

# FINAL NARRATIVE REPORT

*Guidelines on how to complete this report are included in italics.*

*Use the information included in your BIFA Full Proposal (reproduced in Annex 1 of your BIFA contract) as a baseline from which to complete this report.*

*Remember that this report will be made available on your project page on the GBIF website and therefore should not include any contact information, unless you have permission from all mentioned in the report that their contact information can be published.*

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## Project information

Main contact person and role:	Thien-Tam Luong, Project coordinator
Institution/network/agency affiliation:	University of Science, Vietnam National University Ho Chi Minh City, Vietnam
BIFA Project ID:	BIFA4_055
Project title:	A continuous data mobilization of Vietnam bryophyte and lichen collections
Start date and end date of the reporting period:	01/05/2019–15/06/2020
Country in which the activities take place:	Vietnam

## Executive summary

*Please provide a brief summary of your project's objective(s), its implementation and achievements. You should also describe the context and the approach taken for the final evaluation of your project, and also the key best practices and lessons learnt identified. Remember to include any additional objectives that were defined during the implementation of the project and explain why they were added to the project's initial objectives. In the event of unexpected challenges which have prevented you to reach a planned project objective, please provide explanations and indicate if and how you plan to reach these objectives post project.*

*(Max. 350 words.)*

Following the impact and using the existing resource of the BIFA3\_032 project, this BIFA4 project proposal aims to continue mobilizing the remaining Vietnamese bryophyte and lichen collections held in other Vietnamese herbaria and in foreign countries. Visits to PC, EGR Herbarium in September-October 2019 are core activities to find out the real situation of Vietnamese specimens in the two large collections. Thousands of specimens have been searched and pulled out for databasing and digitizing by the staff in PC, EGR and PHH. Part of the collection have been sent out to worldwide experts for identification and verification of names. After the visits, more than 2000 loans and duplicates in EGR were made and sent to PHH for computerized before publishing to GBIF.

By the end of the project, we have published 4 new datasets in the BIFA4 projects with more than 2000 records, and ~1400-1500 images. We also updated 3 datasets from the BIFA3\_032 project. More than 500 more specimens from Eger Herbarium, which are on their way travelling to PHH, will be computerized and published once arrived. About 3000 Vietnamese bryophytes specimens in MNHN-Paris are incorporated in the main dataset Cryptogamy Collection at MNHN-Paris and published gradually by MNHN staffs. Altogether, when the BIFA4 project closed, more than 5000 Vietnamese bryophytes and lichens specimens are published.

Furthermore, the seminar and workshop “GBIF & Open data In Biodiversity study” was organized by the team, with collaboration of GBIF-France and University of Turku, Finland in July 2019. The event caught attention of people and showed that GBIF is an effective facility to publish data for biodiversity studies. After the workshop, the team hope that the university partners and other researchers will be able to digitalize, mobilize and manage their own database.

This report helps the readers, project partners and especially BIFA Coordination team understanding activities and results that have been carried out and achieved until the end of the project. The report is a self-evaluation based on the project coordinator’s opinion with discussion with partners from the University of Turku and University of Science, VNUHCM.

## Progress against expected milestones

*Please indicate the status of the expected milestones as outlined in Annex 3 of the contract, at the time of final reporting. Please provide links in the sources of verification.*

*In the event of unexpected delay(s), please provide detailed explanatory notes.*

Expected milestones	Completed? Yes/No	Explanatory notes	Sources of verification
Gain certification at BIFA Capacity Enhancement Workshop (Mid-term report milestone)	Yes	Biodiversity Data Mobilization digital badges (Basic) for Vo Thi Phi Giao	Annex 1
At least one dataset has been published to GBIF.org (Mid-term report milestone)	Yes	Occurrence dataset: Vietnamese Lichenized Fungi Collection in Eger Herbarium (EGR)	<a href="https://doi.org/10.15468/wrmnjf">https://doi.org/10.15468/wrmnjf</a>
All deliverables have been produced (Final report milestone)	Yes	3 datasets from the BIFA3-032 projects are updated. 4 new datasets published	Annex 12
Sustainability and next steps have been documented (Final report milestone)	yes		



## Activities

Please indicate the status of the activities as outlined in the BIFA Full Proposal (section 4.4), at the time of final reporting.

