

Tapping two decades of ecological research in PNG: Creating a framework for data mobilisation at New Guinea Binatang Research Center

Programme: BID

Project ID: BID-PA2020-007-INS

Project lead organization: New Guinea Binatang Research Center

Project implementation period: 1/9/2021 - 9/7/2023

Report approved: 11/7/2023

Final Narrative Report

Executive Summary

New Guinea Binatang Research Center (BRC) thanks the BID program for supporting our efforts to better mobilise data in Papua New Guinea (PNG) through the project period. The initiative was largely implemented as planned; initial activities focussed on training a GBIF Officer at BRC and involving BRC staff members in the data cleaning and quality control process, with latter activities focussed on sharing what we learned, broadening the training audience and promoting the concept of data sharing with other stakeholders in PNG. Our key achievements are as follows: A) The training of a GBIF officer at BRC who is active in staff capacity building and continued data mobilisation, B) the reformatting, quality control and mobilisation of 177,229 occurrence records to the GBIF network, making BRC the greatest contributor of PNG records by a PNG institution (and 2nd greatest overall) and C) The promotion and training of 48 people through three workshops. The practical impact of these key achievements are: A) BRC, PNG's most productive biological research organisation, now has a member of staff capable of mobilising records to the GBIF network, and further, other key staff members understand how to access, use, control quality and format records for the GBIF network including taxa team leaders, junior researchers and database associates, B) the number of published occurrences on the GBIF network from PNG was increased by 9.7 % and C) staff from 18 national organisations (research institutes, NGOs, private sector, government agencies and universities) now understand the importance and advantages of data sharing.

BRC have learned a number of important lessons throughout this project- 1) Data curation and mobilisation is a labour intensive process that requires repeated training activities to ensure efficient workflows and quality datasets in line with GBIF publishing standards, 2) National collaboration in PNG is challenging as priorities of organisations shift and often clear communication is lacking, 3) There is a desire in PNG to maximise the usefulness of biodiversity data and promote PNGs native biodiversity, 4) GBIF is undervalued or seldomly heard of in PNG and thus there is ample room for further data contributions as other organisations learn of the advantages of GBIF.

As our project developed and evolved we identified opportunities to expand past our initial researcher and student focus, instead also involving conservation initiatives and private industry to the training components. This was prompted by the realisation a) that GBIF is very useful to conservation projects who wish to create species lists or generally improve their natural history understanding, and b) that long-term efforts of conservation projects and environmental sector companies to document species in their conservation areas can be an excellent source of data for GBIF.

The team recognise that some challenges were unforeseen on project inception. First was project staffing; Our initial team composition and in particular our key staff member serving as GBIF Officer was unfortunately not capable of filling this role. This led to project wide delays on achieving deliverables, and time spent searching for a replacement and subsequent retraining. Second, we underestimated the labour needed to process our extensive datasets and bring them to the quality and formatting standards of GBIF, resulting in fewer published datasets than was initially planned. Finally, communication and collaboration between project partners was stifled and subject to long delays due to circumstances outside of our control, leading to partially completed collaborative deliverables with the PNG Forest Research Institute.

Data mobilisation activities of the project which were not completed in time will be followed up by GBIF Officer (E Arom) and database manager (P Butterill) over the remainder of 2023. We have also set up a dedicated Facebook group for PNG and GBIF data discussions which will serve as a post-project forum for continued collaboration and mobilisation efforts. The collaboration with FRI will continue after the project where BRC will further support FRI to build a database management system for their insect collection data, thus facilitating future mobilisation.

Progress against milestones

Has your project completed all planned activities?: No

Has your project produced all deliverables: No

Rationale:Our project did not complete the mobilisation of 5 datasets: Madang Leaf Miners, Wanang Ants, Mt. Wilhelm Ants, PNG Plants, and EntomID-PNG Database. The primary setback came from a need to change key staff (GBIF Officer) mid-project. Unfortunately, progress made during the first half of the project had to be extensively revised due to an insufficient level of quality control. Furthermore, we underestimated the labour intensity required to carry out the work needed to ensure quality and update records accordingly. We acknowledge over-ambition in the number of datasets in our original proposal.

The "Guilds" Data Paper was not completed as planned. This paper requires the ID updates from barcoding that are not yet incorporated into key datasets, hence, the deliverable had to be delayed. Nevertheless this is a key output that we will move towards post-project.

