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# The Presence of Branded Imperial *Eooxylides tharis* Geyer, 1837 (Lepidoptera: Lycaenidae) in Bangka Island, Sumatra, Which Subspecies is This?

INA APRILLIA[1*], ZAHRIAL EFFENDI[2], AMANATUN NISA[3] & MUHAMMAD IQBAL[1]

[1]*Department of Biology, Universitas Indo Global Mandiri, Jalan Jend. Sudirman No. 629, Palembang 30129, South Sumatra, Indonesia*
**Corresponding Author. E-mail: inaaprillia@uigm.ac.id; https://orcid.org/0000-0003-3531-2445*
*E-mail: miqbal@uigm.ac.id; https://orcid.org/0000-0002-6657-0183*
[2]*Flora Fauna Bangka, Jalan Sisingamangaraja RT 06 Air Ruai Pamali, Bangka 33255, Indonesia*
*E-mail: zahrial@gmail.com; https://orcid.org/0009-0004-7250-9698*
[3]*Department of Biology, Bangka Belitung Universitas, Merawang, Balun Ijuk, Gang IV No.1, Bangka 33172, Bangka Belitung Islands, Sumatra, Indonesia*
*E-mail: amanatun@ubb.ac.id; https://orcid.org/0000-0002-6368-9023*

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**Abstract**
The Branded Imperial *Eooxylides tharis* Geyer, 1837 is a lycaenid butterflies found in mainland Sumatra and Belitung Island, but no references provided information if this butterfly occur in Bangka Island. On 7 December 2024, few individuals of *E. tharis* were observed and documented in Pelawan Forest, Namang Village, Central Bangka District, Bangka Island, Sumatra. In addition, there are two reports from citizen science platform about the presence of *E. tharis* in Bangka Island. The status of which subspecies is discussed, and it is possible that population of *E. tharis* from Bangka Island represent a new subspecies.

**Keywords**: Bangka, Branded Imperial, *Eooxylides tharis*, Rhopalocera, Sumatra.

## Introduction

Sumatra is the sixth largest island in the world, and as well as the second largest island in Southeast Asia and Indonesian region (Shepherd & Magnus 2004). The Sumatra Island is one of the highest levels of biodiversity hotspot in the world, and exhibits some of richest islands in Southeast Asia and Indonesian region (Whitten *et al.* 2000). Many taxa remain unexplored, particularly for arachnids and butterflies (Aprillia 2019; Rachman *et al.* 2024).

The Lycaenid butterflies or Family Lycaenidae is a big family of butterflies that comprise over 5.000 species (Holloway *et al.* 2001). Many more undoubtedly remain to be discovered as most of the tropical species spend their entire lives undetected in the remote area or in the rainforest canopy (Hoskins 2015; Iqbal *et al.* 2021). Recent study suggest that there are more than 6.000 reported species of lycaenid butterflies, and the tropical lycaenid butterflies are not thoroughly documented (Powell 2009; Iqbal *et al.* 2020a, b).

Sumatra is home for more than 1.000 species of butterflies (Rhopalocera), and at least 365 species are lycaenid butterflies (Iqbal *et al.* 2021; Aprillia & Iqbal 2024). One of lycaenid butterflies in Sumatra is Branded Imperial *Eooxylides tharis* Geyer, 1837 (Aprillia *et al.* 2020; Panjaitan *et al.* 2020). There are subspecies of *E. tharis* in Sumatra, including *E. t. tharis* (mainland Sumatra), *E. t. watsoni* (Simuelue Island), *E. t. latipictus* (Nias Island), *E. t. enganicus* (Enggano Island) and *E. t. ritsemae* (Belitung Island) (GBIF 2023; Savela 2024). Based on the available references, there is no information about the occurence of *E. tharis* in Bangka Island, Sumatra. In this paper, we report the presence of *E. tharis* in Bangka Island, and the status of which subspecies is discussed.

## Methods

A visit to Pelawan Forest or Hutan Pelawan was conducted on 7 December 2024. Administratively, Pelawan Forest was located in Namang Village, Central Bangka District, Bangka Belitung Islands Province, Indonesia (Fig. 1). The Pelawan Forest has a total area of 300 ha, and there 47 ha has been allocated as a Biodiversity Park of Pelawan Forest in 2013 (Henri 2017). This area is managed by POKDARWIS (Kelompok Sadar Wisata) or a community-based volunteer organization in increasing tourism development in the village. The area is dominated by Pelawan Tree *Tristaniopsis merguensis*, a species from family of Myrtaceae (Fig. 2). In general, this species is capable and successful to survive in acidic soil conditions and under stressful conditions.

