R	LC
5	White-eyed Buzzard	*Butastur teesa* (Franklin, 1832)	OfG	R	LC
6	Shikra	*Accipiter badius* (Gmelin, 1788)	OfG, Ac, Ts	R	LC
	Ardeidae				
7	Cattle Egret	*Bubulcus ibis* (Linnaeus, 1758)	MgS, HH, Cl, PF	R	LC
8	Little Egret	*Egretta garzetta* (Linnaeus, 1766)	MgS, Tc	R	LC
9	Intermediate Egret	*Mesophoyx intermedia* (Wagler, 1829)	MgS, Tc	R	LC
10	Greater Egret	*Casmerodius albus* (Linnaeus, 1758)	MgS, Tc	R	LC
11	Indian Pond Heron	*Ardeola grayii* (Sykes, 1832)	MgS, FwS, Tc, Pu	R	LC
12	Black-crowned Night-Heron	*Nycticorax nycticorax* (Linnaeus, 1758)	MgS, Tc	R	LC
13	Striated Heron	*Butorides striata* (Linnaeus, 1758)	MgS, FwS, RS, FwR	R	LC
14	Grey Heron	*Ardea cinerea* Linnaeus, 1758	Ri, MgS, RS,SS	WV	LC
15	Purple Heron	*Ardea purpurea* Linnaeus, 1766	MgS	R	LC
16	Western Reef Egret	*Egretta gularis* (Bosc, 1792)	RS,Ri	WV	LC
	Bucerotidae				
17	Malabar Pied Hornbill	*Anthracoceros coronatus* (Boddaert, 1783)	Mn, OfG, FcB, Co	FR	NT
18	Indian Grey Hornbill	*Ocyceros birostris* (Scopoli, 1786)	Mn, OfG, Co, FcB	R	LC
	Irenidae				
19	Common Lora	*Aegithina tiphia* (Linnaeus, 1758)	Ac, MV, OfG	R	LC
20	Jerdon's Leafbird	*Chloropsis cochinchinensis* (Gmelin, 1788)	Ac, Bm	R	LC
	Passeridae				
21	House Sparrow	*Passer domesticus* (Linnaeus, 1758)	HH, Cl,	R	LC
22	Chestnut-shouldered Petronia	*Petronia xanthocollis* (Burton, 1838)	Ts, OfG	R	LC
	Nectariniidae				
23	Purple rumped Sunbird	*Nectarinia zeylonica* (Linnaeus, 1766)	Ac, MV	R	LC
24	Crimson Sunbird	*Aethopyga siparaja* (Raffles, 1822)	Ac, MV	R	LC
	Corvidae				
25	House Crow	*Corvus splendens* Vieillot, 1817	HH, AH	R	LC
26	Indian Jungle Crow	*Corvus macrorhynchos* Wagler, 1827	AH, MV	R	LC
27	Rufous Treepie	*Dendrocitta vagabunda* (Latham, 1790)	Gc	R	LC
	Dicruridae				
28	Black Drongo	*Dicrurus macrocercus* Vieillot, 1817	AH, Cl,	R	LC
29	Greater Racket-tailed Drongo	*Dicrurus paradiseus* (Linnaeus, 1766)	AH, Cl,	R	LC
	Muscicapidae				
30	Tickell's Blue Flycatcher	*Cyornis tickelliae* Blyth, 1843	Ac, MV	R	LC
31	Pied Bushchat	*Saxicola caprata* (Linnaeus, 1766)	AH,MV	R	LC
	Alcedinidae				
32	White-breasted Kingfisher	*Halcyon smyrnensis* (Linnaeus, 1758)	FwR, FwS, MgS, Tc	R	LC
33	Lesser Pied Kingfisher	*Ceryle rudis* (Linnaeus, 1758)	FwR, FwS, MgS, Tc	R	LC
34	Stork-billed Kingfisher	*Halcyon capensis* (Linnaeus,1766)	FwR, FwS, MgS, Tc	R	LC
	Meropidae				
35	Small Bee-eater	*Merops orientalis* Latham, 1801	AH, Cl, Ts	R	LC
36	Blue Bearded Bee-eater	*Nyctyornis athertoni* (Jardine & Selby, 1828)	OfG	R	LC
	Charadriidae				
37	Red Wattled Lapwing	*Vanellus indicus* (Boddaert, 1783)	MgS, Ogl, FwS,	R	LC
38	Little Ringed Plover	*Charadrius dubius Scopoli, 1786*	SS, RS	WV	LC

