

MID-TERM ACTIVITY REPORT®

BIFA3_26 - Alien Reptiles and Amphibians, a Threat to Philippine Biosecurity: Developing a National Invasive Alien Reptile and Amphibian Inventory and Occurrence Database and an Observation and Monitoring System

Guidelines on how to complete the activity report are included in italics.

Contents

Executive summary	2
Contact information	2
The project and its objectives	2
Introduction	4
Activities	5
Deliverables	
Calendar of activities	12
Project communications	15
Mid-term evaluation findings and recommendations for the remaining project	
implementation period	
Appendix – Sources of verification	18
Appendix A — Kickoff meeting with project partners	19
Appendix B — Preparation of original articles	20
Appendix C — Mid-term meeting of project partners	21
Appendix D — Information campaigns	22
Appendix E — Training workshops – Palawan State University	
Appendix F — Training workshops 27 th Philippine Biodiversity Symposium	25
Appendix G — Mini-Workshop	27



Executive summary

Provide a brief explanation of the context and the approach taken for the mid-term evaluation, and a summary of the main conclusions, lessons learned and recommendations for the remaining project period.

This mid-term report presents the evaluation of the Project's implementation from 1 April to 30 October 2018. The Project was evaluated in three levels: (1) Inputs – i.e., the financial inputs of the project; (2) Implementation – i.e., the activities and goals successfully undertaken; (3) Outputs – e.g., the number of articles submitted; the number of scientific conferences where the project was presented including the number of people participating in such events; the number of information campaigns, meetings, trainings, and workshops where results were presented and the number of people participating in such events.

As of mid-term period, the Project expenditures is in line with the project's initial budget allocation, with budget per expense type on track and budget per activity with minimal to negligible adjustments. Although only 28% of the budget has been expended so far, this is expected since majority of the budget is allocated for the expenditures of activities during the latter half of implementation of the Project. The project has accomplished or is near completion of most of the scheduled activities in the first half of implementation, including activities that were initially scheduled at a later date. The project has delivered expected outputs as of mid-term reporting, and including outputs that were not initially planned but will contribute greatly to the goal of the Project and the BIFA grant. In light of the evaluation of the project's inputs, implementation, and outputs, it can be concluded that the Project is on-track and can be confidently projected to conclude on-time.

Contact information

Please provide the name, institutional affiliation, role in the project and contact details of the author(s) of the report.

This mid-term report was prepared by **Arman N. Pili** (Science Research Specialist, HerpWatch Pilipinas, Inc.; armannorciopili@gmail.com), **Mae Lowe L. Diesmos** (Project Leader and Project Coordinator, HerpWatch Pilipinas, Inc.; maediesmos@yahoo.com), and **Arvin C. Diesmos** (Co-Project Leader, HerpWatch Pilipinas, Inc.; <u>Arvin.diesmos@gmail.com</u>).

The project and its objectives

A brief summary of the project to help readers understand its objectives, including, for example:

- The project's start date and expected duration
- A list of project participants and description of the main stakeholders
- The targeted capacity needs as outlined in the project proposal

The Philippines is recognized as a 'megadiverse' nation and a 'global biodiversity conservation hotspot'. Its rich biodiversity is exhibited by its amphibian and reptile species, which is among the most important faunas in the Indomalayan Region in terms of diversity and endemism.



Currently, there are about 468 native species of amphibians (110 species) and reptiles (358 species) known from the Philippines, 75% of which are endemics (91% for amphibians and 73% for reptiles). Unfortunately, about 10% (23% for amphibians and 7% for reptiles) are threatened with extinction, and among the major culprits is 'invasive alien species'. Included in the Philippine amphibian and reptile species are 13 alien amphibians (seven alien species) and reptiles (six alien species), making the Philippines the 10th in the world with the most established amphibian and reptile species and 1st in the world (along with Hawaii, France, and United Kingdom) with the most established alien amphibians. In light of the negative ecological, evolutionary, and socio-economic impacts of invasive alien species (Convention on Biological Diversity – https://www.cbd.int/), world nations are committed to develop and implement sound biosecurity programmes in response to current and future biological invasions, for sustainability (Target 9 of Aichi Biodiversity Targets – https://www.cbd.int/) and biodiversity conservation (Goal 15 of Sustainable Development Goals – http://www.un.org/).

On November 2017, the Global Biodiversity Information Facility (GBIF) on its third call under the Biodiversity Information Fund for Asia (BIFA), funded by the Ministry of the Environment, Government of Japan, invited project proposals that aim to enhance knowledge of Asian biodiversity through access to data from biological collections and monitoring programme in the region and support GBIF nodes in Asia to develop or improve biodiversity information portals.

On March 2018, the GBIF under BIFA programme awarded HerpWatch Pilipinas, Inc., represented by Asst. Prof. Mae Lowe L. Diesmos (Project Lead) and Dr. Arvin C. Diesmos (Co-Project Lead), a BIFA ecological monitoring data mobilization grant, in the amount of €15,000.00 for the implementation of the project entitled, *Biodiversity Information Fund for Asia (BIFA) – BIFA3_026:* Alien Amphibians and Reptiles, a Threat to Philippine Biosecurity: Developing a National Invasive Alien Amphibian and Reptile Species Inventory and Occurrence Database and an Observation and Monitoring System, herein called the "Project". The grant covers cost related to the project from the 1 April 2018 to 31 March 2019, for a total coverage period of 12 months.

The main goal of this Project is to fill taxonomic, geographical, and historical gaps in species occurrence and sampling-event data, focused on the 13 alien amphibians and reptiles in the Philippines, and develop an online national platform for long-term observation and monitoring of alien species invasions, with alien amphibian and reptile as pilot group. This will be achieved by:

- (1) assembling historical and geographical data from literature and natural history collections;
- (2) generating species occurrence and sampling-event data by conducting targeted herpetofaunal surveys in two key conservation areas, namely, Ilocos Norte Province, Luzon Island and Palawan Island, Palawan Province;
- (3) reconstruct invasion histories and develop 'Pest Risk Maps'; and,
- (4) ultimately, developing an observation and monitoring system, named "DAYO" (filipino for "alien") which we envision to be an online, open-access national platform and repository of species occurrence data and sampling-event data dedicated to invasive alien species in the Philippines, with alien amphibians and reptiles as pilot group, in the form of a web portal and a smartphone application.
- (5) In addition, Information campaigns and training workshops targeting key stakeholders (i.e., communities, environmental managers) will be conducted to promote and encourage citizen science and contributions from volunteers.



