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WILD LIFE CONSERVATION PLAN WITH SPECIAL REFERENCE TO INDIAN ELEPHANT AND DHOLE (WILD DOG) AROUND 5 MINING SITES IN BEHAT, SAHARANPUR (UP)

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Abstract: Saharanpur is considered as a very rich agricultural area. This small town has a strong agricultural belt with plenty of grains and fruits. Current study was conducted on 5-7 August 2015 to assess the wildlife presence in the surrounding area of Kalesar National Park and Kalesar Wildlife Sanctuary along with 5 mine sites on Yamuna River. Total 4 species of schedule I and 10 species of schedule II was observed during the study. Out of which 2 species viz. Indian Elephant (*Elephas maximus*) and Dhole (*Cuon alpinus*) are endangered species. Elephant is an occupational visitor from Rajaji National Park. Elephants use to stay at Kalesar Protected Area for few weeks and used to go back to Rajaji National Park. Kalesar National Park is situated in the foot hills of Shiwalik ranges of mighty Himalays. The conservation measures to protect Indian Elephant and Wild Dog are discussed in this article.

Keywords: Conservation; Ecological impact; Flora and Fauna; Wild life.

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INTRODUCTION

Wildlife is a national resource which not only helps in maintaining the ecological balance but is also beneficial from economic, recreational and aesthetic points of view. Wildlife means all the flora and fauna, which are not domesticated by humans. It includes animals, plants and microorganisms. Last few decades have seen emergence of human encroachment to an extent that has never been seen. This is one of the greatest threats to India's wildlife. In order to overcome the result of human encroachment many national parks as well as protected areas have been established so far and the first came in 1935. Conservation and management are two words sometimes used as synonyms and sometimes with different meanings. Generally speaking wild life conservation is regarded as the antithesis to economic development. However, according to IUCN the term conservation should be interpreted as management of the biosphere and the components of its eco-systems for human use in order to derive the greatest sustainable benefits for the present generation while maintaining their potential to meet the needs and aspirations of future generations. Wildlife management is the application of scientific knowledge and technical skills to protect, conserve, limit, enhance, or create wildlife habitat. Wildlife management also includes implementing laws regulating the use, kinds and amounts of wildlife, people can harvest (Kumar, 2015). Laws that protect existing habitat are also wildlife management tools. Biological evolution on earth is associated with extinction of older species and descent of new species but the disappearance of species from the surface of the earth has speeded up 1000 to 10,000 times as compared to the natural disappearance, due to destructive activities of man. Important reasons for decline of wildlife are:

a) Habitat loss.

b) Fragmentation and degradation.
c) Hunting and poaching.
d) Man-Animal conflict.
e) Pollution.

Status of the forest, their category in study area

There are no any national parks, wild life sanctuary or reserve forest, 14 reserved forest and 10 protected forests along with **Kalesar National Park** and One **Elephant Reserve** (part of Rajaji National Park) were observed in the study area (10 Km radius). The Kalesar Wild life Sanctuary is in the Kalesar National Park and it is approx 18 Km (areal) in north-west direction. The table 1 shows the eco-sensitive area, reserved and protected forest surrounding the lease mines (5 Nos.) in the study area.

Table 1. List of Reserved and Protected Forests in the Study area and Surroundings

S.No.	Name of Eco-Sensitive Area/Zone(s)
Wild Life Sanctuary and National Park	
1.	Kalesar Wild Life Sanctuary
2.	Kalesar National Park
3.	Elephant Reserve
4.	Rajaji National Park
Reserved Forests	
1.	Khara R.F.
2.	Kothiwala R.F.
3.	Kalesar R.F.
4.	Masdali R.F.
5.	Ambwali R.F.
6.	Dhaula R.F.
7.	Kansali P.F.
8.	Kulhal R.F.
9.	Naushera R.F.
10.	Chapni R.F.
11.	Badshahibagh R.F.
12.	Barani R.F.
13.	Magahnpura R.F.
14.	Karaundi R.F.
Protected Forests	
1.	Kansali P.F.
2.	Khilonwala P.F.
3.	Bagpat P.F.
4.	Bhurch Bali P.F.
5.	Khizarabad P.F.
6.	Chuharpur P.F.
7.	Deodar P.F.
8.	Rayanwala P.F.
9.	Nagal Patti Milak P.F.
10.	Khizni P.F.

