

Vertebrate Fauna of Hadagarh Wildlife Sanctuary



• Hemanta K. Sahu • Pratyush P. Mohapatra
• Bijay K. Parida • Himanshu S. Palei
• Sushil K. Dutta



Himalaya Publishing House

Vertebrate Fauna of Hadagarh Wildlife Sanctuary



Hemanta K. Sahu
Pratyush P. Mohapatra
Bijay K. Parida
Himanshu S. Palei
Sushil K. Dutta



Himalaya Publishing House

MUMBAI • NEW DELHI • NAGPUR • BENGALURU • HYDERABAD • CHENNAI • PUNE
• LUCKNOW • AHMEDABAD • ERNAKULAM • BHUBANESWAR • INDORE • KOLKATA • GUWAHATI

© Authors

No part of this publication should be reproduced, stored in a retrieval system, or transmitted in any form or any means, electronic, mechanical, photocopying, recording and/or otherwise without the prior written permission of the publisher.

First Edition : 2012

-
- Published by** : Mrs. Meena Pandey for **Himalaya Publishing House Pvt. Ltd.**,
"Ramdoot", Dr. Bhalerao Marg, Girgaon, **Mumbai - 400 004.**
Phone: 022-23860170/23863863, Fax: 022-23877178
E-mail: himpub@vsnl.com; Website: www.himpub.com
- Branch Offices** :
- New Delhi** : "Pooja Apartments", 4-B, Murari Lal Street, Ansari Road,
Darya Ganj, New Delhi - 110 002.
Phone: 011-23270392, 23278631; Fax: 011-23256286
- Nagpur** : Kundanlal Chandak Industrial Estate, Ghat Road,
Nagpur - 440 018. Phone: 0712-2738731, 3296733;
Telefax: 0712-2721215
- Bengaluru** : No. 16/1 (Old 12/1), 1st Floor, Next to Hotel Highlands,
Madhava Nagar, Race Course Road, Bengaluru - 560 001.
Phone: 080-32919385; Telefax: 080-22286611
- Hyderabad** : No. 3-4-184, Lingampally, Besides Raghavendra Swamy
Matham, Kachiguda, Hyderabad - 500 027.
Phone: 040-27560041, 27550139; Mobile: 09390905282
- Chennai** : No. 8/2, Madley 2nd Street, Ground Floor, T. Nagar,
Chennai - 600 017. Phone: 044-28144004/28144005;
Mobile: 09345345051
- Pune** : First Floor, "Laksha" Apartment, No. 527, Mehunpura,
Shaniwarpath (Near Prabhat Theatre), Pune - 411 030.
Phone: 020-24496323/24496333; Mobile: 09370579333
- Lucknow** : Jai Baba Bhavan, Church Road, Near Manas Complex and
Dr. Awasthi Clinic, Aliganj, Lucknow - 226 024.
Phone: 0522-2339329, 4068914; Mobile: 09307501550
- Ahmedabad** : 114, "SHAIL", 1st Floor, Opp. Madhu Sudan House, C.G. Road,
Navrang Pura, Ahmedabad - 380 009. Phone: 079-26560126;
Mobile: 09377088847
- Ernakulam** : 39/176 (New No: 60/251) 1st Floor, Karikkamuri Road,
Ernakulam, Kochi - 682011,
Phone: 0484-2378012, 2378016; Mobile: 09344199799
- Bhubaneswar** : 5 Station Square, Bhubaneswar - 751 001 (Odisha).
Phone: 0674-2532129, Mobile: 09338746007
- Indore** : Kesardeep Avenue Extension, 73, Narayan Bagh, Flat No. 302,
11rd Floor, Near Humpty Dumpty School, Indore - 452 007 (M.P.).
Mobile: 09301386468
- Kolkata** : 108/4, Beliaghata Main Road, Near ID Hospital, Opp. SBI Bank,
Kolkata - 700 010, Phone: 033-32449649;
Mobile: 09883055590, 07439040301
- Guwahati** : House No. 15, Behind Pragjyotish College, Near Sharma
Printing Press, P.O. Bharalumukh, Guwahati - 781009 (Assam).
Mobile: 09883055590, 09883055536
- DTP by** : HPH, Editorial Office, Bhandup (Priyanka M.)
- Printed at** : M/s. Seven Hills Printers, Hyderabad. On behalf of HPH.

