

# Data Mobilization of Botanical Collections at Herbarium Bogoriense (BO), Indonesia

---

**Programme:**BIFA

**Project ID:** BIFA6\_014

**Project lead organization:**Herbarium Bogoriense, Indonesian Institute of Sciences

**Project implementation period:**1/9/2021 - 28/2/2023

**Report approved:** 28/7/2022

## Narrative Midterm report

---

### Executive Summary

---

The purpose of this program is to mobilize about 10000 Botanical Collections that are kept at Herbarium Bogoriense (BO), Indonesia. The program conduct 4 main activities: validating taxonomic identification, databasing, imaging, and georeferencing data. Cleaning data and publishing data are two additional activities. The project is supported by Curators, IT specialist, Herbarium assistants, and Data Entry Operators (DEO). They work under the Monitoring and Evaluation (M&E) process that has been routinely conducted by the Project Coordinator and Project Assistant in order to achieve the targeted project.

As a part of the project communication plan, internal and external communication have been conducted for the purpose of disseminating the botanical collection digitization program. The internal communication was done, meanwhile, the external communication will be organized the workshop on mobilization data of Herbarium Bogoriense in the second midterm of the project.

In this first mid-term, about 1000 records have been validated, and dataset of Ebenaceae has been published. Some datasets are ready to be cleaned and published soon. Those data have been completed by georeferencing dan imaging.

The project achievement in the first mid-term has been significantly affected by the COVID-19 pandemic. The implementation of the Work from Home (WFH) is applied by most government institutions in Indonesia. This WFH gives less opportunity for Curators to validate the herbarium specimens.

For the next mid-term program, back to the normal condition is expected in order to pursue the final targets of the project.

### Progress against milestones

---

**Has your project published at least one dataset through GBIF.org?: Yes**

**Dataset published:**

Dataset	DOI
Type collections of Ebenaceae at Herbarium Bogoriense (BO), Indonesia	<a href="https://doi.org/10.15468/9p9ydz">https://doi.org/10.15468/9p9ydz</a>
Type collections of Nepenthaceae at Herbarium Bogoriense (BO), Indonesia	<a href="https://doi.org/10.15468/g629ne">https://doi.org/10.15468/g629ne</a>

**Has at least one member of your project team received certification following the BIFA capacity enhancement workshop?: Yes**

**Name of the workshop participant:**Atik Retnowati

### Activity progress summary

The project has targeted 10000 records of the type and general herbarium collections kept in Herbarium Bogoriense (BO). The data were extracted from the Indonesian Biodiversity Information System (IBIS) served by the Unit of Biodiversity Scientific Data of The National Research and Innovation Agency of Indonesia (BRIN). BRIN is the new agency where all research institutions in Indonesia were merged into this agency, including the Indonesian Institute of Sciences (LIPI) where Herbarium Bogoriense (BO) was within it.

The workflow of the program is preceded by validating the collection data which done by the BO curators, then followed by the databasing, imaging and georeferencing. The project targeted taxa have been distributed to the curators, and they focus on the group they are responsible for.

Progress on four project activities are as follows:

#### **1. Validate taxonomic identification**

Curators check each row of the completeness and validity of the collection data extracted from the IBIS, particularly the taxonomic information of the collections, i.e. scientific name, the type status (holotype, isotype, type, etc), and ensure as type or general collection. Tracing the protologue to verify the type status of the collection is a challenging activity. To support this activity, online literature databases are used as references. Additionally, these online databases are also used to determine the current name of species.

Validation of the taxonomic information was then followed by the viewing and matching of the data with collection labels done by the herbarium assistants. While working on this stage, herbarium assistants find out the unrecorded collections.

Up to mid of May 2022, approximately the data of 1000 collections of several families have been validated. Dataset of Ebenaceae is the first dataset published on the dataset webpage on GBIF.org. It will be followed by other datasets as soon as possible. The validating activity has been delayed due to the pandemic COVID-19 for the last two years. Herbarium Curators have to Work from Home (WFH), instead of working at the herbarium. The WFH gives less opportunity for Curators to validate the herbarium specimens. Consequently, the number of validated collection data is behind the expectation.

The daily new case of Covid-19 in Indonesia up to May 2022 is constantly decreased, and hope Curators can start Working from Office (WFO) soon. It will speed up the validating process of the herbarium collection data.

#### **2. Databasing**

As mentioned in the validation process, it turns out that many of the existing type collections have not been entered into the database. Those data should be entered into the Indonesian Biodiversity Information System (IBIS) database by the Data Entry Operator (DEO). Unfortunately, the IBIS database is a very unstable system. Trouble often occurs during data entry. In order to secure the BO BIFA program, the data entry operator temporarily lists the data in the excel file, and it will be entered when the database is stable.