Report on Activities

Summary of the implementation of the project activities

We are pleased to report key activities, with few exceptions, were delivered as planned and had notable impacts. BRC now has a trained GBIF Officer on staff with a knowledge of GBIF protocols and the importance of data sharing. Additional 17 staff members have either worked closely with the GBIF officer to perform data checks or have attended a workshop on GBIF protocols and key aspects of data mobilisation. Eight datasets have been registered with GBIF accounting for an 267 % increase in published datasets (previously only 3) from PNG institutions. The BRC reference collection of insects is in the process of being cleaned, updated including new labels and photographs, and will be linked to database entries by end of 2023. Three workshops were held in total, a- BRC workshop for staff, 3 days, b- Online national stakeholder workshop, 1 afternoon, c- BRC workshop for students, conservation communities and private industry, 3 days. This differed from the initial plan to host just one national workshop and a seminar at a student course, thus expanding our capacity building significantly. These were successfully held resulting in 31 people with new knowledge of GBIF from both a user and data contributor standpoint. Training participants will be encouraged to upload data from projects they are collaborating with BRC in 2023, this represents a new goal but it's delivery will fall outside of project implementation period. BRC have provided FRI with a basic database management tool which they can use for the ongoing digitisation of their insect collection and to improve their mobilisation capabilities going forward. Unfortunately our collaborative activity to mobilise the EntomID-PNG database did not materialise due to issues with the dataset and a lack of resources/expertise to bring its quality and formatting into a state we were prepared to publish on GBIF. However, we anticipate that these data will be incorporated into the aforementioned database so that they can be published in the future by FRI in collaboration with BRC.

Completed activities

Activity: Training of GBIF Officer

Description: At first training was focussed on preparing Mr Frank Philip for the role of GBIF Officer. Although Mr Phillip successfully gained his badge from the GBIF Biodiversity Data Mobilization workshop and got off to a reasonable start, his performance later was deemed unacceptable and unfortunately resulted in termination. Following this the team searched for a replacement with a suitable technical background and this led to the hiring of Ezekiel Arom. Mr Arom completed the GBIF manual training under the guidance of Dr Butterill and Dr Redmond through a series of weekly meetings and exercises. Additionally Mr Arom was tutored by Mr Penniel Lamei during a visit to BRC in (May 2023), where Mr Arom additionally shared further learning with other members of BRC. Mr Arom subsequently delivered training exercises and the national online workshop focussing on demonstrating tools for data cleaning (June 2023) and at an in-person workshop at BRC for students, conservation professionals and private industry (July 2023).

Start Date - End Date: 2/8/2021 - 3/7/2023

Verification Sources: GBIF Officer Training Verification.pdf

Activity: Training for BRC taxa leaders and staff

Description: Training for BRC taxa leaders and key staff has taken the form on going work alongside BRC GBIF Officer and set programs including workshops and live tutorials. John Auga entomology team leader initially worked closely with our original GBIF Mr Philip to work through entomology datasets and format for GBIF network. From this work Mr Auga developed a working knowledge of the system, but lacked technical capacity to interact with data cleaning and refining software. Similarly Kenneth Molem and Nancy Labun have worked with GBIF Officers to understand the requirements for botanical data on GBIF network. With the departure our original GBIF officer, J Auga together with Jonah Filip and assisted by Steven Sau filled the role of the GBIF officer and continued work on bringing data to GBIF standards, carrying out ID updates where possible and improving quality of reference collections. E. Arom replaced these as the permanent GBIF Officer, and after receiving training, assisted Penniel Lamei with a workshop for BRC staff on 29-31st May, for 12 research staff and students (see list attached). Furthermore three staff (Steve Sau, Gibson Aubona, Kari Lamba) attended the national workshop where they learned about the importance of national efforts and how to promote data sharing. Finally two BRC staff (Kiole Imale, Lui Napa) participated in the student and conservation GBIF and data analysis workshop on 3-5th July.

Start Date - End Date: 1/1/2022 - 1/5/2023

Verification Sources: Program_BRC GBIF Training 2023.pdf & Training for BRC taxa leaders and staff.pdf

Activity: Quality control and refinement of BRC datasets

Description: BRC GBIF Officer together with taxa team leaders and project management worked to update species identifications and correct an array of data inconsistencies including; species duplicate entries, species synonyms, misspelled species names, incorrect identifications, incorrect dates or inconsistent formatting of dates, incomplete data entries. Additionally the team compiled metadata which was quality controlled through multiple checks and collaboration with the original researchers who gathered the data. Finally the team made progress cleaning and updating the BRC reference collection, with this work ongoing.

