



Sumatran Elephant Friendly Village Model (*Elephas Maximus Sumatranus Temminck*) In The Giam Siak Kecil Elephant Population Pocket Riau Province

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Abstract

Conflict between elephants and humans makes this animal has a unique position that on the one hand this animal is protected by law and must be preserved, but on the other hand this animal causes great losses that result in victims on both sides. Efforts to resolve conflicts between elephants and humans cannot be done by killing or destroying them as is done with other pests, because elephants are protected animals. Therefore, it is necessary to find a solution so that elephants can be useful for development and society. This study aims to analyze the conservation of Sumatran elephants through partnerships between village communities and related parties. This study uses a literature study by utilizing secondary data from various institutions. Conflicts between elephants and communities require comprehensive solutions with the concept of collaboration, habitat protection and community empowerment through elephant-friendly village models.

Keywords: Village Model, Elephant Friendly, Giam Siak Kecil.

1. Introduction

The Sumatran elephant (*Elephas maximus sumatranus*) is one of Indonesia's faunal treasures, which is a rare animal and is feared to be extinct. This animal has been protected since 1931 using the Wild Animal Protection Ordinance Number 134 and 226 and strengthened by the Decree of the Minister of Agriculture No. 234/Kpts/Um/1972 and Government Regulation of the Republic of Indonesia No. 7 of 1999 concerning the Preservation of Plant and Animal Species. Meanwhile, CITES (Convention on International Trade in Endangered Species of Wild Flora and Fauna) classifies elephants in Appendix 1, which is a wildlife that is not allowed to be traded internationally either ivory or other body parts.

Elephants play an important role in regulating the Earth's atmosphere through their impact on the carbon cycle and maintaining the diversity of plant species by creating openings in vegetation, allowing new plant growth. The extinction of elephants would result in the loss of approximately 361 million metric tons of carbon sequestration per year [1].

The development of development in Riau Province, especially development in the fields of plantations, transmigration, and with the increasingly widespread clearing of forest areas, has resulted in increasingly narrow forest areas as elephant habitat. This has led to the fragmentation of elephant habitat and made elephant populations separated. With the

increasingly narrow forest area and insufficient availability of natural food, the elephants will look for a place where food is widely available until they enter the human cultivation area so that the problem of human-elephant conflict arises, namely elephants entering plantation areas, agriculture and settlements around their habitat, causing considerable damage and losses.

In this condition, the rampant conflict between elephants and humans, makes this animal has a unique position that on the one hand this animal is protected by law and must be preserved, but on the other hand this animal causes great losses that result in victims on both sides. Efforts to resolve conflicts between elephants and humans cannot be done by killing or destroying them as is done with other pests, because elephants are protected animals. Therefore, it is necessary to find a solution so that elephants can be useful for development and society that lives in harmony with humans.

In Riau Province, elephant populations are spread across 8 sub-populations (Elephant Pockets), most of which are outside conservation areas and even outside forest areas with a total area of 844,490.4 Ha. One of the sub-populations (Elephant Pockets) is the Giam Siak Kecil Elephant Pocket located in Bengkalis Regency and Siak Regency which has an area of 108,426.89 ha. The Giam Siak Kecil Elephant Pocket is a buffer zone for the Giam Siak Kecil- Bukit Batu Biosphere Reserve. In the period 2019 to 2023 there were 27 incidents of conflict between elephants and humans. The relevant

villages are Tumang Village, Olak Village, Lubuk Umbut Village, Lubuk Jering, bencah umbai, Tebing Serai Village, Serai Wangi Village, Melibur Village, Beringin Village, Kotopait Beringin Village, Titian Antui Village and Muara Basung Village.

Efforts have been made by the government in overcoming conflicts between elephants and humans in the form of eviction and relocation of elephants to their habitat, besides that the community also does traditional conflict management by making sounds from carbide cannons, using fire torches and others. Conflict resolution between elephants and humans is done by the community by installing electric fences in areas where elephant groups pass. The anthropocentrism attitude that considers elephants as pests will have an impact on the survival of Sumatran elephants and damage the ecological balance.

In connection with the phenomenon of conflict between elephants and the community, mitigation efforts are needed as a strategy to prevent and early warning system. The comprehensive solution chosen by the government is the elephant-friendly village model that prioritizes the conservation of Sumatran elephants through partnerships between village communities and related parties. By paying attention to the needs of elephants and involving the community, this model seeks to create harmony between human life and elephant habitat. The implementation of elephant-friendly village model activities can be carried out with 3 concepts, namely collaboration, habitat protection and community empowerment.

