

Status Survey of Indian Grey Wolf (*Canis lupus pallipes*) in West Bengal and some part of Jharkhand

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Abstract

Indian Grey wolf *Canis lupus pallipes* is one of the major carnivores of semi-arid regions of eastern India especially in the regions of southern west Bengal and Jharkhand. The present study was conducted in three districts of west Bengal i.e., Purulia, Bankura and Midnapore and Dalma part of Jharkhand state India, to evaluate the current status of *Canis lupus pallipes*. The overall weighted mean encounter rate from the present study was found to be 0.05 and 0.07, 0.08 and 0.06 from Purulia, Bankura and west Midnapore respectively and in study landscape, wolves are found to prefer dry deciduous scrub and open field. During total field survey 11 individuals of wolves are being sighted along with 23 pugmarks and 5 dens were observed, of which 3 dens were near to agriculture field and rest are in rocky areas specially in Jhaldha region. However dens are found to be in close proximity to human and agricultural settlement near Mechachua (Midnapore) and Sutan and Khata-Am areas (Bankura). Natural prey base for grey wolf in the study area includes Hares about 88.57% followed by Deer/Wild boar and Jungle fowl comprising about 4.28% and 7.14% respectively. Results suggests, very often wolves attack the domestic animals as they are fully dependent on domestic livestock due to the decline of natural prey species. Present study revealed that wolf population in the study area is largely fragmented and few packs of the species have occupied agro-forest landscape of Ranibandh (Bankura) and Jhalda (Purulia) zones than other zones.

Keywords: *Canis lupus pallipes*, Distribution, Indian Grey wolf, Jharkhand, West Bengal

Introduction

Indian subcontinent inhabits two subspecies of wolf i.e., Tibetan Wolf (*Canis lupus chanco* Gray, 1863) and Indian Grey wolf (*Canis lupus pallipes* Sykes, 1831) out of which Tibetan Wolf inhabits the higher mountain ranges of Himalayas ranging from 3000-4000 m and occupies an alpine niche (Sharma, 2004). In contrast grey wolf which was evolved during the Pleistocene epoch (Sharma, 2004; Mech, 2010) have a relatively different climatic envelop and adapted for semi-arid regions of Indian subcontinent including degraded planes, semi arid grasslands and scrublands. Indian grey wolf has been categorised as Scheduled I as per Indian wildlife protection, Act 1972, and includes in Appendix I of CITES. It is a carnivore animal of canidae family with body size:-HBL- 100-130 cm. (male) and 87-117 cm (female), tail 40-52 cm, weight -16-60 kg. (Menon, 2004; Roberts, 1997). As this species is an inhabitant of dry- deciduous, open forest open plain areas it is found in the many states of India (Jhala, 2003; Singh,

2006). Distribution records from isolated pockets of the state of Karnataka, Maharashtra, Gujrat, Madhya Pradesh, Rajasthan, Haryana, Uttar Pradesh, Bihar- Jharkhand, Orissa and West Bengal (Pocock, 1941; Shahi, 1982; Jhala, 1991). Once it was occurred in almost everywhere in Bengal now restricted to small pockets of southern districts of the state (Biswas, 2008). In comparison to other large carnivores like tigers and leopard which are restricted to forested landscape and protected areas grey wolf dominated the unprotected areas and agricultural lands, which are close to human settlement, this is one of the vital reasons which triggers the conflict. As in recent times due to human dominance and decrease in the prey base of grey wolf in semi-arid landscapes throughout India their dietary preference are getting shifted towards the domestic livestock. If domestic livestock will continue to be a significant portion of their prey, this will increase the human-animal conflict and incidences of revenge killing (Kumar and Rahmani, 1997, 2008). However there are many historical references suggesting