	Common name	Scientific name	Habitat	Status	IUCN status
	Pycnonotidae				
39	Red Vented Bulbul	*Pycnonotus cafer* (Linnaeus, 1766)	MV, Ac, HH, Ts	R	LC
40	Red Whiskered Bulbul	*Pycnonotus jocosus* (Linnaeus, 1758)	MV, Ac, Ts	R	LC
	Turdidae				
41	Indian Robin	*Saxicoloides fulicata* (Linnaeus, 1776)	Cl, Ts	R	LC
42	Oriental Magpie Robin	*Copsychus saularis* (Linnaeus, 1758)	MV, Ts, HH	R	LC
43	Orange-headed Thrush	*Zoothera citrine* (Latham, 1790)	MV, Cl,	R	LC
	Coraciidae				
44	Indian Roller	*Coracias benghalensis* (Linnaeus, 1758)	Ac, MV, OfG,Ll	R	LC
	Oriolidae				
45	Black Hooded Oriole	*Oriolus xanthornus* (Linnaeus, 1758)	Ts, MV	R	LC
46	Eurasian Golden Oriole	*Oriolus oriolus* (Linnaeus, 1758)	Ts, MV	R	LC
	Phasianidae				
47	Indian Peafowl	*Pavo cristatus* Linnaeus, 1758	OfG, Cl	R	LC
48	Jungle Bush Quail	*Perdicula asiatica* (Latham, 1790)	OfG,	R	LC
	Sylviidae				
49	Common Tailor-bird	*Orthotomus sutorius* (Pennant, 1769)	HH, AH, FwS,	R	LC
50	Ashy Prinia	*Prinia socialis* Sykes, 1832	Pu	R	LC
51	Grey-breasted Prinia	*Prinia hodgsonii* Blyth, 1844	MV	R	LC
52	Plain Prinia	*Prinia inornata* Sykes, 1832	MV	R	LC
53	Zitting Cisticola	*Cisticola juncidis* (Rafinesque, 1810)	Ofg	R	LC
	Timaliidae				
54	Jungle Babbler	*Turdoides striatus* (Dumont, 1823)	OfG, Ts	R	LC
	Rhipidurinae				
55	White-spotted Fantail	*Rhipidura albicollis* (Vieillot, 1818)	MV, Cl, HH	R	LC
	Picidae				
56	Yellow-crowned Woodpecker	*Dendrocopos mahrattensis* (Latham, 1801)	Ts, OfG	R	LC
57	Lesser Golden Back	*Dinopium benghalense* (Linnaeus, 1758)	Co, Bm	R	LC
	Psittacidae				
58	Rose Ringed Parakeet	*Psittacula krameri* (Scopoli, 1769)	Cl, HH	R	LC
59	Vernal Hanging Parrot	*Loriculus vernalis* (Sparrman, 1787)	Gc, MV	R	LC
60	Plum-headed Parakeet	*Psittacula cyanocephala* (Linnaeus, 1766)	MV	R	LC
	Estrildidae				
61	White-rumped Munia	*Lonchura striata* (Linnaeus, 1766)	Cl, MV	R	LC
	Laniidae				
62	Bay-backed Shrike	*Lanius vittatus* Valenciennes, 1826	OfG, Cl, Ts	R	LC
63	Long-tailed Shrike	*Lanius schach* Linnaeus, 1758	OfG, Cl, Ts	R	LC
	Hirundinidae				
64	Red Rumped Swallow	*Hirundo daurica* Linnaeus, 1771	HH, MV	R	LC
65	Wire-tailed Swallow	*Hirundo smithii* Leach, 1818	MV	R	LC
	Campephagidae				
66	Small Minivet	*Pericrocotus cinnamomeus* (Linnaeus, 1766)	Mn, Ac	R	LC
67	Orange Minivet	*Pericrocotus flammeus* (Forster, 1781)	MV, Mn, Bm	R	LC
	Phalacrocoracidae				
68	Little Cormorant	*Phalacrocorax niger* (Vieillot, 1817)	FwS, FwR, MgS	R	LC
	Scolopacidae				
69	Common Sandpiper	*Actitis hypoleucos* Linnaeus, 1758	SS, RS	WV	LC
70	Wood Sandpiper	*Tringa glareola* Linnaeus, 1758	MgS, Tc, Rs	WV	LC
71	Common Redshank	*Tringa tetanus* (Linnaeus, 1758)	Tc, MgS	WV	LC
72	Common Snipe	*Gallinago gallinago* (Linnaeus, 1758)	RS, Tc, MgS	WV	LC
	Motacillidae				