This Project is expected to produce the much needed science-based information that can help guide the development and implementation of sound national biosecurity programmes for amphibian and reptile invasions, contribute to the Philippines' international commitments to sustainability and biodiversity conservation, and provide a reproducible framework for similar initiatives targeting other groups of alien taxa in the Philippines and other countries.

HerpWatch Pilipinas, Inc. (HWP) leads the project in assembling species occurrence and sampling-event data, conducting herpetofaunal surveys, data analysis, preparation of data papers and original articles for publication, preparation of technical and financial reports, and official communication with GBIF-BIFA. The Biodiversity Management Bureau of the Philippine Department of Environment and Natural Resources (DENR-BMB) helps in the design and execution of project and logistics in information campaigns and training workshops. The University of Santo Tomas – Biodiversity, Ecology, Systematics, and Taxonomy Group (BEST) provides consultancy and support for meeting venues, fieldwork, and laboratory. Other partner stakeholders of the project include the Philippine National Museum of Natural History, the University of the Philippines Diliman, the University of the Philippines Los Baños Museum of Natural History, and the Mindanao State University – Iligan Institute of Technology Natural Science Museum.

Introduction

This section should explain to readers what they will find in this report. It should include:

A description of how the evaluation has been carried out (e.g. consultation or surveys with project partners and participants). Please refer to the description of monitoring and evaluation plans in the original project proposal.

A description of how the project partners will use the evaluation results.

Here we present the mid-term report of the Project which primarily comprises of the evaluation of the Project's implementation from 1 April to 30 October 2018. The Project was evaluated in three levels: (1) Inputs – i.e., the financial inputs of the project; (2) Implementation – i.e., the activities and goals successfully undertaken; (3) Outputs – e.g., the number of articles submitted; the number of scientific conferences where the project was presented including the number of people participating in such events; the number of information campaigns, meetings, trainings, and workshops where results were presented and the number of people participating in such events. In the latter part of this mid-term report, we present an updated calendar of activities and recommendations for the remaining project implementation period. This mid-term report shall inform Project partners with regards to the progress and current status of the Project and guide them in the future activities of the Project.



Activities

Please indicate the status of the activities as outlined in the project proposal. The table below should be completed in the same way as in the full proposal but should include information about the status of the activity.

Description of activity	Partners involved	Contribution of activity to goals listed in table 4.3	Mid-term reporting Percent completed
Mobilizing species occurrence and <u>sampling-even</u> systems	<u>t data</u> from observat	tion networks and mo	nitoring
Data mining: Mining, cataloguing, and digitizing species occurrence data of alien amphibian and reptile species from scientific literature.	HWP	Contributes to Goal 1	90%
Data mining: Mining, cataloguing, and digitizing species occurrence data of alien amphibian and reptile species from University of Santo Tomas Museum.	HWP, UST	Contributes to Goal 2a	80%
Data mining: Mining, cataloguing, and digitizing species occurrence data of alien amphibian and reptile species from Philippine National Museum of Natural History.	HWP	Contributes to Goal 2b	70%
Data mining: Mining, cataloguing, and digitizing species occurrence data of alien amphibian and reptile species from University of the Philippines Diliman Collections.	HWP	Contributes to Goal 2c	0%
Data mining: Mining, cataloguing, and digitizing species occurrence data of alien amphibian and reptile species from University of the Philippines Los Baños Museum of Natural History.	HWP	Contributes to Goal 2d	0%
Data mining: Mining, cataloguing, and digitizing species occurrence data of alien amphibian and reptile species from Silliman University Rodolfo B. Gonzales Museum of Natural History.	HWP	Contributes to Goal 2e	80%
Data mining: Mining, cataloguing, and digitizing species occurrence data of alien amphibian and reptile species from Mindanao State University – Iligan Institute of Technology Natural Science Museum.	HWP	Contributes to Goal 2f	0%



Herpetofaunal survey in Ilocos Norte Province, Luzon Island.	HWP, UST, DENR-BMB	Contributes to Goal 3a	50%
Herpetofaunal survey in Palawan Island, Palawan Province.	HWP, UST, DENR-BMB	Contributes to Goal 3b	90%
"DAYO": Developing an online, open-access platform for observation and monitoring of herpetofaunal invasions – Smartphone Application (similar to the lawin forest and biodiversity protection system – <u>http://forestry.denr.gov.ph/index.php/lawin- forest-and-biodiversity-protection-system</u>).	HWP, DENR- BMB	Contributes to Goal 5	50%
"DAYO": Developing an online, open-access platform for observation and monitoring of herpetofaunal invasions – Webportal	HWP, DENR- BMB	Contributes to Goal 5	10%
Preparing <u>data papers</u>	•		•
BIFA Capacity Enhancement Workshop	HWP	Contributes to Goal 6	100%
Preparation of data papers: Data paper of assembled species occurrence data from literature and natural history collections will be prepared and submitted to a peer-reviewed journal (e.g. NeoBiota, BioInvasions Records, etc.).	HWP, UST	Contributes to Goal 4,6	10%
Preparation of data papers: Data papers on the two herpetofaunal surveys (including data from previous surveys conducted in the sites) will be prepared and submitted to a peer- reviewed journal (e.g. NeoBiota, Check List, etc.).	HWP, UST	Contributes to Goal 4,6	30%
Submission of datasets to GBIF	HWP	Contributes to Goal 6	0%
Other activity types	_		
Coordination and application of Permits: Wildlife Gratuitous Permit (in pursuance to Wildlife Resources Conservation and Protection Act– RA 9147) will be applied with respective local government offices and environmental offices with jurisdiction over study sites. Activities and schedules of herpetofaunal surveys will be coordinated with respective offices.	HWP, DENR- BMB	Contributes to Goal 3a,b	100%
Formal communications and meetings with	HWP	Contributes to	100%



heads of natural history collections institutions : secure access to collections and form mutual agreements on data sharing/publishing.		Goal2a–f	
Preparation of original articles : original articles on reconstructed invasion histories and "Pest Risk Maps" of the alien amphibian and reptile species will be prepared and submitted to peer-reviewed journals (e.g. NeoBiota, Diversity and Distributions, Biological Conservation, etc.).	HWP, UST	Contributes to Goal 4,6	25%
Information campaigns: the findings of the project will be presented in Philippine Biodiversity Symposium.	HWP	Contributes to Goal 7	100%
Information campaigns: Information Campaign: Presentation of Field Report to Protected Areas Board Meeting	HWP, DENR- BMB	Contributes to Goal 7	0%
Training workshops: workshop or short training will be conducted and targeting environmental managers, academe, and natural history collections managers.	HWP, UST, DENR-BMB	Contributes to Goal 7	20%
Kickoff meeting of project partners	HWP, UST, DENR-BMB	Contributes to overall goal of project	100%
Mid-term meeting of project partners	HWP, UST, DENR-BMB	Contributes to overall goal of project	100%
Final meeting of project partners	HWP, UST, DENR-BMB	Contributes to overall goal of project	0%
Preparation of mid-term technical and financial report	HWP	Contributes to overall goal of project	100%
Preparation of final technical and financial report	HWP	Contributes to overall goal of project	0%



Deliverables

This section should summarize the project activities completed by the mid-term, with a description of the associated outputs and deliverables. Please highlight any changes from the original plans provided in the full project proposal.