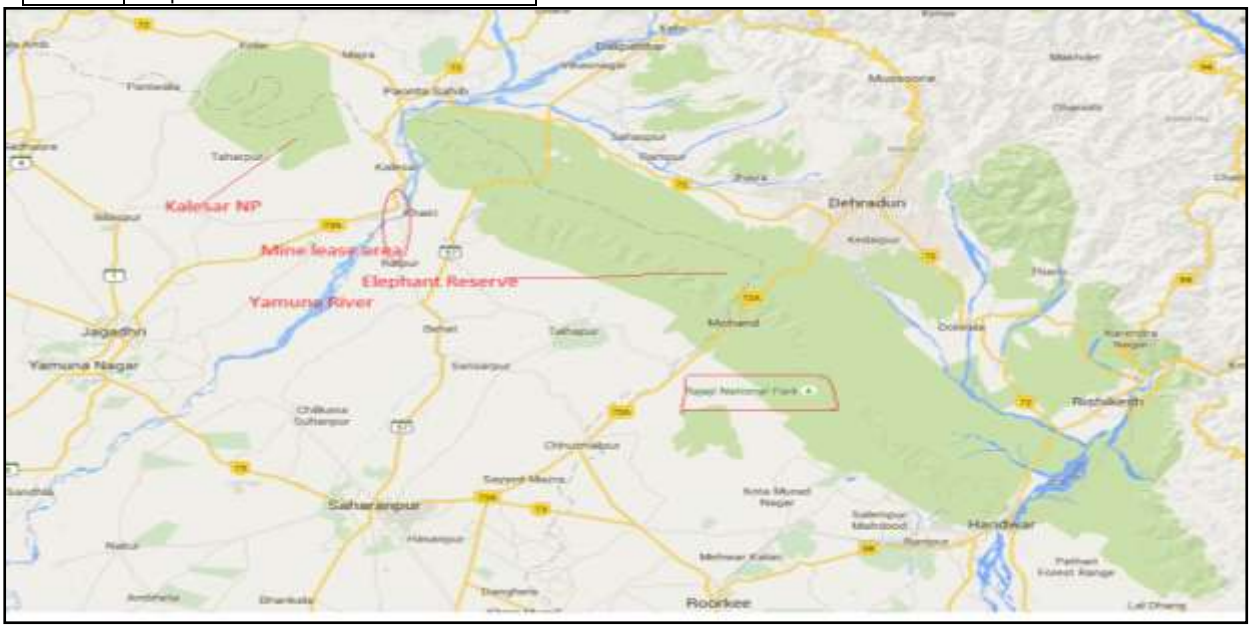

Figure 1. Location of Elephant Reserve and Kalesar National Park

EXPERIMENTAL

An ecological study of the ecosystem is essential to understand the impact of industrialization and urbanization on existing flora and fauna of the study area. Studies on various aspects of ecosystem play an important role in identifying sensitive issues for under taking appropriate action to mitigate the impact, if any. The study area comprises of three states Uttar Pradesh, Himahcal Pradesh and Haryana. The study area comprise 57% (32437.25 ha) dense forest (National park, Reserved forest, Elephant reserve), 10% (5492.43 ha) grassland/pasture land, 10% (5527.65 ha) agriculture land, 8% (4714.23 ha)

settlement, 7% (4013.28 ha) open scrub, 4% (2530.71 ha) river bank/sand area, 2% (1008.27 ha) barren land and 2% (1259.64 ha) water bodies, refer figure 2. The baseline study was conducted for the evaluation of the floral and faunal biodiversity of the terrestrial and aquatic environment of the study area (10 Km radius from the mine area). The baseline study has been conducted on 5 to 7 August, 2015. The area comprise of 5 lease mines which are very adjacent to others. The sampling plots for floral inventory were selected randomly in the suitable habitats (Anderson, 1867; Jain and Rao, 1983). The methodology adopted for faunal survey involve random survey, opportunistic observations, diurnal bird observation, active search for reptiles, faunal habitat assessment, active search for scats and foot prints, animal call, and review of previous studies. The aim was to set baselines in order to monitor and identify trends after the commissioning of the mining activity. Emphasis has been placed on presence of endemic species, threatened species if any present in the study area. Desktop literature review was conducted to indentify the representative spectrum of threatened species, population and ecological communities listed by IUCN, WCMC, ZSI, BSI and Indian Wild life Protection Act, 1972 (Bentham and Hooker, 1862-1883; Hunter, 1879; Dixit, 1984; Ghosh *et al.,* 2004; Lushington, 1915; Wilson and Reeder, 1993; BirdLife International, 2000; BirdLife International, 2004a, b; Wilson and Reeder, 2005; BirdLife International, 2010; Kumar and Srivastava, 2012; Kumar, 2013; Kumar *et al.,* 2013; Kumar and Aggarwal, 2013a,b; Kumar 2015; Kumar and Eledath, 2015). The status of individual species was assessed using the revised IUCN/SSC category system (WCMC, 1988; IUCN, 1994; WCMC, 2000; IUCN, 2001, 2003, 2008, 2010).

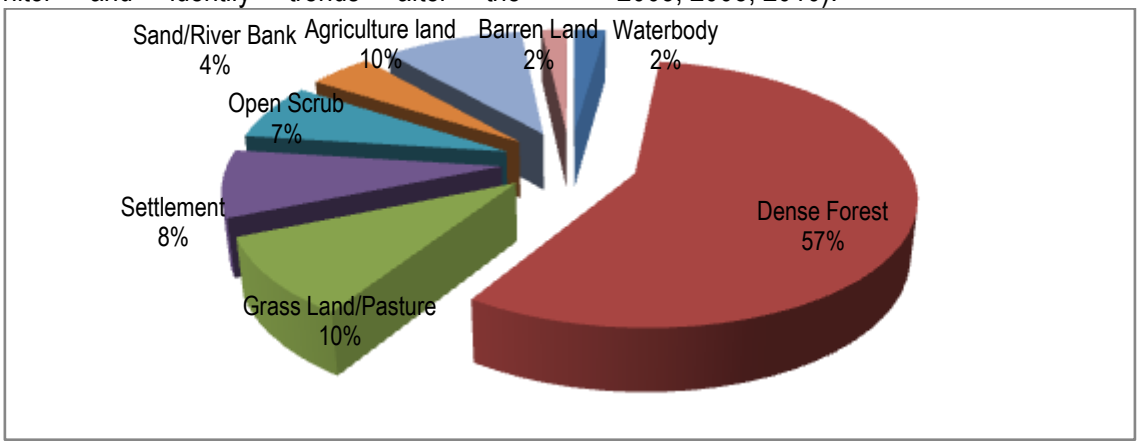

Figure 2. Distribution of Land use of the Study area (10 Km Radius- 56983.46 ha)

