

CHARACTERISTICS OF THE ORDER LEPIDOPTERA IN THE UJONG PANCU BEACH AREA ACEH BESAR

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ABSTRACT

The development of coastal areas has an impact on the presence of insects such as butterflies which belong to the order Lepidoptera. Ujong Pancu Beach, Aceh Besar, is one of the tourist beach areas that has not yet become the main destination for local people and those outside Aceh. However, slowly this coastal area is starting to develop and this is thought to have an impact on the presence of butterflies. This research aims to determine the characteristics of the Lepidoptera order at Ujong Pancu Beach. The method used in this research was an exploratory survey along the route to Ujong Pancu Beach. The Lepidoptera order observation method used is the visual control method which is carried out at 5 points. The data obtained were analyzed using descriptive statistical methods. The research results show that there are 7 species of butterflies on Ujong Pancu Beach, Aceh Besar. The Lepidoptera orders found were Danaus chrysippus, Leptosia nina, Zizina otis lamp, Papilio aegeus, Zizina otis indica, Eurema blanda, Papilio polytes. The Lepidoptera orders found on the Ujong Pancu tourist beach in Aceh Besar have a variety of characteristics and their presence is influenced by the vegetation around the beach.

Keywords: Characteristics, order Lepidoptera, Ujong Pancu beach, vegetation

ABSTRACT

Pembangunan kawasan pantai berdampak terhadap kehadiran serangga seperti kupu-kupu yang termasuk ke dalam ordo *Lepidoptera*. Pantai Ujong Pancu Aceh Besar adalah salah satu kawasan pantai wisata yang belum menjadi destinasi utama masyarakat lokal maupun di luar Aceh. Namun berlahan-lahan kawasan pantai ini mulai berkembang dan diduga berdampak terhadap kehadiran kupu-kupu. Tujuan penelitian ini adalah untuk mengetahui karakteristik ordo *Lepidoptera* di Pantai Ujong Pancu. Metode yang digunakan pada penelitian ini adalah survei eksplorasi sepanjang jalur menuju Pantai Ujong Pancu. Metode pengamatan ordo *Lepidoptera* yang digunakan adalah metode *visual control* yang dilakukan pada 5 titik. Data yang diperoleh dianalisis dengan metode statistik deskriptif. Hasil penelitian menunjukkan ada 7 spesies kupu-kupu di Pantai Ujong Pancu Aceh Besar. Ordo *Lepidoptera* yang ditemukan adalah *Danaus chrysippus*, *Leptosia nina*, *Zizina otis lampu*, *Papilio aegeus*, *Zizina otis indica*, *Eurema blanda*, *Papilio polytes*. Ordo *Lepidoptera* yang ditemukan di pantai wisata Ujong Pancu Aceh Besar memiliki variasi karakteristik dan kehadirannya dipengaruhi oleh vegetasi sekitar pantai.

Kata Kunci: Karakteristik, Ordo *Lepidoptera*, Pantai Ujong Pancu, vegetasi

A. INTRODUCTION

The province of Aceh, located at the northern tip of Sumatra Island, has extensive maritime areas. It is bordered by the Indian Ocean to the west and the Strait of Malacca to the north and east (BMG, 2019). The waters of Aceh are dominated by coral reef and mangrove ecosystems, which significantly influence marine life (Suryawan, 2007). Marine resources impact the livelihoods of communities around the coastal areas (Gama and Agustina, 2022). The coastal regions have been extensively developed to attract tourists. This development poses a risk to the habitats of some flora and fauna in the coastal areas (Rudi, 2013).

One of the coastal areas in Aceh Besar that has started to gain attraction as a recreational and camping site is Ujong Pancu Beach. Ujong Pancu Beach is surrounded by mountains rich in vegetation. This vegetation is crucial for the life of animals, including those of the order Lepidoptera. Ujong Pancu Beach in Aceh Besar is a tourist coastal area that has not yet become a primary destination for locals or people from outside Aceh. However, this area is gradually developing,

and it is suspected that this development is impacting the presence of butterflies.

The presence of butterflies in the environment can serve as an indicator of an ecosystem's health (Ahzara, 2021). The quality of a beach can be assessed in part through the presence of butterflies, considering ecological and environmental aspects. The greater the number of butterfly species, the better the condition of the ecosystem. A stable or increasing butterfly population indicates that the beach habitat provides sufficient food and shelter. The abundance of host plants for butterfly larvae and adults is crucial and can serve as an indicator of the health of a habitat (Ruslan and Andayaningsih, 2021).

The diversity and abundance of vegetation around the beach, including the presence of flowers, shrubs, and trees, support butterfly life. Factors such as air and water pollution, noise levels, and human disturbances can affect the presence of butterflies. The aim of this study is to determine the characteristics of the order Lepidoptera at Ujong Pancu Beach.