Preface

Nature is vibrant in myriad ways . The more comes to view to an inquisitive mind, the more it reveals its secrets. Yet all is transitory. Yesteraage creatures have long since gone extinct and new ones have shaped. By universal law, what is here today, shall be gone tomorrow.

This presentation delves deeply into the peculiarities of (i) breast-feeding; (ii) avians; (iii) cold blooded; as well as (iv) aquatic animals with backbones as the supporting girder, found in the Wildlife Sanctuary of Hadagarh [****where.....?**]

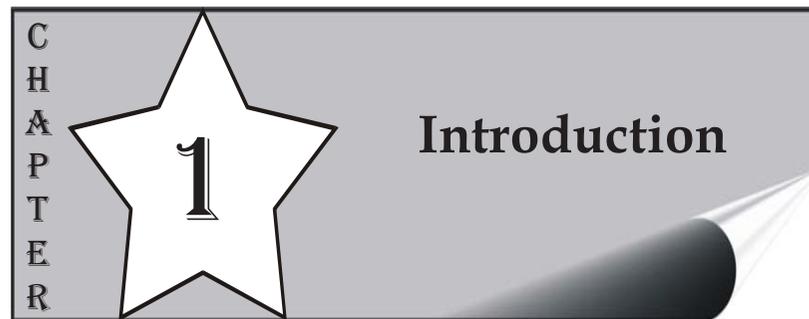
Also chalks it out ways and means to preserve and efficiently manage this Reserve.

[****Authors:** Spell out location in the Preface itself to arouse reader-interest]

Authors

Contents

1. Introduction	1 - 7
2. Checklist of Vertebrate Fauna of Hadagarh Wildlife Sanctuary	8 - 22
3. Mammals	23 - 36
4. Birds	37 - 74
5. Reptiles	75 - 91
6. Amphibians	92 - 97
7. Wildlife Management	98 - 115
Suggested Reading	116 - 117
Index	118 - 126
Photos	127 - 153



Hadagarh Wildlife Sanctuary along with Similipal and Kuldiha Wildlife sanctuary forms the triangular corridor of protected areas. The Sanctuary is situated in Keonjhar and Mayurbhanj Districts of Odisha and has always attracted tourists for picnic and sightseeing. It is located at 21° 12' to 21° 23' North latitude and 86° 12' 30" to 86° 21' 30" East longitude. The total area of the sanctuary is 411.502 km² comprising 191.06 km² core and 220.442 km² of buffer area. The forest in buffer includes Satkosia R.F. in north and Nada R.F. in west; Satkosia, Santoshpur and Atei R.F. in north-western side; Gobarahudi, Rugudi, Purunapani and Dangachua village forest at the east and Asia, Thunigaon village forest at the southern side. On the west, it touches Bahia, Chiljhari village forest. In the North Juari R.F., Tenduhudi etc. are contiguous with the sanctuary.

Hadagarh Wildlife sanctuary was declared vide notification S.R.O. No. 213/80, dated 6th December 1978. In exercise of powers conferred by Section 18 of the Wildlife (Protection) Act, 1972 (53 of 1972), the State Government declared the area of Satkosia R.F. (Mayurbhanj District), Boula R.F. (Keonjhar District) and all other Government lands of Salandi Reservoir in the district of Mayurbhanj and Keonjhar.

Most of the important and large forest blocks were declared as reserved forest during 1910-15 forest settlement operation. Forest blocks, i.e., Benamunda, Bandhanjhari and Ranibeda were reserved during 1925-26. Prior to merger of the Ex-state, some of the forest blocks were reserved as B class. After the merger of the Ex-state, all these forest blocks were deemed to be reserved forests within the meaning of section 20-A of the Indian Forest Act 1927. Relevant notification certifying the documents prepared