2. Research Methods

This study was conducted in villages located in the Giam Siak Kecil Elephant Population Pockets in Bengkalis Regency and Siak Regency. The strategy for implementing activities with a regular mentoring method to community groups by village facilitators who are placed in villages located in the Little Siak Giam Elephant Population Pockets in Bengkalis Regency. The mechanism for implementing activities is carried out with the following steps: a) Area mapping, b) Participatory planning, c) Joint implementation

3. Results and Discussion

3.1. Area Mapping

The Giam Siak Kecil Elephant enclave is located in Bengkalis Regency and Siak Regency, Riau Province which has an area of 108,426.89 ha which is part of the Sumatran Elephant habitat population. The implementation of range mapping is carried out by identifying and determining important zones for

elephants such as migration corridors, food sources and drinking water using direct observation methods in the field and GPS Collar data analysis. Based on the results of direct field observations and located in Lubuk Jering village and Tasik Betung village in January 2024, elephant group activities were found in the land cover of forest plantations and open land. In this activity, it is assisted by drone tools to facilitate the search for the position of Sumatran elephants from above. Sumatran elephant activity observation activities as shown in Figure 1.

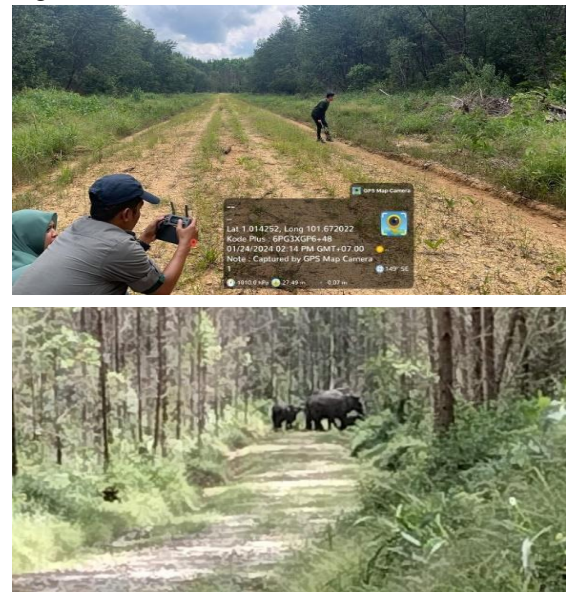


Figure 1. Activity observation of Sumatran elephants

Based on the results of monitoring elephant movement patterns using GPS Collar in January 2023 to February 2024, 2 elephant groups were found, namely the Nae and Almira Elephant Groups. The village passed by the Nae Elephant group in the Giam Siak Kecil Elephant Pocket consists of 5 villages, namely Tumang / Tasik Betung village, Olak village, Lubuk Umbut village, Lubuk Jering and bencah umbai. While the village passed by the Gajah Nae elephant group outside the Giam Siak Kecil Elephant Pocket is Muara Kelantan Village. The village passed by the Gajah Nae elephant group consists of 6 villages located in the administrative area of Siak Regency.

However, the villages traversed by the Almira Elephant group include Tumang/Tasik Betung Village, Olak Village, Lubuk Umbut Village, Lubuk Jering Village, Bencah Umbai Village, and Muara Kelantan Village located in Siak Regency. Meanwhile, the villages located in Bengkalis Regency consist of 7 villages, namely Tebing Serai Village, Serai Wangi Village, Melibur Village, Beringin Village, Kotopait Beringin Village, Titian Antui Village and Muara Basung Village. The results of spatial data processing of the Nae and Almira Elephant Group Home Range are shown in

Figures 2 and 3.