The table below should be completed in the same way as in the BIFA Full Proposal, but should include information and updates on the status of each activity. Please indicate relevant source(s) of verification and **provide links, or a copy of the source of verification** mentioned if no links are available. Attachments should be provided in the Annex.

In the event of unexpected delay(s), please provide detailed explanatory notes and indicate new planned completion date(s).

Please include any additional activities completed during the implementation of the project that were not originally outlined in the BIFA Full Proposal.

Add rows as required.

Activity name	Expected deliverable	Contribution to goals listed in table 4.3 of the BIFA Full Proposal	Status of activity at final reporting: Completed? Yes / No (inc. % complete)	Explanatory notes, including new planned completion date if necessary	Source(s) of verification
BIFA Capacity Enhancement Workshop	Build and enhance knowledge & skill in data mobilization for project core member	Overall contribution to all project goals	Completed	Biodiversity Data Mobilization digital badges (Basic) for Vo Thi Phi Giao	Annex 1
Kick off meeting in PHH	Helps in planning, workflow, and communication between Vietnamese partners	Overall contribution to all project goals, ensure the project running smoothly	Completed	The kick-off meeting was held in 14 <sup>th</sup> July 2019 at the Herbarium PHH, University of Science, VNUHCM.	Annex 3

Activity name	Expected deliverable	Contribution to goals listed in table 4.3 of the BIFA Full Proposal	Status of activity at final reporting: Completed? Yes / No (inc. % complete)	Explanatory notes, including new planned completion date if necessary	Source(s) of verification
Seminar & Workshop on "GBIF & open data in biodiversity study"	<ul style="list-style-type: none"> <li>About 20 participants from the host university and other universities, institutions.</li> <li>The workshop will introduce and provide basic knowledge and skills in data mobilization, focusing on using GBIF data for scientific research.</li> </ul>	<ul style="list-style-type: none"> <li>Digitalization &amp; mobilization specimen data of Vietnamese bryophytes and lichens in foreign and local institutions</li> <li>Promote the use of GBIF among locals, widen the network; increase the number of GBIF publishers and users in Vietnam</li> </ul> <p>First steps to a long-term aim for a checklist &amp; flora of Vietnam bryophytes &amp; lichens</p>	Completed	The seminar & training workshop was held from 15 <sup>th</sup> – 17 <sup>th</sup> July 2019 at the University of Science, VNUHCM.	Annex 2, 3, 4, 5, 6, 7
Visiting Paris for digitizing and databasing specimens	<ul style="list-style-type: none"> <li>A dataset of Vietnamese lichen specimens in EGR will be digitized and checked for identification</li> <li>Loans and duplicates will be</li> </ul>	<ul style="list-style-type: none"> <li>Digitalization &amp; mobilization specimen data of Vietnamese bryophytes and lichens in foreign institutions</li> <li>Confirm identifications of</li> </ul>	Visited	The team from PHH and Prof. Tamas Pocs (EGR) visited Paris Herbarium from 16 <sup>th</sup> –25 <sup>th</sup> September 2019.	Annex 8

