

## AN AMBIGUOUS PERCEPTION OF SUMATRAN ORANGUTANS (*Pongo abelii*) BY LOCAL COMMUNITY IN TANGKAHAN, LEUSER ECOSYSTEM, INDONESIA

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### ABSTRACT

*The interaction between the local community and orangutans was often perceived as mere conflict. Here, we dug into the intricacies of the local perceptions of orangutans by employing semi-structured interviews as a part of an ethnoprimateological approach. Our focus was on the Tangkahan ecotourism area, the Leuser ecosystem, Indonesia. Respondents were selected through convenience sampling. There were 16 respondents, the majority is Batak Karo ethnicity. Our findings revealed a complex and ambiguous local perception towards orangutans, encompassing both positive and negative aspects. In some cases, orangutans were perceived as pests to durian crops and potentially dangerous. In other cases, orangutans were also perceived as human resemble, attractions for tourism, and deserving of protection. We also found some folklore told that orangutans were human relatives. The positive values of orangutans were likely influenced by ecotourism activities that actively involved the local community in management and development efforts.*

**Keywords:** perception; local community; orangutan; conflict; ecotourism

### INTRODUCTION

The way people think about animals influences the way they behave towards them. Human behaviours such as hunting, protecting their crop against animal pests, or preserving wildlife, are strongly influenced by the way they perceive the animals (Nyhus, 2016). Perception refers to the cognitive construction of meaning using information gained from the environment (Krauss, 2005). The human-wildlife relationships can be influenced by various factors, such as the interaction type, the impact magnitude, and the occurrence frequency (Nyhus, 2016).

Sumatran orangutans (*Pongo abelii*) are critically endangered (Singleton et al., 2017). Killing is one of the most important factors responsible for the decline in orangutan populations (Spehar et al., 2018). While orangutans generally demonstrate resilience in adapting to anthropogenic landscapes (Meijaard et al., 2010; Ancrenaz et al., 2015), they are commonly killed because the local community perceives them as pests and sources of bushmeat (Davis et al., 2013). However, some Dayak communities perceive orangutans as sacred animals, which prevents them from killing orangutans (Yuliani et al., 2018).

While it is becoming obvious that the perception of orangutans by local communities strongly impacts their chances of survival, most studies only focus on one facet of perception,

the conflict. Orangutans are often described by the local community as crop raiders (Marchal & Hill, 2009; Campbell-Smith et al., 2010; Meijaard et al., 2011; Harahap et al., 2022). Economic losses due to crop raiding, as well as fear of orangutans, sometimes lead to them being killed (Davis et al., 2013). Additionally, many communities hunt orangutans for their meat (Davis et al., 2013; Wich et al., 2012; Sherman et al., 2022). Despite the challenges, some studies highlight the potential for coexistence. For instance, the Dayak Iban community near Indonesia's Danau Sentarum National Park sees orangutans as the reincarnation of their war chief (Yuliani et al., 2018).

Local community perception of wildlife might be more effectively investigated using a qualitative approach (Drury et al., 2011). The qualitative approach proved to be useful in recent primates conservation research (Setchell et al., 2017). This approach can be described as the ethnoprimate approach (Fuentes, 2012), enabling a deeper and more detailed exploration of human-primate relationships (Riley et al., 2017; Dore et al., 2018). Previous studies on locals' perception towards orangutans in the Leuser ecosystem use quantitative surveys (Marchal & Hill, 2009; Campbell-Smith et al., 2010). Here we attempt to use different approaches. Therefore, the aim of our study is to explore the local community's perception of orangutans using an ethnoprimate approach.

## METHOD

### Study Sites

Our study was conducted at the Tangkahan Ecotourism area, specifically Kwala Buluh and Kwala Gemoh Hamlet, Namu Sialang Village, Batang Serangan District, Langkat Regency, North Sumatra Province, Indonesia, as shown in Figure 1. The Tangkahan Ecotourism area was part of The Gunung Leuser National Park (GLNP) centred around the Conservation Response Unit (CRU). The ecotourism was established in 2001, then served as one of the leading tourism destinations in North Sumatra, either national or International scale. This region possessed thermal springs, waterfalls, and lush tropical rainforests. The ecotourism economic value was around IDR 72,708,168,000 per year (Purwoko et al., 2022a).