B. RESEARCH METHOD

The research was conducted in the area of Ujong Pancu Beach, Gampong Lampageu, Aceh Besar. Ujong Pancu Beach is located at the foot of a mountain. This study consists of five locations: Point 1 on the coastal area, Point 2 on the first incline before ascending the mountain, Point 3 ten meters from the first incline, Point 4 ten meters from the second incline, and Point 5 ten meters from the third incline. The butterfly capture method used is sweeping. The sweeping method involves using an insect net, and the specimens found are stored in triangular paper envelopes to prevent damage (Coote, 2000). The butterfly specimens were






brought to the Biology Education Laboratory at UIN Ar-Raniry for identification. Identification was carried out using literature or identification keys up to the species level (Ackery et al. 1999; Peggie and Amir 2006). The research data obtained were analyzed using descriptive statistics. Data are presented in the form of tables and figures.



C. RESULT AND DISCUSSION

The research results showed the presence of 7 butterfly species at Ujong Pancu Beach, Aceh Besar. The species Lepidoptera found includes *Danaus chrysippus*, *Leptosia nina*, *Zizina otis lampu*, *Papilio aegeus*, *Zizina otis indica*, *Eurema blanda*, and *Papilio polytes*. At point 1 (coastal area), the species found were *Danaus chrysippus*, *Leptosia nina*, and *Zizina otis lampu*. At point 2 (first incline before ascending the mountain), the species found were *Danaus chrysippus*, *Papilio aegeus*,

Zizina otis indica, *Eurema blanda*, and *Papilio polytes*. At point 3 (10 meters from the first incline), the species found were *Eurema blanda*, *Danaus chrysippus*, and *Papilio aegeus*. At point 4 (10 meters from the second incline), the species found were *Zizina otis lampu* and *Danaus chrysippus*. At point 5 (10 meters from the third incline), the species found were *Danaus chrysippus* and *Eurema blanda*. The characteristics of the butterflies found at Ujong Pancu Beach can be seen in Table 1.

Table 1. Characteristics of the order Lepidoptera at Ujong Pancu Beach, Aceh Besar.

Species	Characteristics
 <p data-bbox="402 541 652 573"><i>Danaus chrysippus</i></p>	<p data-bbox="813 331 1354 510">It has a black body with white spots, and the upper abdomen is yellowish to pale yellow. The wings are yellowish-brown, with the upper side being brighter than the underside (Khoon, 2010).</p>
 <p data-bbox="431 867 628 905"><i>Papilio aegeus</i></p>	<p data-bbox="813 667 1354 810">It has black and white upper wing surfaces. The underside of its wings features striking colors that are not clearly visible when in flight (Khoon, 2010).</p>
 <p data-bbox="428 1161 631 1199"><i>Eurema blanda</i></p>	<p data-bbox="813 978 1354 1121">The underside of the wings has yellow forewings and hindwings, but the forewings have a brown patch in the discal cell (Khoon, 2010).</p>
 <p data-bbox="431 1461 628 1493"><i>Papilio polytes</i></p>	<p data-bbox="813 1236 1354 1379">The upper side of the wings is black, while the underside has a series of submarginal lunules ranging from yellow to red on the hindwings (Khoon, 2010).</p>
 <p data-bbox="415 1791 641 1822"><i>Zizina otis indica</i></p>	<p data-bbox="813 1587 1354 1730">The upper side of the wings is light brown, with irregular wavy edges and a broad black border that protrudes noticeably between veins 3 and 4 (Smetacek, 2015).</p>

 <p style="text-align: center;"><i>Zizina otis lampu</i></p>	<p>Pale bluish-purple, with a pearly sheen under certain light. The forewings have a broad brown border along the termen (Smetacek, 2015).</p>
 <p style="text-align: center;"><i>Leptosia nina</i></p>	<p>The wings are white with brown markings on the outer side in irregular patches. On the inner wings, there are two irregular black circles (Khoon, 2010).</p>

The male *Papilio polytes* has black upper wings with a broad whitish-yellow band along the hindwings. The underside of the wings features a series of submarginal lunules ranging from yellow to red on the hindwings. The female butterfly is polymorphic, with several forms including the polytes form that mimics the Common Rose but with an entirely black abdomen.

The larva of *Papilio polytes* is brownish-yellow dorsally and dark brown laterally, approximately 3 mm in length, with a somewhat pointed body surface. By the fifth instar stage, its body color changes to green with eye-like spots on the third thoracic segment connected by a transverse green band and a wavy pattern on its back (Khoon, 2010).

The pupa of *Papilio polytes* comes in two color types. The green pupa is green with diamond-like golden markings on the dorsum of the abdominal segments. The brown pupa ranges in color from greyish to dark brown. This species of pupa has a pair of horns on its head, a hump on its back, and appears tilted to the side. The pupa measures approximately 31 – 32 mm in length.

Papilio polytes is commonly found in parks, gardens, urban areas, forests, and mangrove forests, and can even be found in mountainous regions. It reproduces by laying eggs; the female butterfly lays eggs one by one on young stems, leaf stalks, or under the leaves of host plants. The eggs are nearly round, about 1.2 mm in diameter, pale

creamy yellow in color, with a rough surface (Khoon, 2010).