Activity name	Expected deliverable	Contribution to goals listed in table 4.3 of the BIFA Full Proposal	Status of activity at final reporting: Completed? Yes / No (inc. % complete)	Explanatory notes, including new planned completion date if necessary	Source(s) of verification
	made to PHH for further works	specimens • First steps to a long-term aim for a checklist & flora of Vietnam bryophytes & lichens			
Visiting Eger for digitizing and databasing specimens	<ul style="list-style-type: none"> <li>• A dataset of Vietnamese lichen specimens in EGR will be digitized and checked for identification</li> <li>• Loans and duplicates will be made to PHH for further works</li> </ul>	<ul style="list-style-type: none"> <li>• Digitalization &amp; mobilization specimen data of Vietnamese bryophytes and lichens in foreign institutions</li> <li>• Confirm identifications of specimens</li> </ul> <p>First steps to a long-term aim for a checklist &amp; flora of Vietnam bryophytes &amp; lichens</p>	Visited.	The team from PHH and Dr. Sanna Huttunen (TUR) visited Eger Herbarium from 26 <sup>th</sup> September–15 <sup>th</sup> October 2019.	Annex 9 <a href="http://biologia.uni-eger.hu/en/biology/science/herbarium-eger-egr--141/our-projects-142/c/databasing-the-vietnamese-collection-at-herbarium-in-eger">http://biologia.uni-eger.hu/en/biology/science/herbarium-eger-egr--141/our-projects-142/c/databasing-the-vietnamese-collection-at-herbarium-in-eger</a>
Deadline for mid-term report – 31 October 2019	<ul style="list-style-type: none"> <li>• At least one dataset has been published to GBIF.org</li> <li>• Narrative and financial reports will be submitted to</li> </ul>	Overall contribution to all project goals, ensure the project running smoothly	Submitted		Mid-term report approved

Activity name	Expected deliverable	Contribution to goals listed in table 4.3 of the BIFA Full Proposal	Status of activity at final reporting: Completed? Yes / No (inc. % complete)	Explanatory notes, including new planned completion date if necessary	Source(s) of verification
	BIFA Coordination team				
Digitizing and databasing duplicates of lichen specimens from KoLRI and KH to PHH	A dataset of Vietnamese lichen specimens in EGR will be digitized and checked for identification	<ul style="list-style-type: none"> <li>• Digitalization &amp; mobilization specimen data of Vietnamese bryophytes and lichens in foreign institutions</li> <li>• First steps to a long-term aim for a checklist &amp; flora of Vietnam bryophytes &amp; lichens</li> </ul>	Withdrawn	Lichen specimens of KoLRI have been transferred to KH, and they have their own plan of digitization and publication of data.	Withdrawal approved by BIFA Coordination team
Visiting TTN & PDU collection for digitizing and databasing specimens	Dataset of Vietnamese lichen specimens in TTN & PDU will be digitized and checked for identification	<ul style="list-style-type: none"> <li>• Digitalization &amp; mobilization specimen data of Vietnamese bryophytes and lichens in Vietnamese institutions.</li> <li>• Confirm identifications of specimens</li> <li>• First steps to a long-term aim for a checklist &amp; flora of Vietnam bryophytes &amp; lichens</li> </ul>	Cancelled because of the Covid-19.	We arranged online meeting.	

Activity name	Expected deliverable	Contribution to goals listed in table 4.3 of the BIFA Full Proposal	Status of activity at final reporting: Completed? Yes / No (inc. % complete)	Explanatory notes, including new planned completion date if necessary	Source(s) of verification
Continue digitizing and databasing specimens, updating identifications for specimens at PHH	Completed datasets of Vietnamese bryophytes and lichens specimens in DwC format	<ul style="list-style-type: none"> <li>Digitalization &amp; mobilization specimen data of Vietnamese bryophytes and lichens in foreign and local institutions.</li> <li>Confirm identifications of bryophyte and lichen specimens to improve the utility of the collections in taxonomic studies and research</li> </ul>	Partly completed	<ul style="list-style-type: none"> <li>Published one new dataset "Miscellaneous Lichenized Fungi (PHH Herbarium, Cryptogam Collection)"</li> <li>Updated identification for about 700 specimens of BIFA3_032 project.</li> </ul>	<a href="https://doi.org/10.15468/rtk3dk">https://doi.org/10.15468/rtk3dk</a> <a href="https://doi.org/10.15468/siajpm">https://doi.org/10.15468/siajpm</a> <a href="https://doi.org/10.15468/je1esr">https://doi.org/10.15468/je1esr</a> <a href="https://doi.org/10.15468/k5xaie">https://doi.org/10.15468/k5xaie</a>
Publishing the georeferenced species occurrence data to GBIF	Datasets of Vietnamese bryophytes and lichens specimens are published and available on GBIF	<ul style="list-style-type: none"> <li>Publish the georeferenced species occurrence data in GBIF</li> <li>First steps to a long-term aim for a checklist &amp; flora of Vietnam bryophytes &amp; lichens</li> </ul>	75% completed	<p>4 new datasets are published.</p> <p>However, because of the Covid-19, more than 500 the specimens still have not arrived PHH, and this activity must continue after</p>	<a href="https://doi.org/10.15468/wrmnjf">https://doi.org/10.15468/wrmnjf</a> <a href="https://doi.org/10.15468/aafcsk">https://doi.org/10.15468/aafcsk</a> <a href="https://doi.org/10.15468/9q6x8d">https://doi.org/10.15468/9q6x8d</a> <a href="https://doi.org/10.15468/">https://doi.org/10.15468/</a>