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the conflict issues with wolf and humans are not new and wolf have a bad reputation for incidences like child lifting or attacking humans (Blanford, 1891; Jhala and Sharma, 1997; Rajpurohit, 1999). The major threat to this species is the expansion of agricultural in ecologically less productive lands which is leading to loss of habitat and range contraction. Though adjacent state Bihar-Jharkhand surveyed by (Jhala *et.al.*, 2003) and a total population of Grey Wolf in India is available from the report by (Jhala, 2000) but, no details status survey on Wolf has been carried out in West Bengal. Hence, in the present study status survey of Indian Grey Wolf was conducted in West Bengal and some part of Jharkhand from 2015-2016 with an aim to determining the population status in the study areas. Surveys were conducted in selected areas of three district of West Bengal (Purulia, Bankura and West Midnapore) and Dalma Wildlife Sanctuary of Jharkhand.

The present study focus on the present distribution and status of *Canis lupus pallipes* in West Bengal and some parts of Jharkhand and was a portion of a larger study on the distribution of all wild mammalian fauna, and not specifically concentrated on wolf alone. Distribution of other sympatric mammalian species sharing the similar habitat type are have been documented in this study and given in the result and observation (Appendix I). This preliminary insight from West Bengal and areas of Jharkhand may initiate further intensive studies with more rigorous methodology and quantification.

Study Area

The present study was undertaken in three districts of West Bengal (Purulia, Bankura, and West Midnapore) and Dalma Wildlife Sanctuary, Jharkhand. The field survey was conducted by a team of researchers during 2015-2016. Geographic extent of these district is about 19,644 Km², having a forest cover of 873 Km² located between 22°43' and 24°4' north latitude and 85°49' and 86°54' East. Bankura district of Ranibandh areas where the survey was carried out lies between Lat.22° 8661" N and Long 86°7831" E. As per census report 2011, West Midnapore spreads over 9345 km² with a forest cover of 1719.35 Km². The temperature varied maximum 39°C and minimum 10°C in the study area. The Dalma Wildlife sanctuary is situated between 22° 54' 15" N and

86° 12' 59" E, sanctuary spread over 193 km² falls under east Singhbhum district of Jharkhand state with dry mixed deciduous forest. The Purulia district is bounded in north side by Damodar River, western and southern by Hazaribag and east Singhbhum district and much of the area is classified as waste land, with few portions is cultivated land and plantation forest. The survey areas like Bandwan, Bugmundi and Jhalda are hilly, hard rocky and undulating zone. The soil type is infertile laterite and alluvial. It falls under upland and Chotta-nagpur plateau. The climate of the district is very drier so it is called as drought prone district, temperature varied from 7°C to 46°C and annual rain fall 1180mm. The entire surveyed areas habitat is almost same except Dalma, Ayodhya and Bagmundi areas. These areas are hilly with undulations in comparison to than other areas. The entire habitat of the survey areas was dry-deciduous, scrub forest, rocky hillocks and undulating.

The flora and fauna of study areas represented by Gum arabic (*Accacia arabica*), Kendua (*Diospyrox melanoxylon*), Karam (*Haldina cordifolia*), Arjun (*Termiricalia. arjuna*), Bahera (*Terminalia bellirica.*), Loharia, (*Diospyrox montana*), Asan (*Terminalia tomentosa.*) Bhela (*Semecarpus anacadium*), Neem (*Azadina indica*) Bael (*Aegele marmelos*), Mahua (*Modhuca latifolia.*), Mango (*Megnifera indica*), Dumur (*Ficus racemosa*), Imli (*Tamarindus indica*), Kusum (*Schleichera aleosa*), Haritaki (*Termenalia chebula*), Dominant sal (*Shorea robusta*), Kurchi (*Holarrohuna pubescens*), Gamar (*Gmelina arborea*), Pial (*Buchanania lanzana*), Kul (*Zizyphus sp*), Piasal (*Pterocarpus marsupium*), Siris (*Albizia lebbeck*) and varieties of creepers like Dudhi and Buchiti., Kalmegh. Among mammalian and aves fauna are Asiatic Jackal (*Canis aureus*), Northern plains gray langur (*Semnopithecus entellus*), Jungle Cat (*Felis chaus*), Grey mongoose (*Herpestes edwardsii*), Sloth bear (*Melursus ursinus*), Wild boar (*Sus serofa*), Common palm civet (*Paradoxurrus hermaphroditus*), two type of Squirrel (*Funambulus palmarum*, *Funambulus pennantii*), Antelope rat (*Tatera indica*), House mouse (*Mus musculus*), Bandicoot rat (*Bandicota bengalensis*), Tree rat (*Rattus rattus arboreus*), Field rat (*Mus booduga*), Elephant (*Elephas maximus*), Spotted deer (*Axis axis*), Indian grey wolf (*Canis lupus pallipes*), Porcupine (*Hystrix indica*) and Stripped hyena (*Hyaena hyaena*) etc. (Taraknath Ghosh *et al.*, 2013) and (Biswas *et al.*, 2008).

