



**CONVENTION ON
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SPECIES**

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Agenda Item 27.1

**PROPOSAL FOR THE INCLUSION OF
THE MAINLAND ASIAN ELEPHANT/INDIAN ELEPHANT (*Elephas maximus indicus*)
IN APPENDIX I OF THE CONVENTION**

Summary:

The Government of the Republic of India has submitted the attached proposal for the inclusion of the Mainland Asian Elephant/Indian Elephant (*Elephas maximus indicus*) in Appendix I of CMS.

PROPOSAL TO AMEND CMS APPENDICES

- A. Proposal: To include mainland Asian elephant/Indian elephant (*Elephas maximus indicus*) subspecies in Appendix I of the CMS Convention.
- B. PROPONENT: Ministry of Environment, Forest and Climate Change, Government of India, New Delhi
- C. SUPPORTING STATEMENT: Mainland Asian elephants/ Indian elephants are large, social, intelligent, endangered and long ranging migratory animal, which are trying to survive in continually shrinking, degraded and fragmented habitat. They frequently come into conflicts with people, with large number of people and elephants killed and injured, during train hits, electrocution, crop raiding, poaching, poisoning, etc. India, being the home of 60% of the Asian elephant global population, has a primary duty and responsibility for ensuring survival of Asian elephants.

1. Taxonomy

1.1 Class: *Mammalia*

1.2 Order: *Proboscidea*

1.3 Family: *Elephantidae*

1.4 Genus, species or sub species: *Elephas maximus indicus*

Currently, three sub species are recognized taxonomically: *Elephas maximus indicus* on the Asian mainland, *Elephas maximus maximus* in Sri Lanka, and *Elephas maximus sumatranus* on the Indonesian island of Sumatra (Shoshani and Eisenberg 1982). However, recent molecular genetic studies indicate no major genetic differentiation of the Sri Lankan elephant from that of the mainland (Hartl *et al.*, 1996; Fernando & Lande, 2000; Fleischer *et al.*, 2001; Sukumar 2003) and therefore there is a theory that it should not be considered as a distinct subspecies. Borneo's elephants have traditionally been included within *Elephas maximus indicus* (Shoshani and Eisenberg 1982) or *Elephas maximus sumatranus* (Medway 1977). However, elephants in Borneo are morphologically, and behaviourally distinct from the elephants of mainland Asia (Cranbrook *et al.*, 2008). Mitochondrial DNA halotypes (mtDNA) analysis (Fernando *et al.*, 2003; Sharma *et al.*, 2018) also confirms this and indicates that Borneo's elephants are genetically distinct from any South and Southeast Asian population and that they have been isolated for over 300,000 years. These studies may necessitate the formation of a separate subspecies *Elephas maximus borneensis*.

1.5 Scientific synonyms: none

Common name (s), in all applicable languages used by the Convention:

English: Asian Elephant, Indian Elephant

French: Eléphant d'Asie, Eléphant d'Inde

Spanish: Elefante Asiático

German: Elefant

2. Overview: India, being natural home of largest population of mainland Asian elephant/Indian elephant (*Elephas maximus indicus*), wishes to promote conservation of this species, by seeking natural migration of elephants in all range countries, through bringing the subspecies under Appendix I of CMS Convention. The two other sub-species of the Asian elephants (Sri Lankan and Sumatran) and the proposed sub-species (Bornean) are island sub species and as such do not migrate as per CMS Convention norms.
3. Migrations: Mainland Asian elephants/Indian elephants migrate over long distances in search of food and shelter, across States and Countries. Some elephants are resident while others migrate regularly in annual migration cycles; proportion of resident and migratory populations depends upon, size of regional populations, as well as on extent, degradation and fragmentation of their habitats. There are well defined elephant corridors used by elephants since ages. However, elephant corridors are dynamic and flexible; these change from time to time depending on prevailing conditions.

3.1 Kinds of movement, distance, the cyclical and predictable nature of the migration

Home ranges: Female Asian elephants live in clans, which in natural conditions are mostly made up of related individuals (Vidya & Sukumar, 2005) and males are largely solitary, but form loose social bonds with other males. Both females and males have well defined home ranges and show fidelity to their established home ranges (Baskaran *et al.*, 1995, Fernando *et al.* 2008, Baskaran *et al.* 2018). Home range sizes in India, have been estimated to vary between 550 to 700 km² for female clans in tropical deciduous forests of south India (Baskaran *et al.* 1995) and between 188 to 407 km² for different males and female clans in north India (William *et al.* 2008). In Sri Lanka home range sizes have been estimated to vary between 50 to 400 km² in a study of males and female clans by Fernando *et al.* (2008) and in another study of two female clans it was estimated to be 217 and 326 km² Marasinghe *et al.* (2015). In Sumatra, a study by Moßbrucker *et al.* (2016) showed that home range sizes of males and female clans ranged between 210 to 997 km² for elephants in Jambi Province. The Sumatra data is added as it would likely reflect similar land use changes and ranging as in Malaysia. In Borneo a study by Raymond *et al.* (2012) showed that home ranges of males and female clans ranged from 291 to 778 km² for three elephants which had reasonable monitoring period (>200 days). The linear extent of home ranges can vary from 10 to 150 km or more depending on the size of the home range. This would indicate that transboundary populations can range deep into different Range States. Overlapping and large home ranges would essentially straddle vast areas in the transboundary area crossing one or more jurisdictional boundary.