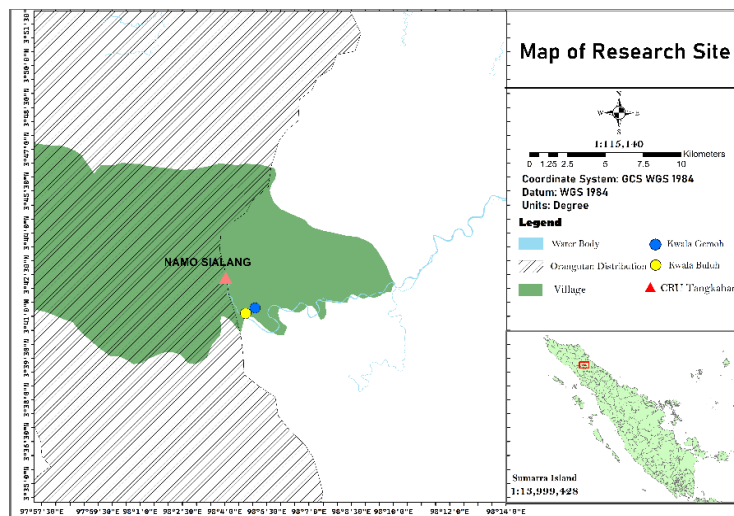


Figure 1. Map of village location bordering orangutan habitat

Most of the local community who included in managing ecotourism through Lembaga Pariwisata Tangkahan (LPT), came from 2 hamlets within Namu Sialang Village. The village's total area was around 375,02 Km<sup>2</sup>, with a total of 18 hamlets. Most of the agricultural

commodity in Batang Serangan District was palm oil (*Elaeis guineensis*) and horticulture i.e. Durian (*Durio zibethinus*), Papaya (*Carica papaya*), Rambutan (*Nephelium lappaceum*) (Maharaja, 2022). In the Tangkahan, the majority was Batak Karo ethnic group with few Javanese immigrants. We selected this location due to the existing interactions between the local community and orangutans.

### Data Collection

We chose to work with a limited sample size in this study as it served as a pilot study aimed at assessing the effectiveness of our questionnaire design. The insights gained from this study were used to enhance the questionnaire (Meijaard et al., 2011), which was used in our primary study on the area around the Batang Toru ecosystem. In order to gather more detailed data, we adopted a qualitative approach (Drury et al., 2011; Dore et al., 2018). Our primary method was semi-structured interviews thus utilizing open-ended questions (Yuliani et al., 2018). The questionnaire was designed based on the research question: "What is the local community's perception of the Sumatran orangutan?" To ensure the comfort of the respondents, we organized the questions in a sequence of sensitivity, placing less sensitive questions first, as shown in Table 1.

Table 1. The questionnaire design

No	List of questions	List of probing questions
1	How are orangutans called in your village?	What does its mean?
2	What makes the orangutans different from other animals?	Do they resemble humans? why?
3	What is the role of orangutans in the forest?	What will happen to the forest if orangutans disappear? Why?
4	What are the benefits of orangutans for humans?	Can the orangutan be eaten or kept as a pet? Why?
5	What happens when people encounter orangutans?	Are you afraid of orangutans? why?
6	How often do orangutans come into the orchards?	What are the orangutans looking for? Is it destructive? why?
7	what is the conservation status of orangutans?	how do you feel if orangutans go extinct? Why?
8	Tell me any folklore or myths about orangutans!	Are they considered to be sacred animals?

