

Post Mining Ecosystem Life Of Vertebrate Animals In The Emil Salim Sawahlunto Biodiversity Park

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Abstract – Emil Salim Sawahlunto Biodiversity Area, formerly a mining site, presents a significant case study concerning ecosystem transformation post-mining activities. Intensive mining activities have deeply impacted the ecology, dramatically altering the landscape and causing serious environmental damage. The decline in biodiversity is a crucial indicator of ecosystem degradation. Biodiversity, encompassing both flora and fauna, plays a central role in the reclamation and restoration processes of former mining lands. Being an integral part of the ecosystem, vertebrates play a vital role in aligning and expediting the natural recovery processes of the environment. This study aims to identify and document the vertebrate species still present in the Emil Salim Sawahlunto Biodiversity Area. The research employs a descriptive qualitative approach involving direct observations, trapping, and using calls to identify vertebrate species within the area. Direct observations revealed a total of 34 vertebrate species, distributed across 5 groups: 19 bird species, 5 reptile species, 6 amphibian species, 2 mammal species, and 2 fish classes. The identified vertebrate species within the area fall under the category of 'Least Concern' (LC) status, indicating a low risk of endangerment and are not protected by Law No. 92 of 2018.

Keywords – Vertebrate Animals, Biodiversity Parks, Former Mining Area.

I. INTRODUCTION

Emil Salim Sawahlunto Biodiversity Area, formerly a mining site, is a tangible example of ecosystem transformation post-mining activities. Intensive mining activities have left profound ecological footprints, dramatically altering the landscape, and causing environmental damage. Ecosystem and habitat destruction, resulting in the loss of biodiversity, is a pressing concern today. One critical indicator of ecosystem damage is the increasing difficulty in finding vertebrate species in the surrounding environment. According to the Biodiversity of Indonesia data (2014), Indonesia is a country facing a high rate of species extinction [1]. One primary cause of the decline in the number of species is environmental degradation due to human needs, which significantly restricts animals from thriving in their natural habitats, affecting vertebrate species as well [2]. Formerly eroded and disrupted by mining activities, the land is now undergoing reclamation and restoration to restore life to areas that were intensely exploited. Biodiversity, encompassing both flora and fauna, plays a central role in the reclamation and restoration processes of former mining lands. The selection of appropriate plant and animal species for reintroduction and restoration leads to a more balanced ecosystem, allowing for self-sustaining and sustainable natural regeneration [2]

The Emil Salim Sawahlunto Biodiversity Park is an ex-situ conservation hub supporting the sustainability of local flora and fauna. Vertebrate animals play a vital role in human life and the overall ecosystem. In this context, vertebrate animals hold significant importance. As part of the food chain, pollinators for plants, and even seed dispersers, they help balance the ecosystem and accelerate natural processes that enable life to regrow in previously disturbed areas [3]. The presence and role of vertebrate animals in this area reflect nature's ability to heal and adapt. This study aims to identify vertebrate animals still present in the Emil Salim Sawahlunto Biodiversity Area. This information is crucial to enhance understanding of post-mining recovery processes and provide opportunities to formulate better recommendations supporting

environmental sustainability and enriching natural life.

II. RESEARCH METHODOLOGY

This research was conducted within the Emil Salim Sawahlunto Biodiversity Park from October to December 2022. The study utilized a qualitative descriptive approach, aiming to explain a phenomenon occurring within the vertebrate animals in the Emil Salim Sawahlunto Biodiversity Park. The purpose of this research is to describe the results of field identification to be used as information for solutions or answers to the issues being studied [4]. Observations were carried out using sighting, trapping, and calling methods [3]. The sighting method involved direct visual observation of the animals. Trapping was conducted by setting traps to capture the animals. The calling method involved specific sound emissions to attract the attention of the animals. Instruments used in this research included Nikon binoculars, mammal traps, and a digital camera. The data sources in this study consisted of primary and secondary data. Primary data were obtained directly from the research site and included identification results of vertebrate animals in the Emil Salim Sawahlunto Biodiversity Park. Secondary data were obtained indirectly by the researcher through literature, previous research reports, and government data. The collected data from field observations were then analyzed descriptively based on identification book sources and categorized into tables containing species names, local names, habitats, discovery photos, functions, and roles of vertebrates for the community [5], [3], [6], and [7].

