

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/343319057>

# Photographic evidences of Indian grey wolf (*Canis lupus pallipes*) in Sundargarh forest division, Odisha, India

Article · December 2019

CITATIONS

6

READS

1,411

4 authors, including:



**Nimain Charan Palei**

Maharaja Sriram Chandra Bhanja Deo University

60 PUBLICATIONS 166 CITATIONS

[SEE PROFILE](#)



**Bhakta Padarbinda Rath**

27 PUBLICATIONS 122 CITATIONS

[SEE PROFILE](#)



**Himanshu Shekhar Palei**

Maharaja Sriram Chandra Bhanja Deo University

78 PUBLICATIONS 514 CITATIONS

[SEE PROFILE](#)



# *e-planet*

Volume- 17

December - 2019

Issue No. - 2



A Multi-disciplinary International Journal of  
Ecology, Environment, Agriculture and Allied Sciences

[www.e-planet.co.in](http://www.e-planet.co.in)

# Editorial Board

## Editor-in-Chief

**Rtn (Dr.) R.K. Samantarai**

Ex Jt. Director, Animal Husbandry &  
Veterinary Services, Odisha

## Chief Patron

**Mr. Ramesh Ch. Parida**

Chairman, NM Group of Institutions,  
Sijua, Patrapara, Bhubaneswar, Odisha, India.

## Executive Editor

Mr. Sangram Keshari Nayak, Former Principal Scientist & Head, CRRI, Cuttack

## Managing Editors

Dr. Umakanta Behera, Dean, Coll. of Agriculture, Kyrdemkulai, Meghalaya

Dr. Ramesh Ch. Misra, Principal Scientist, ICAR-NBPGR, Cuttack

Dr. Ranjan Kumar Mohanta, SMS, KVK, NRRI, Cuttack

## International Editors

Prof. James France, Director, Centre for Nutrition Modelling,  
University of Guelph, Guelph, Ontario, Canada

Dr. Frank Niranjan, Senior Scientist, Srilanka Council for Agricultural  
Research Policy, Colombo 07, Sri Lanka

Dr. S.H.R. Sadeghi, Professor, Department of Watershed Management  
Engineering, Faculty of Natural Resources, Tarbiat  
Moadares University, Noor, Mazandaran Province, Iran

## Editors

Dr. Sujit Kumar Nath, Sr. Scientist and Head, KVK, Deogarh

Dr. Arun Kumar Mishra, Divisional Forest Officer, Sundargarh

Dr. Sarada Prasanna Sahoo, Director, CCBF, Semiliguda, Koraput

## Associate Editors

Dr. Nityamanjari Mishra, Scientist, RRTTS, Keonjhar

Dr. Satyanarayan Mishra, Curator, I.G. Park Zoo, Rourkela

Dr. Hiranmayee Nayak, Asst. Prof. Coll of Forestry, OUAT, BBSR

Ms. Pallavi Patnaik, Ex Asst. Managing Editor, Graphy Publ., BBSR

## Chairman, Advisory Committee

Prof. Dr. Khageswar Pradhan, Chancellor, SOA University, BBSR

## Advisors

Mr. Vinod Kumar, IFS, Former Director, IGFNA, Dehradun

Dr. J.V. Cheeran, Former Prof. & Member to IUCN, Thrissur, Kerala

Dr. S.K. Ray, Former Director, Animal Husbandry Dept., Odisha

Dr. Basant Kumar Das, Director, CIFRI, Barrakpore, Kolkata

Dr. Gayatri Biswal, Prof. (Plant Pathology), OUAT, BBSR

Dr. Satya Parida, Head of Vaccine Diff., Pirbright Institute, U.K.

Dr. J.K. Panigrahi, HOD of Zoology, Sri Jaydev College, BBSR

## OPES Representative

Prof. Brundaban Dhal, President, OPES, Bhubaneswar

Mr. Suvrajeet Padhy, Secretary, OPES, Bhubaneswar

Mr. Taruna Kanta Samantaray, Vice President, OPES, BBSR

Mr. S.S. Jiban Dash, Jt. Secretary cum Treasurer, OPES, Bhubaneswar

## Patrons

PCCF, Dept. of Forest & Environment, Govt. of Odisha

Mr. Ram K Dash, MD; Sree Mahabahu Hi-Tech Farms Pvt. Ltd.

