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Research Paper

FLORISTIC COMPOSITION OF BONAL BIRD SANCTURY, YADGIR DISTRICT, KARNATAKA

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Abstract

The second-largest bird sanctuary in Karnataka is the Bonal bird sanctuary located near Bonal lake, Bonal village in Shorapur at yadgiri district. This lake is believed to be built by Surpur King Raja Pam Naik in the 17th century. This paper reports about 136 species belongs to 105 genera and 44 families, Top three families are fabaceace with 24(17.64%) which is followed by Poaceae with 9(6.61%) & Euphorbiaceae with 8(5.88%) species. Herb were dominated the sanctuary with 79(58.08%), followed by shrub with 23(16.91%), Trees with 22(16.17%) and climbers 12(8.82%). Cultivated species are about 10(7.35%) and wild 126(92.64%) species. Plant species acts as nest site resources for birds & integral component of sanctuary sustenance. Since no data pertaining to the flora of the Bonal Reservoir is available, this work is necessory.

Key words: Flora, Bonal Reservoir, Conservation, wetland.

INTRODUCTION

The various reservoirs, shallow ponds and numerous tanks support wetland biodiversity and add to the country's wetland wealth. It is estimated that freshwater wetlands alone support 20 percent of the known range of biodiversity in India [3] Wetlands in India occupy 58.2 million hectares, including area under wet paddy cultivation (Directory of Indian Wetlands). The various lakes and wetlands in any city serve as a balancing reservoir for sustaining native flora and fauna (Grimmett and Inskipp, 2007; Surana et al., [6]

As per the convention on Wetlands of International importance (RAMSAR) (1971) – Article 1.1: wetlands are "Areas of marsh, fen, and peat land or water whether natural or artificial, permanent or temporary with water, that is static or flowing, fresh, brackish or salt including areas of marine water the depth of which does not exceed 6

meters." Also according to Article 2.1: "[Wetlands] may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six meters at low tide lying within the wetlands".

Fortunately in the recent years, the wetlands have received a good deal of attention. It really started with the conference held in Ramsar in Iran in 1971 where the first listing of wetlands of international importance was made and the contracting parties agreed to take necessary steps to safeguard these wetlands for posterity. India, as one of the original signatories, has made impressive efforts in initiating work for conservation and management of wetlands.

MATERIALS AND METHOD:

Study area:

The Bonal reservoir is the second largest bird sanctuary in Karnataka after Rangantittu bird sanctuary. The wetland is situated near timy hamlet Petha ammapura, Shorapur taluk of yadgir district in Karnataka state, India (Figure 1). The reservoir covers area 676.38 acre with Geo Co-ordinates 16°31′36.88″ N and 76°39′24.11″ E. Surpur King Raja Pam Naik built the reservoir in 17th century, and later Captain Meadows Taylor a Captain in British rule increased the capacity of tank extended it to 1,600 acres with 12 feet average depth. Temperature ranges from 20°C to 39°C and average annual rainfall of about 45 mm. The vegetation map prepared using the satellite image of the Bonal bird sanctuary area.

