

## Naturalis Biodiversity Center visits MZB and UNCEN in Indonesia

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**Abstract:** From 20<sup>th</sup> May until 15<sup>th</sup> June 2022, two butterfly collections in Indonesia were visited in the context of the Malesian butterfly project at Naturalis Biodiversity centre. Specimens of both collections were photographed. The pictures will contribute to the digitalisation of both Indonesian collections and will help identify specimens at Naturalis.

**Rangkuman:** Dari tanggal 20 Mei hingga 15 Juni 2022, dua koleksi kupu-kupu di Indonesia dikunjungi dalam rangka proyek kupu-kupu Malesian di pusat Keanekaragaman Hayati Naturalis. Spesimen dari kedua koleksi difoto. Gambar-gambar tersebut akan berkontribusi pada digitalisasi kedua koleksi Indonesia dan akan membantu mengidentifikasi spesimen di Naturalis.

**Keywords:** Malesian butterfly project, Rhopalocera, Lepidoptera, New Guinea, Papua.

### Introduction

Naturalis Biodiversity Center, in collaboration with the Van Groenendael-Krijger Foundation, started the “Malesian Butterfly project” in November 2020. The Naturalis collection includes an estimated 50.000 pinned Malesian butterfly specimens from countries in the so-called Malay region (Malaysia, Singapore, Indonesia, Philippines, Brunei, East Timor and Papua New Guinea). Within the Malesian butterfly project these butterflies are photographed from the top and bottom. Besides that the taxonomic and geographic data, including coordinates, are entered into a database. This data will eventually be shared through GBIF and through a website which is built during the project, especially devoted to Malesian butterflies *bseai.linnaeus.naturalis.nl*. Collection and literature data will be collected and bundled on the website which is accessible for everyone.

The first author, being the coordinator of the Malesian butterfly project, was allowed to visit two institutions in Indonesia together with the second author, intern student Willemijn van Dijk. The main goal of this visit was to monitor the status of the Indonesian collections and the progress made with the digitization of the collections.

### The butterfly collection at the Museum Zoologicum Bogoriense (MZB)

From 20<sup>th</sup> May until 2<sup>nd</sup> June 2022 we visited Mrs. Peggie Djunijanti at the Museum Zoologicum Bogoriense (MZB) collection in Cibinong (fig. 1). In this collection are pinned butterflies present, but also folded butterflies in triangle paper bags, the so-called papillotten (fig. 2). During previous digitization projects in 2020 and 2021, funded by BIFA grants, the pinned specimens of the Papilionidae, Pieridae, Riodinidae and type specimens of other families have been digitized (BIFA4\_037, see Literature). The data and pictures of

these pinned specimens are available on GBIF, of the papilloten only the data are available, no pictures were taken yet.



**Fig. 1.** (left to right) Peggie Djunijanti, Anne Overduin & Willemijn van Dijk



**Fig. 2.** One of the standardized digital pictures taken at MZB

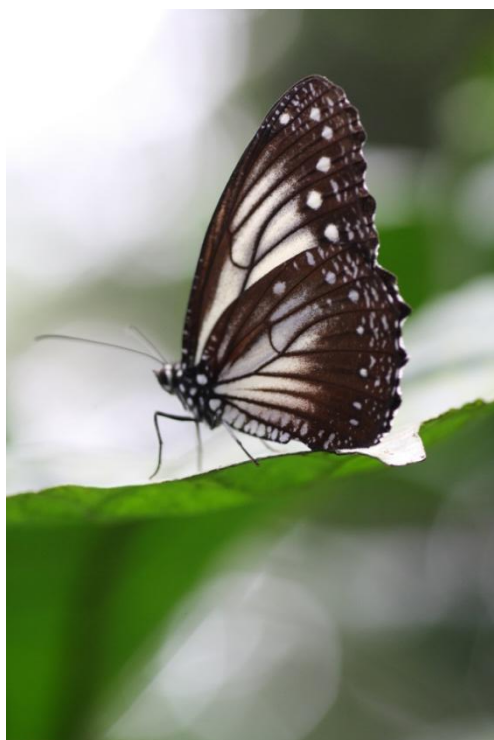
The Nymphalidae, Lycaenidae and Hesperidae specimens still await digitization, but are already provided with unique numbers without QR-codes. We did not have the facilities to print the QR-labels and therefore it was yet impractical to digitize these specimens during our stay as it would require double handling of the specimens. We photographed the folded butterflies using a portable photography setup (figs 3-4), which works with a cell-phone. Because this setup is smaller than the usual setting, it is especially suitable to use on travel

and when a limited budget rules out an expensive camera. The staff at MZB was interested in the setting and learned how to use it. No less than 320 specimens of Papilionidae and Pieridae were photographed. Of every species we photographed four specimens or, in case of multiple subspecies, two specimens of each subspecies when available. We focussed on species that we had not yet identified in the collection papillotten of Naturalis Biodiversity Center (NBC). By doing this, not only the photos of these papered butterflies will become available on GBIF, but we can also add these to our automated species recognition model, which helps identify the specimens in the papillotten collection at Naturalis.