Material and Methods

In order to determine the status of Indian grey wolf in the study areas following method was adopted.

Sampling survey

Preliminary sampling survey was conducted at day time with the help of forest guard and local peoples to ascertain the ideal habitat and occurrence of in the study areas and divided this area in to part then initiated part wise using line transect survey in early morning and late evening along the selected area on foot and sometime used vehicle. During the sample survey travelling distance on foot and vehicle was recorded, direct indirect both types of observation was made. An individual number of wolf, signs, GPS co-ordination, the place from where the Wolf was sighted and indirect information like sings, howling, scats are noted down and photography records also maintained.

Questionnaire survey

Semi structured open ended questionnaire survey was done to old local peoples who reside in the periphery of the study areas, shepherd boy, experience forest guard about the occurrence, activity time and lifting, depredation on domestic and wild animals. On the basis of collected information survey party visited the spot and collected the data.

Night survey

Night survey was conducted from 6.00 pm to 10.30 pm, considering the nocturnal habits of the study animal. Near to human settlement and in a remote area where there is no human disturbance. While crossing the remote, barren area for searching the prey species, the wolf is easily sighted by the observer and took photographs. In night survey a pair headlight and 5 celled magnum spot light were used for detecting the wolf at night.

Pugmarks survey

Pugmarks were collected from the sampled areas near a stream, nulla, river bed, dusting, dumpy ground, loose soil and where depredation on domestic and wild animals happened.

Den survey

Den survey was carried out in particulars selected ideal habitat like less disturbance area on a hilly rock, sandy soil, and dusty ground, under scrub forest and agriculture landscape. While collecting the data of dens distance from one den to another den, human settlement, stream, forest road was noted. Most of the dens were found in loose soil and hilly rocks crevices. Though (Jhala, 2003) reported that wolves are habituated in denning, borrow in the side of the sand hill and under the trunk of the dead tree but in present survey no dens are found in such places.

Depredation survey

Indian grey wolf has a different technique for hunting, like stalking, chasing, rushing and in the pack. The details information on depredation was collected with the help forest guards, local peoples and shepherd boy who often travel in the forest with domestic animals for foraging and collecting forest product from the forest. During depredation survey killing data of lives stocks like goats, sheep and wild animals, the even minimum individual number in a pack of hunting information also collected.

Result and Discussion

The present study was carried out in three districts of West Bengal & some part of Jharkhand state (2015-16) (Figure 1, Figure 2). A total of 44 nos. sites were surveyed in 24 days covering 353 km. According our observation Wolves are absent in deep forest and found to prefer dry deciduous scrub and open field (Figure 3). The overall weighted mean encounter rate from the present study was found to be 0.05 and 0.07, 0.08 and 0.06 form Purulia Bankura and west Midnapore respectively (Table 1). Out of total 45 mammals observed 11 individuals of wolves are sighted in two surveys. Although villagers, forest guards and old local people reported that wolves are found more and less everywhere in the study area but the direct sighting is very difficult. However, the direct sightings are less but the number of indirect evidence are quite abundant (Scat, Pug marks etc). Majority of the indirect evidence were observed away from human habitation (3 to 4 Km) and remote areas. However, in case of Mechachua (Midnapore) and Sutan and Khata-Am areas (Bankura) their dens were near to human settlement in the scrub forest. In all 23 pugmarks and 5 dens are observed that is much less for two surveys of

