



Local Community Perceptions and Attitudes Towards Butterflies and Ecotourism in West Sumatera

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ABSTRACT

One of the most biodiverse nations in the world, Indonesia is home to a wide variety of butterflies as well as other animals and plants. Butterflies play a significant role in the ecosystem, both in the pollination process and in the process of detecting environmental changes in the ecosystem. One alternate strategy for preserving biodiversity and natural resources while boosting a nation's economy is ecotourism. This study aims to investigate the perceptions and attitudes of local communities in West Sumatera regarding with butterflies and ecotourism. The study was conducted from February to March 2023 by using two-page questionnaire developed to collect social information regarding with ecotourism and butterflies through in-depth interview with respondents who was currently living in West Sumatra. A total of 30 respondents (15 Male, 15 female) from various background were questioned. According to the survey's findings, the majority of the population (93%) was passionate about protecting biodiversity and has extensive understanding of ecotourism and butterflies. Additionally, the majority of respondents (93%) mentioned that they would love to join Butterfly Watching Program. The respondents indicated that West Sumatera has a lot of ecotourism destinations. To draw visitors, a more sophisticated ecotourism program centered on beautiful wildlife and flora should be established.

INTRODUCTION

Indonesia possesses a significant diversity of animal and plant species, including a large diversity of butterflies, making it one of the major biodiversity countries in the world. Almost 2,000 species of butterflies were thought to exist in Indonesia (Amir and Kahono, 2003). Indonesian butterflies are constantly under danger due to habitat loss brought on by land change, which has a negative impact on their fragmented, deteriorated, and reduced habitat. In addition, the loss of plants that provide to larvae can result in the extinction of butterflies (Ferrer-Paris et al., 2013; Bibas et al., 2021).

In the current classification of butterflies, there are two superfamilies: Hesperioidea, which includes all skippers, and Papilionoidea, which comprises the remaining real butterflies. Papilionoidea includes four families, including Papilionidae (Swallowtails), Pieridae (Whites and Yellows), Nymphalidae (Brush-footed Butterflies), and Lycaenidae, but Hesperioidea

only has one family, Hesperioidea (skippers) (Kehimkar, 2008; Naing et al., 2019). The existence of butterflies can also show how butterfly communities and their environmental interactions can be utilized to evaluate an ecosystem's functioning and conservation efforts (Salmah, Abbas and Dahelmi, 2001). The diversity and habitats of butterflies can be preserved by implementing conservation management that is designed after assessing diversity, abundance, and distribution (Bibas et al., 2021).

Ecotourism is currently one of the best options for local governments and communities for preserving biodiversity and enhancing local welfare, as well as natural resources, where an abundance of resources can generate economic support and boost social power. The process of resource and environmental conservation as well as increasing the expansion of an ecosystem's resources can both benefit from this support (Spanou, Tesgenidi and Georgiadis, 2012).

Ecotourism is a form of tourism that respects the environment and has benefits for local economies because it can attract more visitors without depleting the environment's natural resources (Kilipiris and Zardava 2012). Ecotourism benefits forest preservation (Mensah 2017) and serves as a role model for protecting the environment and natural resources (Bashar 2018). Both wealthy and developing nations can profit from and experience the positive effects of tourism (Uysal et al. 2016; Gursoy and Nunkoo 2019).

One of the emerging nations, Indonesia, keeps making changes in order to raise money from visitors who come to experience the natural and cultural beauty of the nation (Siahaya et al. 2021). The author is studying the diversity of butterflies in several locations dealing with ecotourism. To support that research, we need to know people's recent knowledge and hope on ecotourism and biodiversity. Therefore, the purpose of this study was to investigate the perceptions and attitudes of

local communities towards butterflies and ecotourism in study sites.

MATERIALS AND METHODS

Study site and sampling method

This research had been conducted in February and March, 2023 in West Sumatera. A questionnaire was developed to collect information regarding with ecotourism and butterflies through in-depth interview with respondents who is currently living in West Sumatra. The study was conducted using a two-page questionnaire. The questionnaire was available in English and Bahasa version. There were a total of 18 survey questions used, plus demographic inquiries about each interviewee's age, sex, education, and occupation. The majority of the questions were closed-ended and just required the respondent to select a number, check off a list of possibilities, or demonstrate their understanding with ecotourism and butterflies.

