



## Recent observations of *Elephas maximus sumatranus* in Sembilang National Park, South Sumatra

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### Abstract

Sumatran elephants (*Elephas maximus sumatranus*) are one of four Asian elephants subspecies, which are categorized as Critically Endangered by the IUCN (International Union of Conservation of Nature) since 2011. Some factors that might drive this species into extinction ranges from wild attacks in the forest, habitat degradation due to land acquisition for plantation and development areas, and human slaughter because they regard these animals as enemies that sometimes enter community settlements. Elephants in Sembilang National Park is an interesting issue because it has not been registered as key species in Sembilang National Park, as well as no authentic evidence and official reports about the existence of elephants in the park. This paper proves the existence of elephants in Sembilang National Park, South Sumatra. The elephant documentation is in the form of photos and videos of 4 different elephant individuals, footage, cruising lanes and elephant puddles. Evidence of the existence of elephants in Sembilang National Park strongly indicates that future actions, participation and attention of all stakeholders are needed to the conservation efforts of the biggest Sumatran mammals in Sembilang National Park

Keywords: National Park, Sembilang, South Sumatra, Sumatran elephant

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### 1. Introduction

Sumatran elephant (*Elephas maximus sumatranus* Temminck, 1847) is one of four subspecies of Asian Elephant which is one of the priorities of wildlife in Sumatera Island by Indonesian government policy. This species has been categorized as critically endangered (CR) according to the IUCN since 2011 (Gopala et al 2011). In Sumatra, the populations and habitats of this elephant are in the critical stage. In 1985, the population of this subspecies was between 2400-4800 (Blouch & Haryanto 1984; Blouch & Simbolon 1985), and then was decreased to between 2400-2800 elephants in 2007 (Soehartono et al. 2007; Azmi and Gunaryadi 2011). By 2014, the population was estimated to be only 1724 elephants (WWF Indonesia 2014).

Elephants in Sumatra were found at a range of altitudes, from the coastal fringes, to 2900 m. They were believed to persist in 44 populations scattered from Aceh in the north to Lampung in the south (Gopala et al 2011). Despite intensive conservation intervention over the past

decade, the Sumatran elephant population is increasingly restricted to fewer habitat fragments (Soehartono et al. 2007). The population of Sumatran elephant is drastically declining caused by deforestation by plantations or monoculture concessions and community settlements (Desai and Samsuardi 2009, Sukmantoro et al. 2019).

In spite of Sumatra's biological importance, only 10% of its total area is protected, leaving the majority of elephants outside protected areas. The main nature conservation areas which offer some prospects for the survival of elephants include the Gunung Leuser National Park (9400 km<sup>2</sup>) in Aceh and North Sumatra (Langkat), Siak Kecil Reserve (1200 km<sup>2</sup>) in Riau, Padang Sugihan Reserve (750 km<sup>2</sup>) in Sumatera Selatan, Way Kambas (1235 km<sup>2</sup>) and Bukit Barisan Selatan (3568 km<sup>2</sup>) National Parks in Lampung, and Kerinci Seblat National Park (14,846 km<sup>2</sup>) extending over the provinces of Jambi, Sumatera Selatan, and Bengkulu. As a result of the 'Ganesha' elephant drive of 1982, when 232 elephants were forced into the area that is now a reserve, Padang Sugihan has an extremely high density of wild elephants. This area has been subject to an ex-

tensive ecological study (Danielsen & Verheugt 1990, Verheugt et al. 1991, Mahanani 2012, Rizwar et al. 2014). In fact, this reserve has a higher density of elephants than any other protected area in Asia (Nash & Nash 1985).

The Sembilang National Park area was established by the Minister of Forestry with decree No. 76/Kpts-II/2001 covering an area of ca. 205,750 hectares located in Musi Banyuasin Regency, South Sumatra Province. Until now the Berbak Sembilang National Park has not included Sumatran elephants as key animals in the region. This is because the presence of elephants is still a big question mark. Although the issue about the existence of elephants is very strong, there are no official reports or documentation of the existence of elephants in Sembilang National Park.

With the opening of forests around Sembilang National Park for transmigration, plantations and industrial plants, this has led to increasingly open access and activities around the Sembilang National Park, which also opens up opportunities for previously unknown information such as the presence of elephants in Sembilang National Park. Another impact is that fauna in the region is increasingly pushed towards Sembilang National Park. This is also the question of whether Sembilang National Park is an original elephant habitat or just a place to escape.

The purpose of this monitoring is to prove the existence of elephants in Sembilang National Park. The evidence can be in the form of photos or videos that record the existence of elephants. Photo and video can be in the form of elephant objects, traces, dirt, and habitat evidence for the existence of elephants in the Nasioanal Sembilang Park.