Figure 3. Study area (10 Km radius from 5 mine sites -56983.46 ha)

RESULTS AND DISCUSSION

Baseline Ecological Status

Saharanpur is considered as a very rich agricultural area. This small town has a strong agricultural belt with plenty of grains and fruits. Many might actually consider Dehradun to be famous for Basmati rice. But actually the larger portion of Basmati is grown in Saharanpur district. Saharanpur also specializes in manufacturing sugar, textile and paper and so many other products. The soil is more alluvial, the typical riverine basin characteristics and is mixed with sand making it more useful for agricultural purposes. The yields for most of the crops are one of the best in India. The gross land area under irrigation now is about 374,000 hectares. This has made Saharanpur a major contributor to the national food grain stock. The climatic conditions are also suitable for agriculture. The major produces are that of wheat, rice, maize, sugarcane, oilseeds and cotton. The gross land area under irrigation now is about 374,000 hectares. This has made Saharanpur a major contributor to the national food grain stock. The climatic conditions are also suitable for agriculture. The major produces are that of wheat, rice, maize, sugarcane, oilseeds and cotton. The agriculture in India is predominantly devoted to the production of rice and wheat. Not to be left behind is the mango production of Saharanpur. It produces more than various varieties of mango they are Langda, Dusheri, Gulab Khas, Malda, Chausa, Alphonso and Tota Pari etc. are the some popular names. A special variety called Laila Ki Aungali, shaped like a delicate finger, is the speciality mango of the region. The study area has major drainage system of Yamuna River and its tributaries along with canal in entire area. The dominant trees in the area are *Cordia dichotoma, Alstonia scholaris, Syzigium cumini, Mangifera indica, Terminalia arjuna, Eucalyptus camaldulensis, Trewia nudiflora, Populus ciliata, Phoenix sylvestris, Dalbergia sissoo, Milletia pinnata, Melia azedarach, Azadirachta indica, Ziziphus muritiana, Callistemon lanceolatus, Acacia nilotica, Bombax ceiba, Solanum indicum, Saccharum spontaneum, Calotropis gigantean, Mallotus philippinensis, Lagerstroemia parviflora, Cannabis sativa, Grevillea robusta, Argemone mexicana, Ceiba pentandra, Ipomoea carnea, Parthenium hysterophorus, Euphorbia thymifolia, Vitex negundo, Thevetia peruviana, Santalum album, Zephyranthes carinata, Psidium guajava, Anogeissus latifolia, Butea monosperma, Carissa karandas, Cassia fistula, Delonix regia, Delinia pentagyna, Chorisia speciosa, Erythrina blackii, Biscophia javanica, Bauhinia purpurea, Plumeria rubra, Pterospermum acerifolium, Aegle marmelos, Sapindus mukorossi, Barringtonia acutangula, Mimusops elengi, Saraca indica, Plantycladus orientalis, Millingtonia hortensis, Ficus retusa, Polyalthia longifolia, Acalypha ceylon, Adenanthera pavonina, Bambusa polymorpha, Schleichera oleosa, Tridex procumbens ,etc.* (Bentham and Hooker, 1862-1883; Anderson, 1867; Ahmedullah and Nayar, 1886;1987; Dixit, 1984; Nayar and Sastry, 1987; 1988, 1990).


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Figure 4. Existing Scenario of Ecological Status as on 5th, 6th & 7th August 2015.

Endangered species in the area: As per IUCN, there are two endangered species viz. Indian/Asian Elephant (*Elephas maximus*) and Dhole (*Cuon alpinus*).

Schedule-I & II fauna in the study area: Following fauna observed during study period which belongs to Schedule I of the Wildlife (Protection) Act 1972 (Wilson and Reader; 1993; 2005). Elephant is an occupational visitor from Rajaji National Park. Elephants use to stay at Kalesar Protected Area for few weeks and used to go back to Rajaji National Park. Kalesar National Park is situated in the foot hills of Shiwalik ranges of mighty Himalays. It falls under Yamunanagar district of Haryana and sharing boundary with three states viz. Himachal Pradesh & Uttrankhand and U.P. The Yamuna river form the Eastern boundary with Uttar Pradesh, the main shiwalik ridge separates state boundary among Haryana, Himachal Pradesh & Uttaranchal in the north. Kalesar National Park is named after the Kaleshar (Shiva) temple located in protected area. The whole area is full of bio-diversity having dens Sal forest, Khair forest and patches of grass lands, which supports an amazing variety of plants and animal species. The park was declared as National Park on 8th December 2003 having an area of 11570 acres. Just adjacent to the National Park is Kalesar Wildlife Sanctuary and it was notified on 13th December 1996, having an area of 13209 acres.