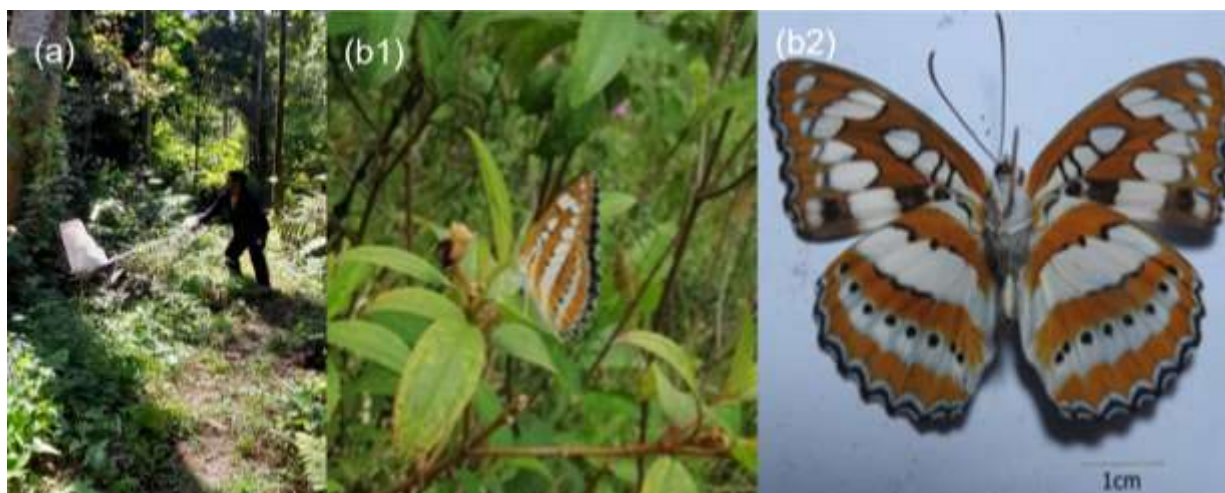


Figure 1. Butterfly sampling activities using insect net at the study site (a) sampling of butterfly using insect net, and (b) one of the butterfly species collected in study site (family Nymphalidae)

Data analysis

The data obtained from questionnaire survey was clustered in according to its question criteria to draw the tendency from respondents' answers. The quantitative data from the interviews with the respondents were tabulated and the percentage of respondents' answer was calculated. The data were shown in table, pie chart, and bar chart respectively. Then, the results were thoroughly discussed.

RESULTS AND DISCUSSION

Demography of Respondents

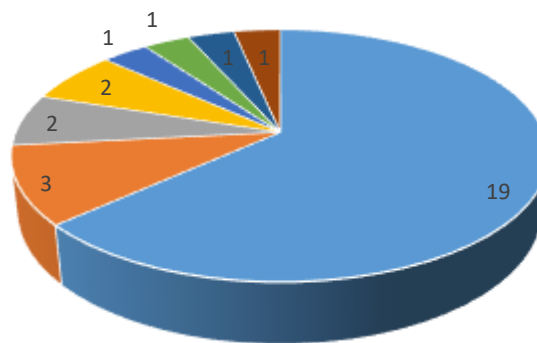
A total of 30 people were interviewed. All of the interview subjects were from West Sumatera and had a range of educational and professional backgrounds. The data were shown in table, pie chart, and bar chart respectively. Table 1 displayed demographic information. The majority of the 30 people interviewed were students. Also, interviews were conducted with the locals who are

currently developing ecotourism zones on their property. The majority of respondents (n = 19) were from Padang, followed by three respondents from Padang Panjang, two respondents from

Bukittinggi, two respondents from Pariaman, and one each from Mentawai, Jambi, Agam, and Pekanbaru (Figure 2).

Table 1. Socio-Demographic Characteristics

	Characteristics	Frequency	Percentage
Sex	Male	15	50
	Female	15	50
Age	15-24 yrs	17	56.7
	25-34	8	26.7
	35-44	3	10
	45-54	2	6.7
Education level	Elementary School	2	6.7
	Junior High School	2	6.7
	Undergraduate	21	70
	Graduate	4	13.3
	Doctoral	1	3.3
Occupation	Farmer	2	6.7
	Freelancer	1	3.3
	House-Wife	2	6.7
	Lecturer	1	3.3
	Part-time worker	1	3.3
	Student	22	73.3
	Self-Employed	1	3.3



■ Padang ■ Padang Panjang ■ Bukittinggi ■ Pariaman ■ Mentawai ■ Jambi ■ Agam ■ Pekanbaru

Figure 2. The composition of respondents background area for the questioner related to butterfly ecotourism.