Ms. Geetanjali Mohanty, Prop; Gitanjali Herbal Garden

Dr. Mukti Kanta Bhuyan, Veterinary Officer; Aish Pharmaceuticals

Rtn. Prakash Ch. Prusty, Vasundhara Micro Irrigation & Services

## Honorary Patron

Mr. Sudarshan Pattnaik, Noted Sand Artist, Puri

Financial assistance from Indian Council of Agricultural  
Research (ICAR), Krishi Bhavan, New Delhi for publication  
of this journal is gratefully acknowledged.



Printed, published & edited by Dr. R.K. Samantaray, 1(A), Nandankanan Zoo, P.O. Barang, Dist- Khurda, Odisha, India, Pin - 754005.  
Owned by the Organisation for Protection of Ecosystem, Environment and Endangered Species (OPES), Plot No. - A-47, Rameswarpatna,  
Maushima Square, Old Town, Bhubaneswar-751002, Odisha, India. Published and printed at Print-Tech Offset Pvt. Ltd., Bhubaneswar - 751024

**Logo description** : It symbolizes an elephant within an ecological frame of peace and harmony moving towards prosperity and posterity.

## SUBSCRIPTION

Life Member (Individual) 15 yrs – Rs. 5000/-

Life Member (Overseas) 15 yrs – USD 100/-

Life Member (Institutional) 15 yrs – Rs. 30000/-

Patron (Individual) 15 yrs – Rs. 20000/-

Patron (Institutional) 15 yrs – Rs. 50000/-

\* Please send payment to : **OPES, Bhubaneswar**  
in shape of D.D. payable at Bhubaneswar

## ADDRESS FOR CORRESPONDENCE

**Dr. R.K. Samantaray**

**Editor-in-Chief**

A - 47, Rameswarpatna, Maushima Square  
Bhubaneswar - 751 002, Odisha

e-mail - [eplanetjournal@gmail.com](mailto:eplanetjournal@gmail.com)

Mob. : +91 9437090017 / 7008370017

Please visit us at : [www.e-planet.co.in](http://www.e-planet.co.in)



**A Multi-disciplinary International Journal  
of  
Ecology, Environment, Agriculture and Allied Sciences**



## CONTENTS

<b>AGRICULTURE</b>	Evolution of system of rice intensification (SRI) and economic security in Tripura state of North East hill region of India	R. Singh and S.M. Feroze	89-97
	Precision nitrogen management in maize cultivars under variable growing environments: Effects on plant growth, normalised difference vegetation index and leaf nitrogen	A. P. Ghosh and Anchal Dass	98-105
	Effect of integrated weed management in rainfed upland rice of Odisha	S.M. Prasad, S. Saha, M. Chourasia, D.R. Sarangi, T.R. Sahoo, S. Sethy and R.K. Mohanta	106-110
<b>HORTICULTURE</b>	Vegetative propagation of some selected horticultural crops	Habibullah Hamayoun and Gul Ahmad Zahiryan	111-116
	Performance of potato ( <i>Solanum tuberosum</i> L.) with organic inputs in North-Eastern India	J. M. Mawthoh, Lala I.P. Ray, A.K. Singh, N.J. Singh and R.S. Dhivya	117-122
	Performance of <i>Kharif</i> hybrid tomato varieties in plateau agro-ecosystems of Odisha	S. Muna, B. Mallick and B. Taria	123-126
<b>FORESTRY</b>	Role of socio-economic variables and non-timber forest products on the livelihood dependency of forest fringe communities in Khordha forest division, Odisha	M. Sahoo, H. Nayak and T.L. Mohanty	127-133
<b>CLIMATE SCIENCE</b>	Impact of cyclone Fani on tree damage in Bhubaneswar city, Odisha, India	H.K. Sahoo, S. Dehury and R.C. Misra	134-138
<b>ETHNOBOTANY</b>	Therapeutic uses of mangrove plants of Kansaridia forest block in Mahanadi delta of Odisha, India	M.R. Pattnaik and S.K. Sen	139-145
<b>WILDLIFE</b>	Molecular detection of <i>Theileria</i> spp. in apparently healthy cervids of Nandankanan Zoological Park, Odisha	S.K. Sahu, S.R. Hota, B.K. Behera, M. Dash and N. Sahoo	146-151
	Photographic evidences of Indian grey wolf ( <i>Canis lupus pallipes</i> ) in Sundergarh forest division, Odisha, India	N.C. Palei, B.P. Rath, H.S. Palei and A.K. Mishra	152-156
	Unusual nesting site of red-wattled lapwing ( <i>Vanellus indicus</i> ) in Dehradun, Uttarakhand, India	A. Singh, R. Joshi and K. Puri	157-159
<b>VETERINARY SCIENCE</b>	Clinico-pathological investigation of theileriosis in buffaloes in coastal Odisha	M.K. Mishra, A.P. Acharya, S.K. Panda, B.K. Patra and K. Behera	160-164