Table 2. List of Schedule –I and II Fauna in the Study Area

S. No.	Scientific Name	Local Name	Schedule as per WPA,1972	IUCN Category	CITES Listing
1.	*Pavo cristatus*	Indian Peafowl	Schedule I	Least Concern ver 3.1	Not listed
2.	*Varanus bengalensis*	Common Indian Monitor	Schedule I	Least Concern ver 3.1	Appendix I
3.	*Elephas maximus*	Indian Elephant	Schedule I	Endangered A2c ver 3.1	Appendix I
4.	*Python molurur*	Python	Schedule I	Not assessed yet	Appendix II
5.	*Naja naja*	Indian Cobra	Schedule II	Least Concern ver 3.1	Appendix II
6.	*Vipera/Daboia russelli*	Russell's Viper	Schedule II	Least Concern ver 3.1	Appendix III

7.	*Xenochrophis piscator*	Checkered Keel back	Schedule II	Least Concern ver 3.1	Appendix III
8.	*Canis aureus*	Golden Jackal	Schedule II	Least Concern ver 3.1	Appendix II
9.	*Macaca mulatta*	Rhesus macaque	Schedule II	Least Concern ver 3.1	Not listed
10.	*Presbytis entellus*	Langur	Schedule II	Least Concern ver 3.1	Not listed
11.	*Herpestes edwardsi*	Common Mongoose	Schedule II	Least Concern ver 3.1	Appendix III
12.	*Felis chaus*	Jungle Cat	Schedule II	Least Concern ver 3.1	Appendix II
13.	*Vulpes bengalensis*	Fox	Schedule II	Least Concern ver 3.1	Appendix III
14.	*Cuon alpinus*	Dhole	Schedule II	Endangered C2a(i) ver 3.1	Appendix II
15.	*Rousettus leschenaultii*	Fulvous Fruit Bat	Schedule II	Least Concern ver 3.1	Not listed

Conservation Plan for Indian Elephant

Zoological name*: **Elephas maximus***

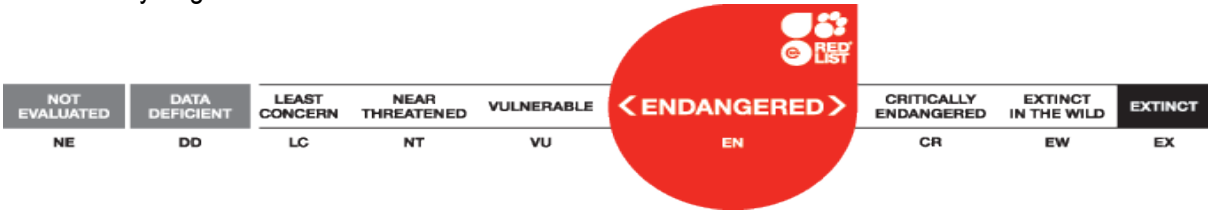
While subspecies taxonomy of *Elephas maximus* has varied among authors, the most recent treatment recognizes three subspecies: *E. m. indicus* on the Asian mainland, *E. m. maximus* on Sri Lanka, and *E. m. sumatranus* on the Indonesian island of Sumatra. Borneo's elephants have traditionally been included in *E. m. indicus* or *E. m. sumatranus*. These subspecies designations were based primarily on body size and minor differences in coloration, plus the fact that *E. m. sumatranus* has relatively larger ears and an extra pair of ribs. The Sri Lankan subspecies designation is weakly supported by analysis of allozyme loci, but not by analysis of mitochondrial DNA (mtDNA) sequences. However, current patterns of mtDNA variation suggest that the Sumatran subspecies is monophyletic and consequently this taxon could be defined as an evolutionarily significant unit (ESU). This suggests that Sumatran elephants should be managed separately from other Asian elephants in captivity, and is also an argument for according particularly high priority to the conservation of Sumatran elephants in the wild. The status of evolutionarily significant unit has also been suggested for the Bornean elephants. The Elephant is listed as Endangered (EN) because of a population size reduction inferred to be at least 50% over the last three generations, based on a reduction in its area of occupancy and the quality of its habitat. Although there are few accurate data on historical population size, from what is known about trends in habitat loss/degradation and other threats including poaching, an overall population decline of at least 50% over the last three generations (estimated to be 60–75 years, based on a generation time estimated to be 20–25 years) seems realistic.

Classification

Kingdom: Animalia
Phylum: Chordata
Subphylum: Vertebrata
Class: Mammalia
Order: Proboscidea
Family: Elephantidae
Genus: *Elephas*
Species: *maximus*

Conservation Status

IUCN: Endangered A2c ver 3.1
IWPA: Schedule I.
CITES: Appendix I.



Native: Bangladesh; Bhutan; Cambodia; China; India; Indonesia (Kalimantan, Sumatera); Lao People's Democratic Republic; Malaysia (Peninsular Malaysia, Sabah);

Myanmar; Nepal; Sri Lanka; Thailand; Viet Nam.

Regionally extinct: Pakistan.

Physical Description

i. Asian elephants are 18-21 feet (5.5-6.4 m) long.
ii. Male Asian elephants average 11,500 pounds (5,221 kg) and may weigh up to 15,000 pounds (6,810 kg); females average 7,700 pounds (3,465 kg) but may weigh up to 9,000 pounds (4,050 kg).
iii. Male Asian elephants average 10.5 feet (3.2 m) tall at the shoulder; females average eight and a half feet (2.6 m) tall at the shoulder
iv. Their thick skin is dark gray and wrinkled.
v. The distinctive trunk is an extended muscular lip and nose.
vi. Female Asian elephants do not have tusks but do have small tushes inside the mouth.
vii. They have large floppy ears to help regulate body temperature.