In the process of data collection, a broader set of questions was employed. Nevertheless, this paper directs its attention exclusively to a subset of responses associated with perception. In addition, flexible probing questions were added to gather more detailed information, further comprehend the issues, verify the internal consistency of the information, and encourage respondents to express themselves more openly (Gallagher et al., 2022). For instance, if the respondent answered 'nothing' or 'I don't know' in question number 5, they were further queried with 'Are you afraid of orangutans? why?' This improvisation was intended to make the respondent explain based on their own cultural perspective beyond the frame (Dore et al., 2018).

Respondents were selected through convenience sampling (Stratton et al., 2021). We targeted individuals who were available and were willing to participate in interviews. We obtained responses from 16 participants. The socioeconomic backgrounds of the respondents can be observed in Table 2. It was around 3 interviews per day, starting from 15 until 20

February 2023. The interviews often took on the front porch of the community. We were targeting personal interviews nevertheless in some cases other individuals joined the interviews. The duration of the interviews was about 30-60 minutes. We obtained the respondent's consent prior to recording the interview.

Table 2. Socioeconomic background of respondents in Tangkahan

Background	Category	Number of respondents
Gender	Male	9
	Female	7
Age	Youth (12-25 years old)	6
	Adult (26-45 years old)	8
	Elder (46-65 years old)	2
Ethnicity	Batak Karo	15
	Jawa	1
Religion	Christianity	8
	Islam	8
Education	No Education	2
	Primary School (SD)	2
	Junior High School (SMP)	5
	High School (SMA)	5
	Diploma/Degree (D1/S1)	2
Origin	Locals	14
	Migrants	2
Occupation	Tour Guide	5
	Mahout	3
	Farmer	7
	Student	1
Orchards commodity	None	6
	Durian	5
	Oil Palm	2
	Lime	3

### Data Analysis

We analyzed the data using the qualitative content analysis method. Specifically, we used directed content analysis (Hsieh & Shannon, 2005). We started with a literature study, intended to find the theory. Based on that, we generated the hypothesis that we used to create codes. We also used some relevant research findings to generate codes. The analysis process involved transcribing interviews, editing to retain respondent statements, categorizing statements into codes, organizing codes by themes, calculating code frequencies, and interpreting themes about local community perceptions of orangutans. Results were presented using an interpretative descriptive framework (Waters et al., 2018; Waters et al., 2019).

### RESULTS AND DISCUSSION,

Through our investigation into Tangkahan's ecotourism, we unearthed a rich tapestry of diverse and nuanced perceptions held by the local community towards orangutans. The respondents, showcasing remarkable flexibility, not only offered detailed insights but also articulated their perspectives with such finesse that it enabled us to construct a profound and comprehensive narrative, providing a deeper understanding of the intricate relationship between the community and orangutans in this unique ecotourism setting

### The durian pests

All respondents said that orangutans were crop raiders. They explained that the most commonly damaged crop by orangutans was the durian tree (*Durio zibethinus*), as shown in Figure 2. Orangutans damaged the tree by consuming its fruits and sometimes caused the fruits to fall without consuming them. One person explained further that the durian fruits were eaten while still unripe. After eating all fruits on one tree orangutans could also move on to another durian tree, causing more damage. The orangutan could stay about 2 - 4 days in the orchard.

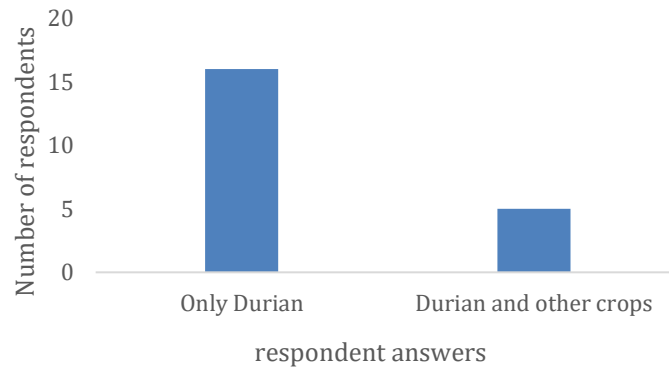


Figure 2. Number of respondents who answer the crop targets of orangutan crop raiding