Activity name	Expected deliverable	Contribution to goals listed in table 4.3 of the BIFA Full Proposal	Status of activity at final reporting: Completed? Yes / No (inc. % complete)	Explanatory notes, including new planned completion date if necessary	Source(s) of verification
				the project deadline.	/rtk3dk
Deadline for final reporting – 30 April 2020	<ul style="list-style-type: none"> <li>• All deliverables have been produced</li> <li>• Sustainability and next steps have been documented</li> </ul>	Overall evaluation for all project goals	Submitted	The deadline was postponed to 15 June 2020.	

## Deliverables

*This section should summarize the project deliverables as outlined in the BIFA Full Proposal (section 4,5), at the time of final reporting. Please highlight any changes from the original plans.*

*If no result has been achieved on a specific point, or in the event of unexpected delay(s), please provide detailed explanatory notes and indicate new planned completion date(s).*

*Please include any additional deliverables completed during the implementation of the project, that were not originally outlined in the BIFA Full Proposal.*

*Add rows as required.*

**a. Data**

*Details of datasets published and/or pending publication as an outcome of the project. The table below should be completed in the same way as in the BIFA Full Proposal but should include information and updates on the status of each dataset. Please provide links in sources of verification.*

*If the dataset is not yet published, please indicate this as "not published" and provide a detailed explanation, % of digitization and expected date of publication.*

*Add rows as required.*

Title of dataset	Data type (checklist/ occurrences/ sampling event) <sup>1</sup>	Estimated number of records (specimens)	Status of dataset:  Published / not published and % of digitization and expected date of publication	Data holding institution agreed to publish its data via GBIF.org (Yes/No)	Explanatory notes	Source(s) of verification:  DOI or URL
Vietnamese bryophytes and lichens collection in PC	occurrences	4000-5000	The dataset is incorporated in the main dataset Cryptogamy Collection at MNHN- Paris and published gradually by MNHN	Yes	According to our communication on March 2020, 2772 Vietnam specimens corresponding to 942 taxa, including 674 types specimens of 338 taxa had been computerized. The work is actively continuing for all the Vietnam specimens found. PHH	<a href="https://doi.org/10.15468/mywiem">https://doi.org/10.15468/mywiem</a>

<sup>1</sup> Dataset classes: <http://www.gbif.org/publishing-data/summary#datasetclasses>