Start Date - End Date: 2/8/2021 - 3/7/2023

Verification Sources: Demonstrated by deliverables report and related datasets published on the GBIF network which underwent quality control and formatting.

Activity: Mobilisation of BRC datasets

Description: In total, eight occurrence datasets, comprising over 177,000 records, were mobilised to GBIF. All data were taken from ecological projects focused on the diversity, host specificity, and betadiversity of insect-plant interactions in the rainforests of Papua New Guinea. This makes BRC the foremost in-country publisher of datasets and the 2nd biggest provider of PNG occurrence records of all institutions globally.

Start Date - End Date: 3/8/2021 - 1/7/2023

Verification Sources: Registered datasets: https://www.gbif.org/dataset/search?publishing_org=da74804c-5f33-4261-a877-a3b30d2ee383

Activity: Student training course workshop

Description: Our team held a 3-day workshop from 3rd to 5th July which hosted 20 participants from diverse backgrounds including conservation area management and rangers, students, environmental officers and private industry. This was a significant expansion on the originally planned activity, which intended to comprise of several short seminars.

Instead, this workshop took place over 3 days and introduced GBIF to participants by providing a tour of the interface and a detailed walk through as a GBIF data user. This included downloading datasets that were then subject to formatting and analysis by workshop participants serving the dual purpose of demonstrating the utility of GBIF and additionally building data analysis capacity in PNG which is sorely missing. Participants were then shown the steps behind data contribution, and tasked with uploading data that will be gathered through BRC collaborations this year. Workshop participants also received a seminar on data sharing and its importance and held discussions on how it would be implemented at their respective organisations or universities. Among the ideas discussed and most met with enthusiasm was the use of citizen science apps such as iNaturalist and eBird. This workshop also had members of BRC in attendance for continued internal capacity building. Participants also learned about the basics of data analysis, imparting important and confidence to fully utilise datasets from GBIF.

Start Date - End Date: 3/7/2023 - 5/7/2023

Verification Sources: Conservation and Environmental Sector workshop participant list.pdf

Activity: In person or online workshop with other national agencies

Description: On 13th June we held an online workshop for potential key data contributors to the GBIF effort. This workshop was attended by members of PNG research institutes, academics, lecturers, data managers, staff of international organisations, and community organisations dedicated to conservation and research (see list in attached file, "In person or online workshop with other national agencies"). Furthermore, materials were provided to those who could not attend the meeting including

members of government agencies (see list). In total we had 16 participants (3 hosts and 13 attendees), and 6 absentees who requested who requested the recording. The meeting involved an introduction session followed by an overview of data sharing and its benefits, which was followed by a tour of the GBIF system and an introduction to data cleaning concepts and tools. The meeting finished with a discussion data sharing in PNG and the creation of an online forum for continued collaboration and discussion. We have begun adding new members to that group with a view to host another meeting of group members later in 2023.

Start Date - End Date: 13/6/2023 - 13/6/2023

Verification Sources: In person or online workshop with other national agencies.docx

<https://www.youtube.com/watch?v=OayB6ToUWIs>

<https://www.facebook.com/groups/1605221479968019>

Report on Deliverables

Deliverables - Summary

We are pleased to report a very successful capacity building program in our project. All of our workshops were met with great feedback and have sparked a wider conversation about GBIF and data sharing in PNG. Furthermore our GBIF Officer is prepared for continued engagement with GBIF and thus we have established strong foundations for data sharing at BRC moving forward.

The mobilisation of our datasets has also gone well, and in terms of total records published on GBIF we can say that this was indeed a successful effort. However in hindsight we believe we were overly optimistic about the number of datasets we could mobilise given the training and resource input needed to ensure high quality contributions. Furthermore and as mentioned, we were forced to change key staff in the middle of the project which was a significant setback to mobilisation efforts. We viewed the top priority as having well trained staff that could curate high quality datasets. We made the decision to prioritise training and focus on quality over quantity in terms of dataset publishing.

Overall we published 8 datasets comprising 177,229 occurrence records. We did not publish 5 datasets but have a workflow established which will hopefully enable us to reach 10-12 datasets by the end of 2023.