	Common name	Scientific name	Habitat	Status	IUCN status
73	Yellow Wagtail	*Motacilla flava* Linnaeus, 1758	FwS,	WV	LC
74	White-browed Wagtail	*Motacilla maderaspatensis* Gmelin, 1789	Tc,	R	LC
75	Paddy Field Pipit	*Anthus rufulus* Vieillot, 1818	OfG	R	LC
	Columbidae				
76	Spotted Dove	*Streptopelia chinensis* (Scopoli, 1786)	AH, Cl, OfG	R	LC
77	Red-collared Dove	*Streptopelia tranquebarica* (Hermann, 1804)	MV, Ts	R	LC
78	Yellow-footed Green Pigeon	*Treron phoenicoptera* (Latham, 1790)	Cl,	R	LC
79	Blue Rock Pigeon	*Columba livia* Gmelin, 1789	HH, MV	R	LC
	Capitonidae				
80	Brown Headed Barbet	*Megalaima zeylanica* (Gmelin, 1788)	Mn, MV, Ll	R	LC
81	Coppersmith Barbet	*Megalaima haemacephala* (Müller, 1776)	MV, HH, Ll	R	LC
	Cuculidae				
82	Asian Koel	*Eudynamys scolopacea* (Linnaeus, 1758)	AH, Cl	R	LC
83	Southern Coucal	*Centropus sinensis* (Stephens, 1815)	Mn, MV, Cl	R	LC
84	Common Hawk Cuckoo	*Hierococcyx varius* (Vahi, 1797)	MV	R	LC
	Sturnidae				
85	Common Myna	*Acridotheres tristis* (Linnaeus, 1766)	AH, HH, Cl	R	LC
86	Jungle Myna	*Acridotheres fuscus* (Wagler, 1827)	Cl, HH	R	LC
	Alaudidae				
87	Common Crested Lark	*Galerida cristata* (Linnaeus, 1758)	OfG, Cl	R	LC
	Monarchinae				
88	Asian Paradise Flycatcher	*Terpsiphone paradise* (Linnaeus, 175)	Mn, MV	Local migrant	LC
	Rallidae				
89	White-breasted Waterhen	*Amaurornis phoenicurus* (Pennant, 1769)	Pu, FwS	R	LC
	Dicaeidae				
90	Pale-billed Flowerpecker	*Dicaeum erythrorhynchos* (Latham, 1790)	MV, Ac	R	LC
91	Thick-billed Flowerpecker	*Dicaeum agile* (Tickell, 1833)	Ac	R	LC
92	Nilgiri Flowerpecker	*Dicaeum concolor* Jerdon, 1840	MV	R	LC
	Upupidae				
93	Common Hoopoe	*Upupaepops*Linnaeus, 1758	Cl	R	LC
	Podicipedidae				
94	Little Grebe	*Tachybaptus ruficollis* (Pallas, 1764)	FwR	R	LC
	Ploceidae				
95	Baya Weaver	*Ploceusphilippinus*(Linnaeus, 1766)	Co	R	LC
	Turnicidae				
96	Common Buttonquail	*Turnix suscitator* (Gmelin, 1789)	OfG, Ts	R	LC
	Strigidae				
97	Jungle Owlet	*Glaucidium radiatum* (Tickell, 1833)	OfG, Ts, Co	R	LC
98	Indian Scops Owl	*Otus bakkamoena* Pennant, 1769	Ofg	R	LC
	Jacanidae				
99	Pheasant-tailed Jacana	*Hydrophasianus chirurgus* (Scopoli, 1786)	Cl, FwS	R	LC
	Anatidae				
100	Lesser Whistling Duck	*Dendrocygna javanica* (Horsfield, 1821)	FwR	R	LC
	Falconidae				
101	Common Kestrel	*Falco tinnunculus* Linnaeus, 1758	OfG	WV	LC