Perceptions and Attitudes of Local Communities

The vast majority of participants responded to survey questions quite well. With a few exceptions, most respondents are knowledgeable about butterflies and ecotourism (Table 2). When asked if they were aware of ecotourism, 26 people

replied "Yes." Later, when asked "Do you know Ecotourism locations in West Sumatera," 24 respondents responded "Yes," and they then shared some of the 26 tourist destinations in West Sumatera that they are know of. These places are Sirukam, Puncak tonang, Sungkai Green Park, Geopark, Silokek, Bukit Nobita, Green talao park,

Harau Valley, Lembah Haru, Danau Maninjau, Ngari sianok, Danau Singkarak, Pantai Air Manis, Air Terjun Padang Panjang, Air terjun lombah anai, Pantai ganodriah, Sawah liek, Peangwan Kota Pariaman, Malibu anai, Air terjun

Proklamator, Mega mendung, Taman wisata Mangrove in Pariaman, Kebun bintang bulat tinggi, Batu busuak, Agrofarm, Taman Hutan raya.

Table2. Perceptions and Attitudes of local communities in regarding with ecotourism and butterflies

Survey Questions	Frequency		Percentage	
	Yes	No	Yes	No
Q1. Do you know about ecotourism?	26	4	86.7	13.3
Q2. Do you know some of the ecotourism places around West Sumatera?	24	6	80	20
Q3. Do you know the term "biodiversity"?	28	1	93.3	3.3
Q4. Do you think ecosystem is important in maintaining biodiversity?	29	1	96.7	3.3
Q5. Do you see butterflies around your environment?	28	2	93.3	6.7
Q6. Are butterflies beneficial to the environment?	30	0	100	0
Q7. Have you ever seen these species in your community?	18	12	60	40
Q8. Do you willing to pay to visit an ecotourism object with butterflies inside?	24	6	80	20
Q9. If you are going to an ecotourism area, are you interested in seeing butterflies there?	27	3	90	10

Most of the participants agree the statement that ecotourism provides a way to increase local's income (Figure 3). According to Cruz et al. (2005), community-based ecotourism initiatives have had a good effect on the local population. They include the creation of jobs, additional income, the development of local talent, community empowerment, and a multiplier effect on the local economy. The preservation of areas

of special value or beauty is one of the positive effects of ecotourism (Mason, 2008). In addition to more conventional strategies like law enforcement, limiting the extraction of timber, and protecting endangered species, community involvement or participation in ecotourism development has emerged as a useful instrument in the field of forest conservation and management.

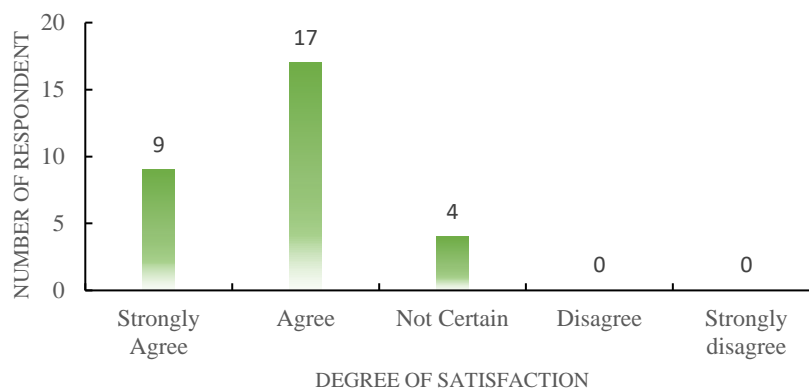


Figure 3. Community perception of the ecotourism development provides a way to increase local's income

Two of interviewees didn't know what the term "biodiversity" meant. The majority of the participants (93 %) feel that ecosystems are crucial to conserving biodiversity. The great number of interviewees (n=28) reported that they

see butterflies in their surroundings, and every interviewee who was asked whether butterflies were good for the environment gave the affirmative. When asked about their observations of butterfly activity outside, 46% reported seeing

butterflies pollinating, whereas 34% responded that they were resting (Figure 4a). Most responders indicated that nectar was a food source for butterflies (Figure 4b). Butterflies have a wide

variety of selection of food, including flowers, fruits, honeydew, tree sap, rotten materials, and decomposing carcasses (Rosmidi et al., 2017).

