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Current Status of Asian Elephants in Indonesia

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Introduction

Indonesia has two subspecies of the Asian elephant, the Sumatran elephant (*Elephas maximus sumatranus*) and the Borneo elephant (*Elephas maximus borneensis*). In addition to size and colour differences used to recognize subspecies of Asian elephants, *E. m. sumatranus* is recognized as a distinct subspecies by the presence of an extra pair of ribs (Shoshani & Eisenberg 1982). Patterns of mtDNA variation suggest that the Sumatran elephants are monophyletic hence an Evolutionarily Significant Unit (Fleischer *et al*. 2001; Fernando *et al*. 2003). In November 2011, the Sumatran Elephant was listed as 'Critically Endangered' by IUCN.

In order to implement elephant conservation nationwide, related legal policies have been introduced into Indonesian law. Act 5/1990 for the Conservation of Living Resources and Their Ecosystems, Act 23/1997 for the Basic Provision for the Management of Living Environment, Act 41/1999 for Forestry Management, Government Regulation No. 7/1999 for Preservation of Fauna and Flora, and Government Regulation No. 8/1999 for Utilization of Fauna and Flora were created. These acts form the basis of government regulations for nature conservation efforts.

Indonesia is one of the few Asian countries that finalized an elephant conservation strategy and action plan (Strategi dan Rencana Aksi Konservasi Gajah Sumatera dan Kalimantan 2007-2017). The development of this document was a good exercise on how multiple stakeholders can pull resources together and agree upon something that will lead the Indonesian elephant conservation effort in the next decade. The document was launched by the president of Indonesia in 2007, along with some other key species' action plans. As this document is intended to be used for a decade, a consistent monitoring process of its implementation is necessary. Every year, inline with the changes of dynamic conservation realities on the ground, the action plan has been evaluated in its implementation in different provinces, and rated based on the level of progress.

Indonesia has a multi-stakeholder forum called Forum Konservasi Gajah Indonesia (FKGI) or Elephant Conservation Forum (IECF) in English. This forum, established in 2006, has a membership representing government, NGOs, academia, and media, and has been working closely with the government as one of the major contributors to develop the national elephant conservation strategy and action plan, as well as its monitoring and evaluation.

People's perception of elephants

For centuries, the northern part of Sumatra had a tradition of elephant taming for court and ceremony (Lair 1997). The traditional tale of "Biram Sattany" tells of humans and elephants coexisting peacefully during the time of the Aceh kingdom (Djamil 1958).

In their attack on Acehnese fighters, the Fourth Division of the Marechaussee Corps of the Dutch army used elephants (Fig. 1) to carry weapons and equipment through places that could not be accessed by vehicles (Basry & Alfian 1997).

During the colonial period, elephants were also used to clear the forests for agriculture (Groning & Saller 1998). At the end of Dutch colonial rule, the tradition of taming elephants in Sumatra declined, and finally ended in the late nineteenth century (Santiapillai & Jackson 1990).

Due to unique historical and cultural associations, in some areas of Sumatra, especially Aceh, elephants have a special place in the hearts of people. Despite severe human-elephant conflict (HEC), Aceh province-wide surveys conducted of respondents from various age groups, occupations, and regions demonstrated a strong public mandate for elephant conservation in Aceh. Most of the respondents wanted to conserve elephants, and thought this should be done in specially designated elephant habitat (Jepson *et al*. 2002).

However, the wider community in Sumatra has been constantly exposed negatively to elephants through various media coverage in the context of HEC. In the long run, further exposure of elephants in various positive contexts will be needed to create some balance and strengthen wider community support. Captive elephants have played various roles, whether by supporting community livelihood through the development of elephant related ecotourism, as well as the utilisation of captive elephants in *in-situ* and *ex-situ* conservation purposes for patrolling, field surveys, research, and conflict mitigation.