## Photographic evidences of Indian grey wolf (*Canis lupus pallipes*) in Sundargarh forest division, Odisha, India

N.C. PALEI<sup>1\*</sup>, B.P. RATH<sup>1</sup>, H.S. PALEI<sup>2</sup> AND A.K. MISHRA<sup>3</sup>

<sup>1</sup>O/o Principal Chief Conservator of Forests (Wildlife) and Chief Wildlife Warden, Odisha, India

<sup>2</sup>Aranya Foundation, Bhubaneswar, Odisha, India

<sup>3</sup>Sundargarh Forest Division, Odisha, India

\*wildpalei@gmail.com

Date of receipt: 26.07.2019

Date of acceptance: 17.12.2019

### ABSTRACT

The Indian grey wolf (*Canis lupus pallipes*) is a rare and lesser-known top predator in India. A rapid camera trapping survey was conducted to assess the large carnivores and their preys in the Sundargarh forest division, Odisha, India. Two individuals of Indian grey wolf were recorded during the survey offering the first photographic evidence of the Indian grey wolf outside protected areas of Odisha. This record increases knowledge on the distribution of the species. More extensive surveys are needed to understand the distribution and population dynamics of Indian grey wolf in the area. We provide photographic evidence of Indian grey wolves and highlight the importance of Odisha forest for species conservation.

**Key words:** Camera trapping, *Canis lupus*, Indian grey wolf, Odisha, photographic evidence

### INTRODUCTION

Wolves are placed in the family Canidae and the genera *Canis* includes species of wolves, jackals, and the domestic dog. The taxonomy and phylogeny of the wolves has been variously explained as including a single species *C. lupus* (Nowak, 2009) or at most as two species with the second being *C. rufus* as suggested by Goldman (1937). Two of these subspecies, the Tibetan wolf (*Canis lupus chanco*) whose range extends from the trans-Himalaya into Tibet and China, and the Indian wolf (*Canis lupus pallipes*) ranging over much of Peninsular India inhabit the Indian subcontinent. Traditional taxonomy considers them as distinct relatives of other Gray wolves; however, recent molecular genetics studies contest this and suggest that (WII, 2017) the wolves from the Himalayas (Tibetan wolf, *Canis lupus chanco*) are the basal form that gave rise to the Indian wolf (*Canis lupus pallipes*).

Further, the two are distinct enough to be treated as full species (Aggarwal et al., 2003). Sharma et al. (2004) suggested that wolf populations of Indian subcontinent have three divergent, ancient and parapatric mtDNA lineages; namely the *Canis lupus pallipes* clade (peninsular India, Iran, Iraq and parts of Arabia), Himalayan clade of *Canis lupus chanco* (Ladakh, Spiti, Tibet and Nepal) and the wolf-dog clade of *Canis lupus chanco* (northwest Jammu and Kashmir, i.e. Gilgit and Baltistan). Based on a combined analysis of nuclear and mitochondrial DNA, Bardeleben et al. (2005) suggested that the relationships among the wolf-like canids remains poorly understood due to their recent divergence. Aggarwal et al. (2007) proposed the revision of the taxonomy of the wolves in India and proposed a new species *Canis indica*. Conclusive evidence that fully elucidates the taxonomy and phylogeny of the wolves remains to be fully explained and the studbook uses the

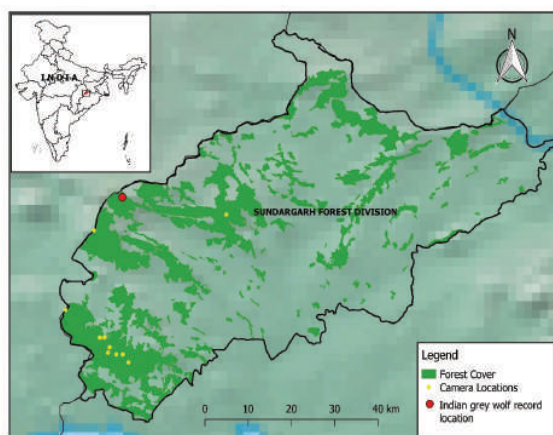
taxonomy suggested by Nowak (2009).