If no result has been achieved on a specific point, please indicate it as "no result achieved yet".

The following activities were completed in the mid-term period (chronological order):

(1) Kickoff meeting with project partners

The kick off meeting was held last 04 May 2018 at the Common Room, Central Labs, University of Santo Tomas, from 1700h to 2100h. The meetings was composed of 10 representatives, from HerpWatch Pilipinas, Inc., and Biology, Ecology, Systematics, and Taxonomy Group of the University of Santo Tomas (UST). The project members discussed the general plan of action; particularly, the schedule of activities and budget allocation.

(see Appendix A)

(2) Coordination and application of Permits for Herpetofaunal Surveys

On June 2018, the Project member presented the project to the Protected Area Management Board of (1) Metropolitan Ilocos Norte Watershed and Forest Reserve and (2) Kalbario-Patapat Natural Park, and attended meetings with the Municipality Mayors of Pasuquin and Burgos, Ilocos Norte Province. On July 2018, the Project members attended meetings with Barangay Captains of Barangays in Puerto Princesa City, Narra, Coron, and El Nido, Palawan Province. This was done to secure a Wildlife Gratuitous Permit, which gives us the legal authority to conduct the Herpetofaunal Survey in the aforementioned sites. Wildlife Gratuitous Permits were issued by the Biodiversity Management Bureua (WGP no. 282) and the Palawan Sustainable Development Council (PSDC) (WGP No. 2018-33).

(3) Formal communications and meetings with heads of natural history collections institutions : secure access to collections and form mutual agreements on data sharing/publishing.

Formal communications via email was sent to and was acknowledged by heads of partner stakeholder natural history collections institution on June. All partner stakeholders approved of the data mining activity, and expressed their intent to participate in the training workshop to be held on February.

(4) Data mining: Mining, cataloguing, and digitizing species occurrence data of alien amphibian and reptile species from scientific literature.

A dataset comprising of 500+ species occurrence data of alien amphibians and reptiles in the Philippines was assembled from data obtanied from 60+ scientific litearture and anecdotes of experts. The dataset is the process of review, quality checking, and transformation to DwC occurrence core format for publication in GBIF. The dataset is expected to be published in GBIF by November 2018. Moreover, HerpWatch Pilipinas, Inc. is officially registered as a publisher in GBIF on October 2018.

(5) Attendance of project team member at BIFA Capacity Enhancement Workshop

Arman N. Pili, the project's Science Research Specialist, attended the Capacity Enhancement Workshop held last June 2018. Arman N. Pili expressed his intent to share the knowledge and skills he acquired during the workshop in the training workshop, and in future workshops that HerpWatch Pilipinas will undertake post-project.



(6) Data mining: Mining, cataloguing, and digitizing species occurrence data of alien amphibian and reptile species from Philippine National Museum of Natural History

The dataset of the Herpetological Collections of the Philippine National Museum of Natural History was accessed on June 2018. The dataset comprised of abut 5000+ entries (occurrence data) of amphibians and reptiles (50+ are data on alien amphibians and reptiles), dated 1950 to present. Aside from publishing the occurrence data on alien amphibians and reptiles, the project members is also considering publishing the ocurrence data on native amphibians and reptiles, during or right after the training workshop.

(7) Preparation of original articles: original articles on reconstructed invasion histories of the alien amphibian species will be prepared and submitted to peer-reviewed journals (e.g. NeoBiota, Diversity and Distributions, Biological Conservation, etc.).

A manuscript on the invasion of alien amphibians in the Philippines was submitted to Pacific Science on July 2018 and was accepted with revision on August 2018. The project member decided to publish first the occurrence dataset (data mined from Scientific Literature) before submitting a revised version of the manuscript. The occurrence dataset is projected to be published in GBIF on November, the manuscript re-submitted on December 2018, and, hopefully, accepted on January 2019.

(see Appendix B)

(8) Data mining: Mining, cataloguing, and digitizing species occurrence data of alien herpetofauna from Silliman University Rodolfo B. Gonzales Museum of Natural History

The dataset of the Herpetological Collections of the Silliman University's Rodolfo B. Gonzales Museum of Natural Hisotry was accessed on August 2018. The dataset comprised of abut 3000+ entries (occurrence data) of amphibians and reptiles (50+ are data on alien amphibians and reptiles), dated 1950 to present. Aside from publishing the occurrence data on alien amphibians and reptiles, the project members is also considering publishing the occurrence data on native amphibians and reptiles, during or right after the training workshop.

(9) Data mining: Mining, cataloguing, and digitizing species occurrence data of alien herpetofauna from University of Santo Tomas Museum

The dataset of the Herpetological Collections of the University of Santo Tomas Museum and scientific literature (with relevant data) was accessed on September 2018. The dataset comprised of abut 500+ entries (occurrence data) of amphibians and reptiles (50+ are data on alien amphibians and reptiles), dated 1800s to present. Aside from publishing the occurrence data on alien amphibians and reptiles, the project members is also considering publishing the occurrence data on native amphibians and reptiles, during or right after the training workshop.

(10) Herpetofaunal survey in Palawan Island, Palawan Province

Herpetofuanal surveys was conducted in 4 sites in Palawan Province: (1) Barangay Poblacion, Municipality of Coron, Palawan Province, Busuanga Island; (2) Barangay Estrella, Municipality of Narra, Palawan Province, Palawan Island; (3) Palawan Wildlife Rescue Center, Barangay Irawan, Puerto Princesa City, Palawan Province, Palawan Island; (4) Palawan Sustanable Development Council Compound, Barangay Irawan, Puerto Princesa City, Palawan Province, Palawan Island; (4) Palawan Province, Palawan Island. The field survey was conducted for a total of 20 days

(11)Preparation of data papers: Data papers on the two herpetofaunal surveys (including data from previous surveys conducted in the sites) will be prepared and submitted to a peer-reviewed journal (e.g., NeoBiota, Check List, etc.).