Habitat: Asian elephants are generalists and they occur in grassland, tropical evergreen forest, semi-evergreen forest, moist deciduous forest, dry deciduous forested and dry thorn forest, in addition to cultivated and secondary forests and scrublands. Over this range of habitat types elephants are seen from sea level to over 3,000 m asl. In the Eastern Himalaya in northeast India, they regularly move up above 3,000 m asl in summer at a few sites. The Asian elephant is one of the last few mega-herbivores i.e. plant-eating mammals that reach an adult body weight in excess of 1,000 kg, still extant on earth. Given their physiology and energy requirements, elephants need to consume large quantities of food per day. They are generalists and browse and graze on a variety of plants. The proportions of the different plant types in their diet vary depending upon the habitat and season. During dry season in southern India, Sukumar (1992) observed that 70% of the elephant's diet was browse, while in wet season; grasses make up about 55%. However, in an adjoining area, Baskaran (2002) observed that browse formed only 15% of the diet in dry deciduous forest and 47% of the diet in the thorn forest in the dry season, while the annual diet was dominated by grass (84%). In Sri Lanka, elephants may feed on more than 60 species of plants belonging to 30 families. Elephants may spend up to 14–19 hrs a day feeding, during which they may consume up to 150 kg of wet weight. They defecate about 16–18 times a day, producing about 100 kg of dung. Dung also helps disperse germinating seeds. Elephants range over large areas and home ranges in excess of 600 km² have been recorded for females in south India. In north India, female home ranges of 184–326 km² and male home ranges of 188–407 km² have been recorded. Smaller home range sizes, 30–160 km² for females and 53–345 km² for males, have been recorded in Sri Lanka. Given their requirements for large areas, elephants are regarded as an umbrella species because their conservation will also protect a large number of other species occupying the same area. They are also a premier flagship species and are sometimes regarded as a keystone species because of their important ecological role and impact on the environment.

Life Span: The life span of Asian elephants is 60 to 70 years, and males reach sexual maturity at between 10–15 years of age; females usually first give birth in years 15 or 16.

Distribution: Asian elephants formerly ranged from West Asia along the Iranian coast into the Indian subcontinent, eastwards into South-east Asia including Sumatra, Java, and Borneo, and into China at least as far as the Yangtze-Kiang. This former range covered over 9 million km². Asian elephants are now extinct in West Asia, Java, and most of China The western populations (*Elephas maximus asurus*) were probably extinct by 100 BC, and the main Chinese populations (sometimes referred to as *E. m. rubridens*) disappeared sometime after the 14th century BC. Even within its surviving range in South and South-east Asia, the species has been in retreat for hundreds if not thousands of years, and generally survives only in highly fragmented populations. Asian elephants still occur in isolated populations in 13 states, with a very approximate total range area of 486,800 km². The species occurs in Bangladesh, Bhutan, India, Nepal, and Sri

Lanka in South Asia and Cambodia, China, Indonesia (Kalimantan and Sumatra) Lao PDR, Malaysia (Peninsular Malaysia and Sabah), Myanmar, Thailand, and Viet Nam in South-east Asia. Feral populations occur on some of the Andaman Islands (India). The elephants of Borneo were believed to be feral descendants of elephants introduced in the 14th-19th centuries; however, recent genetic evidence suggests they are indigenous to the island. The species was once found throughout Sri Lanka, but today elephants are restricted mostly to the lowlands in the dry zone where they are still fairly widespread in north, south, east, north-western, north-central and south-eastern Sri Lanka; but with the exceptions of small remnant populations in the Peak Wilderness Area and Sinharaja Area, elephants are absent from the wet zone of the country. The species continues to lose range to development activities throughout the island. Once widespread in India, the species is now restricted to four general areas: north-eastern India, central India, north-western India, and southern India. In north-eastern India, the elephant range extends from the eastern border of Nepal in northern West Bengal through western Assam along the Himalaya foothills as far as the Mishmi Hills. From here it extends into eastern Arunachal Pradesh, the plains of upper Assam, and the foothills of Nagaland. Further west, it extends to the Garo Hills of Meghalaya through the Khasi Hills, to parts of the lower Brahmaputra plains and Karbi Plateau. Elsewhere in the south in Tripura, Mizoram, Manipur, and the Barak valley districts of Assam, isolated herds occur. In central India, highly fragmented elephant populations are found in the States of Orissa, Jharkhand, and the southern part of West Bengal, with some animals wandering into Chhattisgarh. In north-western India, the species occurs in six fragmented populations at the foot of the Himalayas in Uttaranchal and Uttar Pradesh, ranging from Katerniaghat Wildlife Sanctuary in Bahraich Forest Division in the east, to the Yamuna River in the west. In southern India, elephants occur in the hilly terrain of the Western Ghats and in parts of the Eastern Ghats in the states of Karnataka, Kerala, Tamil Nadu, and, relatively recently, Andhra Pradesh. There are eight main populations in southern India, each fragmented from the others: northern Karnataka; the Crestline of Karnataka–Western Ghats; Bhadra–Malnad; Brahmagiri–Nilgiris–Eastern Ghats; Nilambur–Silent Valley–Coimbatore; Anamalais–Parambikulam; Periyar–Srivilliputhur; and Agasthyamalais.