Cyclical and predictable migrations across international boundaries: Movement within home ranges has been shown to be influenced by seasonal changes in resources (Fernando 2015, Baskaran *et al.* 2018). These seasonal movements are both cyclic and predictable. When home ranges cover jurisdictional boundaries such movement across

jurisdictional boundaries is both cyclic and predictable. This applies to both female clan and male home ranges. Even in habitat or areas where there is environmental constancy, movement would be confined to the home ranges which cross the jurisdictional boundaries as clans show strong fidelity to their home ranges (Baskaran *et al.* 1995, Fernando 2015, Baskaran *et al.* 2018). Such movement would be cyclic in that the elephants would move across the boundary with a certain frequency when traversing their home range in search of resources.

Dispersal: A critical reproductive strategy in elephants is the dispersal of males from their natal home range, when they attain puberty. This helps in avoiding inbreeding and is critical for gene flow through the population. Although studies on male dispersal distances are lacking, any dispersal greater than one or two home ranges away would result in distances of 100 km or more. Thus transboundary populations would see such cross jurisdiction movement of elephants, which may not be cyclic or predictable, but is critical for conservation. This would be particularly important where populations are small and where any barrier to such movement would undermine the viability of the population.

3.2 Proportion of the population migrating, and why that is a significant proportion:

There are three main considerations that have been taken into account while determining why the proportion of transboundary population is significant.

First, a majority of the estimated Asian elephants (60%) are in India, and a vast majority of these are confined to India, although India shares border populations with Nepal, Bangladesh, Bhutan and Myanmar the numbers are small relative to the overall Indian population. But these numbers are very significant for Nepal, Bangladesh, and Bhutan all of which have populations of 500 or less. For example Bangladesh has a population of 289 (lower CI) and a population of 93 transboundary elephants that move between India and Bangladesh. This for Bangladesh would represent nearly 25% of its population but for India it would represent 0.2% of its population. Similarly in Borneo the entire population in Kalimantan (Indonesia) is likely to be migratory across the border on a seasonal basis but for Malaysia (Sabah) these elephants represent less than 3% of their population. Further the highly fragmented nature of the Sabah population will require meta-population management strategies if conservation is to succeed in the long term. Given the diverse Global 200 Ecoregion/Biome present within the elephant ranges in these Range States and there is a need to conserve elephants in all these representative biomes, for this the remaining 20% of the Asian elephant population and the smaller portion of that which migrates across international borders is both important and significant as it is the most vulnerable. Elephant conservation in eight Range States are very dependent free movement of elephants across international borders. And a further four countries share transboundary populations.

Second, a majority of the Range States have small populations (Table-1), 7 Range States have populations of <600 (taking the lower estimate), 4 have population between 1000 and 2000 and only three Range States have populations greater than 3000. Sukumar (2003) estimated the minimum viable area for long-term conservation of an elephant population (defined as 500 breeding individuals, a 1:5 male:female sex ratio, and a density of 0.5 elephants/km²) to be 4,400 km². There are no individual populations with more than >1000 elephants outside of India and Sri Lanka and few with >500 elephants. Hence, in future managing the smaller isolated populations within and along the transboundary area as meta-populations will be critical for conservation. The first step would be to ensure the continued free movement across jurisdictional boundaries so that natural movement is not broken and to ensure that effective conservation actions are initiated along both sides of the border to cohesively conserve transboundary elephants.

Thirdly, human-elephant conflict is a major challenge for elephant conservation as it generates negative sentiment towards conservation within the affected communities and also results in retaliatory killings, which in India and Sri Lanka is a bigger threat than poaching (Dublin et al. 2006). Land use changes within the range of transboundary population can result in increased human-elephant conflict and lead to increased retaliatory killings and also reduce support for elephant conservation in such areas. This is particularly important to avoid for Range States with small populations and as such requires good management and protection of habitat within and across the border.

