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Habitat Deterioration of the Golden Horn Bill (*Aceros undulatus*) in Tahura Pocut Meurah Intan

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Abstrak: Taman Hutan Raya Pocut Meurah Intan atau Tahura Pocut Meurah Intan merupakan salah satu kawasan konsevasi yang terdapat di Provinsi Aceh. Aktivitas alihfungsi lahan hutan untuk dijadikan lahan perkebunan monokultur menyebabkan terjadinya perubahan fisik pada lingkungan hutan. Aktivitas pencarian kayu bakar dengan cara melakukan penebangan hutan pada beberapa kawasan di kawasan Tahura Pocut Meurah Intan akan menyebabkan terganggunya habitat alami bagi berbagai spesies satwa. Tujuan penelitian ini adalah; untuk mengetahui deteorasi habitat burung julang emas (*Aceros undulatus*) di Tahura Pocut Meutah Intan. Metode yang digunakan dalam penelitian ini adalah metode survei eksploratif. Pengumpulan data menggunakan kombinasi metode line transect, metode concentration count dan metode kuadrat. Hasil penelitian tentang deteorasi habitat burung julang emas (*Aceros undulatus)* di Tahura Pocut Meurah Intan diketahui bahwa tingkat deteorasi habitat yang terjadi pada kawasan Tahura Pocut Meurah Intan sangat tinggi. Luas lahan kawasan Tahura Pocut Meurah Intan yang mengalami deteorasi habitat pada tahun 2021 mencapai 2 hektar kawasan hutan primer dan 21 hektar untuk tutupan pohon.
Kata kunci: Deteriorasi; Tahura Pocut Meurah Intan; *Aceros undulatus.*

Abstract: Pocut Meurah Intan Forest Park, also referred to as Tahura Pocut Meurah Intan, is a protected region located in Aceh Province. The transformation of forested lands into single-crop plantations is leading to significant alterations in the ecological environment. The practice of wood gathering through logging in various sections of the Tahura Pocut Meurah Intan region is interfering with the natural habitats of numerous animal species. This research aimed to assess the habitat loss of the golden hornbill (*Aceros undulatus*) within Tahura Pocut Meurah Intan. The approach employed for this investigation was an exploratory survey. Data was gathered through a combination of techniques, including the line transect method, concentration count method, and quadrat method. Findings indicated that the habitat degradation affecting the golden hornbill (*Aceros undulatus*) in Tahura Pocut Meurah Intan was alarmingly severe. In 2021, the extent of habitat damage in the Tahura Pocut Meurah Intan area rose to 2 hectares of primary forest and 21 hectares of tree canopy loss.
Keyword: Deterioration; Tahura Pocut Meurah Intan; *Aceros undulatus.*

1. Introduction

Pocut Meurah Intan Grand Forest Park, known as Tahura, serves as a protected area dedicated to the conservation of natural resources and their ecosystems in Aceh Province. Initially referred to as Tahura Cut Nyak Dhien, its establishment followed a recommendation from the Governor of Nanggroe Aceh Darussalam Province, which was later endorsed by the Minister of Forestry through decree No. 1/Kpts-11/1998 dated January 5, 1998. Tahura Pocut Meurah Intan spans an elevation ranging from 500 to 1,800 meters above sea level, covering a total area of 6,300 hectares. In terms of geographical coordinates, Tahura Pocut Meurah Intan is positioned between $05^{o}24'$ and $05^{o}28'$ north latitude and $95^{0}38'$ to $95^{0}47'$ east longitude [1];[2];[3]. Tahura Pocut Meurah Intan features predominantly a natural environment that encompasses primary woodlands, open grassy areas, peat bogs and flowing rivers [4].

The process of transforming forested areas into single-species process of plantations results in tangible transformation in the surrounding environment. The practice of gathering firewood through logging in multiple locations within the Tahura Pocut Meurah Intan region will disturb the natural ecology of numerous animal species.