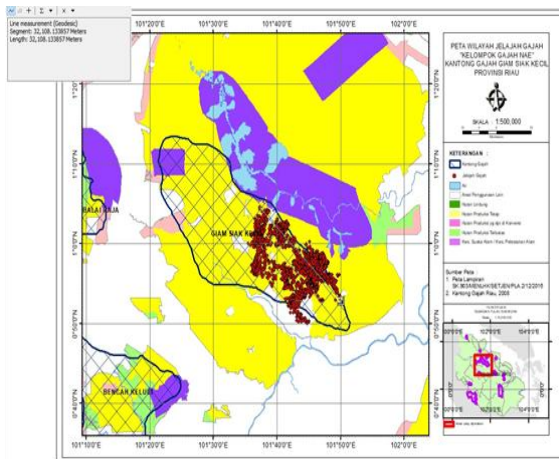


Figure 2. Group Exploration Area Elephant Nae

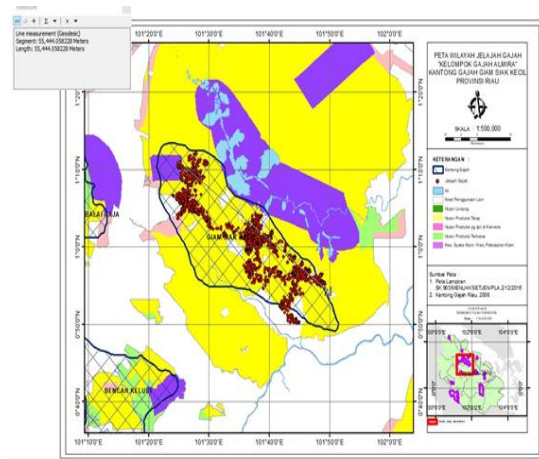


Figure 3. Group Exploration Area Elephant Almira

3.2. Participatory Planning

The movement of elephants within their home range is often influenced by the seasons. During the rainy season, elephants prefer mountain rainforests or primary rainforests because there is enough food for their needs. During the dry season, elephant herds will head to secondary rainforests and especially lowland forests and swamp forests, because that is where food and water sources are usually found when other places experience drought, besides water for drinking, it is also used for wallowing to compensate for the hot sun.

States that elephants require movement areas ranging from 600 ha to 700 ha [2]. Elephants naturally travel in groups following a certain path that is fixed in one year of exploration [3]. The home range of a wildlife species depends on its behavioral characteristics (including its group), and the chemical and physical characteristics of the habitat [4]. The home range of Sumatran elephants is maintained at a minimum of 165 km² in primary forests and 60 km² in secondary forests [5].

Based on the results of field observations in the Giam Siak Kecil Elephant Pocket area, the types of elephant feed at the seedling and herbaceous levels known as the palatability of Sumatran elephant feed are 23 species with 13 families which are potential plants for Sumatran elephant feed sources identified. The types of elephant food in the Giam Siak Kecil Elephant Pocket are *Cyperus rotundus*, *Cayratia trifolia* L., *Mikania micrantha* kunth, *Imperata cylindrica*, *Lycopodium cernuum* L., *Pennisetum polystachion*, *Scleria sumatrensis*, *Setaria parviflora*, *Chromolaesia odorata*, *Acacia mangium*, *Phyllanthus urunaria*, *Eupatorium odoratum*, *Intsia bijuga*, *Melastoma malabathricum*, *Paspalum conjugatum*, *Melaleuca leucadendron* L., *Nephrolepis* sp., *Nephrolepis biserrata* Schott, *Phragmites karka*, *Andropogon aciculatus* L.,

Trema orientalis L. (Blume), *Cynodon dactylon* (L) Pres and *Setaria sphacelata*. Observation of elephant food in Giam Siak Kecil Elephant Pockets as shown in Figure 4.



Figure 4. Observation of Elephant Food in Giam Siak Kecil Elephant Pocket

The results of the area mapping are needed as a basis for the formation and training of community elephant care groups for conflict mitigation and management. The learning model and approach in community empowerment uses Participatory Research and development (PRD). The expected achievements in the community group formation

and training activities are: 1) Reduced community losses caused by conflicts with the formation of independent village community-based teams in handling human-elephant conflicts, 2) Village communities have specially made equipment to anticipate in the event of human-elephant conflict, 3) Economic empowerment of the conflict mitigation community team with a commodity planting program that suits their needs, starting from the aspect of choosing the right commodity, innovative agricultural techniques, the use of modern technology and sustainable approaches that are environmentally friendly.

According to Primahardani, I., Mulyadi, A., Syahza, A., Restuhadi, F. (2022). The strategy of empowering rural communities, strengthening village institutions, strengthening inter-institutional cooperation and optimizing economic benefits are strategic things to realize sustainable forest management [6]. According to Syahza, A., Meiwanda, G., Tampubolon, D., (2023), the role of institutions is needed to provide input and consideration for the development of actors in the context of local economic development [7]. The research results of Indrawati, H., Caska, C., Hermita, N., Sumarno, S. and Syahza, A. (2023), organizational factors emerged as the main determinants of the adoption of environmentally friendly innovations among SMEs in this country [8].

3.3. Participatory Planning Process

The fragmentation of elephant range has an impact on changes in the daily movement patterns of elephants, so it is necessary to manage the Sumatran elephant wildlife corridor through participatory planning with steps that are in accordance with the needs of the community, namely: 1) Information on activities is made openly to the community, 2) Implementation of activities is carried out through cooperation, 3) Horizontal and vertical coordination is needed, 4) There is no need to have a superior attitude or feel the most knowledgeable at every opportunity for program implementation, 5) Seriousness of performance in the context of the work program that has been determined.