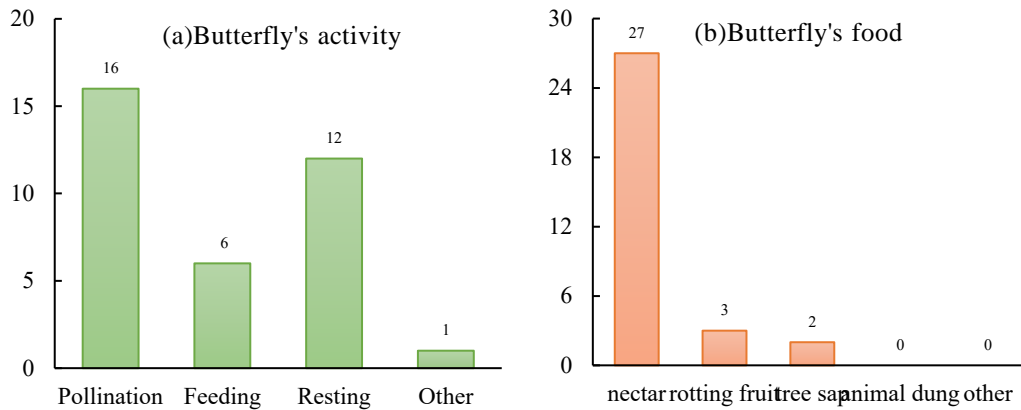


Figure 4. Opinion of respondent related to butterfly activities and food; (a) Butterfly's activity and (b) Butterfly's food.

Most of the participants (n=21) indicated that they encounter butterflies in areas with many flowering plants, six cited areas near water sources, and four mentioned areas with dense vegetation (Figure 5a). The interaction of biotic and abiotic elements leads to the formation of interconnected interactions that create the habitat. The butterfly cannot survive if only one of them is present, especially if there is no host plant (Ilhamdi et al. 2018). Ilhamdi et al. (2018) also mentioned that the butterfly habitat should be a wet area with plenty of flowering plants, water features, and

sunshine and the majority of species are found on farms, orchards, main and secondary wood. The majority of participants said that butterflies' colors and wing patterns are attractive. (Figure 5b). It could be accepted that most of butterflies are known for their beautiful color pattern. Due to the intense trading and hunting of various species of butterflies because of their magnificent color patterns, some butterfly species are now listed as endangered species (Coote, 2000; Koneri and Nagoy, 2019).

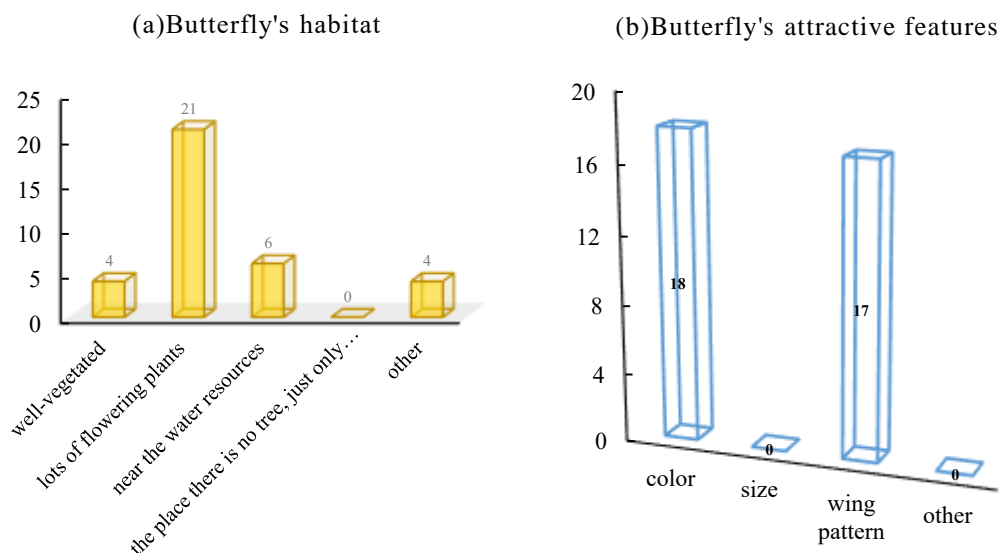


Figure 5. Opinion of respondent related to butterfly habitat and attractive features (a). Butterfly's habitat (b) Butterfly's attractive features

In general, 25 percentage of participants stated they saw butterflies in the afternoon, whereas 75% said they saw them in the morning. Nobody responded that they see butterflies at evening (Figure 6). It could be that most of butterfly are active at daytime and only a few species are active in the evening like Hesperidae family. This family is typically crepuscular, which means they are active in the early evening or while it is dark outside. Moreover, most of these members are small in size and thus, most people couldn't be aware of their existence (Amir and Kahono, 2008; Nagoy, 2020). Additionally, Peggie and Amir (2006) argued that the observations at different times may show different types because butterfly have different flying periods. The hours between 9:00 and 13:30 are when butterflies flower most frequently, and the quantity of butterflies that notice the flowers is positively impacted by their color (Duara & Kalita, 2014).