We unfortunately did not achieve the 'Guilds data paper'. Again project staffing setbacks forced us to reevaluate priorities and the data paper was deemed as a lower priority outcome which had no real bearing on the sustainability of project outcomes. It also relies of barcode ID updates, which are ongoing. There is a commitment to this data paper post-project.

Deliverables produced by the project

Dataset deliverables

Lowland Betadiversity

Dataset type: Occurrences

Dataset scope: Betadiversity of tropical insects feeding on angiosperms – Larval leaf chewers (Lepidoptera) sampled from four sites each in Madang and East Sepik Provinces (PNG) in secondary/primary lowland rainforests from 2002-2005

Number of records: 75,136

Data holder: BRC

Data host institution: BRC

% complete: 95%

Status update: Awaiting barcoding ID updates

DOI: <https://doi.org/10.15468/34dna2>

Expected date of publication:

Madang Adult Leaf Chewers

Dataset type: Occurrences

Dataset scope: Host specificity of tropical insects feeding on angiosperms – Adult leaf chewers (Orthoptera, Coleoptera & Phasmida). Sampled from four sites around Madang (Madang Province, PNG) in mosaic secondary/primary lowland rainforests. Sampling duration: 1994-2000.

Number of records: 24,503

Data holder: BRC

Data host institution: BRC

% complete: 95%

Status update: Awaiting barcode ID updates.

DOI: <https://doi.org/10.15468/meu2wn>

Expected date of publication:

Madang Lepidoptera

Dataset type: Occurrences

Dataset scope: Host specificity of tropical insects feeding on angiosperms – Larval leaf chewers (Lepidoptera). Sampled from multiple sites around Madang (Madang Province, PNG) in mosaic secondary/primary lowland rainforests. Sampling duration: 1997-2002.

Number of records: 49,133

Data holder: BRC

Data host institution: BRC

% complete: 95%

Status update: Awaiting barcode ID updates.

DOI: <https://doi.org/10.15468/pnycbd>

Expected date of publication:

Madang Leaf Miners

Dataset type: Occurrences

Dataset scope: Host specificity of tropical insects feeding on angiosperms – Leaf miners (Lepidoptera, Coleoptera, Diptera). Sampled from the village of Ohu (Madang, Madang Province, PNG) in mosaic secondary/primary lowland rainforests. Sampling duration: 2003-2006.

Number of records: 28,000

Data holder: BRC

Data host institution: BRC

% complete: 25%

Status update: Awaiting barcode ID updates. Mobilisation delayed.

DOI:

Expected date of publication: 2023-12-10

Simbu Lepidoptera

Dataset type: Occurrences

Dataset scope: Caterpillar assemblages feeding on Ficus (Moraceae) – Larval leaf chewers (Lepidoptera). Sampled from three sites in Simbu Province (PNG) in mosaic secondary/primary lowland rainforests. Sampling duration: 2001-2002.

Number of records: 12,752

Data holder: BRC

Data host institution: BRC

% complete: 95%

Status update: Awaiting barcode ID updates

DOI: <https://doi.org/10.15468/g59evz>

Expected date of publication:

Madang Root Chewers

Dataset type: Occurrences

Dataset scope: Host specificity of tropical insects feeding on angiosperms – Root chewers (Chrysomelidae, Coleoptera). Sampled from sites in Madang Province (PNG) in mosaic secondary/primary lowland rainforests. Sampling duration: 2002-2004.

Number of records: 2,495

Data holder: BRC

Data host institution: BRC

% complete: 95%

Status update: Awaiting barcode ID updates.

DOI: <https://doi.org/10.15468/dbd6j8>

Expected date of publication:

Madang Sap Suckers

Dataset type: Occurrences

Dataset scope: Host specificity of tropical insects feeding on angiosperms – Sap suckers (Hemiptera). Sampled from sites in Madang Province (PNG) in mosaic secondary/primary lowland rainforests. Sampling duration: 2007-2009

Number of records: 1,857

Data holder: BRC

Data host institution: BRC

% complete: 95%

Status update: Awaiting barcode ID updates

DOI: <https://doi.org/10.15468/eqecuc>

Expected date of publication:

Madang Bark Beetles

Dataset type: Occurrences

Dataset scope: Host specificity of tropical insects feeding on angiosperms – Wood borers (Coleoptera). Sampled from sites in Madang Province (PNG) in mosaic secondary/primary lowland rainforests. Sampling duration: 2002-2006.