Wild elephants

Past elephant distribution

Elephants in Sumatra were found at a range of altitudes, from the coastal fringes, to 2900 m. in Kerinci-Seblat (Hartana & Martyr 2002). In 1985, population estimates were between 2800 and 4800 (Blouch & Haryanto 1984; Blouch & Simbolon 1985). They were believed to persist in 44 populations scattered from Aceh in the north to Lampung in the south.

Wild Bornean elephants have only occurred in the northeastern part of the island of Borneo (Andau *et al*. 1997), and elephant range in Kalimantan has been limited to an area astride the international boundary with Malaysian Sabah.

Current elephant distribution

In 2007, elephant conservation practitioners and government representatives worked together to estimate the population based on various sources. Some estimation was done in a systematic survey, but most of the data was collected per region based on local estimation during various field exposures, especially HEC incidents. It was estimated that the number of Sumatran elephants in 2007 was between 2400–2800 individuals, which means a possible reduction of the population by 35% within the last 15 years.

In Aceh, elephants exist in moderate numbers and have a wide distribution. The distribution of elephant populations in North Sumatra is patchy, due to the barriers formed by many large-scale oil palm and rubber estates in the region (Figs. 2 & 3). Although substantial herds of elephants were reported in a number of areas within and around the Kerinci Seblat National Park until the early 1980s, poaching and habitat loss have left only two main populations extant. In Jambi province, two or more small herds survive to the west and east of Mount Sumbing, and the population probably totals around 40 animals. One herd totals fewer than 11 animals. Until the

Figure 1. Elephants being used as a mode of transportation for military purposes from Tangse to Geumpang, Pidie-Aceh during Dutch colonial time. Source: Tropen Museum.

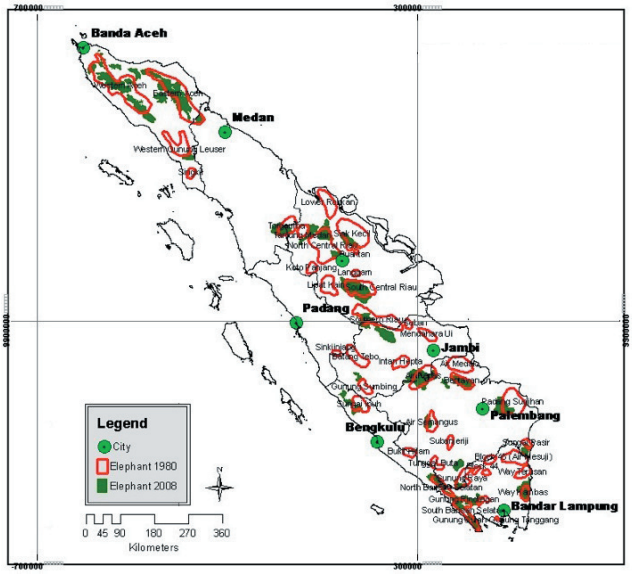

Figure 2. Sumatran elephant distribution in 1980 and 2008.

late 1980s, elephants in this area roamed between Lempur in Kerinci district, and Seremphas in Bangko district, but their range has been reduced by land clearances. Poaching for ivory has been confirmed in this area.

The current population of elephants west of the Barisan mountains in North Bengkulu district is unclear, although likely to be in excess of 100 individuals. Elephants in this area range between the Seblat river system to the south and at least as far as the Bantal river to the north. Lack of elephant corridors when lowland forests were cleared for oil palm plantations have led to conflict problems in a number of areas, notably the Retak river area, while elephants have lost access to the Air Di forests to the north.

In all areas of Kerinci Seblat, topography and altitude have been found to be the limiting factors to elephant movements. In particular, the very steep sided river valleys, which are a feature of the central area of the national park, appear to form significant barriers to elephant movements. The Barisan mountain range that runs along the length of Sumatra supports elephant populations, though at much lower densities than in the lowland areas.

In Riau, scattered populations are threatened by new development and protected areas do not have the capacity to accommodate them all. As a result of the 'Ganesha' elephant drive of 1982, when 232 elephants were forced into the area that is now a reserve, Padang Sugihen has an extremely high density of wild elephants. This area has been subject to an extensive ecological study. In fact, this reserve has a higher density of elephants than any other protected area in Asia (Nash & Nash 1985).