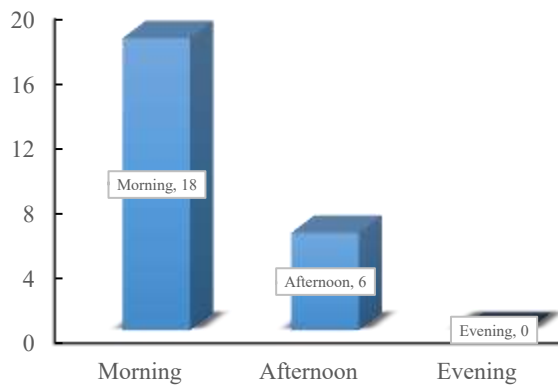


Figure 6. Butterfly's active time around the respondents' surroundings

Ecotourism Program Including Butterfly Watching

A butterfly-watching program would be their first choice, according to 80% of participants. When asked if they would pay to visit an ecotourism site that contained butterflies, 24 respondents said "Yes" (Figure 7). Finally, 27 respondents said they would like to see butterflies when they travel to ecotourism destinations. According to Utama (2016), Bali has a butterfly park that is a butterfly and insect conservation facility that showcases a variety of specimens through its park grounds of

around 3,000 sqm located in the village of Wanasari, 6.5 km north of the Tabanan city, and 30 km northwest of Denpasar, Bali's administrative capital. Visitors can take an educational tour and see hundreds of butterflies from 15 different species that thrive in Indonesia's tropics as well as various other insects and arachnids in large and informative displays at this butterfly park, which is a convenient stopover on excursions to the island's northern region via Tabanan.

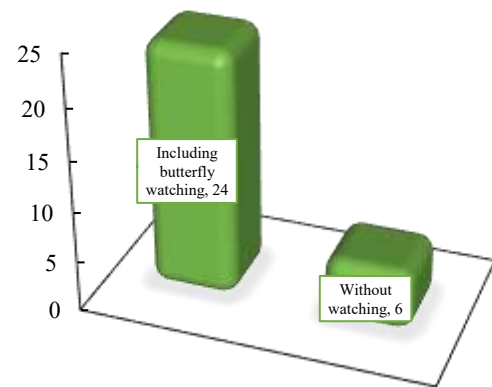


Figure 7. Choice of Ecotourism Program by respondents

In addition, there are other entomotourism destinations around the globe, those focused on insects. According to Lemelin (2015), millions of tourists yearly visit butterfly pavilions and insectariums around the world, and up to 700,000 aficionados visit glow worm caves in Australia (Hall, 2013) and New Zealand to see the aggregations of monarch butterflies in rural Mexico (Barkin, 2000) and the fireflies of Asia (Shahwahid et al., 2013). Otherwise, Lemelin (2015) mentioned that butterflies and specific varieties of moths are allowed to fly freely and interact with guests in spacious, warm, well-lit, open areas in butterfly pavilions. Other butterfly pavilions are permanent or temporary displays of a bigger museum or zoo, while some butterfly pavilions are permanent and exist as autonomous tourist attractions (Lemelin et al., 2019). Common educational and outreach techniques for butterfly pavilions include public programming (such as school tours, teacher training, and visitor interpretation), research, conservation initiatives,

citizen science, and special events like "Hug-a-Bug" provided by the Cambridge Butterfly Conservatory (Lemelin, 2015; Lemelin et al., 2019).

CONCLUSION

There are many ecotourism places in West Sumatera according to the respondents and it is indicated that conservation practices should be performed in these areas to maintain not only the butterfly but also the other natural resources. Therefore, the author would like to propose that **the Entomotourism** program: like butterfly garden should be established in West Sumatera in order to draw tourists and to grow the tourism industry. On the other hand, it boosts the local economy while simultaneously protecting the environment, promoting West Sumatra's culture, and beautifying the region.

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