The destruction of habitats resulting from unlawful logging and the shift of forests into agricultural land will adversely affect the food supply and distribution of the golden horn bill (*Aceros undulatus*). The golden hornbill (*Aceros undulatus*), which relies on sizable trees for nesting and feeding, will be compelled to seek out other habitats for these purposes. This is believed to influence the distribution trends of the golden horn bill (*Aceros undulatus*).

The golden horn bill (*Aceros undulatus*) is crucial for maintaining forest health, particularly in terms of seed dispersal. This bird can traverse an area up to 1,000 square kilometers, enabling it to distribute plant seeds across a similar expanse in the forest [5];[6]. The golden hornbill (*Aceros undulatus*) holds significant importance within the ecosystem. This species

primarily consumes fruits and seeds, such as those from figs (*Ficus* sp), which are essential trees for wildlife conservation [7]. The group of golden hornbill (*Aceros undulatus)* contributes to the propagation of seeds throughout the forest. Their droppings carry the seeds since the digestive process of the hornbill does not harm the seeds of the fruits they consume.

The extreme degradation of the habitat in Tahura Pocut Meurah Intan poses a significant danger to the existence of the golden horn bill (*Aceros undulatus*). The exploitation of forests leads to the destruction of the golden hornbill's (*Aceros undulatus*) habitat, resulting in a decline in its food supply [8].

The absence of information regarding how habitat degradation affects the distribution of the golden horn bill (*Aceros undulatus*) has deminished the regulatory role played by the presence of the golden hornbill (*Aceros undulatus*). This situation will speed up the decrease in the golden hornbill (Aceros undulatus) population, leading to adverse effects on forest sustainability within the Tahura Pocut Meurah Intan ecosystem.

2. Research Method

This study took place within the Tahura Pocut Meurah Intan ecosystem located in Aceh Province. The site for this research is situated at coordinates $05^{0}24'$- $05^{0}28'$ N and $95^{0}38'$ - $95^{0}47'$ E. Data collection for this research commenced in June 2022. The research site's location is illustrated in Figure 1.

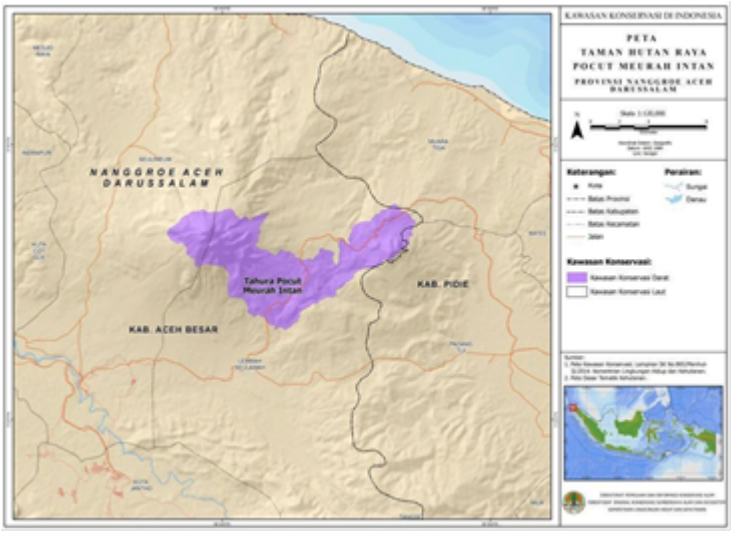

Figure 1. Research Location

The approach employed in this research is an exploratory survey technique that involves on-site observation of the subject matter. The data gathering incorporates a mix of the line transect technique, the concentration count technique, and the quadrat technique. The Line Transect and concentration count techniques facilitate monitoring birds as they transition between counting locations and while they forage [9];[10];[11]; [12]. Meanwhile, the quadrat technique is utilized to assess the variety of plant species in Tahura Pocut Meurah Intan [13].