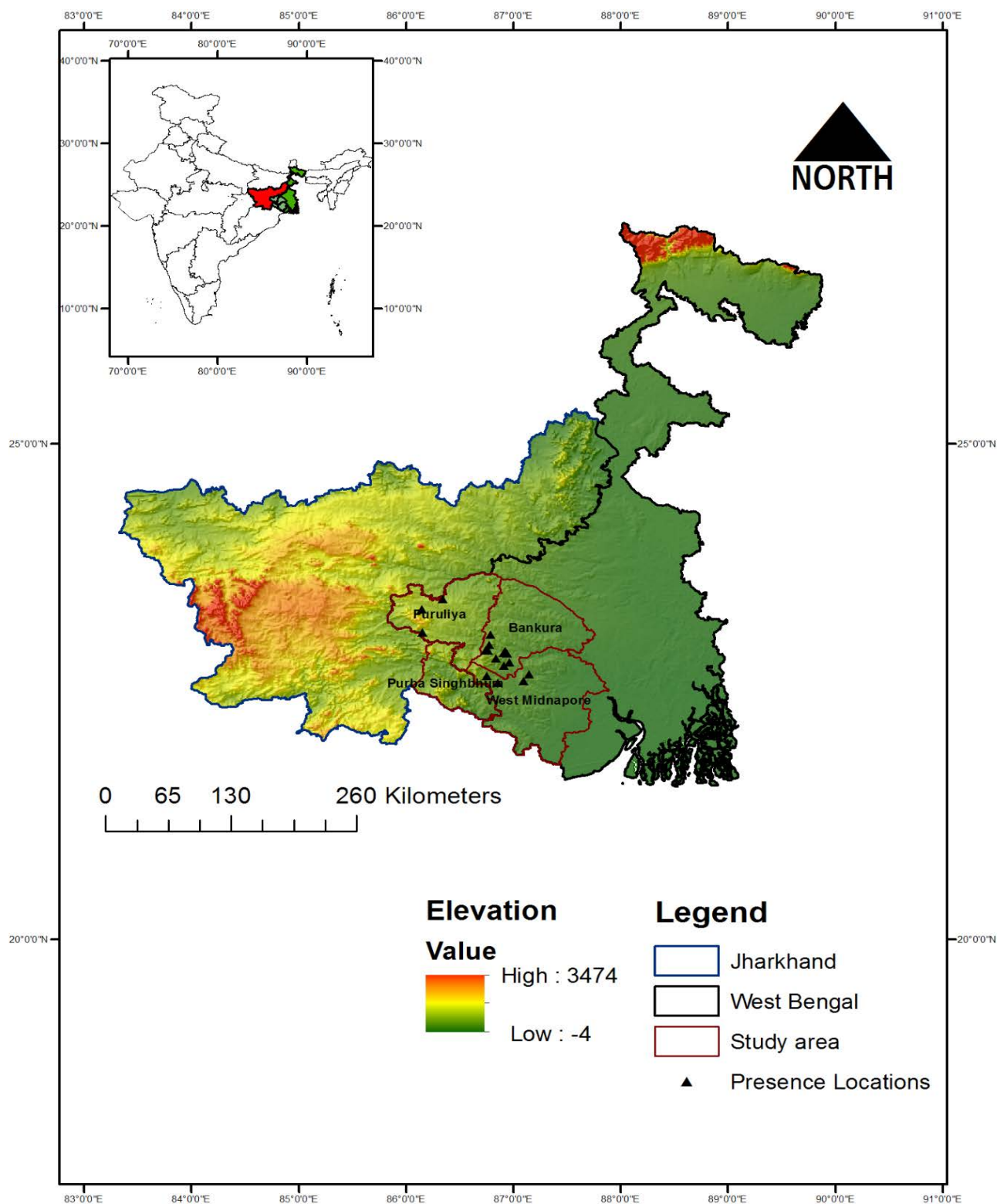


Figure 1. Elevation map of study area. Showing the different elevation profiles of the study area ranging up to 3474 m. The colour ramp signifies the ranging from high to low elevation across the landscape, where red colour indicates the high elevation ranges and green showing the lower elevation ranges.