Food and Eating Habit: Elephants eat between 149 and 169 kg of vegetation daily. Sixteen to eighteen hours, or nearly 80% of an elephant's day is spent feeding. Elephants consume grasses, small plants, bushes, fruit, twigs, tree bark, and roots. Tree bark is a favourite food source for elephants. It contains calcium and roughage, which aids digestion. Tusks are used to carve into the trunk and tear off strips of bark. Elephants require about 68.4 to 98.8 L of water daily, but may consume up to 152 L. An adult male elephant can drink up to 212 L of water in less than five minutes. To supplement the diet, elephants will dig up earth to obtain salt and minerals. The tusks are used to churn the ground. The elephant then places dislodged pieces of soil into its mouth, to obtain nutrients. Frequently these areas result in holes that are several feet deep and vital minerals are made accessible to other animals. Hills have been carved by Asian elephants in India and Sumatra searching for salt and minerals. These carved areas in the landscape provide valuable food and shelter resources for a diverse array of native wildlife.

Threats: The pre-eminent threats to the Asian elephant today are habitat loss, degradation, and fragmentation, which are driven by an expanding human population, and lead in turn to increasing conflicts between humans and elephants when elephants eat or trample crops. Hundreds of people and elephants are killed annually as a result of such conflicts. The long-term future of elephants outside protected areas, as well as in some protected areas, is therefore inextricably linked to mitigating such human–elephant conflicts, and this is one of the largest conservation challenges in Asia today. Asian elephants live in the region of the world with the densest human population, growing at a rate of between 1–3% per year.

Because elephants require much larger areas of natural habitat than most other terrestrial mammals in Asia, they are one of the first species to suffer the consequences of habitat fragmentation and destruction and because of its great size and large food requirements; the elephant cannot co-exist with people in areas where agriculture is the dominant form of land-use. In extreme cases, elephants have been confined as so called 'pocketed herds' in small patches of forest in landscapes dominated by man. Such 'pocketed herds' represent an extreme stage in the human–elephant conflict. In other cases elephants have been caught and taken to so-called Elephant Training Centres where they languish, lost to the wild population. Poaching is a major threat to elephants in Asia too, although reliable estimates of the number of elephants killed and the quantities of ivory and other body parts collected and traded are scarce. It has been argued that poaching is a relatively minor threat to Asian elephant because some males and all females lack tusks. However, the reality is that elephants are poached for a variety of other products (including meat and leather) in addition to ivory, and poaching is now acknowledged as a threat to the long-term survival of some Asian elephant populations. Moreover, poaching of elephants for ivory is a serious problem in some parts of Asia. In Periyar Tiger Reserve in southern India, for example, ivory poaching has dramatically skewed adult sex ratios: over the 20-year period from 1969 to 1989 the adult male: female sex ratio changed from 1:6 to 1:122. Selective removal of tusked males has several implications for the affected populations: sex ratios obviously become highly female biased, genetic variation is reduced, and fecundity and recruitment may decline. Poaching of elephants is also a major problem in other parts of Asia. Large-scale hunting of elephants for ivory, bush-meat, hides, and other products has reduced their populations significantly over a wide area.

Conservation Measures

a) Conservation of the elephant's habitat and maintaining habitat connectivity by securing corridors;
b) The management of human–elephant conflicts as part of an integrated land-use policy that recognizes elephants as economic assets from which local people need to benefit or at least no suffer;
c) Better protection to the species through improved legislation and law enforcement, improved and enhanced field patrolling, and regulating/curbing trade in ivory and other elephant products.

Monitoring of conservation interventions is also needed to assess the success or failure of the interventions so that adjustments can be made as necessary *i.e.* adaptive management. Reliable estimation of population size and trends will be needed as part of this monitoring and adaptive management approach.

Table 3. Activities for Indian Elephant

S.No.	Activity
1.	Plantation of adequate number of tress along with fruit bearing especially banana trees
2.	Education and Awareness
3.	Fencing around Open Roads
4.	3 cash prizes in a year will be awarded to the informer of poachers

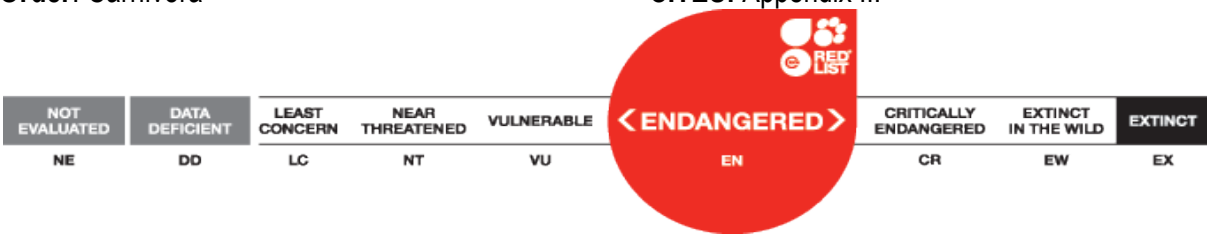
Conservation plan for Dhole or Asian Wild Dog (*Cuon alpinus*)

The dhole (*Cuon alpines)* is a medium-sized social canid that once occurred over a wide geographic range from the Tian-Shan and Altai Mountains in central Asia and easternmost Siberia to India and Indochina. Dholes or Asian wild dogs are pack-living canids, although they are unique amongst this family in having a thickset muzzle and one less molar tooth on each side of the lower jaw. The bushy coat is usually a rusty red colour with white on the belly, chest and paws. Different subspecies exist and those in the northern parts of the dhole's range have lighter and longer hair than their southern relatives. The bushy tail is black and the pups are also born a sooty black colour before acquiring their adult coat at around three months of age. The large rounded ears are filled with white hair and the eyes are amber. Males tend to be significantly larger in size than females. Dholes have a wide range of vocalisations including an extremely distinctive whistle that is used to reassemble

pack members in the thick forest of their habitat.