The decline in the habitat of the golden hornbill (*Aceros undulatus*) within Tahura Pocut Meurah Intan was documented through on-site examination of the affected regions. The dimensions of the impacted zones were assessed, documented, and captured in photographs, while the geographic coordinates were obtained via GPS (Global Positioning System). Along with the on-site examination of the damaged areas, aerial mapping of the disrupted forest was performed utilizing a drone device.

3. Results and Discussion

The findings from the research regarding the habitat degradation of the golden hornbill (*Aceros undulatus*) in the Pocut Meurah Intan Tahura indicate that the extent of habitat degradation in this region is significant. In 2021, the Pocut Meurah Intan Tahura area experienced a loss of 2 hectares in terms of primary forest and 21 hectares concerning tree cover. The substantial deterioration within the Pocut Meurah Intan Tahura area can be attributed to illegal logging activities, wildfires, and the conversion of land for other uses. The study reveals that a considerable portion of the land previously classified as forested in the Pocut Meurah Intan Tahura area has been transformed for different purposes into living spaces, crops including chocolate, yams, oil palms, bananas, maize and various other farmed species. The land area transformed in Tahura Pocut Meurah Intan is illustrated in Figure 2.

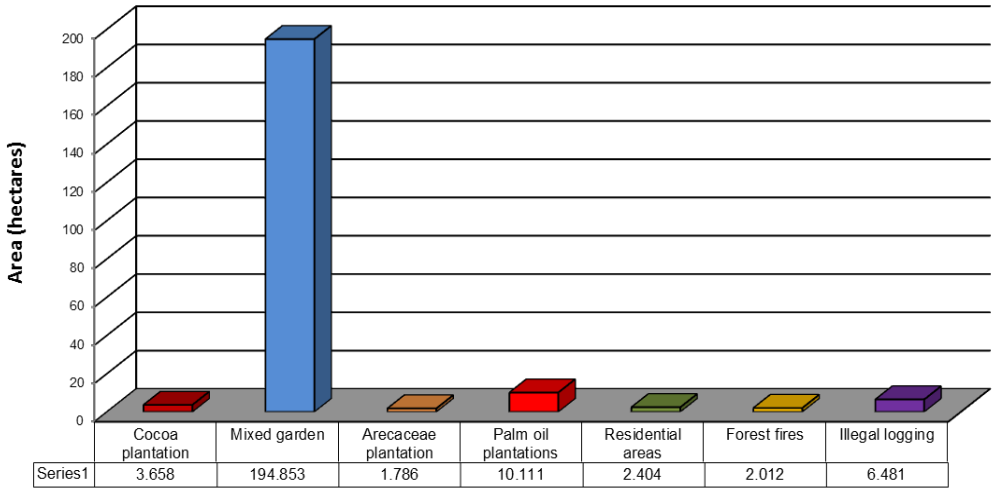

Figure 2. Area of Land Converted in Tahura Pocut Meurah Intan

According to Figure 2, the decline in the habitat of the golden hornbill (*Aceros undulatus*) within Tahura Pocut Meurah Intan resulted from various activities. The land in Tahura Pocut Meurah Intan has been primarily altered for mixed garden cultivation, covering 194,853 hectares, followed by oil palm plantations spanning 10, 111 hectares, illegal logging extending over 6,481 hectares, cocoa farming occupying 3,658 hectares, residential areas

at 2,404 hectares, areas affected by fires measuring 2,012 hectares, and banana plantations covering 1, 786 hectares. The proportion of land area altered in Tahura Pocut Meurah Intan is illustrated in Figure 3.