HEC is of particular concern in Lampung, since the elephants inhabit an area also occupied by man. Twelve populations occurred in Lampung Province in the 1980s, but WCS surveys revealed that only three were extant in 2002. Causal factors underlying this decline include human population growth; changes in land use, and HEC. Nevertheless, the surveys in the Province's two national parks, Bukit Barisan Selatan and Way Kambas, produced population estimates of 498 (95% CI = [373, 666]) and 180 (95% CI = [144, 225]) elephants, respectively. The estimate for Bukit Barisan Selatan is much larger than previous estimates; the estimate for Way Kambas falls between previous estimates. The third population was much smaller and may not be viable. These are the first estimates for Southeast Asian elephant populations based on rigorous sampling- based methods that satisfied the assumptions of the models used, and they suggest that elephant numbers in these parks are of international importance.

Figure 3. Sumatran elephant distribution and forest cover in 2006.

In the Indonesian part of Borneo it has been estimated that the population numbers 60-100 individuals who have trans-border ranges between Indonesia and Malaysia in Nunukan district (Fig. 4).

Threats

The actual number of elephant deaths is unknown due to lack of monitoring illegally killed elephants throughout Sumatra. At a minimum, 44 elephants have been killed in the last 5 years, and 12 persons have been killed by elephants.

Despite Sumatra's biological importance, only 10% of its total area is protected, leaving the majority of elephants outside protected areas (Table 1). The main nature conservation areas which offer some prospects for the survival of elephants include the Gunung Leuser National Park (9400 km^2) in Aceh and north Sumatra (Langkat), Siak Kecil Reserve (1200 km^2) in Riau, Padang Sugihan Reserve (750 km^2) in Sumatera Selatan, Way Kambas (1235 km^2) and Bukit Barisan Selatan (3568 km^2) National Parks in Lampung, and Kerinci Seblat National Park (14,846 km^2) extending over the provinces of Jambi, Sumatera Selatan, and Bengkulu.

There is clear direct evidence from two provinces (Riau and Lampung) to show that entire elephant populations have disappeared as a result of habitat loss over the past 25 years: nine populations have been lost since the mid-1980s in Lampung (Hedges *et al*. 2005) and a 2009 survey of nine forest blocks in Riau that had elephant herds in 2007 revealed that six herds had gone extinct (Desai & Samsuardi 2009). It is estimated that Sumatran elephant habitat has declined by more than 69% since the 1930s, especially in Riau and Lampung provinces. This is one of the reasons that the Sumatran elephant was listed as a critically endangered (Gopala *et al*. 2011).

During Dutch colonial times, the capturing and culling of elephants continued inline with the development of large-scale rubber, sugar, tobacco, and oil palm plantations. Legal captures as part of the government policy to address rising HEC was started in the 1980s, and brought into existence

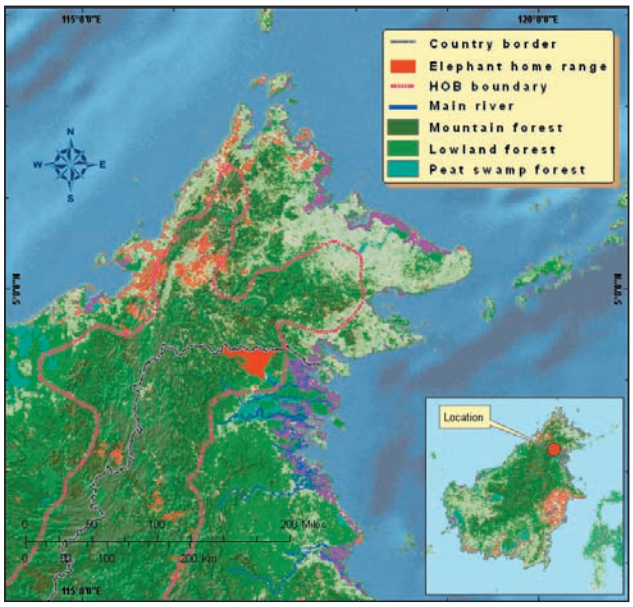

Figure 4. Elephant distribution in the Indonesian part of Borneo.

the modern elephant training camps throughout Sumatra. This policy became the main cause of wild elephant extraction for the entire island in the past years. In the last decade, capturing was still conducted mainly as part of HEC resolution. Some illegal hunting of elephants also occurs and is usually associated with HEC.