Number of records: 1,999

Data holder: BRC

Data host institution: BRC

% complete: 95%

Status update: Awaiting barcode ID updates

DOI: <https://doi.org/10.15468/q9c3hg>

Expected date of publication:

Wanang Ants

Dataset type: Occurrences

Dataset scope: Diversity of tropical arboreal communities – Ants (Hymenoptera). Sampled from Wanang in Madang Province (PNG) in secondary/primary lowland rainforests. Sampling duration: 2007 (Feb – Nov)

Number of records: 3,000

Data holder: BRC

Data host institution: BRC

% complete: 10%

Status update: The dataset was omitted due to time constraints. It will hopefully be mobilised later in 2023

DOI:

Expected date of publication: 2023-12-10

Mt. Wilhelm Ants

Dataset type: Occurrences

Dataset scope: Betadiversity of tropical ant communities – Ants (Hymenoptera). Sampled at six sites in Madang Province (PNG) on an elevational gradient leading to Mt. Wilhelm. Sampling duration: 2012 (Oct – Nov)

Number of records: 3,500

Data holder: BRC

Data host institution: BRC

% complete: 10%

Status update: Omitted due to time constraints. It will hopefully be mobilised later this year.

DOI:

Expected date of publication: 2023-12-10

PNG plants

Dataset type: Occurrences

Dataset scope: Plants of PNG, from multiple ecological projects over the last 20 years. The dataset contains a conservative estimate of 15,000 trees and 700 morphospecies mostly located in the lowland rainforests of Madang Province, but also some at higher elevations in Madang and Morobe provinces.

Number of records: 15,000

Data holder: BRC

Data host institution: BRC

% complete: 10%

Status update: Omitted due to time constraints. Will hopefully be mobilised early in 2024.

DOI:

Expected date of publication: 2024-03-31

Wanang Lepidoptera

Dataset type: Occurrences

Dataset scope: Successional diversity of tropical caterpillars (Lepidoptera). Sampled at Wanang in Madang Province (PNG) in lowland rainforest plots. Sampling duration: 2006-2008.

Number of records: 9,354

Data holder: BRC

Data host institution: BRC

% complete: 95%

Status update: Awaiting barcode ID updates.

DOI: <https://doi.org/10.15468/7e96ht>

Expected date of publication:

Wanang Wood Borers

Dataset type: Occurrences

Dataset scope: Successional diversity of tropical wood-boring insects (Coleoptera). Sampled at Wanang in Madang Province (PNG) in lowland rainforest plots. Sampling duration: 2006-2007

Number of records: 15,000
Data holder: BRC
Data host institution: BRC
% complete: 10%
Status update: hang on
DOI:
Expected date of publication: 2023-12-10

EntomID-PNG Database

Dataset type: Occurrences
Dataset scope: A database of museum insect specimens (predominantly Coleoptera, Lepidoptera and Hymenoptera) collected by various institutions all over PNG.
Number of records: 60,000
Data holder: FRI, BRC
Data host institution: BRC, FRI
% complete: 50%
Status update: The data is prepared (cleaned) but is in a format that poses a technical challenge to transfer it to a modern database. There are also questions of ownership that need resolving. Hopefully it can be mobilised early in 2024.
DOI:
Expected date of publication: 2024-03-31

Other deliverables

GBIF Officer

Description: At first training was focussed on preparing Mr Frank Philip for the role of GBIF Officer. Although Mr Phillip successfully gained his badge from the GBIF Biodiversity Data Mobilization workshop and got off to a reasonable start, his performance later was deemed unacceptable and unfortunately resulted in termination. Following this the team searched for a replacement with a suitable technical background and this led to the hiring of Ezekiel Arom. Mr Arom completed the GBIF manual training under the guidance of Dr Butterill and Dr Redmond through a series of weekly meetings and exercises. Additionally Mr Arom was tutored by Mr Penniel Lamei during a visit to BRC in (May 2023), where Mr Arom additionally shared further learning with other members of BRC. Mr Arom subsequently delivered training exercises and the national online workshop focussing on demonstrating tools for data cleaning (June 2023) and at an in-person workshop at BRC for students, conservation professionals and private industry (July 2023).

% complete: 90%

Status update: Mr E Arom still requires support in his role from the project team, due to joining the team relatively late in the project timeline.