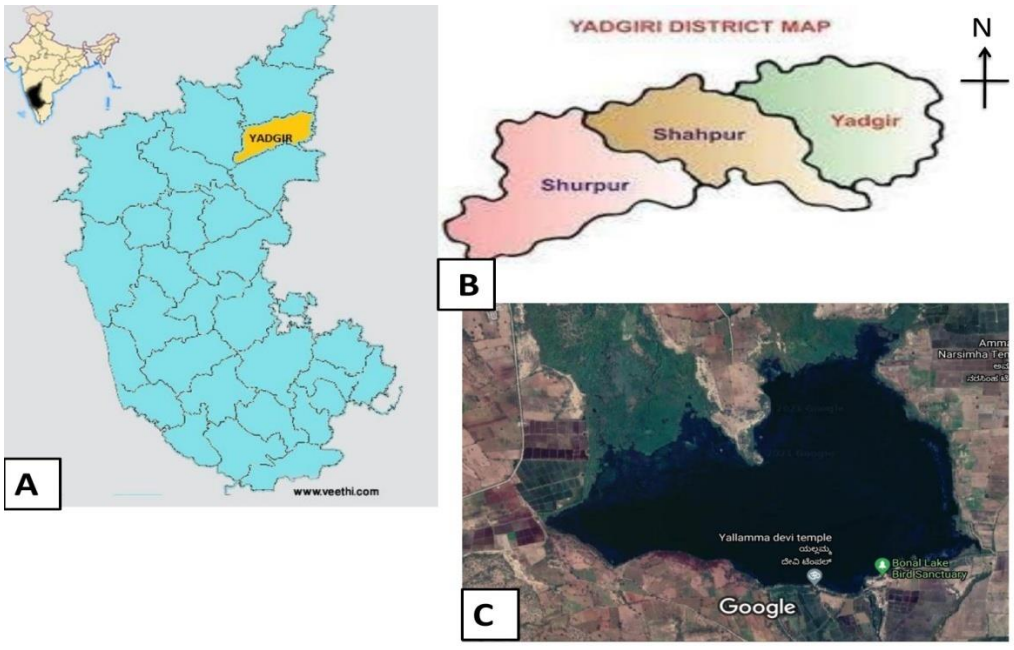

Fig 1. A. KARNATAKA STATE MAP, B. YADGIRI DISTRICT MAP, C. MAP OF BONAL BIRD SANCTUARY.

Identification & Nomenclature:

The survey was conducted to document the floristic composition of Bonal birds sanctuary during August 2021 to October 2022, by applying transect method. Using DSLR 5600 Nikon camera did photography. Collected species were identified with the aid of regional floras [2,5,10,13,14,15,16,17,19]. The voucher species were pressed & dried by following standard method [8]. Species name authentication is crosschecked in International Plant Names Index.

RESULTS AND DISCUSSION:

This paper reports about 136 species belongs to 105 genera and 44 families (Table 1). Top three families are fabaceace with 24(17.64%), which is followed by Poaceae family with 9(6.61%) and Euphorbiaceae with 8(5.88%) species.

Among 136 species herbs with 79 (58.08%) species stands first followed by shrub with 23(16.91%), Trees with 22(16.17%) and climbers 12(8.82%). Cultivated species are about 10(7.35%) and wild 126(92.64%) species.

According to IUCN red list of threaten species, total 48 plant species were reported from the current study including 45 (33.8%) least concerned, vulnerable represented by single species .

The vegetation towards the Bonal lake was of monoculture type i.e. the plantation of *Acacia nilotica*, done by forest department. In the study area poaceae members cover region along the sanctuary boundary and Ipomoea genera and among tree species *Vachellia nilotica* (L.) P.J.H.Hurter & Mabb. (Baval) vegetation is dominated.

CONCLUSION

Habitat diversity plays a pivotal role in wildlife management, especially to its conservation hence floristic population plays a pivotal role in the wildlife conservation. Present study concludes that the abundance of flora indicates the healthy status of reservoir owing the availability of water, safe habitat and food sources for birds. The preservation of plant resources is crucial for the survival of birds.

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Table 1. Checklist of Plant Species in Bonal Bird Sanctuary, Karnataka.

SL. NO.	SCIENTIFIC NAME	FAMILY	HABIT	IUCN STATUS	C/W
1	*Abutilon grandifolium* (Willd.) Sweet	Malvaceae	S		W
2	*Abutilon indicum* (L.)Sweet	Malvaceae	S		W
3	*Acacia catechu* (L.f.) Willd.	Fabaceae	T	LC	W
4	*Acacia ferruginea* Dc.	Fabaceae	T	VU	W
5	*Acacia leucophloea* (Roxb.) Willd.	Fabaceae	T	LC	W
6	*Acalypha indica* L.	Euphorbiaceae	H		W
7	*Achyranthes aspera* L.	Amaranthaceae	H		W
8	*Aerva javanica* (Burm.f.) Juss. ex Schult.	Amaranthaceae	H		W
9	*Aerva lanata* (L.) Juss. ex Schult.	Amaranthaceae	H		W
10	*Agave amaericana* L.	Asparagaceae	H		W
11	*Ageratum conyzoides* L.	Asteraceae	H	LC	W
12	*Albizia lebbeck* (L.) Benth.	Fabaceae	T	LC	C
13	*Alternanthera pungens* Kunth	Amaranthaceae	H	NA	W
14	*Alternanthera sessilis* (L.) DC	Amaranthaceae	H	LC	W
15	*Amaranthus spinosus* L.	Amaranthaceae	H		W
16	*Ammannia verticillata* (Ard.) Lam.	Lythraceae	H	LC	W
17	*Andrographis echioides* Nees.	Acanthaceae	H		W
18	*Anisomeles malabarica* (L.) R.Br.	Lamiaceae	H		W
19	*Annona squamosa* L.	Annonaeae	T	LC	C
20	*Antigonon leptopus* Hook & Arn.	Polygonaceae	C		W
21	*Apluda mutica* L.	Poaceae	H		W
22	*Argemone mexicana* L.	Papavaraceae	H		W
23	*Asparagus racemosus* Willd.	Asparagaceae	C		W
24	*Azadirachta indica* A.Juss.	Meliaceae	T	LC	C
25	*Bacopa monnieri* (L.) Wettstein.	Plantaginaceae	H	LC	W