Traditionally many people have lived near or within elephant occupied areas. This leads us to expect that humans and elephants have been in contact for a long period of time. However, it has only been since the large scale clearance of forests and the development of transmigration areas in Sumatra that elephants coming into contact with people have been considered to be in conflict. This might best be explained by the scale of habitat clearance and the increased competition for arable lands having forced elephants to move to alternative areas. In some cases, where elephants are totally surrounded by human settlements (or natural barriers), elephant groups have started crop raiding and have come into frequent contact with humans, leading to lethal consequences. In cases where people have opened new gardens in the middle of elephant habitat, or when elephants permanently reside at the interface of forest and gardens, local farmers try to protect their crops using different methods including fire, loud sounds, or simply requesting the elephants to leave.

Elephant management and HEC mitigation

A consequence of most of the elephant population in Indonesia living outside current conservation areas is that elephant habitat is subject to further conversion to other land uses. The conversion of elephant habitat in the past has led to increased interaction between humans and wild elephants, thereby resulting in conflicts, which has led to Sumatran elephants becoming critically endangered. The best conservation prospects for Sumatran elephants maybe in Aceh, where elephants are widely distributed in all of Aceh's districts, and some populations in HEC areas have groups with calves (BKSDA pers. comm. 2011). The situation in Aceh is exceptional. Many areas outside Aceh in Sumatra have lost significant core elephant habitats.

Due to the large area required by elephants, conservation efforts of this species in Sumatra need to be done at appropriate levels and based on habitat needs. Conservation investment and resources need to be placed strategically at the land use planning level as a fundamental requirement. Land use planning in Aceh Province has benefited from input about elephant distribution and the needs for corridors. Based on this input, the allocation of protected forest area in the current Aceh land use planning has been proposed to be increased by 1 million ha of protected forest to a total of 2.8 million ha. This figure indicates that Aceh will protect a total forest area as large as 3.86 million ha. (BKTRP Aceh 2011).

HEC is a major threat to the Sumatran elephant. HEC results in a lack of local support to conserve this species and its habitat. The communities become less tolerant of wild elephants, leading them to use different methods to kill or capture them. In the recent past, HEC has been handled by capturing the raiding elephants, driving them or scaring them off using sound and fire, while a few plantations use modern technology such as electric fences.

In 2008 the Directorate General of Forest Protection and Nature Conservation issued a letter declaring a Moratorium on elephant capturing in Indonesia. This policy means there will be no budget allocation from the Forestry Ministry for elephant capturing, and it effectively reduced the elephant capturing (PHKA 2008)

Currently, besides various mitigation methods, which have been tried in Sumatra, a non-invasive solution has been introduced based on the concept of human-elephant co-existence based on alternative livelihoods. In most HEC areas, HEC mainly impacts community livelihoods, and only a small percentage of communities are in life threatening situations. Therefore this new concept using alternative livelihoods as a basic approach will provide an option for communities to share their landscape with wild elephants in a rather peaceful way. Four out of 18 planned community ranger groups, who live in elephant habitat in Aceh, have been supporting these elephant friendly livelihoods. Each of the groups consists of 15 – 20 people who are supported monthly for their conservation and patrol activities, as well as HEC mitigation activities (Ismail pers. comm. 2011).