The field survey resulted to 20 sample-event entries, and about 100+ occurrence data on alien and native amphibians and reptiles. A field report is currently being prepared for



stakeholders and the a sample-event dataset with occurrence dataset is currently being reviewed and quality checked for publication in GBIF on February 2019. A datapaper (or at the least a short communciation) will also be prepared and submitted on February 2019 after publishing of datasets in GBIF.

(12)Mid-term meeting of project partners

The mid-term meeting was held last 24 August 2018 at the Common Room, Central Labs, University of Santo Tomas, from 1700h to 2100h. The meetings was composed of 17 representatives, from HerpWatch Pilipinas, Inc., and Biology, Ecology, Systematics, and Taxonomy Group of the University of Santo Tomas (UST). The project members discussed the updates and progress of the Project and the general plan of action for the latter-half of the Project calendar.

(see Appendix C)

(13)Information campaigns: the project will be promoted in Philippine Biodiversity Symposium. Preliminary findings will be presented.

Results of data mining from scientific literature and Philippine National Museum of Natural History, and reconstruction of invasion history of the alien amphibians was presented in the 27th Philippine Biodiersity Symposium held in Pampanga State Agricultural College on October 16–19, 2018. The symposium was attended by about 150+ participants from across the Philippines. The presented study received good feedback from experts.

(see Appendix D)

(14)Training workshops: workshop or short training will be conducted and targeting environmental managers, academe, and natural history collections managers.

Classroom talks on Biodiversity Informatics and the Project was conducted in Palawan State University on July 2018. The classroom talks was attended by 30+ undergraduate students (Bachelor of Science in Biology) and Biology Department Staff of Palawan State University.

(see Appendix E)

Short Workshop on Biodiversity Informatics and GBIF was conducted during the 27th Philippine Biodiversity Symposium held on October 16–19, 2018. The short workshop was attended by 15+ participants, comprising of High School students, Masteral Students, Doctoral Students, and professionals. All participants expressed their intent to attend the training workshop on February 2019.

(see appendix F)

a. Data

Details of datasets expected to be mobilized as an outcome of the project:

Title of dataset	Taxonomic/geographi	Approximate number	Current format (e.g.
	c/temporal scope	of records	undigitized, digitized)
Philippine Invasive Alien	Historical and recent	1500	Undigitized
Amphibian and Reptile	records of alien	Occurrence records of alien	
Inventory and Occurrence	amphibians and reptiles	amphibians and reptiles	
	in the Philippines from		



Database	1900 to 2018.		
Philippine Invasive Alien Amphibian and Reptile Project Database (Ilocos Norte Province)	Amphibian and reptiles in Ilocos Norte, Luzon Island in year 2018.	60 (50) sampling-event data (fieldwork is expected to yield 200–400 occurrence data of native and alien amphibians and reptiles)	Undigitized
Philippine Invasive Alien Amphibian and Reptile Project Database (Palawan Province)	Amphibian and reptiles in Palawan Island, Palawan Province, Philippines, in year 2018.	20 (50) sampling-event data (fieldwork is expected to yield 200 – 400 occurrence data of native and alien amphibians and reptiles)	Undigitized
Philippine National Museum of Natural History Collections (Herpetological Collections)	Amphibians and Reptiles of the Philippines from 1940 to 2018.	1,000+ Occurrence records of amphibians and reptiles	Undigitized
University of the Philippines – Dilliman (Herpetological Collections)	Amphibians and Reptiles of the Philippines from 1940 to 2018.	500+ Occurrence records of amphibians and reptiles	Undigitized
Museum of Natural History – University of the Philippines Los Baños Collections (Herpetological Collections)	Amphibians and Reptiles of the Philippines from 1900s to 2018.	500+ Occurrence records of amphibians and reptiles	Undigitized
Silliman University Rodolfo B. Gonzales Museum of Natural History (Herpetological Collections)	Amphibians and Reptiles of the Philippines from 1950 to 2018.	1,000+ Occurrence records of amphibians and reptiles	Undigitized
Mindanao State University – Iligan Institute of Technology Natural Science Museum (Herpetological Collections)	Amphibians and Reptiles of the Philippines from 1900s to 2018.	500+ Occurrence records of amphibians and reptiles	Undigitized
University of Santo Tomas Museum (Herpetological Collections)	Amphibians and Reptiles of the Philippines from 1800s to 2018.	500+ Occurrence records of amphibians and reptiles	Undigitized



b. Other deliverables

Describe other deliverables expected from the project (e.g. publication of data papers, catalogues, reports etc.)

- (1) Technical reports. Mid-term and final technical report, (i.e., minutes of meetings, field updates, data mining updates, presentations in conferences, etc.), will be prepared and submitted to GBIF-BIFA, project partners, and concerned institutions (e.g. natural history collections where species occurrence data were obtained).
- (2) Financial report. Mid-term, and final financial report will be prepared and submitted to GBIF-BIFA and project partners.
- (3) Data papers. 3 data papers on the (1) assembled species occurrence datasets from scientific literature and natural history collections, and (2,3) sampling-event data and occurrence data from herpetofaunal surveys in Ilocos Norte Province, Luzon Island, and Palawan Island, Palawan Province will be prepared and submitted to peer reviewed journals (e.g. NeoBiota, BioInvasions Records, Zookeys, etc.). Status of papers (i.e., in preparation, in review, accepted, published) will be reported to GBIF-BIFA, project partners, and concerned institutions (e.g. natural history collections where species occurrence data were obtained, regional/provincial environmental offices and protected areas offices where herpetofaunal surveys were conducted). Datasets will be published/submitted to GBIF immediately after acceptance/publication.
- (4) Original articles. Original articles on reconstructed invasion histories including biosecurity recommendations will be prepared and submitted to peer-reviewed journals. Status of paper (i.e., in preparation, in review, accepted, published) will be reported to GBIF-BIFA, project partners, and concerned institutions (e.g. natural history collections where species occurrence data were obtained, regional/provincial environmental offices and protected areas offices where herpetofaunal surveys were conducted). Published original articles will be communicated with GBIF after publication.
- (5) Registration of partner stakeholders and other institutions as publishers with GBIF.