The Indian grey wolf *Canis lupus pallipes* is considered as the top carnivore species of the Indian open plains, semi-arid grasslands, scrublands and grazing lands (Singh and Kumara, 2006). It is considered as endangered species in India, features on Schedule-I of the Indian Wildlife (Protection) Act, 1972 and listed as Appendix-I under the Convention on International Trade in Endangered Species (CITES). The species can grow up to a height of 65 to 75 cm with a body length of 90 to 105 cm excluding 35-40 cm tail. They attain a body weight upto 40 to 60 kg. The dentition and large skull distinguish the wolves from rest of the family. The skin colour of the species varies from grey and blacking coat (Prater, 2005). Jhala (2000) estimated that the wolf population was between 2000-3000 in entire Indian peninsula. The Indian grey wolf had once one of the largest natural range of any land mammal (Sheldon, 1992). The Indian grey wolf is widely occurring, but at low density throughout its range in the Indian sub-continent. The core habitat of this species is the western, central and peninsular India in open grassland, scrubland and rocky hills (Sahi, 1982). The eastern population of Indian grey wolf found in Odisha, Jharkhand, Bihar and parts of West Bengal, is an exception and occurs in moist forested habitats (Sahi, 1982). They prefer open forest on the periphery of protected forest areas where forest reduced to scrub forest due to heavy biotic pressure (Jhala, 2003). Only a few reports on the occurrence of wolf are available from Odisha (Palei et al., 2013; Nair and Panda, 2013). Camera traps is increasingly used as survey tool to study wildlife (Das et al., 2019). Here we report the photographic evidence of Indian grey wolf from Sundargarh Forest division, Odisha, India.

## MATERIALS AND METHODS

The Indian grey wolf was recorded during the survey of carnivores and their prey species in Sundargarh Forest division, western Odisha. The study area lies between 21° 47' 7" N to 22° 32' 2" N and 83° 32' 19" E to 84° 34' 18" E (Fig. 1). The forest division shares its boundaries with Chhattisgarh and Jharkhand. It covers 3576.39 km<sup>2</sup> and is

dominated by tropical dry-deciduous, northern tropical dry-deciduous and northern dry-mixed deciduous forest (Champion and Seth, 1968). The major species, viz. *Anogeissus latifolia*, *Terminalia tomentosa* and *Ougeinia dalbergioides* etc., which are more akin to the dry deciduous forest, whereas the low level Sal forest are characterized by dense undergrowth because of its comparatively cooler climate and species like *Syzygium cumini*, *Albizia* species, *Emblia officinalis* etc. are the common associates. The main species present in the top storey are *Shorea robusta*, *Terminalia tomentosa*, *Anogeissus latifolia*, *Pterocarpus marsupium*, *Adina cordifolia*, *Syzygium cumini*, *Mytragyna parvifolia* and *Albizia procera*. The middle storey contains *Dalbergia latifolia*, *Ougeinia oojinensis*, *Gmelina arborea*, *Bridelia retusa* and *Cleistanthus collinus*. The ground flora comprises *Holarrhena antidysentrica*, *Nyctanthes arbortristis* etc and the important climbers are *Bauhinia vahlii*, *Combretum decandrum* etc.



**Fig. 1.** Indian grey wolf captured location in Sundargarh Forest Division, Odisha, India

The mean minimum and maximum temperature varied from 6-20 °C in January and 35-45 °C in May. The mean annual rainfall is 1,100-1,500 mm during the monsoon between June and September. We used 45 motion sensor camera traps (Cuddeback Model C1) to carry out a mammal survey from 25<sup>th</sup> October to 20<sup>th</sup> November 2018. We set up 30 camera trap stations in Dangakhhol,



Garjanpahad Reserve Forest of Hemgiri forest range, 15 in Jamkani Reserve Forest of Lepripara forest range and one in Dhanubauns Reserve Forest of Gopalpur forest range (Fig. 1). We selected most suitable sites likely to trap all species based on preliminary sign surveys of their tracks and scats. Moreover, we interviewed local forest staff. Camera traps were predominantly set along forest roads, game trails and footpaths. At each location one camera trap was installed for 25 days, yielding a total of 1125 trap nights.