The results supported the hypothesis that local farmers perceive orangutans as pests, especially when it came to durian trees. Orangutans consumed durian fruits and sometimes caused damage, leading to tensions. A portion (25%) believed orangutans could detect the scent of durian fruits, supported by research on their olfactory receptor (OR) genes (Matsui et al., 2010). This belief may have contributed to a negative attitude. Conversely, another group (31%) thought orangutans entered orchards due to limited forest fruit, showing empathy for their hunger. One respondent saw orangutans as problematic pests due to their protected status, preventing lethal mitigation measures.

Additionally, 31% of respondents reported damage to various crops other than durians, including Dogfruit (*Archidendron pauciflorum*), Stink Bean (*Parkia speciosa*), Banana (*Musa acuminata*), Papaya (*Carica papaya*), Eggplant (*Solanum melongena*), and Oil Palm (*Elaeis guineensis*), all of which were significant income sources in the region (Marchal & Hill, 2009). The extent of orangutan-induced damage to oil palm remained uncertain, with varying opinions. While some believed orangutans consumed oil palm fruits and could enter palm oil estates, others argued that the thorns on palm fronds and their inability to support orangutan weight prevented such disturbances. However, another study suggested that orangutans could indeed inhabit palm oil estates, feeding on mature palm fruits and nesting in palm trees, supported by forest fragments within the estates (Ancrenaz et al., 2015).

Half of the respondents (56%) said that orangutans could make nests on top of durian trees in the orchards. One person stated that orangutans could make nests on the rubber trees. They explained that orangutans constructed nests by breaking branches and twigs, thereby causing damage to the trees. Nevertheless, 13% believed that orangutans rarely made nests in orchards due to fear of humans, as shown in Figure 3.

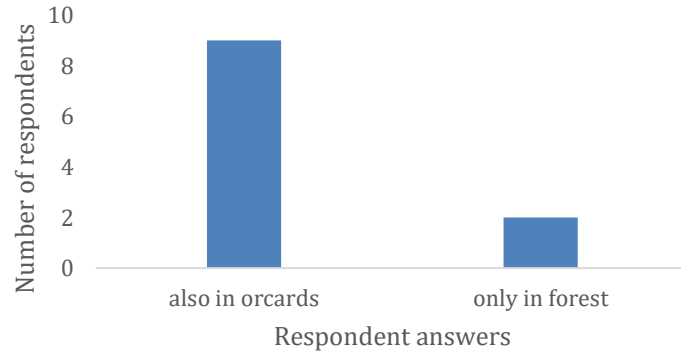


Figure 3. Number of respondents who argue about nest location of orangutan

Respondents who believed that orangutans could build nests in orchards perceived this behaviour as destructive, as it could lead to more fruit consumption and damage within their fields, potentially intensifying negative sentiments towards orangutans. However, a minority of respondents disagreed, suggesting that orangutans tend to avoid nesting in agroforestry areas due to their fear of humans. Research from West Borneo indicates that in areas where killing orangutans was considered taboo, orangutan nest density was relatively higher (Yuliani et al., 2018). Another study suggested that in areas where orangutans were not killed, they could coexist with humans, even in anthropogenic habitats (Spehar et al., 2018).

### A dangerous creature

A total of 56% of the respondents expressed fear towards orangutans, while the remaining 44% reported no feelings of fear. The latter group attributed their lack of fear to their understanding that orangutans never actively attacked humans. In contrast, among the 56% who felt afraid, various reasons contributed to their apprehension. A significant portion (78%) of this group mentioned fear arising from the potential retaliatory behaviour of orangutans when disturbed, such as throwing branches and twigs. One individual elaborated that orangutans could also throw their faeces, as shown in Figure 4.

