

Koleksi Serangga Papua: collection management and digitization

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Abstract: Since the end of 2015, the staff of Kelompok Entomologi Papua (KEP) and the Universitas Cenderawasih (UNCEN) in Waena are responsible for the care of the magnificent entomology collection Koleksi Serangga Papua (KSP). In order to boost the professional management this large collection requires, KEP members co-organized in May 2017 a short Collection Management training, together with UNCEN, the Papua Insects Foundation and Naturalis Biodiversity Center. Also, the four organizations launched a pilot-digitization project (data and image capture), in order to facilitate access to the collection for scientists and students, promoting collection-based research and ensuring the preservation of the KSP specimens. This paper gives a short report of the activities during the Collection Management training and the takeoff of the digitization project.

Rangkuman: Sejak akhir tahun 2015, staf Kelompok Entomologi Papua (KEP) dan Universitas Cenderawasih (UNCEN) di Waena bertanggung jawab atas perawatan koleksi entomologi yang luar biasa dari Koleksi Serangga Papua (KSP). Untuk meningkatkan pengelolaan yang profesional yang dibutuhkan oleh koleksi besar ini, anggota KEP menyelenggarakan sebuah pelatihan Manajemen Koleksi singkat di bulan Mei 2017, bersama dengan UNCEN, the Papua Insects Foundation dan Naturalis Biodiversity Center. Selain itu, keempat organisasi tersebut meluncurkan proyek digitalisasi percontohan (pengambilan data dan gambar), bertujuan untuk memudahkan akses koleksi bagi para ilmuwan dan siswa, mempromosikan penelitian berbasis koleksi dan memastikan pelestarian spesimen KSP. Makalah ini memberikan laporan singkat tentang kegiatan-kegiatan selama pelatihan Manajemen Koleksi dan awal pelaksanaan dari proyek digitalisasi.

Keywords: KSP collection, collection management, digitization, accessibility, KEP, UNCEN, Naturalis Biodiversity Center.

Introduction

Koleksi Serangga Papua (KSP) is a large insect collection with around 75,000 specimens of Papuan insects, including 70,000 Lepidoptera, most of them legacy of late Br. Henk van Mastrigt (De Vos, 2016). It is a collection rich in type and voucher specimens, unique records and possibly, also containing undescribed species. It is the biggest archive of the butterfly diversity of Papua in the world. The collection is under the supervision of the Kelompok Entomologi Papua (KEP) and property of the Universitas Cenderawasih (UNCEN) in Waena. In January 2016, the KSP collection was moved to climate-controlled collection and curation rooms in UNCEN premises. Miss Erlani Rahareng and Miss Evie Warikar are watching over

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the drawers, with the help of Mrs. Daawia Suhartawan, as they combine their studies and teaching obligations with the care of the collection (Purwoadji, 2017). The KEP staff, aware of the scientific importance of the collection, have taken steps to further improve its curation and enhance access. In order to achieve this, two main initiatives have been developed, starting in May 2017. In the first place, staff of Naturalis Biodiversity Center delivered a Collection Management Course for members of KEP and staff of the Biology Department (FMIPA) at UNCEN. Secondly, a digitization process begun, with a nine-months pilot, carried out by KEP with the support of Naturalis.

Collection Management Course

The Collection Management Course was prepared and delivered by Rob de Vos and myself, both collection managers at Naturalis Biodiversity Center. The course was designed to fit the needs of the KEP staff members and it consisted of three lectures and additional learning documentation, which was made available to the students digitally. The first lecture dealt with the general guidelines for the care of natural history collections, with a special focus on Entomology. The second lecture covered the techniques of collecting and mounting Lepidoptera, followed by a short fieldtrip and practical demonstrations. The third and last lecture was also the kickoff of the digitization project, covering the theory and techniques for image and data capture of collection specimens. Around 25 people attended the course, among them were members of KEP, biology students, teachers, members of WWF Indonesia and of the photography group 'Macro Papua'.

The main topics covered during the first lecture included the value of natural history collections, collection management policies and outreach, as well as the main aspects of curation (storage, preservation, pest management, loan policies and digitization). We discussed the legal, ethical and professional standards needed for the successful management of a collection such as the KSP. Security issues and risks, like access, theft, conservation conditions and risks related to handling specimens were also reviewed. The second lecture, on mounting butterflies and moths, was delivered by Rob de Vos. The participants were able to try the techniques and materials themselves with some fresh specimens we collected together around the UNCEN campus. All participants received handouts of both talks, and related literature was delivered in digital form as well.

The lectures were given in English, and translated by Mrs. Daawia Suhartawan and Miss Evie Warikar. The participants also visited the KSP and had an opportunity to see the scope and the state of curation of the collection *in situ*. KEP members were able to put some of the concepts into practice in the following days.