#### **3. Imaging**

The BO collections have only been partially digitized, and type collections are the priority for this digitization activity. The remaining un-digitized collections have been captured in this midterm program. The herbarium assistant also recaptured the collections with low-resolution images to improve the quality of the collection images.

#### **4. Georeferencing data**

Finding the coordinates of the locality is done by the Herbarium Assistant who has experience determining the coordinates of the locality.

**New activities:**

## 1. Cleaning data

We detect errors in the BO data, and we assume that errors occurred during the data entry. We observe that taxonomic and data errors are two major causes.

Taxonomic data errors:

- a misspelling of the species names
- invalid the species names
- incorrect and inconsistency of the species authorship
- incorrect and inconsistency in writing the name and collector number

Data errors:

- format of the date.

The Curators have corrected the taxonomic errors while working on the validation process by using the validation tools, i. e OpenRefine, excel and also using the global taxonomic names list that is available online.

Columns contain the data that have been standardized into Darwin Core format.

## 2. Publish the dataset via the IPT:<http://ipt.biologi.lipi.go.id/>

Collection data that have been validated, cleaned, and standardized are ready to be published GBIF web through this <http://ipt.biologi.lipi.go.id/>.

In order to keep the program workflow running smoothly, the data have been categorized the data into:

1. Raw data
2. Validated data
3. Complete data

### Completed activities

#### **Activity name: Validate taxonomic identification**

---

**Description:** Curators validated the taxa of their expertise.

**Start Date - End Date:** 4/10/2021 - 24/2/2023

**Verification Sources:** Attach file of the

#### **Activity name: Validate taxonomic identification**

---

**Description:** Herbarium Assistants check the availability on type collections of of the targeted taxa.

**Start Date - End Date:** 3/1/2022 - 24/2/2023

**Verification Sources:** Attached file

#### **Activity name: Databasing**

---

**Description:** The DEO entered data into excel format of the un-recorded collections.

**Start Date - End Date:** 3/1/2022 - 24/2/2023

**Verification Sources:** Attached file.

#### **Activity name: Imaging the undigitized collections**

---

**Description:** Herbarium assistant has scanned the undigitized collections and collections with low resolution images.

**Start Date - End Date:** 3/1/2022 - 24/2/2023

**Verification Sources:** Attached file.

#### **Activity name: Georeferencing the location**

---

**Description:** The latitude and longitude are provided by manually searching the coordinates of the locations.

**Start Date - End Date:** 3/1/2022 - 24/2/2023

**Verification Sources:** -

## Activity name: Cleaning dataset

---

**Description:** Cleaning dataset by using the validation tools; OpenRefine, excel, and also using the global taxonomic names list that is available online

**Start Date - End Date:** 2/5/2022 - 24/2/2023

**Verification Sources:** Attached file.

## Activity name: Publishing dataset

---

**Description:** Collection data that have been validated, cleaned, and standardized are ready to be published GBIF web through this <http://ipt.biologi.lipi.go.id/>.

**Start Date - End Date:** 30/5/2022 - 28/2/2023

**Verification Sources:** Attached file.

## Report on Deliverables

---

### Deliverables progress summary

The mobilization data of Herbarium collections is a new program for BO, and there is still a lot to learn. For the first midterm, the project team focused on the main activities of the program: validating, databasing, imaging, and georeferencing. This program gives us a new opportunity to start learning new things. To achieve the midterm target of the BO BIFA Program, publishing herbarium collection data through the GBIF web is the first priority.

Under the above condition, the scientific publications, as one products of the BIFA program, will be delayed. Change in the final target of scientific publications is taken into consideration. We will produce a draft published paper in the next mid-term program, not a published scientific paper. This is our strategy to achieve the target of publishing 10000 data records via web GBIF as priority.

### Progress towards deliverables

## Title: Type collections of Ebenaceae at Herbarium Bogoriense (BO), Indonesia

---

**Type:** Dataset

**Status update:** Published and registered

**Dataset scope:** Indonesia, Malaysia, Philippines, Sri Lanka, Thailand

**Expected number of records:** 237

**Data holder:** Herbarium Bogoriense, National Research and Innovation Agency (BRIN)

**Data host institution:** Herbarium Bogoriense, National Research and Innovation Agency (BRIN)

**Sampling method:** The essential taxonomic data associated with collections were extracted from the Indonesian Biodiversity Information System (IBIS). These include the taxonomic name, location, habitat, collection date, collector name, collector number, and collection number. The data are then validated by Curators. Checking the data in the collection are done by the Herbarium assistants. The unrecorded collection data are entered into Excel and completed by capturing them. Re-identification is taken place on several selected species.