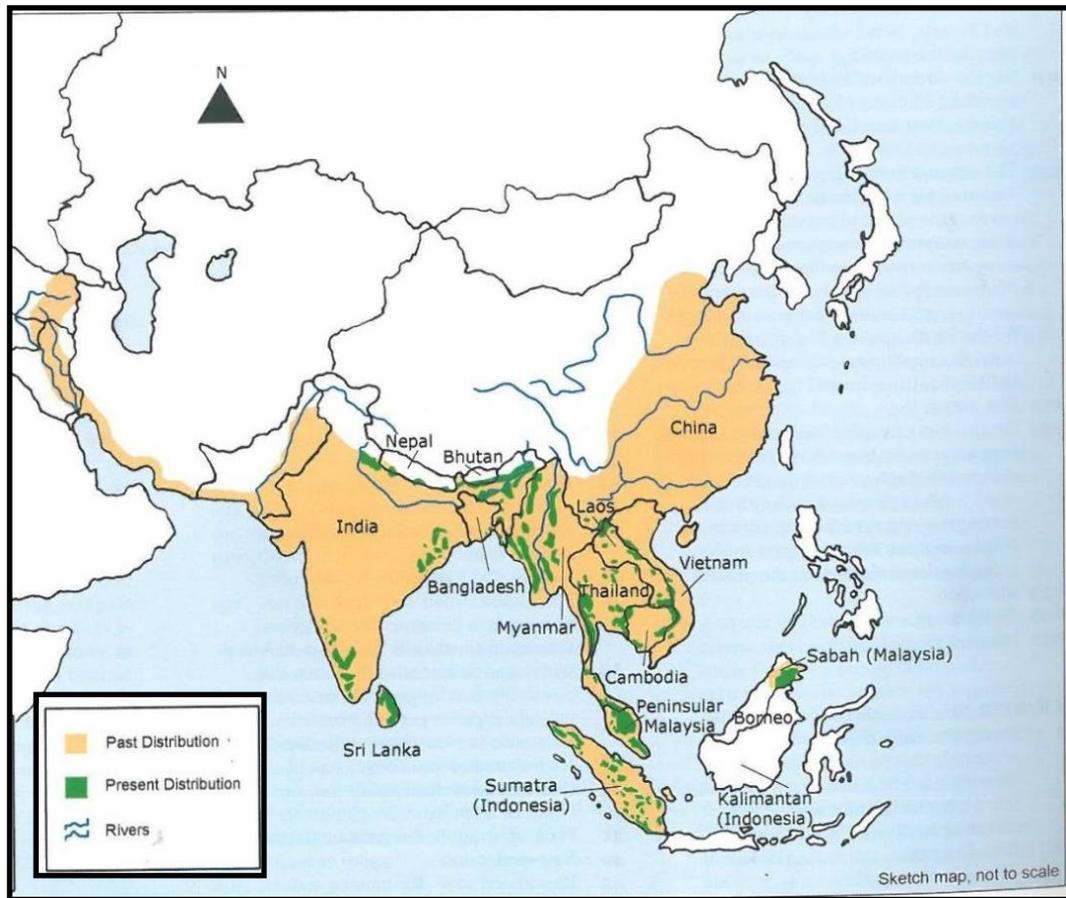
4. Biological Data

4.1 Distribution (Current and historical):

Asian elephants once ranged all the way from West Asia along the Iranian coast into the Indian subcontinent and eastwards into South-east Asia including the islands of Sumatra, Java, and Borneo and extended as far north as the Yangtze River in China (Olivier 1978). This former range covered over nine million km² (Sukumar 2003). Today, the species has disappeared from c 95% of its historical range (Sukumar 2006) and are extinct in West Asia, Java, and most of China.

The current distribution of wild Asian Elephants is in 13 countries across South and Southeast Asia spread over an area of 486,800 Km² (Sukumar 2003). 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 Borneo), Myanmar, Thailand, and Vietnam in South-east Asia. Of these, all populations except Sumatra (Indonesia) and Borneo (Malaysia) are the Asian mainland elephant or Indian elephant (*Elephas maximus indicus*).

The total population of *Elephas maximus indicus* in wild is estimated to be about 44,500-47,835 (AsESG, 2018 unpublished) and in captivity is about 14,440-14,640 elephants in Range countries.



As per All India Synchronised Elephant Population Census, 2017, total population of wild elephants in the country is 29,964. There are another approximately 3,500 elephants in captivity. India has four subpopulations of elephants, namely.

- i. In the Northwest – At the Himalayan foothills in Uttarakhand and Uttar Pradesh.
- ii. In the North East – From eastern border of Nepal in North West Bengal through western Assam along Himalayan foothills as far as Mishmi Hills into eastern Arunachal Pradesh, plains of upper Assam, Nagaland, to Garo and Khasi hills of Meghalaya to parts of lower Brahmaputra plains and Karbi Plateau. Isolated herds occur in Tripura, Manipur, Mizoram and in Barak valley district of Assam.
- iii. In the East Central Part – In Odisha, Jharkhand, South West Bengal, with some animals wandering into Chhattigarh.
- iv. In the South – eight populations are fragmented from each other in northern Karnataka, in the crestline of Karnataka-Western Ghats, in Bhadra Malnad, in Brahmagiri-Nilgiris-Eastern Ghats, in Nilambur-Silent Valley-Coimbatore, in

Annamalai-Parambikulam, in Periyar-Srivilliputhur, and one in Agasthyamalai.

A small isolated population of 25 feral elephants is also available in Andaman and Nicobar Islands.

In Nepal, elephants are distributed in four isolated sub-populations and are mainly restricted to protected areas along the border with India- namely Royal Chitwan National Park, Parsa Wildlife Reserve, Royal Bardia National Park, and Royal Suklaphanta Wildlife Reserve.

In Bhutan, elephants are distributed throughout the southern belt of Bhutan along the border with India (Samtse, Chhukha, Dagana, Phibsoo Wildlife Sanctuary, Sarpang, Royal Manas National Park, Samdrupjongkhar and Jomotshangkha Wildlife Sanctuary) from elevation ranging between 100m to above 2000m (NCD, 2018).