Sources of verification: GBIF Officer Training Verification.pdf

Promotion and workshop with members of key national insitutions

Description: On 13th June we held an online workshop for potential key data contributors to the GBIF effort. This workshop was attended by members of PNG research institutes, academics, lecturers, data managers, staff of international organisations, and community organisations dedicated to conservation and research (see list in attached file, "In person or online workshop with other national agencies"). Furthermore, materials were provided to those who could not attend the meeting including members of government agencies (see list). In total we had 16 participants (3 hosts and 13 attendees), and 6 absentees who requested who requested the recording. The meeting involved an introduction session followed by an overview of data sharing and its benefits, which was followed by a tour of the GBIF system and an introduction to data cleaning concepts and tools. The meeting finished with a discussion data sharing in PNG and the creation of an online forum for continued collaboration and discussion. We have begun adding new members to that group with a view to host another meeting of group members later in 2023.

% complete: 100%

Status update: Achieved with slightly fewer participants that initaly promised

Sources of verification: In person or online workshop with other national agencies.docx

<https://www.youtube.com/watch?v=OayB6ToUWIs>

<https://www.facebook.com/groups/1605221479968019>

GBIF promotion and workshop at student course

Description: Our team held a 3-day workshop from 3rd to 5th July which hosted 20 participants from diverse backgrounds including conservation area management and rangers, students, environmental officers and private industry. This was a significant expansion on the originally planned activity, which intended to comprise of several short seminars. Instead, this workshop took place over 3 days and introduced GBIF to participants by providing a tour of the interface and a detailed walk through as a GBIF data user. This included downloading datasets that were then subject to formatting and analysis by workshop participants serving the dual purpose of demonstrating the utility of GBIF and additionally building data analysis capacity in PNG which is sorely missing. Participants were then shown the steps

behind data contribution, and tasked with uploading data that will be gathered through BRC collaborations this year. Workshop participants also received a seminar on data sharing and its importance and held discussions on how it would be implemented at their respective organisations or universities. Among the ideas discussed and most met with enthusiasm was the use of citizen science apps such as iNaturalist and eBird. This workshop also had members of BRC in attendance for continued internal capacity building. Participants also learned about the basics of data analysis, imparting important and confidence to fully utilise datasets from GBIF.

% complete: 100%

Status update: Achieved with good participation.

Sources of verification: Conservation and Environmental Sector workshop participant list.pdf

Events

Online GBIF and PNG data sharing workshop

Dates: 2023-06-13 - 2023-06-13

Organizing institution: New Guinea Binatang Research Center

Country: Papua New Guinea

Number of participants: 16

Comments: We held an online meeting scheduled for 22 people (but 6 absentees) involving national stakeholders from 11 organisations representing research institutes, community organisations involved in research and conservation, academics, lecturers, and data managers (see attached folder In person or online workshop with other national agencies for full list). The goal of the meeting was to promote both using and contributing to GBIF and discuss data sharing in PNG. The meeting comprised of i) a project overview, (ii) introduction session, (iii) seminar on the benefits of data sharing in PNG, (iv) a guided tour of the GBIF system including tutorial from both a user and contributor standpoint, (v) an introduction to data cleaning concepts and tools, and finally (vi) discussion and questions.

The meeting was well attended by a diverse selection of stakeholders representing both the present and future of PNG data gatherers. From the meeting the team established a Facebook group for continued discussion. At present we are working on expanding members of this group and encouraging all levels of stakeholders to participate.

Main take-away:

The ideas of data sharing were well received by participants who expressed an interest in both using and contributing to GBIF. The main concerns of attendants included i) a reluctance for people to share data that they felt belonged to the data gatherer, and ii) the difficulty of enacting change in some PNG institutions where senior staff are typically not receptive to change and collaboration.

Website or sources of verification: <https://www.youtube.com/watch?v=OayB6ToUWIs>;
<https://www.facebook.com/groups/1605221479968019>

Events

BRC workshop for staff capacity building

Dates: 2023-05-29 - 2023-05-31

Organizing institution: New Guinea Binatang Research Center

Country: Papua New Guinea

Number of participants: 12

Comments: We held a 3 day workshop from 29th-31st May for BRC staff and led by Mr Penniel Lamei and assisted by Ezekiel Arom (see folder 'training for BRC taxa leaders and staff' for attendee list, program and photos). The workshop was based largely on the official BID workshop in which Mr Penniel Lamei participated as an instructor. Day 1 began with an introduction session followed by how to plan a digitisation project and finished with the first steps of digitisation.