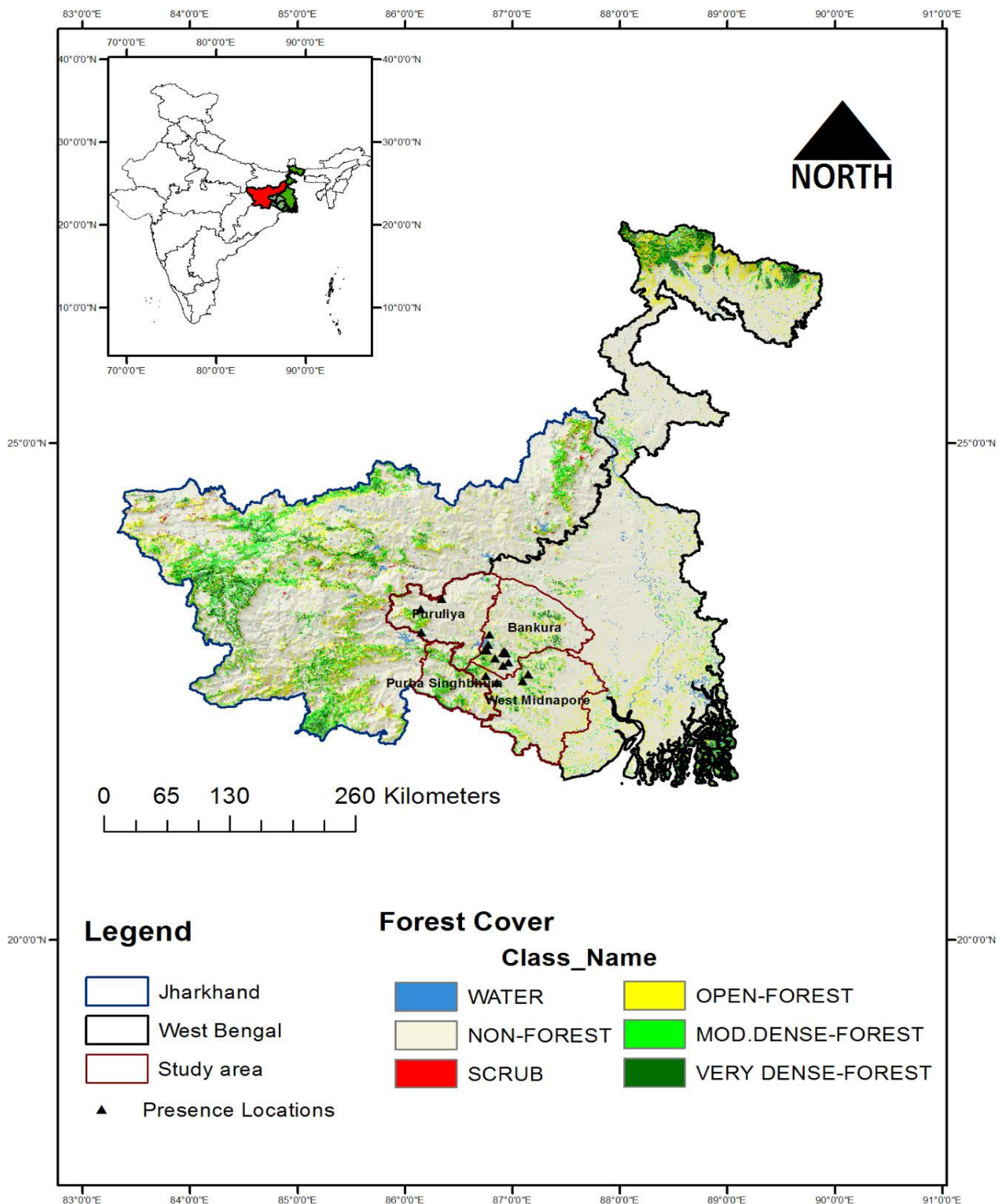


Figure 2. Forest cover map of study area. Showing the different forest types across the two states i.e. West Bengal and Jharkhand. Forest cover map has been classified in to open-forest, moderate-dense forest, very dense forest, Scrubland, no forest and water bodies. (Source: Forest Survey of India 2013).