Calendar of activities

The calendar should be completed in the same way as in the Full Project Proposal (4.6) but should include any expected changes. Please provide reasons for any expected changes in the Notes column in the table below.

Proposed dates	Activity	Lead partner	Notes
April 2018	Kickoff meeting with project partners	HWP	
April 2018	Coordination and application of Permits for Herpetofaunal Surveys: Wildlife Gratuitous Permit (in pursuance to Wildlife Resources Conservation and Protection Act– RA 9147) will be applied with respective local government offices and environmental offices with jurisdiction over study sites. Activities and schedules of herpetofaunal surveys will be coordinated with respective offices.	HWP	
April 2018	Formal communications and meetings with heads of natural history collections institutions : secure access to collections and form mutual agreements on data sharing/publishing.	HWP	
May-June 2018	Data mining: Mining, cataloguing, and digitizing species occurrence data of alien amphibian	HWP	Activity was initially scheduled on May, but was conducted from May to June. The



	and reptile species from scientific literature.		project members underestimated the amount of literature to be mined.
June 2018	Attendance of project team member at BIFA Capacity Enhancement Workshop	HWP	
June 2018	Data mining: Mining, cataloguing, and digitizing species occurrence data of alien amphibian and reptile species from Philippine National Museum of Natural History (PNMNH)	HWP	Due to the extensive amount of data to be mined and cleaned, the activity was done for the whole month of June, causing adjustments to the month's schedule (see Data mining UST).
July 2018	Preparation of original articles: original articles on reconstructed invasion histories of the alien amphibian species will be prepared and submitted to peer-reviewed journals (e.g. NeoBiota, Diversity and Distributions, Biological Conservation, etc.).	HWP	Originally a paper on Amphibians and Reptiles was to be prepared, but the project members later decided to prepare two separate papers for the two groups – for the month of July, a paper on alien amphibians was prepared, whereas a paper on Reptiles is scheduled to be prepared on December.
August 2018	Data mining: Mining, cataloguing, and digitizing species occurrence data of alien herpetofauna from Silliman University Rodolfo B. Gonzales Museum of Natural History	HWP	The activity was conducted in two parts – the first part was on August and the second part was on October.
September 2018	Data mining: Mining, cataloguing, and digitizing species occurrence data of alien herpetofauna from University of Santo Tomas Museum	HWP, UST	The activity was initially scheduled on June, but due to the extensive amount of information of the PNMNH dataset that need to be cleaned, this activity was rescheduled to September.
September 2018	Preparation of data papers: Data papers on the two herpetofaunal surveys (including data from previous surveys conducted in the sites) will be prepared and submitted to a peer-reviewed journal (e.g., NeoBiota, Check List, etc.).	HWP	This activity was initially scheduled on November, but the project members decided to move this right after the herpetofaunal survey to minimize loss of information.
September 2018	Herpetofaunal survey in Palawan Island, Palawan Province	HWP	
October 2018	Mid-term meeting of project partners	HWP, UST, BMB	This activity was initially schedule on September, but was moved to October to give time for the fieldwork.
October 2018	Information campaigns: the project will be promoted in Philippine Biodiversity Symposium. Preliminary findings will be presented.	HWP	This activity was initially scheduled on July since the symposium is usually conducted on this month. Due to unforeseen issues, the symposium, along with this activity, was moved to October.
October 2018	Data mining: Mining, cataloguing, and digitizing species occurrence data of alien herpetofauna from Silliman University Rodolfo B. Gonzales Museum of Natural History	HWP	The activity was conducted in two parts – the first part was on August and the second part was on October.
October 2018	Preparation of Mid-Term Report and Preparation	HWP, UST, BMB	This activity was initially schedule on September, but was moved to October to give time for the fieldwork.



November 2018	Herpetofaunal Survey in Ilocos Norte Province, Luzon Island.	HWP, BMB	This activity was initially scheduled on August, but because of unprecedented issues (a super typhoon hit llocos Norte), the survey was rescheduled on November.
November 2018	Preparation of data papers: Data papers on the herpetofaunal surveys (including data from previous surveys conducted in the sites) conducted in Ilocos Norte will be prepared and submitted to a peer-reviewed journal (e.g., NeoBiota, Check List, etc.).	HWP	
December 2018	Data mining: Mining, cataloguing, and digitizing species occurrence data of alien herpetofauna from Mindanao State University – Iligan Institute of Technology Natural Science Museum	HWP	The activity was initially scheduled on September, but because of adjustments made during that month, this activity was moved to December.
December– February 2018	DAYO: Developing an online, open-access platform for observation and monitoring of herpetofaunal invasions	HWP	This activity was initially scheduled from November to January, but due to adjustments in schedule during these months, this activity was moved to December 2018 to February 2019.
December 2018	Preparation of original articles: original articles on reconstructed invasion histories of the alien reptile species will be prepared and submitted to peer-reviewed journals (e.g. NeoBiota, Diversity and Distributions, Biological Conservation, etc.).	HWP	Originally a paper on Amphibians and Reptiles was to be prepared, but the project members later decided to prepare two separate papers for the two groups – for the month of July, a paper on alien amphibians was prepared, whereas a paper on Reptiles is scheduled to be prepared on December.
January 2018	Data mining: Mining, cataloguing, and digitizing species occurrence data of alien herpetofauna University of the Philippines Diliman (UPD) Collections,	HWP	This activity was initially scheduled on July, but was rescheduled to give time in the preparation of an original article on alien amphibian invasions. Moreover, this was rescheduled in a much later date since UPD is more accessible compared to the other institutions scheduled earlier.
January 2018	Data mining: Mining, cataloguing, and digitizing species occurrence data of alien herpetofauna from University of the Philippines Los Baños Museum of Natural History (UPLB-MNH)	HWP	This activity was initially scheduled on July, but was rescheduled to give time in the preparation of an original article on alien amphibian invasions. Moreover, this was rescheduled in a much later date since UPLB-MNH is more accessible compared to the other institutions scheduled earlier.
February 2019	Training workshops: workshop or short training will be conducted and targeting environmental	HWP,	
	managers, academe, and natural history collections managers.	BMB	
February 2019	Preparation of data papers: Data paper of assembled species occurrence data from literature and natural history collections will be prepared and submitted to a peer-reviewed journal (e.g., NeoBiota).	HWP	