III. RESULT AND DISCUSSION

3.1 General description of the Emil Salim Sawahlunto Biodiversity Park

Emil Salim Kehati Park in Sawahlunto City is one of the collaborative projects involving the Indonesian Biodiversity Foundation, the Department of Public Works, Cleanliness, Park and Cemetery Management, and the Environment (DPKP2LH), and the Master's Program in Environmental Science, Postgraduate of Andalas University. The Emil Salim Kehati Park covers an area of 24.28 hectares and was a former mining site that has undergone post-mining rehabilitation. Various green vegetation has been planted by PT. Bukit Asam, and thanks to government programs, reforestation has been conducted in the vicinity of the mining area. The mining area is divided into development areas, such as the city forest park (1.06 Ha), Kandi Park (0.88 Ha), City Park (4.25 Ha), and the Muh. Yamin monument area (2.42 Ha).

In addition to the development areas, around the Emil Salim Kehati Park in Sawahlunto, there is a tourism sector, including Kandi Wildlife Park, Camping Ground, Road Race, Kandi Fruit Garden, and Horse Racing Fields. Based on field observations, no residential settlements were found in the surrounding area. The role of the local community in the tourism program at these attractions is under the supervision of the city government. The community can only manage parking areas if the tourist attractions are frequented by visitors. Additionally, there is only one active vendor selling goods near the Kandi Wildlife Park

Emil Salim Kehati Park area in Sawahlunto exhibits a varied topography comprising plains, hills, and mountains. The region includes steep slopes with narrow valleys or basins situated on the edges of river streams. It is located within a basin surrounded by cliffs, hills, and mountains with elevations exceeding 150 meters. The geographical environment of Talawi Village covers an area of 9,939 hectares, while Talago Gunuang Village spans 5,258 hectares. On the ecoregion map, the area of the Emil Salim Kehati Park in Sawahlunto and its surroundings falls within 2 ecoregion complexes, namely the Sumatran karst hill complex and the structural hills along the Barisan mountain range. The majority of the area consists of structural hills with mixed carbonate and non-carbonate sediment rock materials. The region is primarily dominated by limestone rocks, potentially forming karst morphologies, along with volcanic igneous rocks [8].

3.2 Vertebrate animals found in the Kehati Emil Salim Sawahlunto

Emil Salim Sawahlunto Conservation Park has a significant impact on biodiversity and ecosystems. This park stands as a concrete example of how effective planning can provide protection and insights into the importance of conservation areas considering the needs and sustainability of vertebrate species. Direct observations of vertebrate fauna within the Emil Salim Sawahlunto conservation park revealed a total of 34 species, classified into 5 groups, including 19 bird species, 5 reptile species, 6 amphibian species, 2 mammal species, and 2 fish species

Table 1. Vertebrate Animal in Emil Salim Kehati Park area

	Latin Name	Indonesian Name	Autor	Red List Status
Aves				
1.	<i>Hemipus Picatus</i>	Jingjing Bukit	Sykes, 1832	LC
2.	<i>Dendronanthus Indicus</i>	Kecuit Kerbau	Gmelin, 1789	LC
3.	<i>Pericrocotus divaricatus</i>	Sepah Padang	Raffles, 1822	NT
4.	<i>Cinnyris jugulari</i>	Burung Madu Sriganti	Linnaeus, 1766	LC
5.	<i>Anthus Novaeseelandiae</i>	Apung Tanah	Gmelin, 1789	LC
6.	<i>Aegithina tiphia</i>	Cipoh Kacat	Linnaeus, 1758	LC
7.	<i>Micropternus Brachyurus</i>	Pelatuk Kijang	Vieillot, 1818	LC
8.	<i>Lonchura Punctulata</i>	Bandol Peking	Linnaeus, 1758	LC
9.	<i>Geopelia striata</i>	Perkutut	Linnaeus, 1766	LC
10.	<i>Pycnonotus Goiavier</i>	Cucak Cerucuk	Scopoli, 1786	LC
11.	<i>Lanius Schach</i>	Bantet Kelabu	Linnaeus, 1758	LC
12.	<i>Todirhamphus Chloris</i>	Cekakak Sungai	Boddaert, 1783	LC
13.	<i>Treron Vernans</i>	Punai Gading	Linnaeus, 1771	LC
14.	<i>Dicaeum Trigonostigma</i>	Cabai Bunga	Scopoli, 1786	LC
15.	<i>Hirundo Rustica</i>	Layang-Layang Asia	Linnaeus, 1758	LC
16.	<i>Prinia Familiaris</i>	Perenjak Jawa	Horsfield, 1821	LC
17.	<i>Rhipidura javanica</i>	Kipasan Belang	Sparrman, 1788	LC
18.	<i>Pycnonotus Aurigaster</i>	Kutilang Perak	Vieillot, 1818	LC
19.	<i>Streptopelia Chinensis</i>	Tekukur	Scopoli, 1786	LC
20.	<i>Passer Domesticus</i>	Burung Gereja	Illiger, 1811	LC
21.	<i>Pernis Ptilorhynchus</i>	Elang Madu Asia	Temminck, 1821	LC
Amfibi				
1.	<i>Duttaphrynus Melanostictus</i>	Kodok buduk	Schneider, 1799	LC
2.	<i>Fejervarya Cancrivora</i>	Katak Sawah	Gravenhorst, 1829	LC
3.	<i>Hylarana Nicobariensis</i>	Kongkang Jangkrik	Stoliczka, 1870	LC
4.	<i>Huia Sumatrana</i>	Kongkang Jeram Sumatera	Yang, 1991	LC
5.	<i>Hylarana Erythraea</i>	Kongkang Gading	Schlegel, 1837	LC
6.	<i>Odorrana Hosii</i>	Kongkang Racun	Boulenger, 1891	LC
Reptil				
1.	<i>Eutropis Multifasciata</i>	Kadal kebun	Kuhl, 1820	LC