The sulfur butterflies, or yellow butterflies, are a group of small butterflies from the genus *Eurema*, members of the family Pieridae. They are named for their bright yellow color, somewhat resembling sulfur. Commonly, they are referred to as Grass Yellows in English. Currently, there are over 70 species recorded within the genus *Eurema*, with more than 300 synonym names. In fact, species such as the sulfur butterfly (Khoon, 2010).

Zizina otis indica is a butterfly species belonging to the family Lycaenidae. This species can be found in almost all open grassy habitats, including forest clearings, riverbanks, roadsides, parks, and gardens, at elevations up to about 1500 meters above sea level. They are often found in groups in moist and wet areas such as around puddles. Typically, they continuously flutter their wings just above the ground surface and occasionally pause to feed on nectar from aster and other low-growing flowers. *Zizina otis* sunbathes under direct sunlight and rests on the ground with their wings half-open. During the night, these butterflies rest on low vegetation such as bushes. Known for their strong environmental adaptability, this species interacts with various host plants,

allowing them to thrive in high numbers. *Zizina otis* is known to interact with various legumes. The larvae of this butterfly typically feed on plants such as *Mimosa*, *Zornia*, *Sesbania*, *Alysicarpus*, *Lotus*, and *Indigofera* (Fabaceae) (Febriyanti et al. 2020).

Zizina otis is a small butterfly, with dull purplish-blue upper wings bordered by wide black margins in males, while females are brown. The underside of the wings is gray, adorned with a series of small black spots on both the forewings and hindwings. The submarginal markings on both wings are typically diffused and indistinct, which helps distinguish it from other species in the same genus. The larvae of *Zizina otis* are cylindrical in shape, green with a dark green dorsal stripe, and a yellowish stripe running along each side of the body. Their heads are brown or black, and the surface of their bodies is covered with short setae (Khoon, 2010). The wingspan of *Zizina otis* ranges between 14 and 20 mm. It flies slowly and is active during bright, sunny days, while at night it rests on grass flowers or blades of grass, sometimes found in groups. This species exhibits a habit of flicking its hindwings up and down. The larvae of *Zizina otis* feed on the leaves of *Mimosa pudica* and *Desmodium*, and they may also consume other weedy plants. *Zizina otis* reproduces by

laying eggs, with the female butterfly depositing her eggs on the underside of leaves (Khoon, 2010).

Leptosia nina is easily identifiable due to its distinct and striking features, which set it apart from other butterflies, even those within the Pieridae family. It has a small body, with a wingspan of about 25-35 mm. The wings are white with irregular brown or black markings on the outer edges. The upper side of the wings has two irregular black spots resembling eyes, and two black streaks at the corners of the forewings. These four black markings are also faintly visible from the outer side of the wings. There is no significant resemblance between the Wandering Snowflake and other butterflies. The body and wings of the female *Leptosia nina* are slightly larger and more rounded. The outer wings have a tinge of brown or cream. The four black markings on the inner wings are also broader, and the outer wing markings are more numerous. During mating, the female positions herself below, hanging from the abdomen of the male (Sonia et al., 2022).

Eurema blanda is characterized by black antennae with yellow stripes; brown eyes; a yellow head; a yellow proboscis; a yellow abdomen with brown spots; and yellow legs. The wings are yellow, with a

brown band along the marginal to the anal edges, narrowing towards the subcostal region. This butterfly is distributed across Sumatra, Java, Bali, Nusa Tenggara, Kalimantan, Sulawesi, Maluku, Papua, Taiwan and Philippina (Alawiyah et al., 2022).

Papilio aegeus prefers greenish targets for oviposition, similar to Pieris butterflies, suggesting that butterflies may use the green color to distinguish young leaves from a distance. *P. aegeus* also favors horizontally polarized light, which may help them identify flat, horizontally oriented leaves that are easy to lay eggs on. Nymphalid checkerspot butterflies select leaves based on visual cues such as size, shape, and orientation. Thus, it appears that various visual cues contribute to how these insects evaluate leaves as potential oviposition targets. However, laboratory studies often use artificial stimuli, raising questions about the ecological relevance of these preferences in the wild (Nagaya et al., 2021).

Danaus chrysippus is characterized by a black head with white spots, a black thorax with white spots, and a brown abdomen. The dorsal wings are predominantly orange. The forewings have black tips with white spots, while the hindwings are orange with one

large black spot and two smaller black spots, a thin black margin with white spots. *Danaus chrysippus* is found in Sumatra, Java, Bali, Nusa Tenggara, Kalimantan, Sulawesi, Maluku, Papua, Africa, India, China, Japan, Indo-China, Malaysia, Peninsula, Philippines, Australia, and New Caledonia (Sonia et al., 2022).

D. CONCLUSION

The Lepidoptera orders found were *Danaus chrysippus*, *Leptosia nina*, *Zizina otis lamp*, *Papilio aegaeus*, *Zizina otis indica*, *Eurema blanda*, *Papilio polytes*. The Lepidoptera orders found on the Ujong Pancu tourist beach in Aceh Besar have a variety of characteristics and their presence is influenced by the vegetation around the beach.

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