26	*Barleria prionitis* L.	Acanthaceae	H	LC	W
27	*Blepharis maderaspatensis* (L.) B.Hyene	Acanthaceae	H		W
28	*Boerhavia diffusa* L.	Nyctaginaceae	H		W
29	*Boerhavia erecta* L.	Nyctaginaceae	H		W
30	*Cadaba fruticosa* (L.) Druce	Capparaceae	S		W
31	*Calotropis gigantea* (L.) W.T.Aiton	Ascelpediaceae	S		W
32	*Calotropis procera* W.T.Aiton	Ascelpediaceae	S		W
33	*Canna indica* L.	Cannaceae	H		W
34	*Cardiospermum halicacabum* L.	Sapindaceae	C	LC	W
35	*Carissa carandas* L.	Apocynaceae	S		W
36	*Carissa spinarum* L.	Apocynaceae	S	LC	W
37	*Cassia fistula* L.	Fabaceae	T	LC	W
38	*Catharanthus pusillus* (Murray) G. Don	Apocynaceae	H		W
39	*Catunaregam spinosa* (Thunb.) Tirveng.	Rubiaceae	S	LC	W
40	*Celosia argentea* L.	Amaranthaceae	H	LC	W
41	*Chloris barbata* Sw.	Poaceae	H		W
42	*Cleome chelidoni* L.f	Cleomaceae	H		W
43	*Cleome gynandra* L.	Cleomaceae	H		W
44	*Cleome viscosa* L.	Cleomaceae	H		W
45	*Commelina benghalensis* L.	Commelinaceae	H	LC	W
46	*Croton bonplandianus* Baill.	Euphorbiaceae	H		W
47	*Cryptostegia grandiflora* Roxb. ex. R.Br.	Apocynaceae	C		W
48	*Cucumis maderaspatanus* L.	Cucurbitaceae	C		W
49	*Cuscuta reflexa* Roxb.	Convolvulaceae	C	LC	W
50	Cymbopogon citratus (DC.) Stapf	Poaceae	H		W
51	*Cynodon dactylon* (L.) Pers.	Poaceae	H		W
52	*Cyperus compressus* L.	Cyperaceae	H	LC	W
53	*Cyperus rotundus* L.	Cyperaceae	H	LC	W
54	*Dactyloctenium aegyptium* (L.) Willd.	Poaceae	H		W
55	*Datura metel* L.	Solanaceae	S		W
56	*Datura stramonium* L.	Solanaceae	S		W
57	*Dentella repens* (L.) J.R.Forst. & G.Forst.	Rubiaceae	H	LC	W
58	*Dichanthium annulatum* (Forssk.) Stapf	Poaceae	H		W
59	*Dichrostachys cinerea* (L.)	Fabaceae	T	LC	W
60	*Eclipta prostrata* (L.) L.	Asteraceae	H	LC	W
61	*Echinochloa colonum* (L.) Link	Poaceae	H		W
62	*Euphorbia alluaudii* Drake	Euphorbiaceae	S		W
63	*Euphorbia heterophylla* L.	Euphorbiaceae	H	LC	W
64	*Euphorbia hirta* L.	Euphorbiaceae	H		W
65	*Euphorbia prostrata* Aiton.	Euphorbiaceae	H		W