During our visit to Pelawan Forest, we spotted few individuals of a certain of lycaenid butterflies, which identified Branded Imperial *Eooxylides tharis*. This species is quite common in the Pelawan Forest, from entrance of the forest to the end of forest track. Due to the our limitation of equipments and permit for collecting sample, no specimen was collected during this visit. However, we took some photos for documentation and identification. To review distribution status of *E. tharis* in Bangka Island, we search other records of *E. tharis* from citizen science platform and social media such as GBIF and I naturalist.

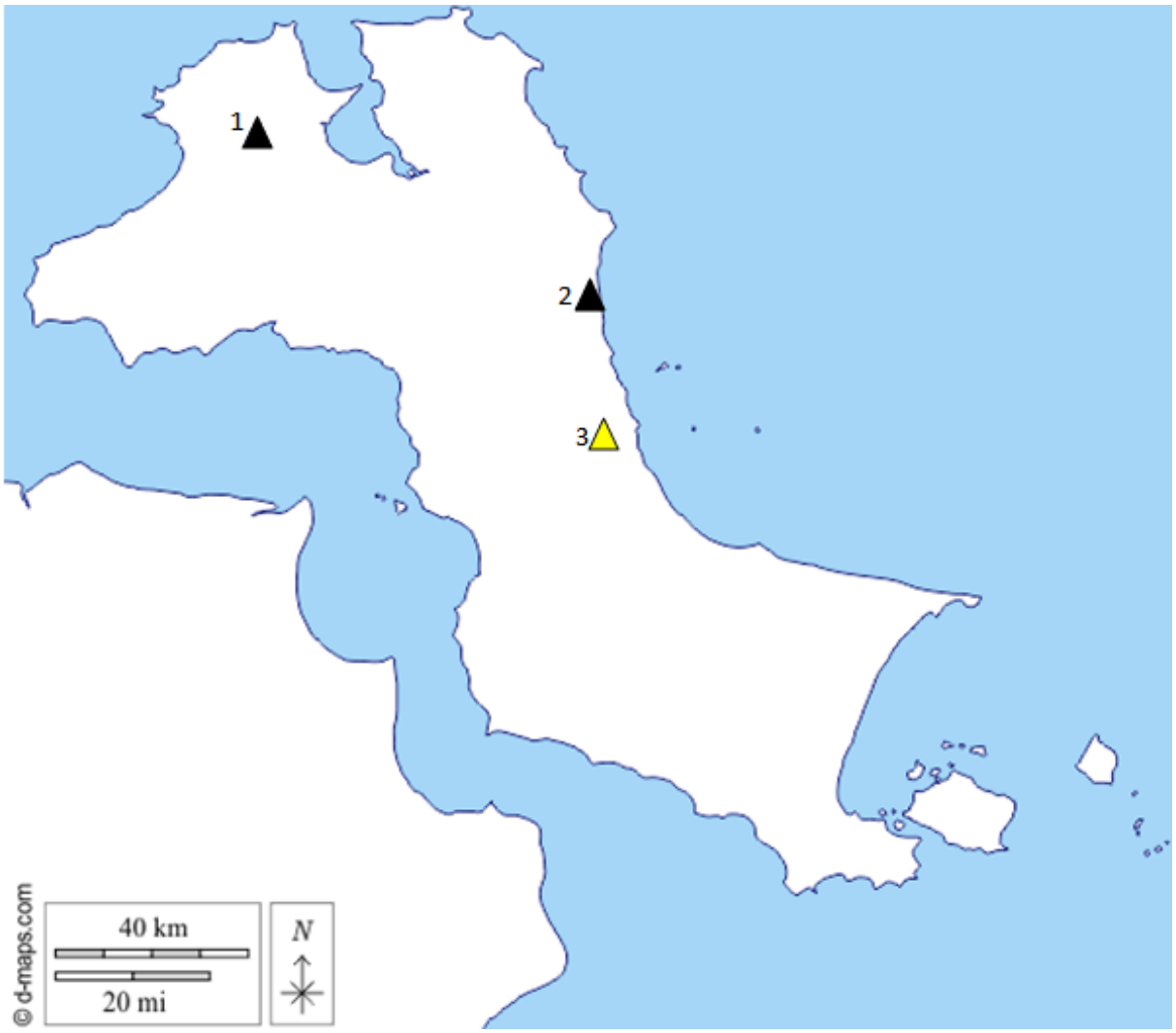



**Figure 1.** Map of Bangka Island (Sumatra), and the occurence of Branded Imperial *Eooxylides tharis* in the island. Black triangles are previous records from citizen science platform, and yellow triangle is recent record from Pelawan Forest. Number in the figure indicate (also see Table 1): 1. Record of *E. tharis* on 20 November 2022 in Tumbak Petar, Jebus, West Bangka District; 2. Record of *E. tharis* on 9 June 2023 in Bangka District; 3. Record of of *E. tharis* on 7 December 2024 in Pelawan Forest, Namang Village, Central Bangka District.