during Ex-state period under the authority of the Ruling chief were also issued vide Govt. of Odisha in their defunct Development Department notification no. 10721-12-F-42(M)/2/58-D dated the 16th/27th March, 1958 which is reproduced below. The proposal for constituting Hadagarh sanctuary was initiated during 1976-77, when it was decided by task force committee on crocodile farming in Odisha to release the mugger (fresh water crocodile) in the reservoir of Salandi dam (Hadagarh) in view of favourable climatic conditions for that species. It was decided to declare the reservoir and peripheral forests under Anandapur and Karanjia Forest Division as Sanctuary and suspend the rights of local people under Wildlife (Protection) Act 1972. Thus, the Hadagarh sanctuary came into existence by notification no. SF (W) - 160/78- 34113/FFAH dated 6.12.78 of Forest Department, Odisha. The above sanctuary comprises of Boula R.F. sn full of Anandapur and Satkosia R.F. (part) of Karanjia Forest Divisions. Later on, its potential as an elephant reserve was recognized and improvement work was started through Project Elephant for development of sanctuary. Now, this sanctuary has been included in Mayurbhanj Elephant Reserve.

Boula R.F. consists of two hills lying east and west of the Salandi River. A dam has been constructed to store water in Hadagarh reservoir for irrigation purposes. The Boula hill ranges are extension of Similipal hills of Mayurbhanj district. It comprises part of Satkosia R.F. of Mayurbhanj and Boula R.F. of Keonjhar district. The western part of Boula R.F. consists of quartzite while the Northeast part rocks are gabbros, anorthosite and granites. The cluster of hills extend through the western and southern tract of sanctuary. The valley is occupied by Hadagarh reservoir and its catchments. The highest peak being 1861 ft. is the Boula Pahad. The major portion of the Sanctuary under plain tract is around reservoir and its catchments. The hilly tract is inaccessible except for some bridle paths, which connect the southern plains by passes. These paths are the means of communication for the local tribals.

Chakratirtha and Gadachandi temples with Jaina and Buddhist shrines near Kathakata and Sadha chhak on the fringe of the sanctuary and Sidha matha caves at Gobardhan pahad near Padhiaripally village adjoining the Baniapanka beat attract lot of tourists to have a glimpse of this magnificent wilderness. Being

the extension of Similipal hill range, this sanctuary is a part of Mayurbhanj Elephant and Biosphere reserve.

The sanctuary falls within the Boula-Nuasahi hilly region according to geological stratographic classification. The Boula Nuasahi region exhibits extensive occurrence of quartzite and quartz schist on both the sides of Salandi River. The granite outcrops are commonly seen to the North of Sajanapal in the valleys and low-lying hills. Boula and Nuasahi chromite deposits are found in association with ultra basics (peridotite and serpentinites) deposited on the hill base serve as good agricultural land. This zone supports miscellaneous plant growth with some sal trees. According to the stratographic horizon, the Hadagarh sanctuary forms a part of Eastern ghat group of rocks, i.e., mainly iron ore group of tertiary origin. The general stratography consists of soil and alluvium. Close to the S-E boundary of sanctuary, the Boula Chromites reserve is located having 98% of total chromite reserve of the country. The granite produces a moderately sandy or gritty soil in the hilly forest tracts. Soil derived from granite in hill or from rocks with high percentage of quartz is capable of supporting inferior forest. The dolerite dykes support little forest except thorny scrubs and a few *Cleistanthus collinus* plants on their slopes. However, the dolerite weather to a stiff clay and produce very fertile agricultural soils in the valleys. A sufficient depth of soil forms moderate to gentle slopes and takes the form of a reddish clay which is favored by mixed forest species like Dhaura, Asan, Kurum, Karada etc. At places where red soil is not sufficient in depth, sal may also be present. It is interesting to note that when the soil is formed from these basic rocks in hilly ground they are red containing very high percentage of iron and magnesium.

Rock

The schists generally give rise to good loamy forest soils in the valleys, which usually support mixed forests where the rocks are basic in character. The quartzite and quartz schists are very impervious to weathering. Hence, their slopes are commonly devoid of soil and bears scanty vegetation. However, where the soil has accumulated in the valleys, good loams or sandy loam soil, which is favourable to sal is available. Where sufficient moisture is not available on slopes, these shallow quartzite soils

stands to support dry mixed forest. The only rock of recent formation is the laterite, which is usually associated with basic igneous rocks and iron ores at higher elevations. Laterite soils are extremely porous and permeable to sal wherever found in sufficient depth. Laterite soil has a beneficial effect on forest vegetation through their affect on supply of water. They act as great storehouse of water from numerous perennial springs along the base of the scraps.