In Bangladesh, the elephants are mainly restricted in south-eastern part of the country and restricted to forests in Chittagong, Chittagong Hill tracts and Cox's bazar areas. The elephant habitat in Cox bazar has been severely impacted by the rehabilitation of Rohingya refugees from Rakhaine province of Myanmar.

In Myanmar, the elephant has wide but highly fragmented distribution. The main areas of elephant abundance are a) southeast - Bilaktaung/Tenasserim Elephant Range, b) central - Bago Yoma Elephant Range, c) east - Shan Plateau Elephant Range, d) southwest - Arakan Yoma Elephant Range and f) north - Myitkyina/Upper Chindwin (MECAP 2018).

The elephants in Thailand are distributed in 69 Protected areas, mainly in the mountains along the border with Myanmar and smaller fragmented populations occupying the southern peninsular. Almost 80% of the elephants are found in Western Forest complex (FC), Kheang Krachan FC, Dong Prayayen-Khao Yai FC, Phu-Kheio Nam Nao FC and Eastern FC.

In Cambodia, two largest elephant populations are located in the eastern plains of Mondulkiri province and the Cardamom and Elephant Mountains in southwest (Greater Cardamoms Landscape - GCL). There are smaller trans-boundary populations along the northern border with Lao PDR in Preah Vihear and Ratanakiri provinces, small population in Samlaut district, western Battambang province (trans-boundary population shared with Thailand) and few other small populations.

In Lao PDR, elephants occur in many small fragmented populations. The two important populations are - Xaignaboli Province west of the Mekong and the Nakai Plateau.

In China, elephants are extinct from most parts of the country and are now confined to small population in Yunnan where the species survives in three administrative units of Xishuangbanna, Simao, and Lincang.

In Peninsular Malaysia, the species is still widely distributed in the States of Pahang, Perak, Johor, Kelantan, Terengganu, Kedah, and Negeri Sembilan.

In Sumatra (Indonesia) where the elephant was once widespread, but now survives only in highly fragmented populations. In the mid-1980s, 44 discrete elephant populations (with a population of about 2800 to 4800 elephants) were known to exist in Sumatra's eight provinces scattered from Aceh in the north to Lampung in the south. (Blouch and Haryanto, 1984; Blouch and Simbolon, 1985,). However, by 2003, only three of Lampung's 12 populations were extant (Hedges *et al.*, 2005). A 2009 survey of nine forest blocks in Riau that had counted elephant herds only two years earlier revealed that six herds had gone extinct (Desai and Samsuardi 2009). Over 69% of potential Sumatran elephant habitat has been lost within just one generation (the last 25 years), and much of the remaining forest cover is in blocks smaller than 250km², which are too small to contain viable elephant populations (Gopala et al., 2013).

In Vietnam, elephants are currently distributed in three main regions of Vietnam, namely the Nghe An and adjoining areas in northern Vietnam, Quang Nam area in central Vietnam and Dak Lak Province and adjoining areas in southern Vietnam. Within each region the population is further fragmented into several isolated small groups of elephants (ranging between 1-80 elephants).

4.2 Population (estimates and trends):

The total population of *Elephas maximus indicus* in the wild in its range of distribution is estimated to be about 44,500-47,835 (AsESG, 2018 unpublished). The overall population of Asian Elephant in Wild across 13 Range States is c 45,671- 49,028.

Country	Wild Population (min-max)
Bangladesh	289-437
Bhutan	605-760
Cambodia	400-600
China	300
India	29,964
Laos	500-600
Malaysia <i>Peninsular</i>	1,223 – 1,677
Myanmar	2000-4000
Nepal	109–145
Sri Lanka	5879
Thailand	3126-3341

Vietnam	104-132
Total (Min–Max)	44,499- 47,835

Table 1: population of *Elephas maximus indicus* in Range countries

The elephant populations of Vietnam and Myanmar are under great threat with only 100-130 elephants left in the wild in Vietnam.

As per All India Synchronised Elephant Population, 2017 total population of wild elephants in India is 29,964. Elephant population in North East, East Central, North Western and Southern regions are 10139, 3128, 2085 and 14612 respectively. Comparative study of the results of last three censuses, in 2007, 2012 and 2017 shows that elephant population is fluctuating between 27,500 to 30,000 animals. While the elephant population in Southern and North Western regions have almost stabilised, the population of East Central Region and North Eastern region has been rising continually. These populations are living in highly degraded and fragmented habitats and are known for large scale migration, even across international borders.

4.3 Habitat (short description and trend):

Mainland Asian elephant/ Indian elephants inhabit grasslands, dry deciduous forests, moist deciduous forests, evergreen forests and semi-evergreen forests. Habitats are fragmented and there are 101 documented elephant corridors used by elephants for movement between these pockets. More degraded the habitats; more are elephant corridors in the region.