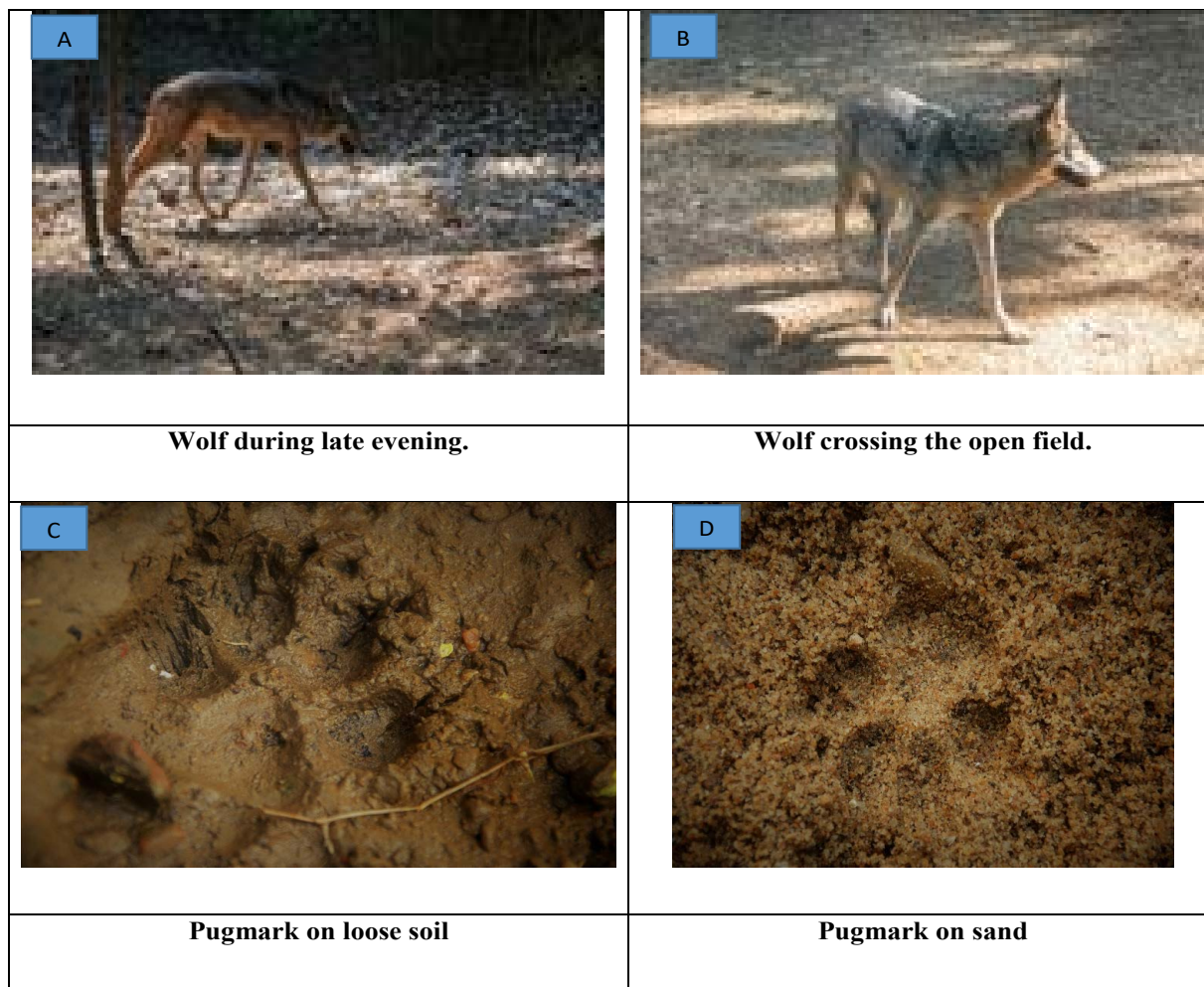


Figure 3. Direct sighting and indirect evidences for wolf presence in the study area. A and B showing the direct sighting of Wolf from study districts of west Bengal, while C and D are the footprints of wolf .

which 3 dens were near to agriculture field and rest are in rocky areas specially in Jhaldha areas (Table 1). Most of the pugmarks observed on sandy soil. It is very interesting to note that an old villager of Raigarh (Bankura), reported that a few months ago a pack of 12 individuals was encountered by him on the forest road out of them 1 individual charged him. From results of the questioner's survey and as per the report of villagers, experienced forest guard and old local peoples that the population of wolves were much more in the past, but due to illegal hunting, poaching, habitat degradation and a decrease of the natural species population are becoming downwards. On an average 46.42% respondents informed us that domestic animals are killed by a wolf during the early morning, night, and day time during grazing in the field. Natural prey base for grey wolf in the study area includes Hares about 88.57%

followed by Deer/Wild boar and Jungle fowl contributing about 4.28% and 7.14% total diet respectively (Appendix I). Apart from the natural prey base majority of the respondent suggests that domestic goat is the most favoured livestock for wolf followed by sheep and domestic chicken. Very often the wolves attack the domestic animals as they are fully dependent on domestic animals due to the decline of natural prey species. The data on killing and hunting in provided in Table 1. As per the report of local people and forest guards there is no such major