**% complete:** 100

**DOI:** <https://doi.org/10.15468/9p9ydz>

**Expected date of publication:** 2022-06-21

### Events

---

#### Curator Project Meeting

---

**Dates:** 2021-09-09 - 2021-09-09

**Organizing institution:** Herbarium Bogoriense

**Country:** Indonesia

**Number of participants:** 5

**Comments:** The meeting was conducted in order to determine the targeted project and deliver the job description of the involved curators at the project.

**Website or sources of verification:** -

### Events

---

#### Curator Project Meeting

---

**Dates:** 2021-10-04 - 2021-10-04

**Organizing institution:** Herbarium Bogoriense

**Country:** Indonesia

**Number of participants:** 5

**Comments:** The meeting was conducted in order to finalize the workflow and time schedule of the project.

**Website or sources of verification:** -

## Events

---

### Inter government Meeting

---

**Dates:** 2021-10-13 - 2021-10-13

**Organizing institution:** Herbarium Bogoriense

**Country:** Indonesia

**Number of participants:** 15

**Comments:** The meeting was addressed to the units of several Indonesian ministries related to the funds received from GBIF. The participants were from the ministry of Finance, Ministry of Foreign Affairs, Ministry of Law and Human Rights of Indonesia, Audit Board of BRIN, and other staffs of Bureau of Law and Cooperation, BRIN.

**Website or sources of verification:** -

## Events

---

### Audit Board of BRIN Meeting

---

**Dates:** 2021-10-26 - 2021-10-26

**Organizing institution:** Herbarium Bogoriense

**Country:** Indonesia

**Number of participants:** 10

**Comments:** The meeting discussed in detail the internal flow of the incoming GBIF's grant.

**Website or sources of verification:** -

## Communications and visibility

---

An internal communication has been established, particularly for the Deputy of Life Sciences and Environment, previously known as Deputy of Life Sciences, Head of Research Center for Biosystematics and Evolution, Director of Scientific collection management, the curators of Herbarium Bogoriense. They give a good response for the BO mobilization data.

The external communication will be conducted by hosting the workshop on mobilization data of Herbarium Bogoriense. The workshop is planned for either October or November 2022. The invited participants will be from the local University in Bogor, members of professional organization of Indonesian plant taxonomists. The workshop will a medium to disseminate the BO data mobilization program.

## Monitoring and evaluation

---

### Monitoring and evaluation findings

Monitoring and Evaluation (M&E) of the program are routinely carried out on a regular basis on the work of the Curators, IT specialist, Herbarium Assistants, Data Entry Operators (DEO), and the program treasurer. The project coordinator and the project assistant play the role of the M&E.

Results on M&E and the project deliverables of each project team:

#### 1. Curators

Curators work on the basis of their expertise as plant taxonomists, and they validate the dataset that has been set at the beginning of the program by the Project Coordinator and Project Assistant. The challenge faced by curators is to allocate the working hours for their own research and commitment to the BIFA program. The M&E of the mid-term results that they work on the track, and they produce the validated data as expected.

#### 2. Herbarium assistants and Data Entry Operator (DEO)

Herbarium assistants were recruited in January 2022 from a former external human resource of Herbarium Bogoriense. Unfortunately, they have a very limited skill about the business process of herbarium. To improve their ability how to work properly on the herbarium collections, we establish a

good communication and intensively remind them about the workflow of the BIFA program. We require them to send their weeklyreport and we give them feedback. We help them to find solutions, in case, they have difficulties encountered while working with collections.

The BO BIFA project is very well supported by the GBIF Secretariat. They give a good respons to the email and give the best solution for the difficulties that we have.

### Impact of COVID-19 pandemic on project implementation

---

The program of mobilization data of Botanical Collections of Herbarium Bogoriense needs high accuracy and due to the COVID-19 pandemic whose risks are severe and difficult to be predicted, our access to the Herbarium was limited. This limited access to the collections, particularly in the period October 2021- March 2022, has affected our activities, especially validating, databasing, imaging and georeferencing. The delay of those activities gave impacts the number of published datasets.

---

**GBIF leads the Biodiversity Information Fund for Asia (BIFA), a programme funded by the Ministry of the Environment, Government of Japan. The programme provides supplementary support for activities addressing the needs of regional researchers and policymakers through mobilization and use of biodiversity data.**