March 2019	Preparation of original articles: original articles on "Pest Risk Maps" of the alien amphibian and reptile species will be prepared and submitted to peer-reviewed journals (e.g. NeoBiota, Diversity and Distributions, Biological Conservation, etc.).	HWP	This was initially scheduled on January but was rescheduled to February so make sure that the occurrence data to be used in the anaylsis will be published first, and thus be cited appropriately.
March 2019	Information Campaign: Presentation of Field Report to Protected Areas Board Meeting in Palawan Province	HWP	This activity was initially scheduled on February but was rescheduled on March to coincide with the schedule of the First Quarter Protected Areas Management Board meeting.
March 2019	Information Campaign: Presentation of Field Report to Protected Areas Board Meeting in Ilocos Norte	HWP	This activity was initially scheduled on February but was rescheduled on March to coincide with the schedule of the First Quarter Protected Areas Management Board meeting.
March 2019	Preparation of Final technical and financial	HWP,	
	iehoira	BMB,	
		UST	

Project communications

Describe the plans to communicate and share the results of your project with the project stakeholders and broader GBIF community. Please also review the page describing your project available from <u>https://www.gbif.org/project/2xGhurLsnOmI0Qgo8iYu2A/alien-reptiles-and-amphibians-of-the-philippines</u>. Highlight any additional documents, events, news items or links that you would like to add to your page.

The project activities and results will be promoted through the following means:

- (1) Publications: Goal 5 of this project is publication of data papers and original articles. These will be published, as much as possible, in appropriate journals such as NeoBiota, Diversity and Distributions, Biological Invasions, among many. Publications will be uploaded by the authors, subject to on article copyright, in online platforms such as ResearchGate (e.g. Arvin C. Diesmos [36.63 RG score], among many).
- (2) Public presentations: The project activities and results will be presented either as poster or spoken presentation in local scientific conferences such as the Annual Philippine Biodiversity Symposium and, if possible, international scientific conferences.
- (3) Information campaigns: Goal 6 of the project is to 'conduct information campaigns and training workshops targeting stakeholders (i.e. environmental managers and academia) to promote and encourage citizen science and contribution from volunteers.' This aims to promote the project activities and the results to stakeholders.

In all publications, public presentations, and information campaigns, BIFA and GBIF will be acknowledged and short reports will be submitted to the GBIF Secretariat post-event.



News and Events

Short Workshop on Biodiversity Informatics and GBIF was conducted during the 27th Philippine Biodiversity Symposium held on October 16–19, 2018. The short workshop was attended by 15+ participants, comprising of High School students, Masteral Students, Doctoral Students, and professionals. All participants expressed their intent to attend the training workshop on February 2019.

See Appendix G for more details.

Amendments to the Project Page Description

The Philippines is marked both as a 'megadiversity country' and a 'global biodiversity conservation hotspot' – a status it shares only with Madagascar, owing to its immensely rich and compellingly unique diversity threatened with extinction, with the invasion of alien species as one of the main culprits.

Led by HerpWatch Pilipinas, Inc. (HWP) and in partnership with the Biodiversity Management Bureau of the Philippine Department of Environment and Natural Resources (BMB-DENR) and the Biodiversity, Ecology, Systematics and Taxonomy Group, University of Santo Tomas (BEST-UST), the main goal of the project is to fill taxonomic, geographical, and historical gaps in species occurrence and sampling-event data, focused on the alien amphibians and reptiles in the Philippines. Ultimately, using invasive reptiles and amphibians as a pilot study, the project will develop an online national platform for the long-term observation and monitoring of alien species invasions and trends.

This Project will produce the much needed science-based information that can help guide the development and implementation of sound national biosecurity programmes for amphibian and reptile invasions, provide a reproducible framework for similar initiatives targeting other groups of alien taxa in the Philippines and other countries, and contribute to the Philippines' international commitments to the United Nations' Sustainable Development Goals and the International Convention on Biological Diversity's Aichi Biodiversity Targets.

Mid-term evaluation findings and recommendations for the remaining project

implementation period

This should be the main section of the report, covering for example:

- An evaluation of the project activities by the mid-term and their outputs/deliverables
- Any feedback on the project's relevance from the partners and stakeholders
- Comments on the project implementation, its efficiency and effectiveness
- The management arrangements for the project, including support from the GBIF Secretariat
- Any reflection on the mid-term evaluation itself that could help inform the project's final evaluation and final report
- Areas of success to build on during the remainder of the project implementation

This section is also an opportunity to draw out the main lessons from the project experience that could be applied in other contexts, including any best practice that others in the GBIF community could apply.

Try to clearly document any changes to the project plans that will be made based on the findings of the mid-term evaluation. Please discuss any substantial changes with the GBIF Secretariat (<u>bifa@gbif.org</u>). In addition, please outline any recommendations for the GBIF Secretariat or the community to reinforce the initial successes of the project.



Inputs

As of 30 October 2018, the Project expanditures amounted to Php291,352.00 or \notin 4,712.00 (~28% of total Project budget), which is Php151,819.2 or \notin 1,688.00 short of the expected Project expanditures at mid-term period of Php445,171.2 or \notin 6,400.00 (~43% of total Project budget). This is expected since majority of the project budget was allocated for the expenditures of latter activities (e.g., publication of data papers and original articles, training workshops, web and app development) of the Project.

In terms of **budget per expense type**, there are no major adjustments are made to date is projected to be followed until the end of the project.

In terms of **budget per activity**, the allocated budget for each activitiy was followed, with some minor exceptions. For instance, due to the change of venue of the PBS (from Palawan to Pampanga, which will not anymore require flight but rather on-land travel), the actual expenses was far lower than the alocated budget. Meanwhile, due to extension of the conduct of data mining from SU-RBGMNH, the actual expenses exceeded the alocated budget (Project members had to fly twice). Moreover, unprecedented expenses for the conduct of some activities arose (e.g., domestic travel, consumables/general purchases), resulting to minute adjustments to the budgeting. These deficits in the implimentation of an activity are minor enough to be easily compensated by the excess in the implementation of other activities.

Implementation

As of 30 October 2018, most of the activities were conducted on time, without adjustments to the initial schedule. It is noteworhty that some of the activities were either conducted at an extended period, rescheduled to an earlier date, or rescheduled to a later date. For instance, Data mining from scientific literature, PNMNH, SU-RBGMNH was extended due to the unprecedented amount of literature to be mined, which consequently caused the rescheduling of other activities (e.g., data mining from UST). Preparation of original articles of invasion histories of the alien amphibians and reptiels was scheduled in two parts, wherein preparation of an article on alien amphibians was schedule at an earlier date, whereas a paper on Reptiles is scheduled to be prepared on December. The fieldwork and preparation of data paper on herpetofaunal survey in llocos Norte was rescheduled to a latter date due to issues relating to safety and accessibility during that particular time period. The PBS was scheduled to a later date, and thus the Project's activity on information campaign (presentation and mini-workshop).