## RESULTS AND DISCUSSION

During the survey we recorded a total of five localities in 12 photograph captured Indian grey wolf in Sundargarh Forest Division. A total 45 camera trap stations with a total sampling effort of 1125 trap days from 25<sup>th</sup> October to 20<sup>th</sup> November 2018. Out of 45 locations five locations were recorded in Indian grey wolf. The first photograph of a male Indian grey wolf was obtained once on 12<sup>th</sup> May 2018 at 07:12 (Fig. 2). After that, a female Indian grey wolf was photographed on 19<sup>th</sup> May 2018 at 09:04 (Fig. 3). The Indian grey wolf photos and different camera trap stations (Fig. 2 and 6; Table 1).



**Fig. 2.** Camera trap photo of a male Indian grey wolf was captured on 12th May 2018 in Ushakothi, Lepripara Range, Sundargarh Forest Division, Odisha, India.

The population of Indian grey wolves were sporadic and rare in Odisha. Several camera trap studies in different parts of Odisha did not reveal their presence (Palei et al., 2016; Debata and



**Fig. 3.** Camera trap photo of a female Indian grey wolf was captured on 17th May 2018 in Jamkani, Sundargarh Forest Division, Odisha, India.

Swain, 2018). But it may be possible that due to its elusive behaviour, naturally low population density (Jhala, 2003). However, Palei et al. (2013) reported the livestock depredation by Indian grey wolf in Hadagarh Wildlife Sanctuary, Odisha. Therefore, survey of population trend, ecology and threats of Indian grey wolf in Odisha is needed to understand its status.



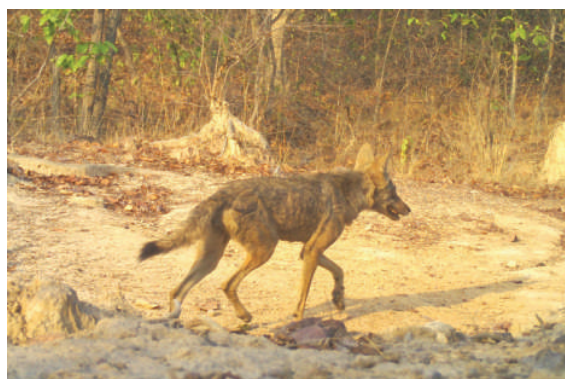
**Fig. 4.** Camera trap photo of a male Indian grey wolf was captured on 11<sup>th</sup> April 2018 in Singharibahal, Hemgiri, Sundargarh Forest Division, Odisha, India

In addition to the Indian grey wolf, threatened species such as tiger (*Panthera tigris*), leopard (*Panthera pardus*), elephant (*Elephas maximus*),





**Fig. 5.** Camera trap photo of a male Indian grey wolf was captured on 10<sup>th</sup> April 2018 in Telianala of Chengapahad, Hemgiri, Sundargarh Forest Division, Odisha, India.



**Fig. 6.** Camera trap photo of a male Indian grey wolf was captured on 11<sup>th</sup> April 2018 in Kodbahal, Hemgiri Range, Sundargarh Forest Division, Odisha, India.

sloth bear (*Melursus ursinus*) and four-horned antelope (*Tetracerus quadricornis*) were also recorded from this study area, highlighting the

importance for threatened species conservation. Thus, extensive surveys of these areas are warranted, as they may be a stronghold for threatened species.

**Table 1.** Records on the occurrence of the Indian grey wolf in Sundargarh Forest Division, Odisha

Sl.	Year	Locations	Forest type	Type of records	Photo captured
1	2018	Ushakothi , Lepripara Range, Sundargarh Forest Division, Sundargarh	Dry deciduous forest	Camera trap	02
2	2018	Jamkani, Lepripara Range, Sundargarh Forest Division, Sundargarh	Dry deciduous forest	Camera trap	02
3	2018	Singharibahal, Hemgiri Range, Sundargarh Forest Division	Dry deciduous forest	Camera trap	02
4	2018	Telianala of Chengapahad, Kanika, Sundargarh, Forest Division.	Dry deciduous forest	Camera trap	03
5	2018	Kodbahal, Hemgiri Range Sundargarh, Forest Division,Sundargarh	Dry deciduous forest	Camera trap	03

## ACKNOWLEDGEMENT

Authors extend their sincere thanks to Dr. Sandeep Tripathi, Principal Chief Conservator of Forests (Wildlife) and Chief Wildlife Warden, Odisha Forest Department and Divisional Forest Officer, Sundargarh Forest Division for supporting the study. Thanks to the Sri Habiram Choudhury, Range Officer, for his valuable support in field level and Prasanta Kumar Patel, Forester, Dolagobinda Panigrahi, Forest Guard and other field staff of Hemgiri Range who accompanied us in various field trips and provided other valuable field information.