**Figure 2.** The typical habitat of Pelawan Forest. The area is dominated by Pelawan Tree *Tristaniopsis merguensis*, a species from family of Myrtaceae (Photograph: Muhammad Iqbal).



**Figure 3.** The Branded Imperial *Eooxylides tharis* on 7 December 2024 in Pelawan Forest, Namang Village, Central Bangka District (Photograph: Muhammad Iqbal).

## Results and Discussion

The butterfly from Pelawan Forest of Bangka Island is identified as *E. tharis* by its morphological features. The hindwing with 3 white tails which the one at vein 2 is the longest, with two shorter tails at veins 1 and 3. The uppperside is blackish-brown with hindwing tornus white with black marginal markings. The underside is reddish-orange, forewing unmarked, and the hindwing with large black submarginal spots on the white tornal area which is separated from the orange area by an irregular black line (Fig. 3). This buterfly is identified as *E. tharis* as the morphological features fit well with illustrations and descriptions appropriate references (D'Abrera 1986; Fleming 1989; Seki *et al.* 1991; Amnuay 2012; Kirton 2014; Corbet *et al.* 2020).

The *E. tharis* has been reported from mainland Sumatra (subspecies *E. t. tharis*) and Belitung Island (subspecies *E. t. ritsemae*) (GBIF 2023; Savela 2024), but no information from Bangka Island. To review distribution status of *E. tharis* in Bangka Island, we search other records of *E. tharis* from citizen science platform and social media. Based on from citizen science platform (GBIF 2023; iNaturalist 2024), there ara two previous other records of *E. tharis* from Bangka (Table 1).

**Table 1.** The records of Branded Imperial *Eooxylides tharis* in Bangka Island, Bangka Belitung Province, Sumatra. The number on the table refers to the map (Figure 1).

| Location | Date | Number on the Map | Sources/Observers |
|---|---|---|---|
| Tumbar Petar, West Bangka District | 20 Nov 2022 | 1 | GBIF 2023, iNaturalist 2024 |
| Near Ayik Anyir, Bangka District | 9 June 2023 | 2 | GBIF 2023, iNaturalist 2024 |
| Pelawan Forest, Cetral Bangka District | 7 Dec 2024 | 3 | Authors *pers. obs* |

Located in the middle of mainland Sumatra and Belitung Island, the records of *E. tharis* from Bangka Island are significance findings for filling gap of its distribution range. The Bangka Island, Sumatra (1.166°−3.166°S, 105.166°−106.833°E) has a total area of 11,340 km$^2$, it is approximately 130 km wide at its northern end and about 70 km in the south, whilst at its narrowest it is no more than 35–40 km wide (Iqbal *et al.* 2017). Bangka is segregated from mainland Sumatra by the deepless Bangka Strait, about less than 20 m deep and 14 km wide at its narrowest point. To the east, the smaller Belitung (Billiton) island (4,595 km$^2$) locates about 100 km away, although several smaller and many very small islands mean that the distances between individual land-bodies are much shorter.

No specimens of *E. tharis* were collected from Bangka Island, but live individuals were photographed (Fig. 3). After carefully comparing our images from Bangka with images of butterflies from other parts of Sumatra and Borneo, we found that it is very difficult to determine which subspecies of *E. tharis* from Bangka Island. In addition, we are unable to find photo of *E. tharis* subspecies *ritsemae* from Belitung Island. The morphological features of subspecies *E. t. ritsemae* from Belitung Island described by van Ecke (1914) as follow: "having even more reduced white spots on the upper surface of the hindwings, which are also powdered with black squamae, so that there is hardly any white color left. On the underside the patterning is also very different, because we count 5 black marginal blemishes, which have white arches, which are again regularly bordered with black. The base color of the underside is almost red. The wingspan is only 27 mm. The ground color of the upper surface is as dark as that of the Borneo specimens without dusting".

The presence of butterflies is influenced by the availability of host plants, which provide essential resources for egg-laying and caterpillar development, a critical part of the butterfly lifecycle (Aprillia *et al.* 2024). It was reported that the *Smilax* spp have been host plants for *E. tharis*. In Malaysia, the larva has been reported feeding on *Smilax leucophylla*, in Thailand on *S. bracteata*, and in Singapore on *S. bracteata* and *S. leucophylla* (as *S. barbata*) (Seki *et al.* 1991; Ek-Amnuay 2012; Corbet *et al.* 2020). In Bangka Island, the species of *S. leucophylla* has been reported in Pelawan Forest. This presence of *S. leucophylla* as host plant of *E. tharis* is one reason why this species occur in Bangka Island.

*Eooxylides tharis* is one of the most complex of all butterflies genera, with specific and subspecific taxonomy extremely little information and lack of specimens for certain subspecies. Our review of *E. tharis* on Bangka Island and their identification as the taxon based on the pattern of wings is a preliminary assessment. Further research is needed to collect information on the taxon's biology, morphological features, hostplants and analyses of its DNA.

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