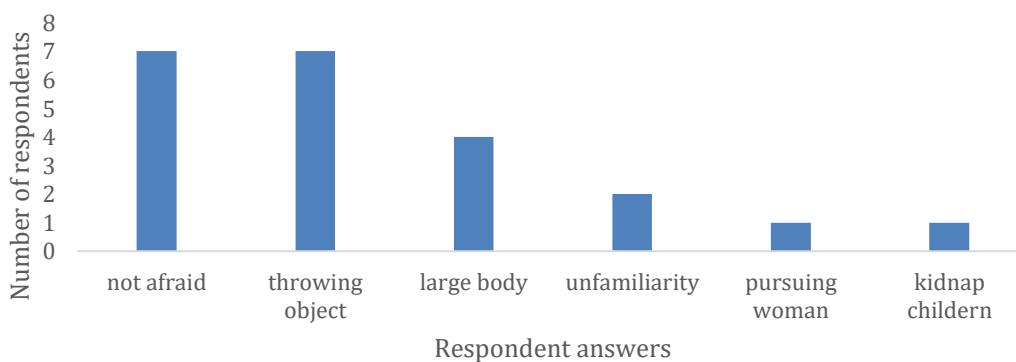


Figure 4. Number of respondents who argue about fear towards orangutan

Among the 78% respondents who explained the throwing behaviour, approximately 57% highlighted the role of orangutans' massive bodies and strong power, enabling them to break branches and twigs with ease. One person also added a story about orangutans engaging in playful behaviour with human children, potentially posing a danger when pulling them up into trees. The next 22% of the respondents mentioned that the reason for their fear

of orangutans might be due to infrequent or lack of encounters, leading to unfamiliarity. The remaining one person expressed fear due to the perceived risk of orangutans potentially pursuing women, as shown in Figures 4.

More than half of the respondents (56%) expressed fear of orangutans, which supported the hypothesis that orangutans were considered dangerous. The manifestation of fear towards wild animals could lead to negative attitudes and practices. A previous study conducted in the nearby Batang Serangan village revealed that local farmers, especially women, felt fear towards orangutans due to a story that suggested male orangutans could rape women (Campbell-Smith et al., 2010). However, this folklore appeared to be absent within the majority of the Batak Karo community. Only one individual, a Javanese woman, explained her fear using this story:

*"It seems a bit scary because, you know, when it comes to women, it's kind of sensitive, they want to get closer. But with monkeys, it's different. They just look around, that's all. But orangutans, they want to get closer, even bother you, they want to kiss"* (Anon, 25, Kwala Buluh).

Nonetheless, she had the potential to spread the story and influence more women to experience heightened fear towards orangutans. Wives could even motivate their husbands to kill orangutans if they deemed it necessary.

Another folklore that amplified the perception of danger associated with orangutans originated from a Batak Karo woman. According to her, there was a narrative that orangutans were inclined to play with human children. The implication was that this was perilous, as orangutans might carry the child to the treetops, leading to potentially fatal falls. These stories are sometimes used to caution children against playing near the forest:

*"Most of the time, when there's an orangutan, we use that to scare the kids, like 'Don't go into the forest, if there's an orangutan there, it will pick you up and then drop you.' So, the kids become scared, and they don't want to go to the forest by themselves"* (Anon, 34, Kwala Buluh).

It's worth noting that orangutans naturally avoid human interactions. The rationale behind these stories could be that orangutans had become habituated, possibly due to the influence of feeding practices (Purwoko et al., 2022b).

### **Role and use**

The majority of respondents (75%) believed that orangutans had no significant ecological roles and that the forest would remain unaffected with or without them, as shown in Figure 5. Historical studies indicated orangutans were extinct in the Batang Gadis forest around the 1940s (Meijaard et al., 2021), but no demonstrated ecological impact of their absence had been found. On the other hand, 19% of the respondents acknowledged that orangutans played a role in seed dispersal, contributing to forest regeneration, supported by research (Tarszisz et al., 2018). Another study suggested that promoting the perception of orangutans as ecosystem engineers could aid in their conservation (Harahap et al., 2022).