**Figs 3-4.** The photography setting which was used with a cell-phone. **Fig. 3.** All separate elements; **fig. 4.** The setup in use.

### Life observations in Java



We also visited the botanical gardens in Bogor, where we had the chance to observe living butterflies. We took many pictures of different species and reported those on 'inaturalist'. That way the occurrence of living butterflies is also updated and the pictures may be used on the project's website.

During a day trip to the Cilember waterfalls we observed a beautiful *Elymnias ceryx* (Nymphalidae) for which there were no observations yet on inaturalist and we had no life picture of this species yet from one of the contacted photographers, which makes it a nice addition for our website.



### Visiting Universitas Cenderawasih (UNCEN)

From 2<sup>nd</sup> until 15<sup>th</sup> of June, we were welcomed by a team of ladies from the Universitas Cenderawasih (UNCEN) in Waena, Papua (fig. 5), Evie Warikar, Daawia Suhartawan, Erlani Febrida, Herlina Menufandu and Ika Ramandey.



**Fig. 5.** At Sentani Lake, together with the UNCEN team (left to right): Evie Warikar, Willemijn van Dijk, Daawia Suhartawan, Anne Overduin, Erlani Febrida, Herlina Menufandu and Ika Ramandey.

We both gave a lecture at UNCEN for students and their lecturers of the Biology Faculty who were involved in Entomology. The talks stressed the importance of collections and its digitization and demonstrated the possibilities for collaboration, how internship students can be involved to digitize collections, and we taught some advanced procedures in specimen digitization such as automated species recognition and georeferencing. The students showed their enthusiasm about the subject. Some of them started an ‘inaturalist’ account and now report their own life observations of butterflies.

We also visited the former collection of Henk van Maastricht (now Koleksi Serangga Papua, KSP) and photographed 181 specimens of pinned Pieridae and 138 specimens of Lycaenidae, upper- and underside. In the KSP collection the Papilionidae are completely digitized and a starting part of the Pieridae. We took pictures of Pieridae species that were not yet digitized and which were not yet identified in the NBC papillotten collection. We photographed four specimens of every species, or in case of multiple subspecies, two specimens of each subspecies when available.

At request of Lycaenidae specialist Stefan Schröder we specifically focused on some specimens from the *Jamides* group (fig. 6), because there was some doubt about the identification (Schröder, 2022). This doubt was grounded because according to Schröder, none of the specimens identified as *Jamides bochus* were correctly identified.



**Fig. 6.** One of the *Jamides* specimens photographed in the KSP collection

### Life observations in Papua

The UNCEN team showed us various locations where we observed some beautiful living butterflies (figs 7-9) which are unique to the island. Again we were very lucky to spot a species which lacked observations in “inaturalist”, the Skipper (Hesperiidae) *Mimene miltias*. This made us even more aware of the lack of research in this region and stresses the importance that we keep on monitoring this region and registering butterfly biodiversity. Although we brought nets for catching butterflies, we think that in the spirit of today's fragility of nature, it is more appropriate to take pictures instead of catching specimens. In some cases, such as describing new species or identifying cryptic species, it may be unavoidable to collect the specimens allowing DNA analysis and investigation of internal anatomy. However, in most cases, such as monitoring the occurrence of known butterfly species, taking pictures is admissible and more and more contributes to scientific research (Fischer et al., 2021).



**Figs 7-8.** Some Papilionidae butterflies observed in the field. **Fig. 7.** *Pachliopta polydorus*, Cyclops Mountains; **Fig. 8.** *Papilio Ulysses*, Keerom regency.





**Fig. 9.** *Mimene miltias* (Hesperiidae), near Sentani Lake

Together with a delegation of the UNCEN team we spent two days in Rheapang forest (Nimbokrang), known for the ecotours organized by Alex Waisimon for spotting birds of paradise. Besides the impressive displaying birds of paradise, we also witnessed and photographed a specimen of *Papilio aegeus* (Papilionidae) being attacked by a praying mantis (figs 10-12).



**Figs 10-11.** *Papilio aegeus* being attacked by a praying Mantis, Rheapang forest, Nimbokrang



**Fig. 12.** The predator in detail

All in all this trip was not only a very nice experience for us, but also gave us some material which is very useful for the Malesian butterfly project, the involved institutions and for entomological research.

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### **Literature**

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