As of mid-term reporting, the activities conducted since the start of Project implementation has been compelted (e.g., information campaigns, meetings) or at least 70% compelted (e.g., original articles in revision, datasets are in the process of quality checking and transforamtion to DwC Occurrence Core format prior to publishing).

Outputs

As of 30 October 2018, about 400+ **occurrence data** on alien amphibians and reptiles has been data mined from scientific literature, observations of experts, and natural history collections. With the trend on accumulation of mined occurrence data and the remaining natural history collections to be visited, we are confident that the expected number of occurrence data (1500) to be published at the end of the Project. In addition to the occurrence data on alien amphibians and reptiles, partner stakeholders (i.e., natural history collections institutions) expressed their intent to publish their data on native amphibians and reptiles, which is projected to be 5,000+ entries in total. This delivrable was not initially part of the planned output and deliverables of the Project, but will contribute greatly to the BIFA grant, which is to fill taxnomic and geographical gaps in biodiversity data in Asia.



In terms of **sample-event data**, we expect an increase of 10 sample event data entries for the llocos Norte Herpetofaunal survey (including an increase of 100+ occurrence data on native and alien amphibians and reptiels). Meanwhile, due to limitations of the fieldwork conducted in Palawan, we can only promise 20+ (from the original 50) sample event data, but with the same projected amount of occurrence data of 200-400. The project members will revisit more sites in Palawan sometime before the end of 2018 or early 2019.

In terms of **articles submitted**, we have one (1) article that was favourably accepted for publication subject to revisions, with the Pacific Science Journal (see appendix B).

In terms of **scientific conferences where the project was presented**, we have presented the findings of the reconstruction of invasion history of alien amphibians in the Philippines at the 27th Philippine Biodiveristy Symposium on October 2018 (see appendix D), which was attended by 150+ participants, comprising of highschool, undergraduate, and graduate students and professionals and experts in Philippine wildlife conservation. The presented study received good remarks from experts.

In terms of the **number of classroom and community talks and information campaigns** where results were presented, the project members held one (1) classroom talk at Palawan State University on July 2018 (see appendix E) which was attended by 30+ students and 10+ professionals, and one (1) mini-workshop in the 27th Philippine Biodiverstiy Symposium (see appendix F) which was attended by 15+ graduate students and professonals. All participants expressed their willingness to join the upcoming training workshop on February, register their insitution to the GBIF as publisher, share their biodiversity data in GBIF and publish data papers. These delivrables were not initially part of the planned output and deliverables of the Project, but will contribute greatly to the goal of the Project and the BIFA grant.

Summary and Conclusion

As of mid-term period, the Project expenditures is in line with the project's budget, with budget per expense type on track and budget per activity with minimal to negligible adjustments. Although only 28% of the budget has been expended so far, this is expected since majority of the budget is allocated for the expenditures of activities during the latter half of implementation of the Project. The project has accomplished or is near completion of most of the scheduled activities in the first half of implementation, including activities that were intiailly scheduled at a later date. Meanwhile, for some of the activities, the project is slightly lagging behind. The project has delivered expected outputs as of mid-term reporting, and inclduing outputs that were not initially planned but will contribute greatly to the goal of the Project and the BIFA grant. In light of the evaluation of the project's inputs, implementation, and outputs, it can be concluded that the Project is on-track and can be confidently projected to conclude on-time.

Appendix – Sources of verification

Sources of verification are for example links to relevant digital documents, news/newsletters, brochures, copies of agreements with data holding institutions, workshop related documents, pictures, etc.



Appendix A — Kickoff meeting with project partners



Appendix B — Preparation of original articles

Abstract (original version) of original article on reconstructed invasion history of the alien amphibians in the Philippines:

Island hopping in a biodiversity conservation hotspot archipelago: reconstructing the invasion history of alien amphibians in the Philippines

Arman N. Pili, Emerson Y. Sy, Mae Lowe L. Diesmos, Arvin C. Diesmos

Abstract

Invasive alien species is the most significant threat to biodiversity conservation in island ecosystems worldwide. By analyzing historical and geographical data, we reconstructed the chronological history of invasion of the alien amphibian species in the Philippines - a model biodiversity conservation hotspot archipelago. We then guantified their rate of spread by constructing invasion curves and proportion curves. Lastly, we updated their invasion status and distribution. Six alien amphibian species have been introduced in the Philippines: chronologically, Hylarana erythraea, Rhinella marina, Lithobates catesbeianus, Hoplobatrachus rugulosus, Kaloula pulchra, and Eleutherodactylus planirostris. Collectively, four pathways facilitated their introduction and subsequent spread, namely, release in nature, escape from confinement, transport-stowaway, and transport-contaminant; of which the latter two demonstrated paramount importance. Spatio-temporal pattern of distribution showed a stratified diffusion process of spread involving a combination of leading-edge and long-distance dispersal. Invasion curves showed that H. rugulosus and K. pulchra spread fastest at provincial and island level, respectively. Moreover, proportion curves showed multiple periods of invasiveness and lag-periods among the species, All alien amphibians, except L, catesbeianus, are now widespread invasive: L. catesbeainus was introduced but the status of its establishment is undetermined. Rhinella marina is currently the most widespread (occurring in 54 provinces, 36 islands), whereas E. planirostris is the least distributed (occurring in eight provinces, seven islands). We recommend the prioritization and management of invasion pathways, integrated with early detection and rapid eradication schemes focused in susceptible sites (e.g. uninvaded islands), in mitigating current and future alien amphibian species invasions in island archipelagos.

Mansucript was submitted to the Pacific Science Journal on July 2018 and was returned on 30 August 2018 and was invited for submission subject to revision.