## 2. Materials and Methods

Monitoring was carried out from 28 January to 4 February 2019 in the Sembilang National Park area bordered by Raja Palma Company, an oil palm plantation (Fig. 1)

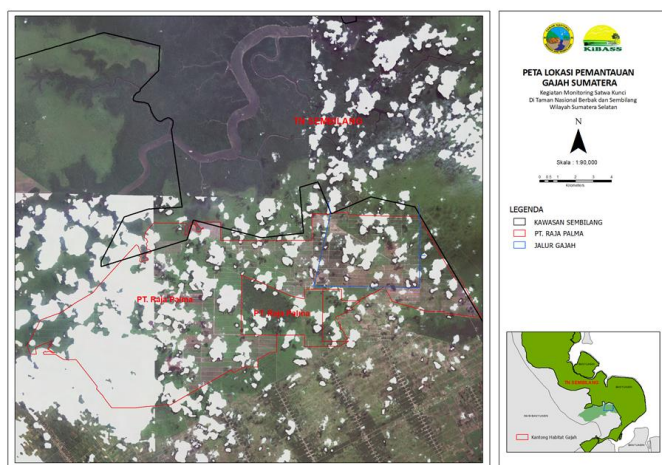


Figure 1. The location of Sumatran Elephant survey in Sembilang NP bordered with Raja Palma Company

Monitoring uses the direct method with two teams consisting of land teams tracing the trail and the air team using Drone and camera traps.

The location of observation of Sumatran Elephants is the Section II of Sembilang National Park, Sungsang - Sembilang area, directly adjacent to the Raja Palma oil palm plantation, where the conditions of the field of observation are forests, open swamp bushes which are dominated by low tree cover, ferns, grasses and mangrove.



Figure 2. Habitat condition in the area border of Sembilang NP and Raja Palma Company, dominance by Prumpung grass (*Phragmites karka*)

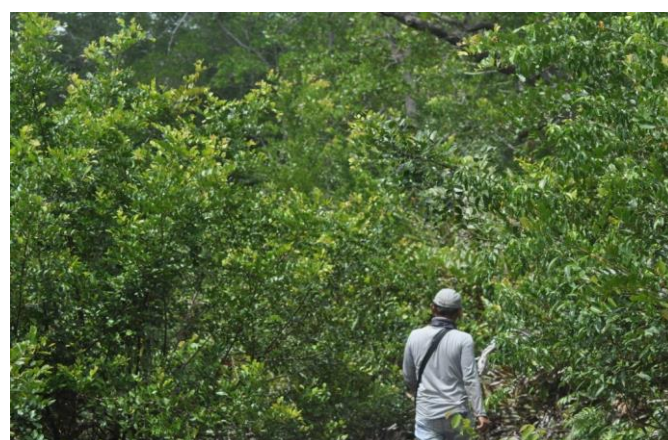


Figure 3. Sembilang National Park, Bugis River, is dominated by mangroves

The observation points are along the Sembilang National Park boundary with PT Raja Palma, connecting the Bungin and Lalan rivers to the south and the Sembilang river to the north. Observations were also made to the east of the Simpang One Sembilang river and to the west are the transmigration fields of Tabala and Jati Sari villages.

The observation location, namely in the oil palm plantation business permit area of PT. Raja Palma, which is directly adjacent to the Berbak Sembilang National Park area, Section II Sungsang Sembilang, can only be reached by water transportation.



Figure 4. Observation use water transportation (small boat)

The point of observation is quite far from the village communities or community gardens and other activities. This makes the information about the existence of Sumatran Elephants at that location relies solely on information from company employees domiciled in the company area, garden security officers, and Security Staff specialized for elephants in the work area of Raja Palma Co.

The first phase of the survey in October consists of only 3 days of observation in the field. The implementation of observations on Sumatran Elephant wildlife uses both direct methods and indirect methods. The direct method is the technical activity by following the Elephant group in a few days, recording elephant activity in a certain period of time along the path used in relation to resting places, feeding, wallowing and other elephant activities. While the indirect method is extracting data and information from the surrounding community and field observations by tracking or following footprints or trails, traces of feed, dirt and other signs.

In the second stage of January-February 2019 the observation time was added to be 6 days. The observation method was added with the aid of drone aircraft and camera traps. The team was divided into two, namely the land team who traced the trail and the team using drone aircraft and camera traps. Observations were carried out from morning to evening, night observations were not carried out considering that the first survey did not produce information which meant that night time observations were not effective due to limited views and safety factors.

### 3. Results and Discussion

The implementation of Sumatran Elephant Observation activities in the Sembilang National Park Section II Sungsang National Park area was carried out for 6 working days. The monitoring team members amounted to 9 people representing various institutions and agencies as well as stakeholders in the Sembilang National Park Forest Zone and involving PT Raja Palma's conservation

staff.