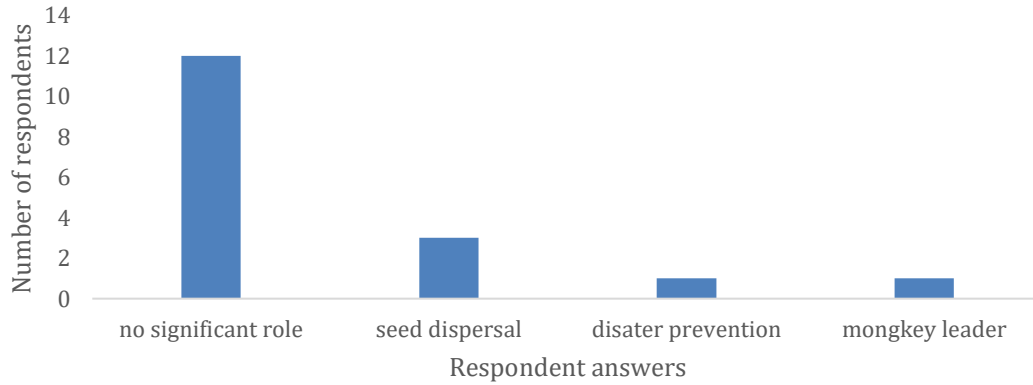


Figure 5. Number of respondents who argue about orangutan role in the forest

One person believed orangutan extinction might negatively affect ecosystem balance, influenced by the Indonesian educational curriculum (Sari, 2019). Another person thought orangutans served as leaders in the monkey community, potentially reducing monkey aggressiveness, which could have positive implications, as macaques were considered more destructive pests (Marchal & Hill, 2009; Campbell-Smith et al., 2010).

None of the respondents perceived orangutans as hunted animals or held them in sacred regard. One person mentioned capturing orangutans for tourism but acknowledged its illegality. This contradicted the hypothesis that orangutans were viewed as hunted animals, unlike in Borneo (Davis et al., 2013). In Tangkahan, conflict appeared to be the primary threat to orangutans, reflected in the absence of the term 'juhut bontar,' symbolizing hunting for bushmeat (Meijaard et al., 2021). The hypothesis that orangutans were seen as sacred animals was rejected, as the Batak Karo term 'mawas' lacked the sacred symbolism found in the 'maias' term used by the Dayak Iban community (Yuliani et al., 2018).

### Our relative

A total of 88% of the respondents believed that orangutans shared human-like features in their facial characteristics, hands, and body size. Among this group, 29% provided additional details about the perceived kinship between orangutans and humans, with one individual suggesting that orangutans were once humans who were cursed and transformed into orangutans. The remaining 75% explained the concept of shared ancestors between humans and orangutans, often citing folklore accounts, as shown in Figure 6. Additionally, 21% of the 88% group mentioned that the food consumed by orangutans was suitable for human consumption and vice versa, offering practical information for those exploring the forest, like local rangers, to conserve food supplies.

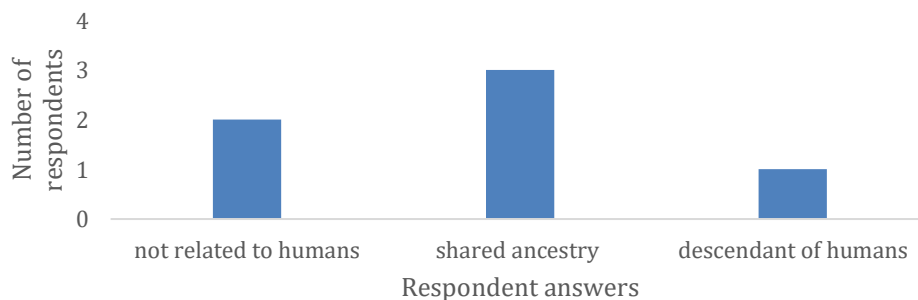


Figure 6. Number of respondents who argue about orangutan as human relative



Most respondents believed that orangutans resembled humans, suggesting they were perceived as human relatives. Only a few provided detailed explanations, with two main concepts emerging: one group believed in a shared common ancestor, and they explained briefly in folklore:

*“Yeah, that’s probably why they’ve been protected. Because these orangutans, said by my ancestor that human origin are from the orangutan”* (Anon, 46, Kwala Buluh).