## REFERENCES

- Aggarwal, R.K., Kivisild, T., Ramadevi, J. and Singh, L. 2007. Mitochondrial DNA coding region sequences support the phylogenetic distinction of two Indian wolf species. *J. Zool. Syst. Evol. Res.* **45**: 163–172.
- Aggarwal, R.K., Ramadevi, J. and Singh, L. 2003. Ancient origin and evolution of the Indian wolf: evidence from mitochondrial DNA typing of wolves from Trans-Himalayan region and Pennisular India. *Genome Biol.* **4**(6): 1.
- Bardeleben, C., Moore, R.L. and Wayne, R.K. 2005. A molecular phylogeny of the Canidae based on six nuclear loci. *Mol. Phylogenetics Evol.* **37**: 815–831.

- Champion, H.G. and Seth, S.K. 1968. *A Revised Study of the Forest Types of India*. Government of India. New Delhi, India, p. 404.
- Das, U.K., Setty, J. and Srivastava, V. 2019. Population study of tiger (*Panthera tigris tigris*) by trap camera photo capture in Katarniaghat Wildlife Sanctuary, Uttar Pradesh, India. *e-planet* **17**(1): 70-75.
- Debata, S. and Swain, K.K. 2018. Estimating mammalian diversity and relative abundance using camera traps in a tropical deciduous forest of Kuldiha Wildlife Sanctuary, eastern India. *Mammal Study* **43**: 45–53.
- Goldman, E. 1937. The wolves of North America. *J. Mammal.* **18**: 37–45.
- Jhala, Y.V. 2003. Status, ecology and conservation of the Indian wolf *Canis lupus pallipessykes*. *J. Bombay Nat. Hist. Soc.* **100**: 293–307.
- Nair, M.V. and Panda, S.K. 2013. *Just Friends*. **XXXIII** (3)
- Nowak, R.M. 2009. Taxonomy, morphology, and genetics of wolves in the Great Lakes region. In: *Recovery of Gray Wolves in the Great Lakes Region of the United States*, A.P. Wydeven, T.R. van Deelen, E. Heske (Eds.), Springer-Verlag, New York, pp. 233-250
- Palei, H.S., Debata, S., Mohapatra, P.P. and Sahu, H.K. 2013. Livestock predation by endangered Indian Wolf (*Canis lupus*) in Hadagarh Wildlife Sanctuary, Eastern India. *Indian Forester* **139**(10): 895-898.
- Palei, H.S., Pradhan, T., Sahu, H.K. and Nayak, A.K. 2016. Estimating mammalian abundance using camera traps in the tropical forest of Similipal Tiger Reserve, Odisha, India. *Proc. Zool. Soc.* **69**: 181–188.
- Prater, S.H. 2005. *The book of Indian animals*. Oxford University Press, Oxford, New York, pp. 125-126.
- Sahi, S.P. 1982. Status of gray wolf (*Canis lupus pallipes*) in India: a preliminary survey. *J. Bombay Nat. Hist. Soc.* **79**: 493–502.
- Sharma, D.K., Maldonado, J.E., Jhala, Y.V., and Fleischer, R.C. 2004. Ancient wolf lineages in India. *Proc. Royal Soc. London B: Biol. Sci.* **271**(Suppl 3): S1-S4.
- Sheldon, J.W. 1992. *Wild dogs: The natural history of non-domestic Canidae*. Academic Press Inc., New York, p. 248.
- Singh, M. and Kumara, H.N. 2006. Distribution, status and conservation of Indian grey wolf in Karnataka. *India. J. Zool.* **270**: 164-169.
- Wildlife Institute of India. 2017. *National Studbook of Indian Wolf (Canis lupus pallipes)*, Wildlife Institute of India, Dehradun and Central Zoo Authority, New Delhi, p. 76.