Abbreviations: Least Concern= LC, Near Threatened = NT. Source: BirdLife International (2014).
Habitat abbreviations: Malvan: MgS - Mangrove swamps; Tc - Tidal creek; RS - Rocky shore; SS - Sandy shore; Ri - Rocky islands; FwR - Freshwater reservoir. Bagayat: HH - Human Habitation; Cl - Cultivation; PF - Paddy Fields; OfG - Open forest Grasslands; AH - All Habitat; MV - Mixed vegetation; Ts - Thorn scrub; FwS - Freshwater stream; Ac - *Acacia auriculiformis*; Pu - *Pundanus* spp.; Mn - *Mangifera indica*; FcB - *Ficus bengalensis*; Gc - *Garcinia indica*; Bm - *Bombax malabaricum*; Co - *Cocos nucifera*; Ll - *Loranthus longiflorus*

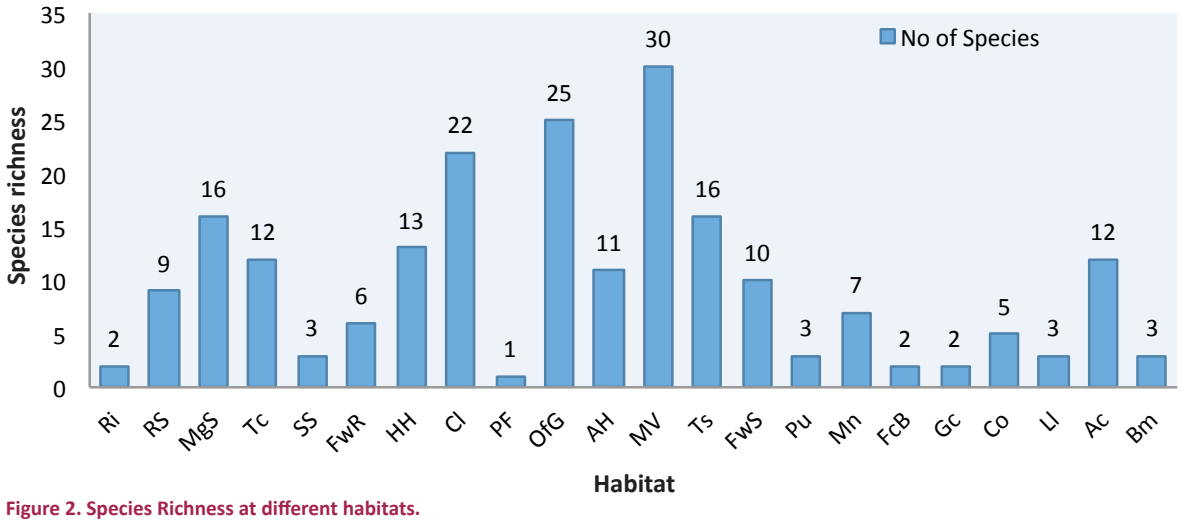

Figure 2. Species Richness at different habitats.
MgS - Mangrove swamps; Tc - Tidal creek; RS - Rocky shore; SS - Sandy shore; Ri - Rocky islands; FwR - Freshwater reservoir; HH - Human Habitation; Cl - Cultivation; PF - Paddy Fields; OfG - Open forest Grasslands; AH - All Habitat; MV - Mixed vegetation; Ts - Thorn scrub; FwS - Freshwater stream; Ac - *Acacia auriculiformis*; Pu - *Pundanus* spp.; Mn - *Mangifera indica*; FcB - *Ficus bengalensis*; Gc - *Garcinia indica*; Bm - *Bombax malabaricum*; Co - *Cocos nucifera*; Ll - *Loranthus longiflorus*

List Category, 100 species were Least Concern while one species was found to be Near Threatened (Malabar Pied Hornbill). Maximum number of species were found in mixed vegetation (14.2%) habitat followed by open forest grassland (11.8%), cultivation (10.4%), thorn scrub (7.5%) and mangroves (7.5%) (Fig. 2). The Bagayat has fresh water stream covered with dense *Pundanus* sp. vegetation which provides a refuge to many species during the afternoon. Species such as Little Cormorant, Yellow Wagtail, White-breasted Water-hen, Indian Pond Heron were observed continuously in December and February in the freshwater streams of Bagayat.