Classification of Dhole
Kingdom: Animalia
Phylum: Chordata
Class: Mammalia
Order: Carnivora
Family: Canidae
Genus: *Cuon*
Species: *alpinus*

Conservation Status
IUCN: Endangered C2a(i) ver 3.1
IWPA: Schedule II.
CITES: Appendix II.



Description: Dholes are highly social animals and they live and hunt in packs that closely resemble those of the African wild dog (*Lycaon pictus*). These packs seem to consist of more males than females and usually contain around 5 to 12 members, although groups of up to 40 have been observed on occasion. There is a strict hierarchy within the pack and the group will defend a territory that can be as large as 84 square kilometres depending on the availability of food; territories are marked by latrine sites at trail intersections. Usually only the dominant female will breed, giving birth to a litter of three to four young, or occasionally ten, after a two month gestation period. The mating season occurs from September to February. Pups are born in a den, which is usually the abandoned burrow of another animal, and all members of the pack help to care for the mother and her litter. Individuals feed the pups by regurgitating food for them, and will help to guard the den; when the pups are old enough to accompany the adults on hunting trips they are allowed to eat first at the kill. Cooperating in a pack to hunt prey, dholes are capable of killing animals over ten times their own body weight in size. Their diet is almost wholly carnivorous, predominantly made up of medium-sized ungulates such as spotted deer (*Axis axis*), sambar deer (*Cervus unicolor*) and wild sheep. Hunting in thick forest, dholes rely on scent to locate prey, occasionally jumping high into the air to get their bearings. Pack members either move forward in a line or stand guard on the edge of dense cover whilst other members flush out the prey. Dholes are capable swimmers and sometimes drive their prey into water. Like the African wild dog, these animals have acquired a vicious reputation due to the speed with which they eat, and their method of disemboweling prey before it is fully dead. Attacks on humans are, however, extremely rare.
Height: 2 feet at the shoulder.
Length: 3–4 feet
Weight: 10-25 Kgs (22–55 pounds)
Distribution: In Central and eastern Asia, there have been no confirmed, recent reports of dholes from Russia, Mongolia, Kazakhstan, Kyrgyzstan where they were found formerly in the Tian-Shan area or Tajikistan where they were found formerly in the eastern Pamir area. There is a recent report of a dhole that was captured in Jiangxi district, south China. Dholes were once present in parts of western China in the Tian-Shan Range, but the species' current status in this area is unclear; they do at least still persist, perhaps in low numbers, in parts of the Qilian Shan in north-western Gansu Province. The species is still found in Tibet today, particularly in areas bordering the Ladakh region of India and the Tibet Forestry Bureau has reported that dholes are still common in parts of southeast Tibet. Dholes occurred in northern Koreaand a few small populations may still exist. There have been no records from Pakistan, but the species occurred on the alpine steppes of Ladakh, Kashmir, and India that extend into the region termed Pakistan-occupied Kashmir by India. Dholes are still found throughout much of India south of the river Ganges, and especially in the Central Indian Highlands and the

Western and Eastern Ghats of the southern states. They are also found throughout north-east India, in the states of Arunachal Pradesh, Assam, Meghalaya, and West Bengal. In the Himalaya and north-western India, the status of dholes seems more precarious with a much more fragmented distribution. Dholes reportedly still occur in the Ladakh area of Kashmir, which is contiguous with the Tibetan highlands in China. The species formerly was recorded in the Terai region of the Indo-gangetic plain, including the Royal Chitawan National Park in Nepal, but there have been few recent reports. There is an unconfirmed report of dholes in Dhorpatan Hunting Reserve in the late 1990s.

The species' historical range probably included all or most of the Malaysian peninsula and the Indonesian islands of Sumatra and Java, but reliable information is scarce. Current distribution is poorly known but is thought to be highly fragmented. On the Malaysian peninsula, dholes are known to occur in four sites in northern and central areas of the peninsula. On Java, dholes appear to be most common in the protected areas at the eastern and western ends of the island. On Sumatra, very little is known, but dholes are known to occur in major protected areas in the southern, central, and northern parts of the island.

Habitat: Dholes are found in forested areas throughout their range from dense montane forest in Thailand to alpine areas in Russia, and thick scrub jungle in India. In general, factors such as prey and water availability, den sites and relatively open forest areas with grassy meadows (usually having high prey densities) are required to support dholes. The dhole is found in a wide variety of vegetation types, including: primary, secondary and degraded forms of tropical dry and moist deciduous forest; evergreen and semi-evergreen forests; dry thorn forests; grassland–scrub–forest mosaics; and alpine steppe (above 3,000 m). They are not recorded from desert regions. In India, tropical dry and moist deciduous forest may represent optimal habitats, based on the regions thought to hold the largest dhole populations. Ungulate biomass, particularly that of cervid species, is highest in these vegetation types when compared to others in the same region. In India, tropical dry and moist deciduous forests are subject to seasonal monsoon climates. Important factors that may influence habitat selection include the availability of medium to large ungulate prey species, water, the presence of other large carnivore species, human population levels and suitability of breeding sites (proximity to water, presence of suitable boulder structures and sufficient prey).