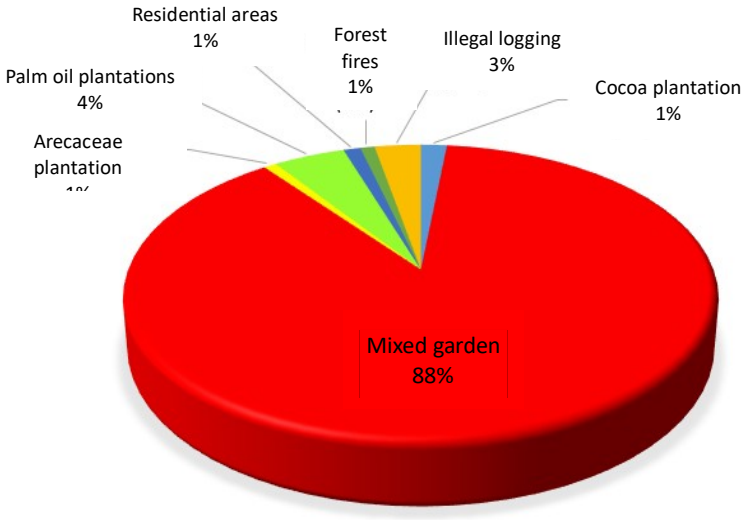

Figure 3. Percentage of Land Area Converted in Tahura Pocut Meurah Intan.

According to Figure 3, it is evident that the primary actions leading to habitat degradation for the golden hornbill (*Aceros undulatus*) in Tahura Pocut Meurah Intan are land clearing for diverse farms, constituting 88% of the area. Following this are oil palm farms at 4%, illegal logging at 3%, cocoa farms at 2%, and housing, wildfires, and banana farms each occupying 1% of the area.

From the findings of the research, it is evident that the identification of the habitat for the golden bird (*Aceros undulatus*) in Tahura Pocut Meurah Intan has been influenced by the clearing of land for diverse plant species. This situation is significantly prevalent in Tahura Pocut Meurah Intan. The conversion of forest land into agricultural plantations stands as a major factor contributing to the decline of forest coverage. This aligns with Akhmaddhian (2016) that the most pressing environmental issues can be categorized into five key areas, one of which includes land degradation

resulting from deforestation and the transformation of land for plantations [14]. The reduction of forested areas within the region inevitably leads to a decrease in the natural resources produced; as a result, the dedication of forest lands to agriculture will induce enviromental degradation and additional repercussions from deforestation include a decline in biodiversity, specifically within flora and fauna species in Tahura, leading to a diminished role of this area as a zone for natural conservation and tourism activities.

The habitat for the golden bird (*Aceros undulatus*) in Tahura Pocut Meurah Intan has been attributed to wildfires. This occurrence is primarily linked to community-led land clearing methods that involve burning, which removes existing vegetation and simplifies the gardening process. Furthermore, elevated temperatures during the dry season also contribute to the incidence of forest fires in Tahura Pocut Meurah Intan. According to a report from the Aceh Besar Disaster Management Agency (BPBD) in October 2016, there was a forest fire that consumed 100 hectares of land in Tahura Pocut Meurah Intan, attributed to the actions of locals who used fire to clear the forest [15];[16];[17].

Moreover, Anggraeni (2016) describes that the aftermath of wildfires leads to the destruction and barrenness of forests [18]. Additionally, illegal logging refers to the unlawful act of harvesting timber without following legal procedures. The act of forest logging can lead to drought conditions in regions devoid of trees, as forests play a crucial role in absorbing rainwater at their roots, which in turn supports various human needs [19];[20]. The encroachment upon primary tropical rainforests results in heightened emissions of greenhouse gases into the atmosphere, the destruction of forest ecosystems, and detrimentally affects the livelihoods of local communities.

The consequences associated with habitat loss include a decline in environmental quality that ultimately raises the likelihood of natural disasters such as landslides. Another effect of forest degradation and functional shifts is

the reduction in the capacity to absorb CO2 and SO2, alongside diminished oxygen supply. There are four primary greenhouse gases involved in this process: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), and chlorofluorocarbons (CFCs). These gases act as catalysts for global warming, stemming from the rising concentration of greenhouse gases, which leads to an increment in global temperatures. This phenomenon is referred to as radiative forcing. The rise in global temperatures poses serious risks of catastrophic events [21];[22].

4. Conclusion

Taking into account the findings from the study and the conversations held, it can be inferred that the land section of Tahura Pocut Meurah Intan which showed detections in 2021 encompassed 2 hectares designated as primary forest and 21 hectares identified for tree coverage.

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