

Distribution and types of negative human-orangutan interactions in Kalimantan based on news articles

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Abstract. Interaction between humans and orangutans can hurt both parties. Crop losses and heightened fear and anxiety among local communities due to orangutan presence often contribute to negative perceptions, which may influence actions towards these primates. Additionally, limited public awareness regarding the risks of keeping orangutans as pets can elevate the potential for zoonotic disease transmission. Habitat loss caused by deforestation and the conversion of forests to agricultural or anthropogenic-used land exacerbates the risk of human-orangutan encounters in Kalimantan. Consequently, understanding these interactions' trends and spatial distribution is essential for devising strategic interventions to mitigate the conflict. Using web scraping methods, we collected article data from various Indonesian news sources from 2011 to 2024. 172 human and orangutan negative interactions were documented and categorized into six types: orangutan sightings, attacks, crop damage/raiding, hunting, capture, and orangutan rearing. These interactions occurred across 125 villages from 28 districts/cities in Kalimantan. Most incidents were reported in settlement areas (35%) and plantations (45%). Orangutans have also been sighted in public places, such as airports and harbors, over the past 5 years. Given the broad distribution of these interactions, coordinated efforts among multiple stakeholders are crucial for mitigating and managing human-orangutan conflicts as part of broader Bornean orangutan conservation initiatives.

1 Introduction

Land use/cover change and use in Kalimantan has shown a significant trend in recent decades, especially with the conversion of forests to plantations, agriculture, and settlements [1–3]. The alteration directly influences the movement of wildlife, as seen with orangutans experiencing a loss of their natural habitat. Habitat fragmentation forces

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some wildlife to move into areas not their natural habitat, such as settlements and plantations, thereby increasing the likelihood of more frequent human-wildlife interactions. Interactions recorded include Sumatran tigers in residential areas and plantations, while interactions with Sumatran elephants are in cultivated plants such as bananas, coconuts, durians, and rambutan [4,5]. These disruptions present significant challenges for effective wildlife conservation and necessitate comprehensive management strategies.

Interactions between humans and orangutans in Kalimantan are inevitable. Negative interactions, such as orangutans destroying farmland, attacking humans, and hunting and capturing orangutans, significantly impact both sides [6–9]. A comprehensive conservation strategy is essential for a balanced coexistence between humans and orangutans. A critical strategy component is monitoring and collecting data on negative human-orangutan interactions across Kalimantan. Accurate and comprehensive data collection will help understand interaction patterns and identify conflict-prone areas. News outlets can serve as an effective monitoring tool, covering the entire Kalimantan region relatively cheaply. This approach has been successfully utilized to map human-Sumatran tiger conflicts in Riau Province [5].

Monitoring trends and spatial distributions of negative interactions through media reporting enables the identification of critical hotspots that require targeted interventions. This facilitates the strategic allocation of resources by governmental and conservation organizations to the areas of highest priority, thereby enhancing the efficiency of conservation efforts. The main objective of this research is to map the distribution and types of negative human-orangutan interactions in Kalimantan. By identifying critical areas, this research aims to significantly contribute to conflict mitigation and orangutan conservation efforts.

2 Materials and methods

The object of this research is human-orangutan interaction (HOI) that occurs on the island of Kalimantan, Indonesia, with an area of 544,150 km². Kalimantan is divided into four administrative levels: provinces (5), regencies and cities (56), sub-districts (617), and villages (7244). HOI data were obtained from local and national news article sources covering June 2011 to June 2024. The news topics were categorized into three main areas: (1) orangutan rescue actions, (2) orangutan deaths, and (3) orangutan sightings. Online news searches were conducted using keywords ‘orangutan,’ ‘Kalimantan,’ and year, with Year numbers ranging from 2011 to 2024. News reports published within the same 7-day time frame and sharing the exact location, number of orangutans, and sex of orangutans were considered a single incident. The news was compiled in table form in CSV format using Microsoft Excel. Then, the content was extracted using web scraping techniques in Rstudio using packages dplyr [10], polite [11], rest [12], and stringer [13]. The extracted parts of the news are the publication date, title, and news content.

Content analysis was conducted to obtain the location and type of negative interactions, which were categorized into six based on literature studies describing the incidence and impact of economic, ecological, and social life [14–17], namely (1) orangutan sightings, (2) crop damage or crop raider, (3) orangutan attacks (4) hunting and

killing of orangutans (5) captive and (6) capture orangutans. The distribution of these interactions based on administrative areas was carried out by text analysis using a “bag of words” consisting of the names of districts/cities (kabupaten/kota), sub-districts (kecamatan), and villages (desa/kampung). The extracted administrative data were compared with spatial attributes data from the Central Statistics Agency (BPS) in 2022-2023 and BIG/BRIN in 2020. Furthermore, the locations of HOI were presented in maps created using ArcGIS 10.8, while graphs were created using RStudio using the packages ggplot2 [20] and gg pattern [19].