Title of dataset	Data type (checklist/ occurrences/ sampling event) <sup>1</sup>	Estimated number of records (specimens)	Status of dataset:  Published / not published and % of digitization and expected date of publication	Data holding institution agreed to publish its data via GBIF.org (Yes/No)	Explanatory notes	Source(s) of verification:  DOI or URL
			staffs.		and TUR staffs help in pulling out, geo-referencing old locality and updating identification.	
Vietnamese bryophytes collection in EGR	occurrences	2200  ~1000 occurrences with images (~1200 images)	Published, 75% completed	Yes	About 2200 Vietnamese specimens have been searched and pulled out from the main collection in EGR.  Among them, 1594 specimens were divided into duplicates and sent to PHH for computerized.	<a href="https://doi.org/10.15468/aafcsk">https://doi.org/10.15468/aafcsk</a>
Vietnamese lichens collection in EGR	occurrences	60–70  (61 occurrences with images)	Published	Yes	Additional dataset	<a href="https://doi.org/10.15468/wrmnjf">https://doi.org/10.15468/wrmnjf</a>
Vietnamese lichens in TTN	occurrences	220  (42 occurrences with images)	Published	Yes		<a href="https://doi.org/10.15468/9q6x8d">https://doi.org/10.15468/9q6x8d</a>

Title of dataset	Data type (checklist/ occurrences/ sampling event) <sup>1</sup>	Estimated number of records (specimens)	Status of dataset:  Published / not published and % of digitization and expected date of publication	Data holding institution agreed to publish its data via GBIF.org (Yes/No)	Explanatory notes	Source(s) of verification:  DOI or URL
Miscellaneous Lichenized Fungi in PHH	occurrences	20	Published	Yes	Additional dataset	<a href="https://doi.org/10.15468/rtk3dk">https://doi.org/10.15468/rtk3dk</a>
Vietnamese lichens in PDU	occurrences	200 (with 145 images)	Published	Yes	PDU collection is now incorporated into PHH collection.	<a href="https://doi.org/10.15468/siajpm">https://doi.org/10.15468/siajpm</a>
Vietnamese lichens in KoLRI & KH	occurrences	(500)	Not published		Withdraw accepted by the BIFA Coordination team after mid-term report	
Updated bryophytes and lichens collection in PHH	occurrences	500 more (with 170 images)	Published	Yes	155 lichen occurrences and 288 bryophyte occurrences are added to PHH datasets (from BIFA3_032).  About 700 specimens has been updated for identifications.  About 1540 specimens are duplicates	<a href="https://doi.org/10.15468/siajpm">https://doi.org/10.15468/siajpm</a> <a href="https://doi.org/10.15468/je1esr">https://doi.org/10.15468/je1esr</a> <a href="https://doi.org/10.15468/k5xaie">https://doi.org/10.15468/k5xaie</a>

Title of dataset	Data type (checklist/ occurrences/ sampling event) <sup>1</sup>	Estimated number of records (specimens)	Status of dataset:  Published / not published and % of digitization and expected date of publication	Data holding institution agreed to publish its data via GBIF.org (Yes/No)	Explanatory notes	Source(s) of verification:  DOI or URL
					<p>from EGR are not published in the PHH datasets because they are already published in the EGR datasets. About 290 specimens are duplicates in TUR herbarium (Finland), and will be automatically published to GBIF through the Finnish National Biodiversity Info Facility <a href="https://laji.fi/">https://laji.fi/</a> Because some of the EGR specimens were divided into duplicates for PHH and TUR, the dataset of EGR collection has our priority for publishing these records in order to avoid publishing one record twice.</p>	

## b. Other deliverables

*Describe other deliverables (e.g. publication of data papers, analysis, reports etc.) produced by the project. In the event of unexpected delay(s), please provide detailed explanatory notes and indicate if the deliverable(s) are to be produced post-project, and if so, indicate expected completion date(s).*

*Please provide links in the sources of verification. Attachments should be provided in the Annex.*

Name and type of deliverable	Status of deliverable: Completed? Yes / No (inc. % complete)	Explanatory notes	Source(s) of verification
Data paper about Vietnam bryophytes and lichens collections	Preparing		
Taxonomic articles, novelty finds when checking for identifications;	Continuing after the project	Online key for the genera of Meteoriaceae and related genera in Vietnam is under preparation.  The content of the taxonomic articles depends on the final identification. Because the large number of unidentified specimens and lack of bryologists, identification work are continuing after the project and taxonomic articles are expected to be published when finished identification.	
A report for the workshop, with evaluation forms from the participants	Completed		Annex 2, 3, 4, 5