Asian elephants are extreme habitat generalists and occupy habitats ranging from nearly semi-arid woodlands having an annual rainfall of 650 mm to wet evergreen forests with an annual rainfall exceeding 4000 mm. They however reach their highest densities in the deciduous forests where abundant grass is available; Baskaran et al. (2010) estimated a density of 2.39 elephants/ km² for Mudumalai Tiger Reserve in southern India, which is largely dominated by dry and moist deciduous forests. Elephants occur from sea level to 3000 meters and above (in parts of north-eastern India). Their diet varies with habitat type and the resources available, in areas rich in grass they feed extensively on grass and in areas with little or no grass they shift to a largely browse diet (Sukumar 2003, Baskaran et al 2010). They are true mega herbivores and consume an estimated 150 kg of fodder daily and although they can drink up to 100-200 liters of water a day they can go for a day or two without water, which allows them to increase their foraging distances in water deficient drier habitats.

The main habitats are the Subtropical/Tropical Dry/ Moist Lowland/Moist Montane Forests, the Subtropical/Tropical Dry/Moist Scrubland and Subtropical/Tropical Dry/Seasonally/Flooded Grasslands. They also use plantations and degraded forests.

Habitat loss, degradation and fragmentation have been identified as key challenges for elephant conservation by all Range States in both their 2006 meeting and the 2017 Range States meeting (Dublin et al.

2006 and AsERSM, 2017). Leimgruber et al. (2003) analyzed the Asian elephant range and showed that the bulk of the Asian elephant habitat is exposed to human pressures and is also fragmented.

4.4 Biological characteristics

Asian elephants are the continent's largest terrestrial mammals. They can reach 6.4 meters in length and 3 meters at shoulder. Their skin ranges from dark grey to brown, with patches of pink on the forehead, ears, the base of the trunk and the chest. A significant number of Asian elephants are tusk less (called Makhana). The percentage of males with ivory varies from just 5% in Sri Lanka (which do not belong to the Indian sub-species) to 90% in southern India. Female elephants are more social than males. They form herds of related females that are led by the oldest female, the 'matriarch'. Males usually live alone but sometimes form small groups with other males. An average life span Indian elephant is about 70 years. Female elephants give birth every 2.5-4 years. It stays with its mother and makes its independent moves, when it is around 4 years old. Both males and females become sexually mature as early as 9, but males do not usually start sexual activity until they are 14 or 15. Elephants only reach their full size at 17 years. Elephants need to eat an average of 150 kg per day to survive. They eat grass, bark, roots leaves and stems. Cultivated crops such as banana, sugarcane, rice are also favoured foods sometimes bringing them into conflicts with people. They need to drink at least once a day so they are always close to a source of fresh water.

4.5 Role of the Taxon in its ecosystem

Elephants are classified as *mega herbivores* and identified as keystone species, as they help to define an entire ecosystem. Without its keystone species, the ecosystem will be dramatically different or cease to exist altogether. Being megaherbivores they have a significant impact on their habitat which in turn impacts multiple other species. Malhi et al. (2016) review the role of past megafauna extinctions and their affect on the ecosystem physical and trophic structure, species composition, biogeochemistry, and climate. The role of such megafauna is only now being understood but there are not many studies assessing their role or impact of Asian elephants on the habitat. Recent studies have focused on seed dispersal, for example, a study showed that seeds of the economically important tree species, *Dillenia indica*, germinated better and faster when they passed through the gut of Asian elephants. The study also showed that gut passage times ranged from 20 to 72 hours, and that seeds retained in the gut longer germinated better (Harich et al. 2016). Similarly, another study found that Asian elephants are a critical seed disperser of the species *Platymitra macrocarpa*. Their large dietary requirement which results in them killing tree by debarking or pushing down for feeding results in creating openings in forest canopies which allows pioneer plant species and their dependent fauna to proliferate in such opening.

5. Conservation status and threats

5.1 IUCN Red List Assessment (if available)

The mainland Asian elephant/Indian elephant (*Elephas maximus indicus*) is one of the three sub species of Asian elephants, other two subspecies are Sri Lankan elephant (*Elephas maximus maximus*) and Sumatran elephant (*Elephas maximus sumatranus*). The global status of the species in the IUCN Red List is listed as Endangered (A2c; ver 3.1; Choudhury *et al.*, 2008). The Sumatran Elephants (*E. m. sumatranus*) are listed as Critically Endangered (A2c; ver 3.1; Gopala *et al.*, 2011).

5.2 Equivalent information relevant to conservation status assessment

All populations of Asian elephants are included in CITES (Convention on International Trade of Endangered Species of wild fauna and flora) Appendix I.

5.3 Threats to the population (factors, intensity)

The challenges confronting Asian elephant conservation in most elephant Range States are habitat loss and fragmentation, human elephant conflict, and poaching and illegal trade of elephants.

Loss and fragmentation of habitat to cater to the need of a growing economy and increasing human population is perhaps the most important factor impacting elephant populations in most range countries in Asia. Habitat loss and fragmentation results in direct loss of habitat for elephants leading to their death due to lack of resources or due to retaliatory killing or capture and removal when they come into conflict. Habitat loss and fragmentation also creates smaller populations that are compressed into smaller and smaller spaces. Such small populations, face the threat of reduced likelihood surviving environmental catastrophes or disease and through stochastic threats (e.g. chance leading to highly skewed sex ratios), etc. (Hedges *et al.* 2008). It also results in habitat patches declining below the average home range size of a single clan which would result in the population going extinct in the short/medium term due lack of resources.