Terrain

Hadagarh Sanctuary falls within the upper Keonjhar category. Boula area consists of two hills lying east and west of the Salandi River. A dam has been constructed to store water of Hadagarh reservoir for irrigation purposes. The Boula hill ranges are extension of the famous Similipal hills of Mayurbhanj district and holds head high like a monument over the low-lying plains below. It comprises part of Satkosia R.F. of Mayurbhanj and Boula R.F. of Keonjhar district. The cluster of hill extends through the western and southern tract of sanctuary. The valley is occupied by Hadagarh reservoir and its catchments. The highest peak being 1816 ft. is the Boula pahad. The major portion of the sanctuary under plain tract is the reservoir and its catchments. The hilly tract is inaccessible except some bridle paths, which connect the southern plains by passes. The well-forested rolling plateaus with deepfold of hills are interlaced with arterial network of perennial streams, rivulet and rivers. Some important hill ranges in buffer zone are as follows:

1. **Gobrahudi:** It is isolated but unique having caves and over hangs covered by dense vegetation which harbors variety of wildlives.
2. **Asia, Thunigaon village forest:** It is steep with scrubs and exposed rocks and harbors bear and other wildlives in abundance.

The area has a sub-tropical climate that is dry and experiences occasional storms accompanied with limited downpours. There are three distinct seasons that is Summer – March to June, Rainy – July to October and winter – November to February.

The Forest Types, Cover and Food for Wild Animals

According to Champion and Seth, the forest of Hadagarh wildlife sanctuary can be classified broadly into the following major forest types.

1. Group 5B - Northern Tropical Dry deciduous forests. Within this main group, several variations occur due to edaphic and biotic factors and following two sub-groups are found: (a) 5B/C1 – Dry Peninsular Sal Forests and (b) 5B/C2 – Northern Dry Mixed Deciduous forests.

According to working plan of Keonjhar Division, 29236 ha. of Boula R.F. contains forest of poor quality having associates like *Terminalia tomentosa*, *Anogeissus latifolia*, *Pterocarpus marsupium*, *Diospyros melanoxylon*, *Adina cordifolia*, *Terminalia chebula*, *terminalia bellerica*, *lagerstroemia parviflora*, *Buchanania lanzyn*, *Lannia coromandelica* and *Dalbergia latifolia* etc. The common plants are *Emblia officinalis*, *Cassia fistula*, *Morinda tinctoria*, *Antidesma species*, *Randia species*, *Symplococos racemosus* and *Cleistanthus collinus*. The under growths in these forests are *Flemingia chappar*, *Indigofera pulchela*, *Wordfordia fruticosa*, *Desmodium species*, *Strobilanthes species*. The common climbers in these forests are *Bauhinia vahlii* and *Smilax species* while *Combretum decandrum* occurs in valleys and ravines. These forests are having 20 mtr. height of trees on average and canopy is irregular with bad shape. In Sal trees, hollowness occurs at very young age. Though the percentage of sal in these forests is more than 50 with more common associates like *Anogeissus latifolia* and *Buchanania lanzan*, the site quality varies from IV to V. The hill slopes generally support growth of dry species.

In the Sanctuary, 7498 ha. of forest within the Boula R.F. falls under 5B/C2-Northern dry mixed deciduous forests category, particularly on steep hill slopes and southern aspects. These forests usually have poor vegetation with upper canopy often broken and irregular. The trees generally have short bole, spreading crown, poor form and height between 15-20 m. The main reasons attributed for such type of vegetation is topography, aspect and shallow nature of the soil coupled with hot weather and exposure of soil to varied climatic conditions. The typical site quality of this type of forest is III/IV to IV and regeneration condition is fair but growth is slow. Dhaura (*Anogeissus*) is often