## Events organized as part of the project

*Please indicate the status of the events as outlined in the BIFA Full Proposal (section 4.6), at the time of final reporting.*

*The table below should be completed in the same way as in the BIFA Full Proposal, but should include information and updates on the status of each event. **Please provide links to any documents or web pages documenting the event(s) in the sources of verification. Attachments should be provided in the Annex.***

*In the event of unexpected delay(s), please provide detailed explanatory notes and indicate new planned completion date(s).*

*Please include any additional events organized as part of the project that were not originally outlined in the BIFA Full Proposal.*

*Add rows as required.*

Event title	Organizing institution	Date held / expected dates	Number of participants	Explanatory notes	Source(s) of verification
Seminar and Workshop "GBIF & open data in biodiversity study"	HCMUS	15-17 July 2019	43 (Seminar-outreach session) 20 (Workshop, practical training session)	More detail in the mid-term report.	Annex 2, 3, 4, 5, 6, 7 <a href="https://www.gbif.org/event/7FtvBdec8teVqXuxUQkRhW/gbif-and-open-data-in-biodiversity-study-scientific-seminar-and-training-workshop">https://www.gbif.org/event/7FtvBdec8teVqXuxUQkRhW/gbif-and-open-data-in-biodiversity-study-scientific-seminar-and-training-workshop</a>

## Calendar of activities

The calendar should be completed in the same way as in the BIFA Full Proposal (section 4.7) but should also clearly indicate and include any changes (e.g. use of colour-coding to indicate expected changes and/or delays). Please provide explanations for any changes in the "Notes" column. Please provide general comments on the calendar of your activities in the 'General comments on project implementation' section.

X – proposed calendar, Green – Actual/changed calendar

Activity	2019								2020						Notes
	M	J	J	A	S	O	N	D	J	F	M	A	M	J	
Mandatory attendance to the BIFA Capacity Enhancement Workshop			X												Mid-term report
Kick off meeting in PHH			X												Mid-term report
Seminar & Workshop "GBIF & open data in biodiversity study"			X												Mid-term report
Visiting Paris for digitizing and databasing specimens				X	X										Mid-term report
Visiting Eger for digitizing and databasing specimens				X	X										Mid-term report
Deadline for mid-term report – 31 October 2019						X									Submitted
Visiting TTN & PDU for digitizing and databasing specimens						X	X								Cancelled because of Covid-19
Digitizing duplicates of lichen specimens from KoLRI (& KH) to PHH						X	X								Withdrawal approved by BIFA Coordination team after mid-term report
Digitizing and databasing specimens, updating identifications for specimens				X	X	X	X	X	X	X	X	x			See explanation below
Publishing the georeferenced species occurrence data to GBIF						X	X			X	X	X			See explanation below
Deadline for final reporting – 30 April 2020												X			Submitted by 15 June 2020



### **General comments on project implementation**

*(Max. 200 words)*

Given the current circumstances related to the Covid-19 pandemic, many of our activities have been delayed, for example:

1. Specimen loans from Eger (Hungary) to Vietnam have arrived later than expected. Especially, until 15 June 2020, one parcel which contain 519 specimens are still on its way (we cannot track its situation). The team in Vietnam needs to receive the specimens in order to digitize them.
2. The short-trip to Tay Nguyen University (planned in February 2020) had to be been cancelled due to limited travel policy in Vietnam during Covid-19.
3. During March-April, our university offices in Vietnam, including the Financial office are half-closed. The other herbarium, especially in France, Hungary and Finland, are closed during the lockdown by Covid-19. This situation has some negative effects on the workflow in general.

The project had been kindly approved for the extension until 15 June 2020 by the BIFA Coordination team. However, even though the project is closed by the day after the submission of final report, our team will continue working when the remaining specimens arrive.