Habitat degradation is another threat which is neither easily visible nor easily measurable. For example, in India there are an estimated 173,000 forest fringe villages and enclaves inside forests with an estimated human population varying from 275 million (World Bank, 2006) to 350-400 million (MoEFCC, 2009). Such large populations which are wholly or partially dependent on forests for resources will invariably degrade the forest. Degradation eventually makes the habitat unsuitable for elephants even though the presence of trees would give the impression of an intact forest. The situation is the same in most Range States with the possible exception of Malaysia which does not have a large forest dependent human population.

Where data was available and analysis done Sumatra makes a good case study, it has lost nearly 69% of its elephant habitat in the last three decades (Gopala, et al 2011) and this is largely due to large scale conversion of native forests to oil palm and softwood plantations. Similarly Malaysia too has lost a significant part of its elephants range in both peninsular Malaysia and the same also happened in Sabah and continues to happen, but adequate data and analysis are lacking. Such development and habitat losses are fragmenting the remaining habitat into smaller unviable patches where elephant conservation is not possible in the long term (Desai and Samsuardi, 2009).

When habitat is lost, fragmented or degraded the affected elephants are bound to come into conflict and thus end up getting killed in retaliatory action by farmer or are captured and removed to mitigate conflict. Conflicts between people and elephants result in loss of more than 600 humans and 450 elephant lives every year in Asia; 80-85% of these reported from India and Sri Lanka alone. Some will also die due to poor nutrition and stress if they cannot successfully raid crops.

Poaching remains a significant threat in Southeast Asia as there is a ready market for elephant products, from meat, skin, tusk/tushes, tail/tail hair, etc. However, retaliatory killing of elephants using trap guns, poison, electrocution, etc are on the rise in most countries. Such killing retaliatory killing is countries like India is exceeding the number of elephants killed by poachers (Dublin et al 2006).

5.4 Threats connected especially with migration

Mainland Asian elephant/Indian elephants are known since time immemorial to migrate to neighbouring countries like Nepal, Bangladesh and Bhutan and probably to Myanmar also. The Government of India has declared Indian elephant as **National Heritage Animal**. Indian elephant is also provided highest degree of legal protection by listing it in Schedule I of the Wildlife (Protection) Act, 1972. Many incidents of elephants from India being killed and/or harmed in neighbouring countries have been reported from time to time.

The Governments of Nepal and Bangladesh have also attempted to create artificial barriers in traditional migration path of elephants across international borders and thus not only affecting the natural ecology of elephants but also intensifying human elephant conflicts in border areas.

Similarly, main land elephant population of Myanmar, Thailand, Vietnam, Cambodia, Lao PDR and China also migrates within their habitats.

5.5 National and international utilisation

Elephant ivory has been used since historical times for making beautiful handicrafts, which fetch very high prices in international market. Ivory hunters were responsible for wiping out African elephant

population in North Africa about 1000 years ago, in much of the South Africa in the 19th century and most of the West Africa by end of 20th century. This is one of the most important reason for listing Asian and African elephants under Appendix I of another important convention, CITES (Convention on International Trade in Endangered Species of Wild Flora and Fauna) since 1975. However, illegal international trade in ivory still continues. Ban on ivory trade by many countries, most recently by China has comparatively improved the situation. However, threat to elephant population still remains due to lucrative illegal market in ivory products and the emerging trade of skin in Myanmar and neighbouring countries. Asian elephants, due to its smaller population (less than 100,000), is highly vulnerable to poaching through international networks.

6. Protection status and species management

6.1 National protection status

The Government of India has accorded highest degree of legal protection to elephants and listed it under Schedule I of the Wildlife (Protection) Act, 1972.

6.2 International Protection status

Unlike India, Asian elephants are not provided high degree of protection in other Asian Elephant Range Countries. Elephants during their migration to Nepal, Bangladesh, Bhutan and Burma are vulnerable to poaching for ivory and food and/or capture for use as captive elephants. There have been reports of elephants being poached for their skin in Myanmar.

6.3 Management measures

There are 30 Elephant Reserves, spread over 61,854.37 Sq. Km. area across India, which are managed through scientifically prepared Management Plans. There is also network of 101 Elephant Corridors in North West, north east, east central and southern parts of India (Menon *et al.*,2017). Chief Wildlife Warden has been given adequate power and responsibilities for conservation of Indian elephants and other wildlife within the concerned States and Union Territories, under the Wildlife (Protection) Act, 1972. Similarly the Act also empowers the Director Wildlife Preservation for conservation of wildlife, including elephants at the federal level.

6.4 Habitat conservation

The Government of India is providing technical and financial assistance to elephant range States for conservation of elephants. Besides that State Governments are also providing financial support for conservation of elephants, including improvement of elephant habitat. Any proposal for diversion of forestlands, for development purposes, falling in Protected Areas, wildlife rich areas are close to elephant corridors has to be scrutinised by National Board of Wildlife (NBWL).