3 Results and discussion

3.1 Number of interactions per year

The search results provided information on human-orangutan interactions from 17 news sources. After filtering duplicate news reports, 172 of the 200 online articles were used in this study. The interactions were then categorized into six types of negative interactions. The data shows that orangutan sightings are recurring and reported consistently every year. This indicates that human interaction with orangutans must occur at certain times of the year.

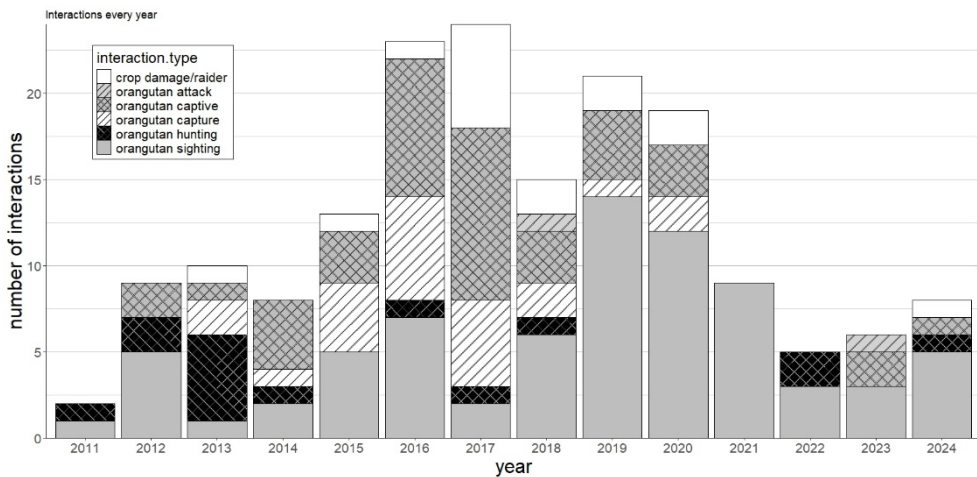


Fig. 1. Interactions negative per year

Orangutan sightings represent a negative interaction that occurs every year. In contrast, only two cases of orangutan attacked humans were reported in 2018 and 2023 (Fig. 1). Many orangutan sightings (43.6%) were accompanied by instances of orangutan captive (23.8%) and orangutan capture (13.4%). News reports about rescues in orangutan captive cases are carried out for various reasons, such as health conditions, the risk of adverse actions from the community, and the isolation of orangutans, which threatens their survival. This is similar to several post-rehabilitation orangutans being rescued [9]. Additionally, news reports mention a wild orangutan named Boncel, who began adapting

to environmental changes and was repeatedly rescued for damaging plants near forested areas. This has made the area a hotspot for orangutan sightings.

Orangutan captivity reported in the news generally involves infants. Such cases often arise from compassion or pity for baby orangutans left behind by their mothers, as described in various news sources. Post-rearing orangutans challenge rehabilitation center management in restoring their natural behaviors. Furthermore, the length of rehabilitation time risks orangutans becoming increasingly adapted to human presence [20].

Hunting cases involving orangutans have become less common over the past five years. However, orangutans were still found killed in local plantations in 2024. News reports also documented orangutans caught in traps, or 'jerat,' in 2022. In addition, a separate rescue case in the same year revealed an orangutan with three bullets embedded in its body. Orangutan hunting is often associated with crop damage and crop theft by orangutans. News reports indicate that traps are dangerous hunting tools that do not discriminate between victims. Although the primary purpose of traps is to control pests or other wildlife that damage crops, their use poses a significant risk to this critically endangered species.

3.2 Negative human-orangutan interaction distribution

The Provinces of Central Kalimantan (51%) and West Kalimantan (41%) received the highest number of news items related to negative interactions. In contrast, South Kalimantan only received one local news item related to an orangutan sighting. Based on the spatial distribution of the Population and Habitat Viability Orangutan (PHVO) 2016, only the North Hulu River-Tabalong district is included in the orangutan population and survival range [21].

The distribution map of human-orangutan interactions indicates that villages experiencing negative interactions are located within the 2016 orangutan PHVO area. Spatial analysis showed that 96 (76.8%) of the 125 negative human-orangutan interactions occurred in villages within the 2016 orangutan PHVO area (Fig 2.). Based on PHVO, orangutans are widely distributed across West, Central, and East Kalimantan provinces, with only small areas in South and East Kalimantan. PHVO areas are widely distributed outside conservation areas, making them more vulnerable to disturbance and loss. More than 60% of orangutan habitat distribution in the Katingan watershed (1,248,246.88 Ha) is outside conservation areas [22]. Human-orangutan interactions can occur in both urban and rural areas. Large metropolitan areas have reported human-orangutan interactions, including orangutan captivity in Singkawang City (n=1) and Pontianak City (n=2).

Additionally, orangutan deaths have also been documented in Pontianak city. In Palangkaraya City (n=1) and Bontang City (n=2), only occurrences of orangutans were reported—urbanization results in simultaneous habitat loss and habitat fragmentation for orangutans [23]. Urban areas within and around orangutan PHVO areas are at higher risk for negative human-orangutan interactions.