Community participation and development focuses on efforts to help community members who have a common interest to work together, identify common needs, and then carry out joint activities to meet these needs [9]. There are three approaches to community assistance including the self-help approach, conflict approach and technical assistance [10]. The process of community empowerment is directed at independence and strengthening the ability of the community to be directly involved in the development process [11].

Illustrate that passive institutional governance is caused by constraints on knowledge of horticultural crop management, nutrient utilization processes, and sustainable agricultural group management techniques in aspects of government regulation and empowerment of surrounding companies through CSR, found management variables and community economic development have a positive influence on the Society [12].

3.4. Joint Implementation

Joint implementation involves the community, government and other stakeholders working together to implement an elephant-friendly village. It is necessary to encourage community involvement in the development of elephant-friendly village models in joint implementation of the following activities:

- 1) Villagers participate in decision-making related to elephant conservation in their area
- 2) The community is involved in monitoring and reporting the presence of elephants and potential conflicts
- 3) The community has a sense of responsibility for elephant conservation efforts
- 4) Villagers manage and benefit economically from ecotourism programs or local products.

The implementation of the elephant-friendly village model has ecological, economic and social benefits, including the following;

- 1) Protecting populations and habitats from extinction.
- 2) Improving economic welfare and villager engagement
- 3) Developing conservation-based tourism that benefits the community
- 4) Creating a balance between human needs and elephant conservation.

Local wisdom also involves knowledge, understanding and customs about humans, nature and how relations between the inhabitants of this ecological community should be built [13]. The solution to overcome problems related to resource management is to grant management rights to local communities in accordance with social, economic, political, cultural, and resource characteristics around them [14]. Social conditions of local communities that shape management patterns and pay attention to community factors in utilizing and utilizing existing resources [15]. The principle of conservation is carried out by the community (local population) has the knowledge capacity to utilize natural resources that contribute to conservation efforts [16].

Environmental sustainability will not be realized if the welfare of the community is not guaranteed. Structural changes in the legislative framework and

political practices of natural resource management that favor local communities are needed. In addition, it is necessary to strengthen the institutions of local communities and farmers [17]. Geographical factors and the natural physical environment as an absolute determinant of the types of community culture [18].

There are three perspectives of human ecology that are considered relevant for aspects of local wisdom, namely

- 1) Political ecology approach
- 2) Ecosystemic approach
- 3) Communism and paternalism paradigms from the perspective of constructionism.
- 4) Action and consequence approach (Progressive contextual explanation model) [19].

That the progressive contextual approach emphasizes the following:

- a. Human activity in relationship with the environment
- b. The causes of activities and the effects of activities both on the environment and on humans as actors of activities. environment and to humans as the perpetrators of activities [20].

The principles of conservation in traditional natural resource management are as follows :

- 1) Respect that encourages harmony. Human relations with the surrounding environment. In this case, traditional communities are more inclined to see themselves as part of nature itself.
- 2) A sense of exclusive community ownership of an area or certain types of natural resources as communal property rights [21].

In general, the role of the community itself is determined by three things, namely:

- 1) The extent to which local knowledge can be appreciated and utilized.
- 2) How much local community members care about their nature.
- 3) How much benefit (material and nonmaterial) the community can receive from the conservation area[22] .

4. Conclusion

1. The results of regional mapping and geographic information system analysis found 2 groups of elephants through 13 villages in the Giam Siak Kecil Elephant Pocket, namely Tumang/Tasik Betung Village, Olak Village, Lubuk Umbut Village, Lubuk Jering and Bencah Umbai are administratively located in Siak Regency. While other villages are Tebing Serai Village, Serai Wangi Village, Melibur Village, Beringin Village, Kotopait Beringin

Village, Titian Antui Village and Muara Basung Village in Bengkalis Regency.

2. In the participatory planning process, the working principles of the conservation steps that are in accordance with the needs of the community, namely:
 - a) The conservation program is openly informed to the community
 - b) The conservation program is implemented through cooperation that does not lead to special circles in the community or groups so as not to create divisions.
 - c) Horizontal and vertical coordination is needed
 - d) There is no need to have a superior attitude or feel the most knowledgeable at every opportunity for program implementation.
 - e) No need to make promises to anyone but prove it with the seriousness of performance in the context of the work program that has been determined.
3. In jointly implementing and encouraging community involvement in the development of the elephant-friendly village model, the involvement and active role of the community in the following activities is required, namely:
 - a) Role in planning, Villagers participate in decision-making related to elephant conservation in their area.
 - b) Joint monitoring, Communities are involved in monitoring and reporting the presence of elephants and potential conflicts
 - c) Shared ownership, the community has a sense of responsibility towards elephant conservation efforts
 - d) Economic Management, Villagers manage and obtain economic benefits from ecotourism programs or local products.

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