In all Range States habitat (forests) are protected by law, however, given Asia's extremely high human population density, developmental needs and a large rural population which is dependent on forest resources for a part of their livelihood, there is tremendous pressure on the elephant habitat leading to loss, degradation and fragmentation. Given the large ranges of the Asian elephant and the huge dependence of rural populations on the forests, the IUCN/SSC Asian Elephant Group had been advocating a different approach from that of PAs to secure the future of the Asian elephant. The concept is based on using PAs as core conservation areas while the remaining habitat around the PA or PAs would be designated as multiple use area so that its use would permit certain human activities, including NTFP collection, but in a manner that will not result in degrading the habitat. This approach was called the 'Managed Elephant Range' (MER). More Range States are looking at the concept and accepting it as it is not possible to declare all elephant ranges as PAs. India was the first to implement it under Project Elephant and the Elephant ranges are based on the same principle. India through the Wildlife Institute of India has also developed guidelines for building linear infrastructure that is wildlife friendly and is sensitizing and building capacity to implement the guidelines within various government agencies which are involved in development of such infrastructure.

6.5 Population monitoring

India is maintaining records of elephant population across the country since 1992. Population census of elephants is conducted every 4/5 years. India is also participating and reporting to IUCN for MIKE (Monitoring of Illegal Killing of Elephants) programme and regularly collecting data on elephant mortality in 10 MIKE sites in India.

7. Effects of the proposed amendments

7.1 Anticipated benefits of the amendment

The amendment, to place Indian elephant in Schedule I of the CMS Convention, will fulfil natural urge of migration of Indian elephant across India's borders and back safely and thereby promote conservation of this endangered species for our future generations. Intermixing of smaller sub populations in Nepal, Bangladesh, Bhutan and Myanmar and widen the gene base of these populations. It will also help to reduce human elephant conflicts in many parts of its migratory routes.

7.2 Potential risks of amendment

Some persons may fear that this proposal may enhance human elephant conflicts, particularly through crop raiding by elephants. However, this is far from truth, in restricting migratory path of elephants will increase human elephant conflicts. There are many techniques for guarding agricultural crops against elephants, which India would like to share with its neighbouring countries to allay their fears.

7.3 Intention of the proponent concerning development of an Agreement or Concerted Action

The intention of the Government of India behind moving this proposal is to promote conservation of this magnificent animal in its natural habitat for future generations, as well as to reduce human elephant conflicts in range countries.

Problems and opportunities for conservation or co-existence are diverse in every elephant range state. But dialogue and cooperation, exchange of ideas and joint trans-boundary cooperation and action could address many problems. The future of the elephant depends on the ability of our governments and people to combine the insights of science with effective governance and an ecologically aware people.

8. Range States

India, Nepal, Bangladesh, Bhutan, Myanmar, Thailand, Cambodia, Vietnam, Lao PDR, Peninsular Malaysia and China

9. Consultations

The Government of India has done many rounds of consultations with the Government of Bangladesh, which has also endorsed trans-boundary migration of elephants. Similar consultations are being tried with other Indian elephant range countries.

10. Additional remarks

Asian elephant has been listed under Appendix I of CITES (Convention for International Trade in Endangered Species of Wild Flora and Fauna) since 1975.

11. References

- i. Documents and database of the Ministry of Environment, Forest and Climate Change, Government of India, New Delhi
- ii. Red data book of IUCN Secretariat
- iii. Documents from CITES Secretariat
- iv. AERSM (2017). Asian elephant range states meeting final report 2017. Ministry of Environment and Forestry, Government of Indonesia
- v. Baskaran, N., Kanakasabai, R., and Desai, A (2018): Ranging and Spacing Behaviour of Asian Elephant (*Elephas maximus* Linnaeus) in the Tropical Forests of Southern India. Tropical Forests of Southern India. 10.1007/978-981-10-6605-4_15.
- vi. Baskaran, N. & Desai, A.A. (1996) Ranging behaviour of the Asian elephant (*Elephas maximus*) in the Nilgiri Biosphere Reserve, South India. *Gajah*, **15**, 41–57
- vii. Baskaran, N., Balasubramanian, M., Swaminathan, S. and Desai, A. (2010): Feeding ecology of the Asian elephant *Elephas maximus* Linnaeus in the Nilgiri Biosphere Reserve, Southern India. Journal of the Bombay Natural History Society, 107(1), Jan-Apr 2010