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## Project communications and visibility

*Describe the way the results of your project have been and will continue to be communicated and shared with the project stakeholders and broader GBIF community.*

*Please also review the page describing your project available from <http://www.gbif.org/programme/bifa> and highlight any additional documents, events, news items or links that you would like to add to your page and provide links/attachments in the Annex.*

*(Max. 300 words)*

The Seminar and workshop “GBIF & open data in biodiversity study” was twitted on Twitter <https://twitter.com/gbiffrance/status/1150636616068689920>  
<https://twitter.com/gbiffrance/status/1150708973944729600>

The visit to Eger Herbarium was shared on the news of the website of Institute of Biology, Eszterhazy Karoly University: <http://biologia.uni-eger.hu/en/biology/science/herbarium-eger-egr--141/our-projects-142/c/databasing-the-vietnamese-collection-at-herbarium-in-eger>

The project activities were shared and published in the Newsletter Biodivari of Biodiversity Unit, University of Turku in December 2019 (Annex 10).

Activities of the project are written as the reports and shared on the GBIF-BIFA project's homepage. <https://www.gbif.org/project/4Hdpl6TMq2C8Y10CPzWaKM/continued-data-mobilization-of-vietnamese-herbarium-cryptogam-collections>

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## Monitoring, evaluation and lessons learned

*Please indicate the results of the monitoring and evaluation plans, as outlined in your BIFA Full Proposal (section 4.9), at the time of final reporting.*

*Ideally this section should also include the following:*

- *An evaluation of the project activities and their outputs/deliverables*
- *An assessment of the overall outcomes, impacts of the project and how it contributes to the overall objective of the BIFA programme*
- *Comments on the project implementation and completion, and its efficiency and effectiveness, strength and weaknesses etc.*
- *Any feedback on the project's relevance from the partners and stakeholders*
- *Indications and reasons for any changes which have been made to the project's original plans, and actions to follow-up*
- *Areas of success to build on, after the project's implementation period and best practices that could be useful for the community*
- *Main lessons from the project experience that could be applied in other contexts*
- *Conclusions from your experience during the implementation of the project and recommendations for the GBIF Secretariat or the community to reinforce the success of the project*

*(Max. 400 words)*

**Evaluation of the project activities:**

1. The Seminar and Workshop has been held and received positive feedback and satisfaction from participants. After the workshop, most of the workshop participant (15

out of 17) said that they would use GBIF's data for their studies and be able to perform related skills about biodiversity data. In this activity, we have received great support from GBIF-France, especially Mrs. Sophie Pamerlon, and University of Turku (Dr. Sanna Huttunen). Personally, I consider that the event was success and attracted attention from the community.

2. We published 4 new datasets in the BIFA4 projects with more than 2000 records, and 1400 images. We also updated 3 datasets from the BIFA3\_032 project. There are 600 more specimens are travelling from EGR to PHH.
3. The visit to TTN and PDU were cancelled because of limited traveling during the Covid-19 pandemic, and online meeting was organised instead.
4. Other activities such as updating names, data papers, taxonomic articles are continued as post project (long-term) activities.

#### Pros:

- Support and advices from the GBIF Secretariat and BIFA Coordination team were very valuable for the smooth project implementation. The BIFA Capacity Enhancement Workshop provided useful and important knowledge about data mobilization and digitalizing process.
- The project received great support from professional staffs from MNHN-Paris, Turku Herbarium, GBIF France, and the community of bryologists and lichenologists around the world.

#### Cons:

- Even though we tried to follow the standard protocol of digitization as in other herbarium such as MNHN-Paris and Turku, Finland, in fact, we needed to adapt the standard protocol according to our real situation (with the lack of IT-facilities, personnel, etc.). These adaptations created many small issues and mistakes sometimes, and our core team member has gained considerable amount of experience on practical steps of mobilization and digitization.
- The project involved partners from several institutions around the world, which sometimes hampered fluent communication. We arranged online meetings between the core team via Skype connection regularly. All information and generated data will be shared to the group via an online drive such as Dropbox or Google Drive to core members of the project. Monitoring and implementing the project required thus more work than expected but this did not risk completing the project according the original plan.