Further studies were needed to comprehend the folklore's significance in shaping perceptions. The second group held the belief that orangutans might have been humans in the past, his argued:

*“Their origin said by the ancestors, similar to humans, you know... like the legend of 'larak jongkrak' or whatever it's called? Hm.. it's like the story of Tangkuban Perahu, being cursed or something”* (Anon, 38, Kwala Gemoh).

This transformation from human to orangutan aligned with the concept of reincarnation observed in the Dayak Iban community (Yuliani et al., 2018). However, the idea of being cursed carried a negative connotation, evoking pity rather than respect, similar to a study about macaques in Morocco, where locals perceive them as degraded humans, as the Quran mentioned (Waters et al., 2018).

In Batak Karo culture, orangutans are called 'mawas,' a term without symbolic meaning. However, the use of 'orang utan,' influenced by Bahasa Indonesia, may have shaped the local community's perception of orangutans as human-like. This term originated from Malay in the mid-19th century due to colonialism (Cribb et al., 2014), while 'mawas' and 'maias' reflect indigenous Malay terminology in both Borneo and Sumatra (Rubis et al., 2020). Decolonizing nature-related terminology is part of conservation campaign (Rubis et al., 2020).

### Source of income

All respondents acknowledged that orangutans contribute to Tangkahan's ecotourism income. Most (63%) compared this ecotourism to Bukit Lawang, considering it a role model, while 25% mentioned that feeding the orangutans was a popular tourist attraction. Tourism was a vital sector that significantly supported the local community, and all respondents emphasized that the benefits from orangutans primarily came from their role in attracting tourists. This was a new hypothesis arising from the data. European visitors or 'Bule,' were considered particularly favourable due to their greater financial contributions. One respondent stated earning an average of IDR 10,000,000 per week as a tour guide.

While orangutans were a tourist attraction, Tangkahan was best known for its tamed Sumatran Elephants (*Elephas maximus sumatranus*), managed by The CRU (Berliani et al., 2022). Respondents drew comparisons between the orangutan attraction in Tangkahan and that of Bukit Lawang, presenting Bukit Lawang as a successful model of orangutan-centered tourism (Purwoko et al., 2022b). In 2018, Bukit Lawang's ecotourism generated approximately IDR 1,721,082,350 in income. Unlike Tangkahan, Bukit Lawang had a longer history, evolving from an Orangutan Rehabilitation Station in 1973 to a successful Conservation Station (Purwoko et al., 2022b). Bukit Lawang is in the Bahorok District, adjacent to Tangkahan's Batang Serangan District.

While successful in attracting tourists, Bukit Lawang's approach of excessive habituation of orangutans had led to problems such as escalating conflicts with local farmers (Marchal & Hill, 2009) and the potential for zoonotic diseases (Molyneaux et al., 2021). One individual even shared their idea:

“Well, to be honest, it seems easy to just capture an orangutan. I mean, who wouldn't find it easy? Just use tranquillizer darts, and it's done. We could cage them for around 5 months or half a year. We'd feed them and take care of them during that time. Afterwards, we could release them back into the forest, and they wouldn't be afraid of humans anymore. It's basically like what they do in Bukit Lawang. It's easier to see orangutans that way, but we afraid of the law's consequences” (Anon, 46, Kwala Buluh).

This approach contradicts true ecotourism principles, as ecotourism aims to minimize negative impacts on wildlife rather than intensify them for greater income (Purwoko et al., 2022b).