2.	<i>Hemidactylus platyurus</i>	Cicak Rumah	Schneider, 1797	LC
3.	<i>Ramphotyphlops</i>	Ular Liang Tanah	Kuhl, 1824	LC
4.	<i>Dendrelaphis Pictus</i>	Ular Tambang	Schlegel, 1837	LC
5.	<i>Draco Sumatranus</i>	Cicak Terbang Sumatra	Schlegel, 1844	LC
Mamalia				
1.	<i>Macaca Fascicularis</i>	Monyet Ekor Panjang	Raffles, 1821	VU
2.	<i>Tupaia javanica</i>	Tupai Kelapa	Wagner, 1855	LC
Ikan				
1.	<i>Oreochromis Niloticus</i>	Ikan Nila	Linnaeus, 1758	LC
2.	<i>Aplocheilus Panchax</i>	Ikan Kepala Timah	Hamilton, 1822	LC

Bird group species observed as a whole belong to the Least Concern (LC) category, except for *Pericrocotus divaricatus* (sepah padang) categorized as Near Threatened (NT), and *Pycnonotus aurigaster* (kutilang perak) categorized as Vulnerable (VU). According to Government Regulation No. 92 of 2018, the protected bird species include *Pernis ptilorhynchus* (Asian honey buzzard), *Treron vernans* (Pink-necked green pigeon), *Streptopelia chinensis* (Spotted dove), and *T. Chloris* (Green-billed malkoha).

The reptile group, including *Draco sumatranus* (kadal pohon), *Eutropis multifasciata* (kadal kebun), *Hemidactylus platyurus* (cicak rumah), *Ramphotyphlops* (ular tanah), and *Dendrelaphis pictus* (Ular tambang) are categorized as Least Concern (LC), indicating a low risk of extinction, and they are not protected under PP no 92 of 2018.

Amphibian group observed consists of *Duttaphrynus melanostictus* (kodok buduk), *Fejervarya cancrivora* (katak sawah), *Hylarana nicobariensis* (kongkang jangkrik), *Huia sumatrana* (kongkang jeram sumatera), and *Hylarana erythraea* (kongkang gading), all categorized as Least Concern (LC), indicating a low risk of extinction, and they are not protected under PP no 92 of 2018.

Mammal group, including the species *Macaca fascicularis* (monyet ekor panjang) and *Tupaia javanica* (tupai kelapa), is categorized as Least Concern (LC), except for *Macaca fascicularis* (monyet ekor panjang), which holds a Vulnerable (VU) status. All identified mammal species are not protected under PP no 92 of 2018.

Fish group comprises *Oreochromis niloticus* (nila) and *Aplocheilus panchax* (ikan timah). They fall under the category of Least Concern (LC), indicating a low risk of extinction, and they are not protected under PP no 92 of 2018.

IV. CONCLUSION

Vertebrate animals in the Kehati Emil Salim Sawahlunto Park, based on direct observations, comprise a total of 34 species, categorized into 5 groups: 19 bird species, 5 reptile species, 6 amphibian species, 2 mammal species, and 2 fish classes. The majority of vertebrate species in this area fall into the Least Concern (LC) category, indicating a low risk of extinction. However, there are a few species categorized as Near Threatened (NT) or Vulnerable (VU), implying a higher risk of extinction. Some of these species include *Pericrocotus divaricatus* (sepah padang), *Pycnonotus aurigaster* (kutilang perak), and *Macaca fascicularis* (long-tailed monkey). Despite most vertebrate species in this area not being protected under PP no 92 of 2018, it remains crucial to make efforts to preserve them. These efforts can involve regular monitoring of vertebrate populations, providing suitable habitats, and engaging the local community in conservation initiatives.

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