Threats: Dhole numbers have been reduced as their habitat is being destroyed throughout much of the Asian continent; the human population explosion has led to the clearance of vast tracts of forest for timber and to make way for agriculture and development. Historically, hunters viewed dholes as competition and thus persecuted them; bounties were also offered for their pelts. Today, habitat loss and the elimination of prey species pose the greatest threats to the survival of the dhole. Diseases such as distemper and rabies, possibly spread by domestic dogs, are important threats to the Indian subspecies *C. a. Primaevus.*

Depletion of prey base: All species of ungulate except muntjacs (*Muntiacus* spp.), pigs (*Sus* spp.) and in some areas southern serow (*Naemorhedus sumatraensis*) are ecologically or fully extinct across extensive parts of the region. Only a few of the largest wildernesses support nearly intact species assemblages and even in these, the larger species (*Bos* spp., *Cervus* spp., hog deer *Axis porcinus*) are very rare. This situation will likely hinder any possibility of recovery by the region's dhole populations, even if the other issues could be addressed. While not as depressed as in Indochina, prey levels in Indonesia also exist at levels much below carrying capacity (because of illegal hunting and habitat degradation). In protected areas in southern and central India, where dhole numbers are stable, prey densities are high. In north-east India, prey densities are very low in protected areas with dholes.

Habitat loss and transformation: Currently, extensive areas of natural or semi-natural vegetation remain in some areas

encompassing many hundreds of square kilometres of potential dhole habitat. However, habitat conversion and fragmentation are proceeding apace. In Viet Nam, very few natural areas of over 50 km² remain. Habitat loss and fragmentation is a major threat to protected areas. Habitat loss and degradation are also serious threats to dholes in South Asia and the disappearance of dholes from many of the forested tracts in India has been attributed in large part to loss of habitat.

Persecution: This certainly occurs in Indochina, although it is unclear how often. In Indonesia, too, it is a threat but again its significance is unknown. In India, such persecution can play a serious role in limiting local populations. Dholes living outside or on the edge of core protected areas are particularly vulnerable to human kleptoparasitism, snaring (non-selective) and direct persecution. For example, during a radio-tracking study in 2000, in the buffer zone of Kanha Tiger Reserve, central India, at least 16 out of 24 dholes in one pack died from a sudden strychnine poisoning. In southern India, such persecution is moderate to low and often occurs indirectly when cattle graziers and others inadvertently go close to dhole dens and disturb adults and pups, disrupting breeding and rearing. By-catch in snares and other traps is probably a significant threat to dholes across Indochina at least.

Competition with other species: Apparently, free-living dogs have been seen and/or camera trapped in many parts of Indochina, but there is no evidence for existence of large populations. Undoubtedly, the main competitor for prey species in Indochina is people. There is no evidence that feral dogs are significant competitors with dholes in Indonesia. In many parts of their range, dholes are sympatric with tigers and leopards and so the potential for significant interspecific competition for prey exists, especially if the prey populations are reduced as a result of hunting by people.

Disease and pathogens: Particularly those transmitted by feral and/or domestic dogs (*e.g.* mange, canine distemper, parvovirus and rabies). The significance of disease is unclear in Indochina, but diseases are a significant threat in South Asia and probably in parts of Indonesia.

Conservation

Dholes are protected throughout most of their range, in India they are protected under Schedule I of the Wildlife Act of 1972 and hunting has also been prohibited in Russia since 1971. In India and Nepal, dholes are protected within many tiger reserves and this has helped to keep their stronghold in southern India. More data is urgently needed on dhole distribution and numbers and the Dhole Conservation Programme is working to achieve this and to develop a Dhole Action Plan to safeguard the future of this remarkable canid.

Table 4. Activities for Conservation of Wild Dog

S.No.	Activity
1.	Plantation of adequate number of trees in nearby area
2.	Education and Awareness about Dhole in the area
3.	Sign Boards on roads, corers and nearby the forest area

CONCLUSION

The conservation plan is suggested here for schedule I animal viz. Indian elephant and wild dog. It is very important to conserve the scheduled fauna in the area by the proponents, local authority as well as by the forest officials. People are not aware about the wildlife and protection of wild animals. There is an urgent need of education and awareness to local people about the wild life and their importance, so that it can be implemented very efficiently. Trees should be planted in the buffer zone. Some of the tree species included should be Saja (*Terminalia tomentosa*), Baheda (*Terminalia bellerica*), Bija (*Pterocarpus masupium*), Bargad (*Ficus benghalensis*), Peepal (*Ficus religiosa*), Mahua (*Madhuca latifolia*), Sal (*Shorea robusta*), etc. Care should be taken to include some fruit bearing trees like Gular (*Ficus glomerata*), Aonla (*Emblica officinalis*), Aam (*Mangifera indica*) and such trees to provide food to the herbivores which in turn will be the food source of the carnivores. Water, particularly during drier seasons, becomes the most important factor to all types of wild animals including the mammals, birds

and reptiles. If water is available safely, then all other factors become secondary for the presence and survival of the wild life in any forested area. Further, to make water available at all the times, throughout the year, some of these water holes will be recharged through artificial means. Proper slope should be given to approach these water sources so that the wild animals will be able to drink water without any difficulty. Proper cover through vegetation or any other type of even artificial cover should be developed near to these water sources so that the prey species will be able to hide themselves from the predators, at the time of approaching the water sources. If water and food are available to the birds without any anthropogenic disturbances, the area can become an ideal place for bird watching.

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