Digitizing the KSP collection

The digitization project will increase virtual accessibility to the collection, which in turn facilitates research on Papuan biodiversity. Virtual access protects specimens from over-handling as the high-resolution photographs allow for on-screen examination. This is particularly true for butterflies and other macro lepidopteran groups. The digitization project of the KSP consists of a nine-month pilot and an evaluation that, if successful, will be extended for a similar period of time. The data registration and image capture is being carried out by members of KEP and the group Macro Papua. They received their training at

UNCEN, consisting of a general lecture and a couple of hands-on sessions. We provided them with a standard digitization workflow, which allows for high quality data registration, and when followed step by step, reduces the risk of errors and helps preserve the information for the future. This workflow has been developed at Naturalis Biodiversity Center (Van Leusen & Heerlien, 2012) and it is now our standard procedure for digitization. The label data of the KSP specimens, each with its unique identification number, is entered in an Excel-file following Darwin Core standards (Wieczorek et al, 2012), so that it can be uploaded to the Global Biodiversity Information Facility (GBIF) in the near future (Robertson et al., 2014). After a process of quality control, the data is safely stored in the main server of Naturalis Biodiversity Center until we are able to release it online.

Financing the projects

The equipment needed for the students to collect and to mount specimens was obtained by generous donation of Vermandel Entomology supplies, while the documentation and literature dealing with collection management was already available at Naturalis Biodiversity Center. The digitization project, on the other hand, required additional funding and specialized equipment. The Dutch Uyttenboogaart-Eliassen Foundation financed the material needed to photograph the specimens (camera, lighting and copy stand) as well as the travel expenses of Rob de Vos and myself to deliver the course. The Papua Insects Foundation contributed with extra hard drive for storage of data, while Naturalis Biodiversity Center donated a laptop and the necessary software. The fees for the digitization team were obtained by the generous donation of private donors, who contributed to this project after a crowdfunding campaign launched by the Papua Insects Foundation in December 2016.

First results and future steps

Since May, members of KEP have been applying some of the concepts treated during the Collection Management course. Pest-management techniques were immediately put into practice in order to guarantee the preservation of the specimens. Amongst other things, naphthalene-balls have been added to each drawer and regular assessments are carried out in the collection by checking drawers for any sign of contamination. Also, the access policy has been upgraded to reduce risks. There is a loan administration in place that allows researchers to request and obtain specimens following international museum standards. Although KEP has always kept a watchful eye on the overall status of the collection, they have now additional tools to do so with more efficiency and security.

The pilot project of the digitization of the KSP collection started with the Papilionidae. At this moment, around 300 specimens have been registered and photographed. In the coming months more specimens will be added, as the team becomes more acquainted with the process and the photography. The data will be made accessible through the GBIF portal after the pilot. An evaluation of the pilot will take place towards the end of 2017, in order to assess the viability of the digitization process with the available resources. Reports and news about the status of the Koleksi Serangga Papua will be posted at the website of the Papua Insects Foundation.

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Fig. 1. Participants of the Collection Management Course, 5-7 May 2017, UNCEN, Jayapura.



Fig. 2. Eulàlia Gassó delivering the Collection Management Course.



Fig. 3. Rob de Vos demonstrating how to mount butterflies.



Fig. 4. Several participants, representing KEP, Macro Papua, WWF Indonesia, UNCEN, Papua Insects Foundation and Naturalis Biodiversity Center.

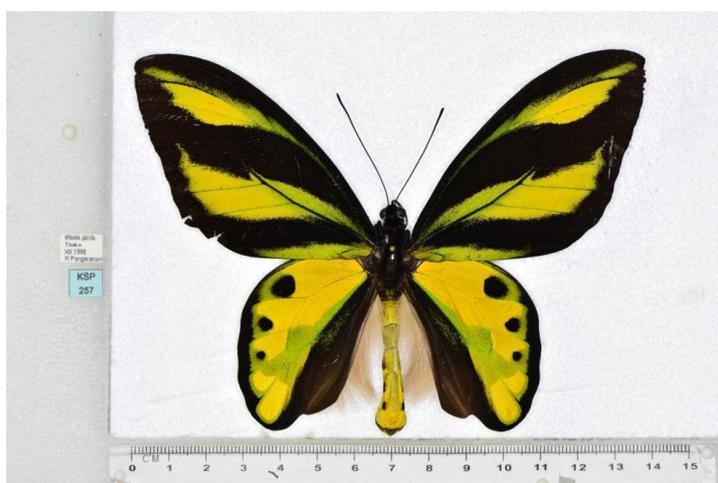


Fig. 5. Hands-on digitization training; **Fig. 6.** A sample of image capture from the digitization project.