Day 2 covered the different types of biodiversity data and principles of data management, followed by data cleaning theory and practical session. The third day was continued on the theme of data management tools with practical components, followed by data publishing guide videos, and integrated publishing toolkit with discussion and practical sessions (see program). An optional 4th day was reserved for time to practice workshop skills with this hosted by E Arom and attended by 6 staff.

At the same time, the visit to BRC by Mr Lamei facilitated discussions between senior BRC management and Mr Lamei as a PNG Forest Research Institute representative on how we can link data sharing efforts in the future. The discussions additionally focused on problem solving communication problems between our organisations.

Website or sources of verification: Program_BRC GBIF Training 2023.pdf; Training for BRC taxa leaders and staff.pdf

Formerly student workshop, but expanded to 'Conservation, student and Environmental Sector workshop'

Dates: 2023-07-03 - 2023-07-05

Organizing institution: New Guinea Binatang Research Centre

Country: Papua New Guinea

Number of participants: 20

Comments: Our team held a 3-day workshop from 3rd to 5th July which hosted 20 participants from diverse backgrounds including conservation area management and rangers, students, environmental officers and private industry. This was a significant expansion on the originally planned activity, which intended to comprise of several short seminars.

Instead, this workshop took place over 3 days and introduced GBIF to participants by providing a tour of the interface and a detailed walk through as a GBIF data user. This included downloading datasets that were then subject to formatting and analysis by workshop participants serving the dual purpose of demonstrating the utility of GBIF and additionally building data analysis capacity in PNG which is sorely missing. Participants were then shown the steps behind data contribution, and tasked with uploading data that will be gathered through BRC collaborations this year. Workshop participants also received a seminar on data sharing and its importance and held discussions on how it would be implemented at their respective organisations or universities. Among the ideas discussed and most met with enthusiasm was the use of citizen science apps such as iNaturalist and eBird. This workshop also had members of BRC in attendance for continued internal capacity building. Participants also learned about the basics of data analysis, imparting important and confidence to fully utilise datasets from GBIF.

We ended the session with a discussion on data sharing and analysis, and participants were provided with contact details of the BRC GBIF Officer for assistance with their future data mobilisation efforts.

Website or sources of verification: Conservation and Environmental Sector workshop participant list.pdf

Communications and visibility

We promoted the project outcomes during the online national workshop with researchers and national organisations demonstrating BRCs contributions to the GBIF network to date. Following the meeting both attendees and those who could not attend the workshop were provided with workshop materials and contact details for further correspondence about data sharing in PNG.

Additionally our team have created a Facebook group on GBIF and data sharing, inviting members of the national online workshop and encouraging them to invite colleagues to the platform. We uploaded workshop materials here and have provided contact details for the BRC GBIF officer who will liaise and assist with data sharing activities in the future. Furthermore we made a series of Facebook posts towards the end of the project to promote GBIF activities. We believe the Facebook group will continue to grow past project completion and that this will be an important promotional forum for GBIF and data sharing in PNG.

We did not achieve the 'Guilds Data Paper' in the project period, instead prioritising data mobilisation and training whilst recovering from project setbacks due to staffing issues.

Monitoring and evaluation

Final Evaluation

The project team held meetings ranging in frequency from once per month during early phases of the project, to once per week in the latter stages. This was a combination of online and in-person meetings between E Arom, P Butterill, C Redmond, J Auga, F Dem, S Sau and J Filip. Overall we have assessed the project to be successful in light of the challenges we faced throughout implementation. We regret that not all of the deliverables and activities were achieved, but have learned lessons with regards to timing, implementation, resource management and setting targets which account for the array of challenges such projects face in Papua New Guinea. The team are particularly pleased with the capacity building efforts of the project, with 54 people now aware of and capable of using GBIF. Furthermore we are pleased with the contribution BRC has made to GBIF published data by PNG institutions. We are now the number one contributing PNG organisation and the 2nd greatest contributor of PNG occurrence records globally, behind eBird. Furthermore, we have more datasets

that can be mobilised in the future.