Captive elephants

The tradition of managing and utilizing captive elephants in Indonesia disappeared at the end of the nineteenth century. It restarted in 1984 when the Indonesian government launched a program to capture wild elephants involved in HEC. The captured elephants were transferred to Elephant Training Centers (ETC) for taming. During this program, about 700 elephants were captured and taken to ETCs. In 2000 this program was formally discontinued. But in some provinces in Sumatra, wild elephant captures as an HEC resolution strategy were conducted until early 2009. All captures of wild elephants for taming were conducted under authority of the legal government agencies. Some of the elephants were transferred to Zoos, Safari Parks, Recreation Parks, and some to timber concessions throughout Indonesia. Today 241 Sumatran elephants are kept in such facilities all over Indonesia. In addition 243 Sumatran elephants are still kept in the ETCs in Sumatra, which were renamed as Elephant Conservation Centers (ECC). Currently there is a total population of 484 Sumatran elephants in captivity in Indonesia

About 10 years ago, some conservation NGOs together with the government conservation agency (BKSDA) in various regions started to utilize small groups of 4 – 7 elephants from the ETCs/ECCs in so called Conservation Response Units, Elephant Flying Squads, or Elephant Patrol Units located close to wild elephant habitat. In these units, elephants and their mahouts are employed for forest patrol, law enforcement, habitat monitoring, HEC mitigation, education, and eco tourism development as an alternative income, generating source for local communities. From an elephant welfare point of view these units provide the advantage that small groups of elephant can be better taken care of than in the large often not very well equipped and funded ETCs/ECCs with high numbers of elephants.

Today 9 such units, with a total of 55 elephants are managed in collaboration between conservation NGOs, government, and local communities. This strategy benefiting wild elephant conservation and captive elephant welfare has increasingly attracted the interest of the Indonesian government, and although initiated by NGOs, today the various government agencies are increasingly involved in the implementation of this concept, which is becoming a vital part of Indonesia's elephant conservation strategy.

With very few exceptions, breeding programs and management systems focused on needs for reproduction, are not implemented in any of the captive elephant locations. In most locations, the management systems applied allow elephants few opportunities for regular free socialization and interaction. Captive breeding and births which occasionally occur in some of the Zoos, Safari Parks and ETCs/ECCs are mostly incidental, rather than as a result of a management system designed and focused on reproduction. In some of the ETCs/ECCs the captive elephants at times come in contact with wild elephants, and the majority of captive born calves in ETCs/ECCs are the result of breeding between wild males and captive females. Current numbers of captive elephants successfully involved in breeding and birth rates are not sufficient for the existing captive population of Sumatran elephants to become self sustaining.

No studbook for captive Sumatran elephants exists, but the government plans to register all Sumatran elephants and has implanted microchips in most of the elephants in the ETCs/ECCs. Implanting microchips in elephants in zoos, safari parks, etc. and the registration of elephants in one central database including regular annual updating of such databases has yet to be implemented.

By Indonesian law, the elephant is a highly protected species. All such protected Indonesian wildlife is owned by the government and no private ownership is possible. Elephants kept in private facilities such as zoos, safari parks, etc. are loaned to these facilities but still remain the property of the Indonesian government.

Mahouts in the ETCs/ECCs are employed by the government, and in zoos, safari parks, etc. are employed by these institutions. Mahoutship in Indonesia is a young profession as captive elephant management only restarted in 1984, and therefore traditional knowledge and experiences forwarded since many generations are lacking. A structured education and training scheme to teach the necessary skills and knowledge about elephant training management and handling are yet to be developed.

Captive elephant management in Indonesia has benefited from capacity building of the mahouts, who are responsible for the care of captive elephants. Since 2006, Indonesia has hosted mahout workshops annually, and established a professional mahout communication forum (FOKMAS) (Nazaruddin *et al*. 2010). Through FOKMAS, mahouts have been provided opportunities to learn additional conservation related skills such as field navigation, gathering data, and monitoring wild elephant populations. FOKMAS provides input and recommendations about captive elephant management and conservation activities to the government, and has improved the care and management of elephants in captivity in Indonesia.

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