threat to wolves. Though the population of wolves are less in study areas but till now no awareness programme and special protection measures have been taken on the wolf in the study areas. Hence it is important to conduct a large term study to understand the population density as well as the habitat ecology of the species for conservation and management.

Table 1. Abundance of Indian Grey Wolf in the Study areas

S.L No.	Area name	The area covered (km)	No. of pugmarks	Encounter rate of wolf signs	Total Wolf encountered
1	Purulia	145	11	0.07	3
2	Bankura	98	8	0.08	6
3	West Midnapore	65	4	0.06	2
4	Dalma	45	0	0	0
	Total	353	23	0.052*	11

Weight mean of the wolf in the study area 0.05*

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Appendix I. Questionnaire survey based information gathered during the survey in the study area.

Sl.No	Questions	Option	Respondents	
			Numbers	%
1	Presence of Wolf in the study area	YES	65	92.85
		NO	15	21.42
2	Grey Wolf common in this area	YES	15	21.42
		NO	55	78.57
3	Livestock depredation by wolf in the area	YES	60	85.71
		NO	10	14.28
4	Previous history of the Wolf in the study area	30 years	64	91.42
		10 years	6	8.57
5	Knowledge of Grey Wolf importance in conservation and management	YES	55	78.57
		NO	15	21.42
6	Any attack records on local people by the Wolf	YES	01	1.42
		NO	69	98.57
7	Presence of natural/wild prey of wolf in the study area	Hares	62	88.57
		Deer/wild boar	03	4.28
		Jungle fowl	05	7.14
8	Present population trend of Wolf in the area	Increased	05	7.14
		Decreased	65	92.85
9	Threat to the species	Poaching	08	11.42
		Habitat destruction	62	88.75
10	Domestic livestock depredation by wolf in the study area	Goat	45	73.77
		Sheep	15	24.59
		Domestic chicken	01	1.63