seen in groups on the southern aspects of steep hills. Sal is very less in this type of forests and other species seen are Asan (*Terminalia tomentosa*), Bahada (*T. Belerica*), Bija (*Pterpocarpus marsupium*), Kusum (*Adina cordifolia*), Harida (*T. chebula*), *Boswellia serrata*, *Lagerstroemia parviflora*. The middle story consists of *Cleistanthus collinus*, *Embllica officinalis*, *Cassia fistula*, *Gardenia strictua* of very poor quality (S-E extreme of sanctuary). *Nyctanthes arboristis* (Ganga siuli) is seen in abundance. The undergrowth is usually rare and consists of shrubs like *Holorrhena* with grasses of *Aristida setacea*, *Cymbopogon martini* and climbers like *Butea superba*. There is one valley in the Boula R.F. called "Pitanau" valley which contains mainly dry deciduous type of crop. This valley is mostly sheltered and the soil is moist and deep than other areas of the block. The type of crop in the Pitanau valley is therefore post climax in the dry deciduous forests. Unfortunately, most of the valley is at present under encroachment and the vegetation has been replaced with agricultural crop and human settlements. Hence, there is no necessity of excluding such area from this sub-type to form another sub-type as per the classification of forest by Champion and Seth. Action is being taken to evict encroachments.

Elephant Corridors Connected to Hadagarh Wildlife Sanctuary

The focal species of the sanctuary is Elephant and Hadagarh is a part of Mayurbhanj Elephant Reserve. There are two elephant corridors/passages connecting to Hadagarh Wildlife Sanctuary to Kuldiha and Simlipal as follows.

Simlipal - Satkosia (alternate name - Simlipal - Hadagarh)

Location: 21°20'N - 21°29'N latitude and 86°12'E - 86°20'E longitude.

This corridor connects Simlipal National Park with Hadagarh Sanctuary through Nato and Satkosia Reserved Forests. It is intact at present. Human settlement and anthropogenic pressure is slowly degrading it and can lead to fragmentation of the habitat. This corridor falls under Keonjhar Wildlife Division, Karanjia and Baripada Forest Divisions and of 15-16 km in length and 3 km wide. The forest along the corridor is of Tropical deciduous Sal forest type and the corridor passes through Reserved Forest and Revenue land comprising forests of different categories,

agricultural fields and human settlement. There are ten villages across the corridor, namely Nato, Matakamhatua, Purunapani, Seliepokhari, Khuntapada, Dhanchaturi, Barabanka, Salandi, Bhalunhurka and Dangadiha and additionally ten villages namely, Jamananda, Bhagapha, Khudisita, Panaposi, Baramunda, Bhagunala, Jadipada, Bhegidiha, Kokunda and Patharpada are dependent on the elephant corridor. This route is frequently used by herds of 20-25 elephants. The present threats to the corridor are: (1) Expansion of settlement and encroachment, (2) Degradation of corridor forest in Satkosia and Nato R.F. and (3) Conversion of forest land into the agricultural land in Satakosia R.F.

Baula-Kuldiha (Alternate Name Hadagarh-Kuldiha)

Location: 21°20'N- 21°23'N latitude and 86°16'E - 86°25'E Longitude.

This corridor connects Kuldiha Wildlife Sanctuary with Hadagarh Wildlife Sanctuary through small hillocks in Garasahi Reserved Forests, Goguapahar, Balihudi and Boula hills. This is now confined only on hills as villages have come up near foot hills. This corridor falls under Keonjhar Wildlife Division, Anandapur, Balasore Wildlife Division and Baripada Forest Division and is of 19-20 km length and 2-2.5 km width. The forest vegetation is of Tropical deciduous sal forest type and constitutes proposed reserve forest, Reserve forestland and revenue land. There are 14 villages along the migratory path, namely Raighati, Telibanka, Barabili, Kuturipal, Gagua Tata sahi, Ambadahi, Kadaligadia, Kantamari, Seliemaiburu, Bolapai, Sarisapal, Rangamatha, Tatasahi, and Garhsahi and another four namely Patana, Malagadalia, Sanakantimari, and Baminipal corridor dependent villages. This corridor is regularly used by small herds of 10-15 elephants.

Threats:

1. Increasing human settlement because of stone quarries and encroachment.
2. Continuous movement of heavy vehicles and blasting in stone quarries and Boula chromite mines.
3. Degradation of corridor forests.
4. Expansion of agricultural activities.