The Malabar Pied Hornbill was observed in 8 to 10 numbers in all seasons every day on Coconut, Mango and Banyan tree in Bagayat and surrounding areas. The reason for occurring in good numbers may be due to tall and fruiting trees. They were also observed on *Ficus bengalensis* many times feeding on the fig fruit. The roosting site for White-breasted Water-hen was *Pundanus* vegetation while that of Little Cormorant and Pond Heron was found on *Semecarpus anacardium* along the streams of Bagayat as they preferred tall trees. Nesting of Tickell's Blue Flycatcher was observed in drinking water well feeding their young ones with Honeybee. Red-rumped Swallow nesting was confirmed by observing them in carrying nest-building mud in their beak. Nesting of Baya Weaver was also seen on coconut trees.

Maximum number of birds was observed during the post monsoon season on fruiting trees. Extensive deforestation by slash and burn for plantations in Bagayat (Image 16) whereas mangroves cutting into Malvan town (Image 15) were the major threats observed in the study area. The forest area around Bagayat is cleared for plantations of cashew, mango and agricultural land. Personal observation has showed that

Table 2. Species distribution in their respective order

	Orders	Number of species	Percentage (%)
1	Accipitriformes	6	5.94
2	Anseriformes	1	0.99
3	Bucerotiformes	3	2.97
4	Charadriiformes	8	7.92
5	Columbiformes	4	3.96
6	Coraciiformes	6	5.94
7	Cuculiformes	3	2.97
8	Falconiformes	1	0.99
9	Galliformes	2	1.98
10	Gruiformes	1	0.99
11	Passiformes	45	44.55
12	Pelecaniformes	10	9.90
13	Piciformes	4	3.96
14	Podicipediformes	1	0.99
15	Psittaciformes	3	2.97
16	Strigiformes	2	1.98
17	Suliformes	1	0.99
	Total	**101**	**100.0**

Image 2. Little Cormorant roosting site

Image 3. Young ones of Tickell's Blue Fly-catcher

Image 4. Tickell's Blue Flycatcher

Image 5. Nesting of Red-rumped Swallow

Image 6. Red-rumped Swallow with mud

Image 7. Brown-headed Barbet

Image 8. Oriental Magpie Robin

Image 9. Vernal hanging Parrot

Image 10. Malabar Pied Hornbill

Image 11. Grey Heron

Image 12. Common Tailor Bird

Image 13. Lesser Goldenback

Image 14. Wire-tailed Swallow

Image 15. Mangrove deforestation

Image 16. Slash and burn for plantations

the population of crows has increased within the two years study period in Bagayat which may be due to the increased anthropogenic activities. Besides, unwanted domestic as well as household waste is deposited in to the stream of Bagayat by local people causing pollution & water logging. During Ganesh visarjan, Ganesh idol immersion is done in Bagayatwadi stream leading to pollution. Species such as the Asian Paradise Flycatcher, Common Hoopoe, Pied Kingfisher were observed once only in the winter season. Increasing household development by cutting off of the forest cover is on the rise resulting in destruction of habitats for different species. In recent year's activities such as urbanization, construction of houses and shops, dumping wastes in stream and estuaries etc is on the rise in Malvan Taluka. Moreover, tourism has increased in Malvan Taluka where large numbers of national and international tourists visit every year thereby increasing pollution and population. A temple called Bharadidevi situated in Angnewadi 4km away from Bagayatwadi is famous for its tourism where a large number of tourists visit every year in the month of February. These increasing developmental activities and disturbances may cause further effects on avifaunal diversity in future.

Conclusion

This is the first documentation on birds from Bagayatwadi Village and Malvan Town as no other records have been published yet. The study area shows a richness for a variety of birds inhabiting the area. Considering the impact of anthropogenic activities and increasing unplanned household development, long term changes in population and abundance of the birds should be monitored in the study area (Mayura Khot pers. obs.) to prepare complete checklist of birds as habitat destruction & pollution plays a major role in the decline of species (Reddy et al. 2014). Activities such as burning forests for plantations and deforestation of

mangroves a detailed study is required to find out the impact on the roosting of birds. As crows are indicators of pollution (Pachlore & Chandrakar 2011), monitoring the population or a detailed study of crows is needed in Bagayat which will help in understanding the increasing population of crows in the particular area. As a result of healthy habitat conditions for threatened species like Malabar Pied Hornbill, long term studies could be planned for population structure and behavior studies so as to assist in conservation of this species in other areas of Konkan. Mangrove areas in Malvan Taluka need to be protected as they play an important role in breeding and nursery ground for large number of birds. Considering the above aspects and to overcome these threats there is need for awareness in coastal village communities where the study area needs to be protected. The data generated in this paper can be used as baseline data for management and conserving population of existing species.

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