66	*Euphorbia serpens* Kunth	Euphorbiaceae	H		W
67	*Evolvulus alsinoides* (L.) L.	Convolvulaceae	H		W
68	*Hardwickia binata* Roxb.	Fabaceae	T	LC	C
69	*Heliotropium curassavicum* L.	Boraginaceae	H	LC	W
70	*Heliotropium indicum* L.	Boraginaceae	H		W
71	*Hemidesmus indicus* (L.) R.Br.	Apocynaceae	S		W
72	*Hybanthus enneaspermus* (L.) F.Muell.	Violaceae	H		W
73	*Hyptis suaveolens* (L.) Poit.	Lamiaceae	H		W
74	*Indigofera linifolia* (L.f.) Retz.	Fabaceae	H	LC	W
75	*Indigofera tinctoria* L.	Fabaceae	H		W
76	*Indigofera tsiangiana* Metcalf.	Fabaceae	H		W
77	*Ipomoea carnea* Jacq.	Convolvulaceae	C		W
78	*Ipomoea hederifolia* L.	Convolvulaceae	C		W
79	*Lagascea mollis* Cav.	Asteraceae	H		W
80	*Lantana camara* L.	Verbenaceae	S		
81	*Lepidagathis cristata* Willd.	Acanthaceae	H		W
82	*Leucaena leucocephala* (Lam.) de Wit	Fabaceae	T		C
83	*Leucas aspera* (Willd.) link	Lamiaceae	H		W
84	*Merremia emerginata* (Burm.f.) Hallier f.	Convolvulaceae	H	LC	W
85	*Mollugo verticillata* L.	Molluginaceae	H		W
86	*Nymphoides indica* (L.) Kuntze	Menyanthaceae	H	LC	W
87	*Ocimum basilicum* L.	Lamiaceae	H		W
88	*Ocimum tenuiflorum* L.	Lamiaceae	H		W
89	*Opuntia elata* Link & Otto ex Salm-Dyck	Cactaceae	H	LC	W
90	*Oxalis corniculata* L.	Oxalidaceae	H		W
91	*Parthenium hysterophorus* L	Asteraceae	H		W
92	*Passiflora foetida* L.	Passsifloraceae	C		W
93	*Pergularia daemia* (Forssk.) Chiov.	Apocynaceae	C	LC	W
94	*Persicaria longiseta* (Bruijn) Kitag.	Polygonaceae	H		W
95	*Phyla nodiflora* (L.) Greene	Verbenaceae	H	LC	W
96	*Phyllanthus amarus* Schumach. & Thonn.	Phyllanthaceae	H		W
97	*Phyllanthus reticulatus* Poir.	Phyllanthaceae	H	LC	W
98	*Physalis angulata* L.	Solanaceae	H	LC	W
99	*Pithecellobium dulce* (Roxb.) Benth.	Fabaceae	T	LC	C
100	*Polygala erioptera* DC.	Polygonaceae	H		W
101	*Pongamia pinnata* (L.) Pierre	Fabaceae	T	LC	C
102	*Prosopis cineraria (*L.) Druce	Fabaceae	T		W
103	*Prosopis juliflora* (Sw.) DC.	Fabaceae	T		W
104	*Prosopis velutina* Wooton	Fabaceae	T	LC	W
105	*Ricinus communis* L.	Euphorbiaceae	S		W
106	*Ruellia prostrata* Poir.	Acanthaceae	H		W
107	*Senegalia chundra* (Roxb. ex Rottler)	Fabaceae	T		W

	Maslin				
108	*Senna auriculata* (L.) Roxb.	Fabaceae	S		W
109	*Senna occidentalis* (L.) Link	Fabaceae	S	LC	W
110	*Senna tora* (L.) Roxb.	Fabaceae	S		W
111	*Setaria verticillata (L.) P.Brauv*	Poaceae	H		W
112	*Setaria parviflora* (Poir.) Kerguelen	Poaceae	H	LC	W
113	*Sida acuta* Burm.f.	Malvaceae	H		W
114	*Sida rhombifolia* L.	Malvaceae	H		W
115	*Solanum incanum* L.	Solanaceae	H		W
116	*Solanum trilobatum* L.	Solanaceae	H		W
117	*Solanum virginianum* L.	Solanaceae	H		W
118	*Stachytarpheta jamaicensis* (L.) Vahl.	Verbenaceae	S	LC	W
119	*Syzygium cumini* (L.) Skeels	Myrtaceae	T	LC	C
120	*Tamarindus indica* L.	Fabaceae	T	LC	C
121	*Tephrosia candida* DC.	Fabaceae	S		W
122	*Tephrosia purpurea* (L.) Pers.	Fabaceae	S		C
123	*Terminalia arjuna* (Roxb. ex DC.) Wight & Arn.	Combrataceae	T		W
124	*Tinospora cordifolia* (Willd.) Hook.f & Thomson	Menispermacea e	C		W
125	*Trianthema portulacastrum* L.	Aizoaceae	H		W
126	*Tribulus terrestris* L.	Zygophyllaceae	H	LC	W
127	*Trichodesma indicum* (L.) Sm.	Boraginaceae	H		W
128	*Tridax procumbens* L.	Asteraceae	H		W
129	*Typha angustifolia* L.	Typhaceae	H	LC	W
130	*Urena lobata* L.	Malvaceae	S	LC	W
131	*Vachellia nilotica* (L.) P.J.H.Hurter & Mabb.	Fabaceae	T	LC	W
132	*Vernonia cinerascens* (Sch.Bip.) H.Rob.	Asteraceae	S		W
133	*Vitex negundo* L.	Lamiaceae	S		W
134	*Wattakaka volubilis* (L.f.) Stapf.	Asclepiadaceae	C		W
135	*Ziziphus mauritiana* Lam.	Rhamnaceae	T		W
136	*Ziziphus oenopolia* (L.) Mill.	Rhamnaceae	T		W