### Deserve a protection

The majority of respondents (63%) felt sadness when considering the extinction of orangutans. Most (40%) attributed this feeling to the perception that orangutans never harm humans. Another 20% mentioned a sense of loneliness in the forest without orangutans, equating them to family members. An additional 20% expressed hope that orangutans would not be harmed by humans, particularly in conflicts. One person mentioned that even a video of a Bornean orangutan in a degraded forest makes them very sad. Another believed that orangutans made efforts, or 'ikhtiar,' to survive in the forest, as shown in Figures 7.

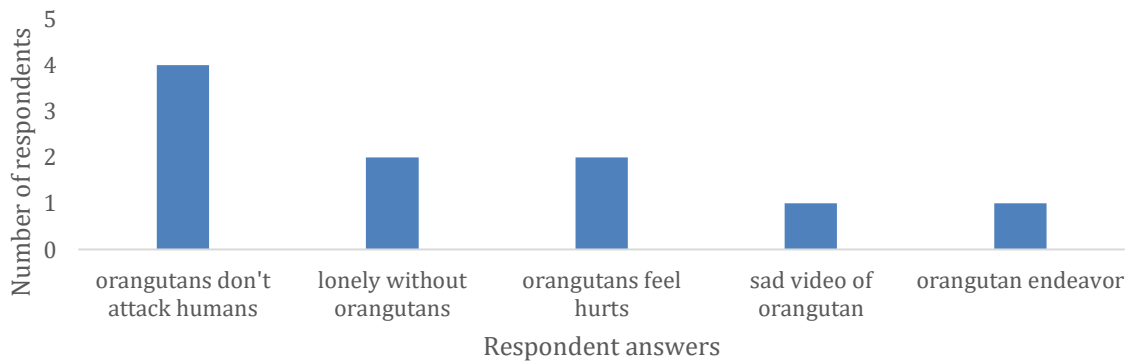


Figure 7. Number of respondents who argue their sadness if orangutans going extinct

More than half of the respondents expressed support for orangutan conservation by feeling sad at the prospect of orangutan extinction. This likely resulted from their familiarity with orangutan conservation, as seen in similar studies abroad (Taylor et al., 2016). Most respondents emphasized that orangutans, known for their non-aggressive nature toward humans, should not face extinction due to human actions.

Another explanation was the profound connection between the respondents and orangutans, viewing them as family and hoping they wouldn't be harmed. This strong bond was likely nurtured through local community involvement in activities like ecotourism, which increased familiarity with orangutans. A mahout respondent shared some photos of orangutans he observed while conducting elephant patrol, as shown in Figure 8. They explained the orangutan activity they observed, including orangutan urination on the canopy (Fig 8. a), orangutan brachiating between the canopy (Fig 8. b), and orangutan party activity in the afternoon (Fig 8. c). They also shared their experience observing protected orangutans with other local communities in Tangkahan. Active local participation enhanced the likelihood of successful conservation by positively influencing local behaviours (Ancrenaz et al., 2007).



Figure 8. a. Orangutan urination, b. orangutan brachiation, c. orangutan party.

The assertion that orangutans had the capacity for 'ikhtiar,' rooted in Islamic values that emphasized endeavouring with belief in God as he said:

*"Absolutely, they surely do ikhtiar, but ultimately, it's in the hands of Allah. Only Allah knows what will happen. According to our teachings, they make their ikhtiar and at least they also remember Allah, and recite God's name. But in the end, it's beyond our comprehensive understanding; only Allah truly knows"* (Anon, 36, Kwala Gemoh).

Many teachings in Islam emphasized a positive attitude towards animals, and this perspective has been incorporated into recent conservation campaigns in Indonesia. It represents a grassroots development in conservation efforts (Mangunjaya & McKay, 2012).

## CONCLUSION

In Tangkahan ecotourism area, the local community perceived orangutans in various ways: as Durian pests due to fruit consumption and nesting behaviour, as potentially dangerous creatures due to their large size, as animals with some human-like traits, and as sources of income through tourism. Despite potential negative aspects, orangutans contribute to the local economy, increase familiarity through ecotourism, and foster active support for orangutan conservation.

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