- viii. Blouch, R. A. and Haryanto. (1984). Elephants in southern Sumatra. Unpublished report, IUCN/WWF Project 3033, Bogor, Indonesia.
- ix. Blouch, R. A. and Simbolon, K. (1985). Elephants in northern Sumatra. Unpublished report, IUCN/WWF Project 3033, Bogor, Indonesia.
- x. Choudhury, A., Lahiri Choudhury, D.K., Desai, A., Duckworth, J.W., Easa, P.S., Johnsingh, A.J.T., Fernando, P., Hedges, S., Gunawardena, M., Kurt, F., Karanth, U., Lister, A., Menon, V., Riddle, H., Rubel, A. & Wikramanayake, E. (IUCN SSC Asian Elephant Specialist Group). 2008. *Elephas maximus*. *The IUCN Red List of Threatened Species* 2008: e.T7140A12828813.
<http://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T7140A12828813.en>
- xi. Cranbrook, E., Payne, J., Leh, C.M.U., (2008). Origin of the elephants *Elephas maximus* L. of Borneo. *Sarawak Mus. J.* LXIII, 84.
- xii. Desai A & Samsuardi (2009) *Status of Elephant Habitat and Population in Riau*. WWF, Pekanbaru, Indonesia.
- xiii. Fernando, P. & Lande, R. (2000): Molecular genetic and behavioral analysis of social organization in the Asian elephant (*Elephas maximus*). *Behavioural Ecology and Sociobiology* **48**: 84–91.
- xiv. Fernando, P. (2015) Managing elephants in Sri Lanka: where we are and where we need to be. *Ceylon Journal of Science (Biological Sciences)*, **44**, 1–11
- xv. Fleischer, R. C., Perry, E. A., Muralidharan, K., Stevens, E. E. and Wemmer, C. M. 2001. Phylogeography of the Asian elephant (*Elephas maximus*) based on mitochondrial DNA. *Evolution* **55**: 1882–1892.
- xvi. Gopala, A., Hadian, O., Sunarto, Sitompul, A., Williams, A., Leimgruber, P., Chambliss, S.E. & Gunaryadi, D. (2011). *Elephas maximus ssp. sumatranus*. The IUCN Red List of Threatened Species 2011: e.T199856A9129626.
<http://dx.doi.org/10.2305/IUCN.UK.2011-.RLTS.T199856A9129626.en>. Downloaded on 10 October 2018.
- xvii. Harich, F. K., Treydte, A. C., Ogutu, J. O., Roberts, J. E., Savini, C., Bauer, J. M. and Savini, T. (2016). Seed dispersal potential of Asian elephants. *Acta Oecologica* **77**: 144-151.
<http://doi.org/10.1016/j.actao.2016.10.005>
- xviii. Hartl, G. B., Kurt, F., Tiedemann, R., Gmeiner, C., Nadlinger, K., Mar, K. U. and Rubel, A. 1996. Population genetics and systematics of Asian elephant (*Elephas maximus*): a study based on sequence variation at the cyt b gene of PCR-amplified mitochondrial DNA from hair bulbs. *Zeitschrift fur Säugetierkunde* **6**: 285-294.
- xix. Hedges, S., Tyson, M. J., Sitompul, A. F., Kinnaird, M. F., Gunaryadi, D. and Aslan (2005). Distribution, status, and conservation needs of Asian elephants (*Elephas maximus*) in Lampung Province, Sumatra, Indonesia. *Biological Conservation* **124**: 35–48.

- xx. Leimgruber, P., Gagnon, J. B., Wemmer, C. M., Kelly, D. S., Songer, M. A. and Selig, E. R. (2003). Fragmentation of Asia's remaining wildlands: implications for Asian elephant conservation. *Animal Conservation* 6: 347–359.
- xxi. Malhi Y, Doughty CE, Galetti M, Smith FA, Svenning J-C, Terborgh JW. (2016). Megafauna and ecosystem function from the Pleistocene to the Anthropocene. *Proceedings of the National Academy of Sciences* 113:838–846.
- xxii. Medway, L. 1977. *Mammals of Borneo: Field keys and an annotated checklist*. Monographs of the Malaysian Branch of the Royal Asiatic Society, Kuala Lumpur, Malaysia.
- xxiii. Menon, V., Tiwari, S.K., Ramkumar, K., Kyarong, Sunil., Ganguly, Upasana and Sukumar, R. (2017): *Right of Passage: Elephant corridors of India* 2nd edition). Wildlife Trust of India, New Delhi.
- xxiv. MoEFCC (2017): Synchronized Elephant Population Estimation India 2017. Project Elephant Division Ministry of Environment, Forest and Climate Change Government of India
- xxv. Myanmar Elephant Conservation Plan (MECAP) 2018-2027.
- xxvi. NCD, 2018. National Elephant Survey Report. Nature Conservation Division, Department of Forests and Park Services, Ministry of Agriculture and Forests, Thimphu, Bhutan.
- xxvii. Olivier, R. C. D. (1978): Distribution and status of the Asian elephant. *Oryx* 14: 379–424.
- xxviii. Shoshani, J. and Eisenberg, J. F. 1982. *Elephas maximus*. *Mammalian Species* 182: 1–8.
- xxix. Sukumar, R (2006): A brief review of the status, distribution and biology of wild Asian elephants. *Int. Zoo Yb.* (2006) 40: 1–8
- xxx. Sukumar, R. (2003): *The living elephants: evolutionary ecology, behavior, and conservation*. New York: Oxford University Press.
- xxxi. Williams, A.C., Johnsingh, A.J., Krausman, P.R., Qureshi, Q., 2008. Ranging and habitat selection by Asian elephants (*Elephas maximus*) in Rajaji national park, north-west India. *J. Bombay Nat. Hist. Soc.* 105 (1), 24e33