Appendix C — Mid-term meeting of project partners



Appendix D — Information campaigns

Island hopping alien anurans in the Philippines: invasion history, updated status, and recommendations for management

Arman N. Pili¹², Mae Lowe L. Diesmos^{3,1,2}, Emerson Y. Sy^{4,2}, and Arvin C. Diesmos^{5,1,2}

¹The Graduate School, University of Santo Tomas; ²HerpWatch Pilipinas, Inc.; ³Research Center for the Natural and Applied Sciences, University of Santo Tomas; ⁴Philippine Center for Terrestrial and Aquatic Research; ⁵ Zoology Division, Philippine National Museum of Natural History

Invasive alien species is the most significant threat to biodiversity conservation in island ecosystems worldwide. By analyzing historical and geographical data, we reconstructed the chronological history of invasion of the alien anurans in the Philippines. We then quantified their rate of spread and updated their invasion status and distribution. Six alien anurans have been introduced in the Philippines: chronologically, the green paddy frog (Hylarana erythraea), cane toad (Rhinella marina), American bullfrog (Lithobates catesbeianus), East Asian bullfrog (Hoplobatrachus rugulosus), Asiatic painted narrowmouth frog (Kaloula pulchra), and greenhouse frog (Eleutherodactylus planirsotris). Our findings demonstrated the paramount importance of the transport-contaminant and transport-stowaway pathways in the introduction and subsequent intra- and inter-island spread of alien anuran species in the Philippines. Invasion curves showed that the rate of spread varied among species, wherein H. rugulosus and K. pulchra spread fastest at province and island level, respectively. Moreover, none of the alien anurans has yet reached spatial saturation, suggesting continuous spread. Lithobates catesbeianus was released into novel environments, but the status of its establishment is undetermined, whereas the five other alien anuran species are now widespread invasive. Rhinella marina is currently the most widespread (occurring in 54 provinces on 36 major islands), whereas E. planirostris is the least distributed (occur in eight provinces on seven major islands). We recommend the prioritization and management of invasion pathways, integrated with early detection and rapid eradication schemes focused in susceptible sites (e.g. uninvaded islands), in mitigating current and future alien anuran invasions in the country.

Figure D3. Abstract of the study on reconstructing the invasion history and updating the status and distribution of alien amphibians in the Philippines presented in the 27th Philippine Bidoiversity Symposium on October 2018.





Figure D4. Acknowledgement slide presented at the beginning and at the end of the presentation.



Figure D5. Title slide of the presented study.





Appendix E — Training workshops – Palawan State University

Figure E6. Classroom talks on Introduction to Biodiversity Informatics and GBIF held at Palawan State University on July 2018.



Appendix F — Training workshops 27th Philippine Biodiversity Symposium



Figure F8. Title slide of the workshop presentation.

	Outline of Workshop	- - -
	Biodiversity Informatics Supplementary Lexicon Brief History Applications	· · ·
	Biodiversity Data and Standards Biodiversity Dataset Témpláté Standards	· · ·
	Biodiversity Data Mobilization and Data Papers	
	Intensive Short-Course on Biodiversity Data Mobilization	· · ·
4		-
5	Data Access via the Global Biodiversity Information Facility (GBIF)	
		-

Figure F9. Outline slide showing the outline of the workshop.



Intro to bio(diversity)informatics and answers to FAQs on biodiversity data

Facilitators:

Arman Pili, Mae Lowe Diesmos, Arvin Diesmos, HerpWatch Pilipinas

Biodiversity informatics is a relatively young science that deals with the application of informatics techniques to biodiversity information for improved capture, cleaning, management, improvement, analysis, and interpretation. The Global Biodiversity Information Facility (GBIF) is an international open data infrastructure funded by governments that allow anyone, anywhere to access data on all types of life on Earth, shared across national boundaries via the Internet. As of August 2018, the GBIF database contains about 1.1M occurrence data available for species in the Philippines; of which, only about 10% are contributed by publishers from the Philippines. This workshop aims to provide a brief introduction to biodiversity informatics and the general process of biodiversity data mobilization; discuss the status and promote biodiversity data use and mobilization in the Philippines; explore how to use the website www.gbif.org, particularly how to obtain and visualize biodiversity data; explore research topics that utilizes biodiversity data; introduce the GBIF-BIFA project alien amphibians and reptiles of the Philippines (https://www.gbif. org/project/2xGhurLsn0ml0Qgo8iYu2A/alien-reptiles-and-amphibians-of-the-philippines) and future training workshops on biodiversity data mobilization facilitated by HerpWatch Pilipinas, Inc. This workshop will be particularly useful for anyone working on taxonomy, biogeography, and conservation biology.

Figure F10. Abstract of the workshop held during the 27th Philippine Biodiversity Symposium at Pampanga State University on 19 October 2018, as shown from the Symposium's Programme.



Appendix G — Mini-Workshop

Workshop title: Intro to bio(diversity)informatics and answers to FAQs on biodiversity data.

An information campaign organized as part of the GBIF-BIFA project (BIFA03_26) lead by HerpWatch Pilipinas, Inc. and in coordination with the Biodiversity Conservation Society of the Philippines (BCSP) and Pampanga State Agricultural University (PSAU). This short-workshop is a 'teaser' to a more intensive capacity enhancement workshop on biodiversity data mobilization that HerpWatch Pilipinas, Inc., in partnership with the Biodiversity Management Bureau of the Philippine Department of Environment and Natural Resources (DENR-BMB) and the Biodiversity, Ecology, Systematics, and Taxonomy group of the University of Santo Tomas (UST-BEST), will organize on February 2019.

Workshop abstract: Biodiversity informatics is a relatively young science that deals with the application of informatics techniques to biodiversity information for improved capture, cleaning, management, improvement, analysis, and interpretation. The Global Biodiversity Information Facility (GBIF) is an international open data infrastructure funded by governments that allow anyone, anywhere to access data on all types of life on Earth, shared across national boundaries via the Internet. As of August 2018, the GBIF database contains about 1.1M occurrence data available for species in the Philippines; of which, only about 10% are contributed by publishers from the Philippines. This workshop aims to provide a brief introduction to biodiversity informatics and the general process of biodiversity data mobilization; discuss the status and promote biodiversity data use and mobilization in the Philippines; explore how to use the website www.gbif.org, particularly how to obtain and visualize biodiversity data; explore research topics that utilizes biodiversity data; introduce the **GBIF-BIFA** project alien amphibians and reptiles of the Philippines (https://www.gbif.org/project/2xGhurLsnOmI0Qgo8iYu2A/alien-reptiles-and-amphibians-of-thephilippines) and future training workshops on biodiversity data mobilization facilitated by HerpWatch Pilipinas, Inc. This workshop will be particularly useful for anyone working on taxonomy, biogeography, and conservation biology.

Workshop facilitators:

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Workshop was conducted during the 27th Philippine Biodiversity Symposium at Pampanga State Agricultural University in Mabalacat, Pampanga, the Philippines on 19th October 2018.