Overall the Team managed to get 5 elephant objects that were documented at a relatively close time and place. There are 5 objects consisting of 4 different individuals identified by the physical characteristics of each individual. One tail with stumpy tusks of short tusks, one with small ivory features that are torn ears, one large bodied tail with ivory broken on one side, and one tail with the characteristic of not having ivory. The fifth object is the same as the first object, an elephant with a stump tail. Testimony of employees of PT Raja Palma Mr. Dwi, during 2018 most of the 10 colonies were found. Therefore it is possible to estimate the number of individuals currently from 6 to 10 who live in the Sembilang-Raja Palma National Park.

This monitoring also proved the existence of elephants in the Sembilang National Park area. The land team managed to find traces and elephant feces inside the Sembilang National Park area. From the drone camera, an elephant track that follows the river flow in the Sembilang National Park area is precisely in the path of the Bugis River. The line looks clean from vegetation, extending more than 1KM into the Sembilang National Park area. The path is filled with elephant footprints at some point in wet soil conditions.



Object #1

Object #2



Object #3

Object #4

Figure 5. The four Sumatran elephant found in Sembilang NP

Another evidence of elephants in Sembilang National Park is a video from the camera of a drone that follows an elephant (3rd object) that moves from Raja Palma's palm plantation to Sembilang National Park. It proves that when elephants experience threats or uncomfortable conditions, the elephants will flee to Sembilang National Park, whose forests are relatively more closed, making it safer as an elephant's shelter.



Figure 6. Elephant trail in Sembilang NP

Elephant trails are found along the border between Sembilang National Park and PT Raja Palma, these trails cross or cross the canal (Fig 6). This shows that the elephants have activities in these two places, or it could be said that the Sembilang National Park and PT Raja Palma are elephant habitat.

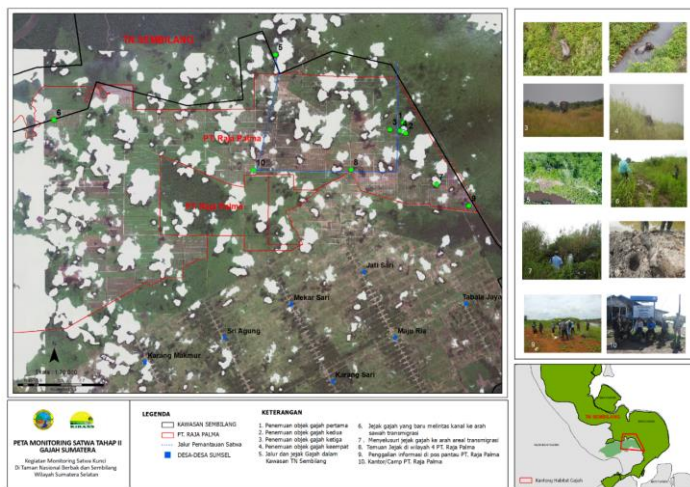


Figure 7. All records of recent observation of Sumatran elephant in Sembilang NP

#### 4. Conclusion

- Sumatran elephants indeed exist in Sembilang National Park. This can be proven by traces, paths, bolly and elephant holes in Sembilang National Park.
- The elephant habitat is estimated to stretch from the north of the Sembilang river to the south of the Bungin River / Sungai Lalan, and from the west of the oil palm plantation of PT Raja Palma to the east of Sembilang National Park.
- The number of documented individuals are 4 individuals, plus 2 individuals which are known for their presence in almost the same and different trace sizes, but are not documented.
- The certainty about the number of elephants and home range has not been validated because of the limited time of observation.

#### Conflict of Interest

There is no conflict of interest from all authors in this paper

#### 5. Acknowledgement

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#### References

- [1] Azmi W, Gunaryadi D. 2011. Current status of Asian elephants in Indonesia. *Gajah* 35: 55-61.
- [2] Blouch RA & Haryanto. 1984. Elephants in Southern Sumatra. *Unpublished report*, IUCN/ WWF Project 3033, Bogor, Indonesia.
- [3] Blouch RA & Simbolon K. 1985. Elephants in Northern Sumatra. *Unpublished report*, IUCN/ WWF Project 3033, Bogor, Indonesia.
- [4] Danielsen, F. and W.J.M. Verheught. 1990. Integrating conservation and land-use planning in the Coastal region of South Sumatra. PHPA, AWB-Indonesia. Bogor
- [5] Desai, A. and Samsuardi. 2009. Status of elephant habitat and population in Riau. In: WWF Technical

report. Pekanbaru, Indonesia.