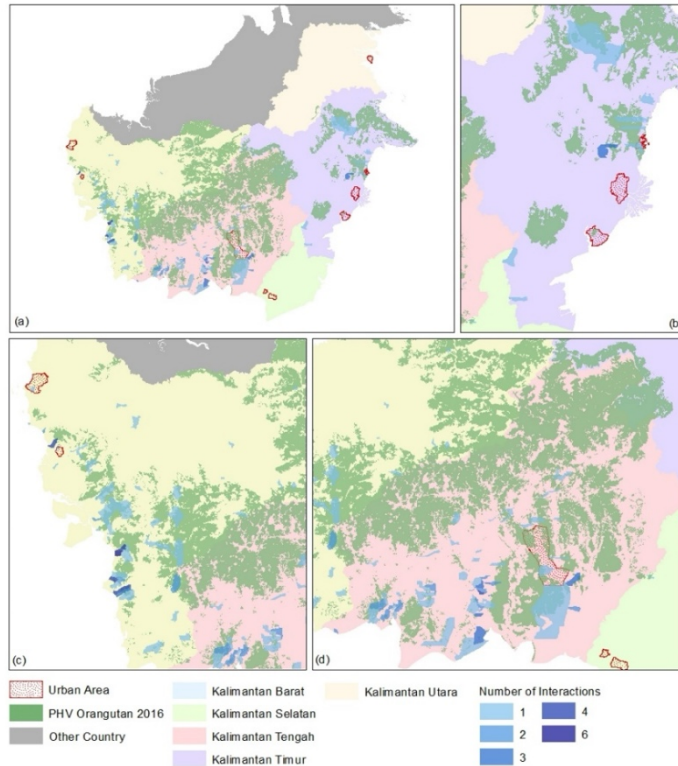


Fig. 2. Negative human-orangutan interactions distribution map

3.3 Location of negative human-Orangutan interactions

The highest occurrences of interactions were both found in plantations (45%) and settlements (61%). We attempted to categorize some of the plantation crops that were the areas where interactions occurred, although most were not clearly described (20%) (table 1). Oil palm plantations accounted for the most negative interactions (15%) compared to other plantations. The conversion of forests to productive areas increases the intensity of human activities, especially in productive plantations. Oil palm workers start their activities on the plantation from 06.30 to 16.00 [24]. Consequently, the potential for human-orangutan encounters increases these active hours over a long period.

Orangutan captive and orangutan sightings were primarily in settlement areas (35%). Orangutans were either captured in plantation areas or purchased from individuals. News reports showed that orangutans were kept in cages or released/free-range at home. There were also reports of orangutans being kept chained as a spectacle in front of the house. The time that orangutans are kept varies, which may influence changes in their wild behavior. Behavioral observations of captive orangutans have been observed to rest more than wild orangutans, which are more intense in eating [6,25].

Orangutan sightings were observed in areas of transport infrastructure, namely roads, bridges, harbors, and airports (Table 1). Three of six news stories reported orangutans being spotted on the banks of highways connecting cities. Orangutans appeared from forests or plantations along the roadside. The analysis of potential interactions on roads

is lower than in oil palm fields [26]. However, orangutan encounters on the highway indicate that orangutans are habituated to areas without trees and appear in open areas.

Table 1. Location of negative human-orangutan interactions

Location	OUS	OUA	CDR	OUC	OUCt	OUH
Forest	1				8	
Plantation forest	2				1	
Fragmented forest	2					
Durian garden			2			
Rubber plantation	7				2	
Coconut farm	1		2			
Pineapple farm			3			
Oil palm plantation	16	1	2		2	5
Sugarcane farm			1			
Undefined farm	20		5		4	4
Burned land	1					
Settlement	13		1	39	6	2
Paddy field	1	1				
Agriculture	1			1		
Transportation infrastructure area	6					
Mining area	2					
Undefined area	2			2		4
Total (%)	75 (44)	2 (1)	16 (9)	42 (24)	24 (13)	15 (9)

Description : OUS = Orangutan Sighting, OUA = Orangutan Attack, CDR = Crop Damage/Raider, OUC = Orangutan Captive, OUCt = Orangutan Capture, OUH = Orangutan Hunting

4 Conclusions

Monitoring negative human-orangutan interactions using news can effectively reveal trends and dynamics in Kalimantan. News articles provide detailed events from a journalist's perspective. However, there is a need to compare data on adverse human-orangutan interaction incidents from conservation organizations and government sources to assess the gap between online news publications and incidents recorded by others. The lack of standardization of news reporting, compared to scientific studies, means that some critical information, such as the sex and age class of recorded orangutans – may be omitted. Additionally, news productivity in each region influences the availability of incident information, which can affect the understanding of the situation in the area. Efforts to increase reader interest through clickbait headlines can weaken incident monitoring, as content often prioritizes the author's opinion over information on the location, type of interaction, and incident conditions.

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