- Identification remains the biggest challenge for the project, because tropical bryophytes and lichens are not well studied in general, and taxonomists working on them are scattered and literature scarce. It is difficult for all experts to compromise and have sufficient time dedicated to the project since the work is voluntary. Therefore, part of the collection must be left as unidentified. We hope that publishing the information onto GBIF will attract more studies on Vietnamese bryophyte and lichen flora.

In summary, the project has mainly followed the original plan and met our main aims and expectations. Deviations from original plan still assure the results.

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## Sustainability plans

*Please provide a description of how the partners involved will build on the results of this project in their future work. This could include future collaborative activities, such as plans to complete any unfinished project activities and how the future impact of the project could be monitored and/or measured.*

*(Max. 200 words).*

PHH Herbarium will continue improving the data digitization for the rest of the collections at the herbarium and regularly update the data that have been published on GBIF website. We will develop our own website with better interface as part of the key link to our datasets on GBIF (Annex 11). We wish to become the centre of information for the mobilization of biodiversity data for Vietnam cryptogams.

After the implementation of the two BIFA projects, we have raised the attention about the benefit of open biodiversity data. The University of Science, VNUHCM plans to become a data hosting institution, which has the capacity for storing the data on a stable and accessible web platform. The plan starts with hosting our own 7 datasets, which are now hosted by the Finnish Biodiversity Information Facility, and later for any publishers in Vietnam who wish to publish their data on GBIF. At the moment, we are the first publisher and the only one from Vietnam who have published on GBIF. We are willing to share our experiences and hoping that more data of other groups of organisms from Vietnam will be published on GBIF in the future.

Tay Nguyen University plans to develop their lichen collection, to establish and indexed their herbarium officially, as well as to become a new publisher for GBIF.

Experts in ABL, BM, EGR, H, TUR (abbreviations follow Index Herbariorum code) have assisted us in identification and verified names for specimens since BIFA3 project. This great work helped to assure the scientific value of each occurrence. New records found during the project will be included in the upcoming manuscripts. The collaboration will continue after the project since there is still material that needs identification. The future publications will cite the project datasets, which can be monitored and measured from GBIF site.

Specimens in Paris herbarium will be computerized continuously by the staff there. Our visit in September 2019 to PC herbarium have helped to pull out 2000 Vietnamese bryophytes specimens, but it is still just a small part of the total Vietnamese specimens in Paris, perhaps just one fourth. In this project, the lichen collection remains untouched as recommended by the staff in PC, because the collection is very old and fragile, which needs special care and longer time to work with. More visits in the future are needed in attempt to digitize all of the Vietnamese specimens.

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## Annex – Additional sources of verification

*Sources of verification are for example links to relevant digital documents, news/newsletters, brochures, workshop related documents, pictures, etc.*

Annex 1\_badge\_174054\_all.pdf

Annex 2\_Seminar and workshop BIFA4.docx

Annex 3\_Seminar & workshop.pdf

Annex 4\_Evaluation forms\_filled.pdf

Annex 5\_Evaluation form\_result.pdf

Annex 6\_List of participants\_seminar.pdf

Annex 7\_List of participants\_workshop.pdf

Annex 8\_PC visit.pdf

Annex 9\_EGR visit.pdf

Annex 10. Biodivari\_2019\_8.pdf

Annex 11. Cryptogam collection PHH Herbarium Homepage

<https://cryptogam-phh.hcmus.edu.vn/index.php/en/>

Annex 12. All 7 datasets published by University of Science, Vietnam National University Ho Chi Minh city

[https://www.gbif.org/dataset/search?publishing\\_org=8dba2e07-0a91-4728-9ea7-39102c5ee8b9](https://www.gbif.org/dataset/search?publishing_org=8dba2e07-0a91-4728-9ea7-39102c5ee8b9)