Switzerland

- [6] 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.2011-2.RLTS.T199856A9129626.en>. Downloaded on 16 April 2019.
- [7] Hedges S, Tyson MJ, Sitompul AF, Kinnaird MF, Gunaryadi D & Aslan. 2005. Distribution, status, and conservation of Asian elephants (*Elephas maximus*) in Lampung Province, Sumatra, Indonesia. *Biological Conservation* **124**: 35-48.
- [8] Kumar MA, Mudappa D, Raman RS. Asian elephant *Elephas maximus* habitat use and ranging in fragmented rainforest and plantations in the Anamalai Hills, India. *Trop Conserv Sci.* 3 (2): 143-158
- [9] Mahanani, A.I. 2012. Strategi Konservasi Gajah Sumatera (*Elephas Maximus Sumatranus* Temminck) di Suaka Margasatwa Padang Sugihan Provinsi Sumatera Selatan Berdasarkan Daya Dukung Habitat. *Tesis*. Program Magister Ilmu Lingkungan Program Pasca Sarjana Universitas Diponegoro Semarang.
- [10] Nash SV & Nash AD. 1985. The Status and Ecology of the Sumatran Elephant (*Elephas maximus sumatranus*) in the Padang Sugihan Wildlife Reserve, South Sumatra. WWF/IUCN
- [11] Okello MM, Njumbi SJ, Kiringe JW, Isiiche J. 2015. Habitat use and preference by the African elephant outside of the protected area, and management implications in the Amboseli Landscape, Kenya. *Int J Biodivers Conserv.* 7: 211-236.
- [12] Puyravaud JP, Cushman SA, Davidar P, Madappa D. 2016. Predicting landscape connectivity for the Asian elephant in its largest remaining subpopulation. *Anim Conserv.* 1-10.
- [13] Rizwar, Z. Dahlan, D. Setyawan, dan I. Yustian. 2014. Selection of Sumatra Elephants (*Elephas maximus sumatranus* Temminck, 1847) toward Habitat Types and Resources in Wildlife Sanctuary of Padang Sugihan, South Sumatra Province. *Advances in Environmental Biology* 8 (21): 403-410.
- [14] Santiapillai C & Jackson P. 1990. *The Asian Elephant: An Action Plan for its Conservation*. IUCN/SSC, Asian Elephant Specialist Group, Gland, Switzerland
- [15] Sitompul AF, Griffin CF, Fuller TK. 2013. Sumatran elephant ranging behavior in a fragmented rainforest landscape. *Int J Biodivers Conserv.* 5 (2): 66-72.
- [16] Sitompul AF. 2011. Ecology and Conservation of Sumatran Elephants (*Elephas maximus sumatranus*) in Sumatra, Indonesia. *Open access Dissertation 355*, Environmental Conservation. University of Massachusetts-Amherst. [https://scholarworks.umass.edu/open\\_access\\_dissertations/355](https://scholarworks.umass.edu/open_access_dissertations/355)
- [17] Soehartono T, Susilo HD, Sitompul AF, Gunaryadi D, Purastuti EM, Azmi W, Fadhli N, Stremme C. 2007. 2007 – 2017 Conservation strategy and action plan of the Sumatran Elephant and Bornean Pygmy Elephant. Ministry of forestry – Indonesia Republic, Jakarta. [Indonesian]
- [18] Sukmantoro YW., Alikodra HS., Kartono AP., Efransjah. 2019. Distribution and Habitat Preferences of Sumatran Elephant (*Elephas Maximus Sumatranus*) In Riau, Indonesia. *BIODIVERSITAS* 20 (1): 226-235
- [19] Verheugt W.J.M, A. Purwoko, F. Danielsen, H. Skov and R. Kadarisman. 1991. Integrating mangrove and swamp forests conservation with coastal lowland development; the Banyuasin Sembilang swamps case study, South Sumatra Province, Indonesia *Landscape and Urban Planning* 20: 85-94.
- [20] WWF Indonesia. 2014. WWF calls government to immediately investigate Sumatran Elephant death cases. <https://www.wwf.or.id/en/?35122/Pemerintah-Harus-Segera-Tuntaskan-Kasus-Kematian-Gajah-Sumatera>. [Indonesian]

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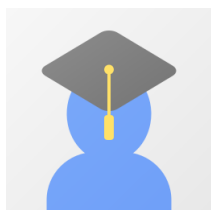


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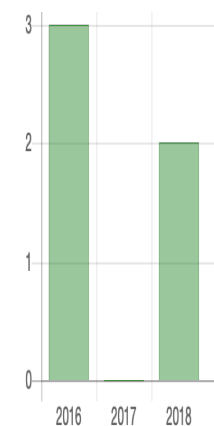


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