Project implementation was challenging as core members of our team were positioned between PNG and Europe. Online communication in PNG is fraught with connection issues and power outages, which meant meetings were often rescheduled or delayed. Implementation was slower than anticipated due to the need for repeated training and continued capacity building, with senior staff required to step in more often than was first envisaged. Bringing together stakeholders and promoting GBIF and data sharing was a strength of the project. Participants in workshops were very happy with project outcomes. We initially planned to have some basic seminars during our student course at BRC, but an opportunity arose to expand on this significantly and host a 3 day workshop which included stakeholders from conservation areas, private industry, students, and academics.

Our main challenges faced in the project was finding a suitable project lead within BRC (GBIF Officer). As mentioned, we unfortunately had to change this staff member the middle of the project, which caused significant disruptions. But the team is very happy with the progress made by the replacement GBIF officer E Arom. We also struggled on occasion with communication with our partners, as unfortunately events on their side meant that collaboration on this project was a lower priority than initially planned. Nevertheless we strengthened our work with partners overall and look forward to continuing to build on this moving forward. Furthermore, we reconnected with other partners in our network (e.g. NARI, FAO, UNDP) through promotion of GBIF, so collaborative data related activities were boosted by the project overall.

Dr Dem stepped in to manage the project on the ground in PNG as overseas management (Dr Redmond and Dr Butterill) encountered a number of setbacks to their travel plans. Obtaining visas for PNG has been a serious issue for overseas collaborators in recent years. Dr Dem provided excellent management of the project and guidance to staff members. She was key to restructuring the team following the departure of F Philip, and helping to get progress back on track. Additionally she contributed much to taxonomic revisions and quality control.

Best Practices and Lessons learned

We believe the foundations of long-term data mobilisation have been set at BRC. The senior project members are very pleased with the skills and capability of the GBIF Officer, stand in GBIF Officers, taxa team leaders, and resident students at BRC. Each brings their own skillset to our larger efforts of data mobilisation. Dr Butterill and Dr Redmond will continue to assist the GBIF Officer with future datasets with a view for full independence achieved by the end of 2023. Furthermore, the team will look to continue efforts to bring other stakeholders together using the Facebook data sharing group. The team found that GBIF is an extremely useful tool for training and teaching activities, and it is largely agreed that BRC will look to incorporate the use of GBIF into appropriate programs moving forward. This will ensure a steady supply of stakeholders gaining exposure to GBIF over the coming years, estimated 25 per year.

For best practices, we learned that quality control is best assigned to multiple people. Of course this creates a higher burden on resources but it is a worthwhile step, especially during training phases for staff. In our project inadequate redundancy in the quality checking phase resulted in low quality datasets that had to be cleaned and processed for a second time.

Post Project activities

PNG has a tremendous amount to offer GBIF both in terms of data and an enthusiastic population who are proud of their biodiversity. We believe that, over time, PNG will be a leader of data mobilisation in the global south. This project has been an important step forward, and we are confident that BRC will be leading the way forward in PNG when it comes to sharing and unlocking the mystery of PNG biodiversity.

We must however acknowledge that PNG faces tremendous education, training, social and political issues which data mobilisation must contend with. Priorities of PNG stakeholders have a tendency to shift in reaction to significant societal challenges. This fractured environment puts the sustainability and feasibility of any project at risk. Data mobilisation in PNG could benefit greatly from a stable and nationally active body committed to data sharing.

Sustainability

Sustainability Plans

BRC have already had numerous discussions identifying which current and recently past projects would be suitable for GBIF mobilisation, and it became clear from this that the vast majority of BRCs work will at some point make it to the GBIF database. The number of published records over the next 1, 3, 5 and 10 years will provide key metrics for the success of this project and future efforts. We do not foresee any PNG institution overtaking BRC as the lead contributors to GBIF, but will instead look

to set the bar for our colleagues in other institutions and motivate them to contribute similarly. BRC and FRI have also agreed to work more closely on databasing and BRC will continue to assist FRI with the creation of a new database. The Facebook group is expected to generate collaboration with new partners in time.

Finally, we are planning to incorporate GBIF records into our research program moving forward, particularly for student projects and biodiversity analyses. We believe GBIF can open up new avenues of research for us, and that this will only strengthen with time as more and more records are added by other PNG researchers and organisations.

Impact of COVID-19 pandemic on project implementation

COVID-19 hampered our progress with regard to incorporating barcode IDs into our datasets. Museum shutdowns meant that our key collaborator in the Smithsonian, Scott Miller, could not visit the museum to check and verify insect records throughout this period, thus leading to delays with our barcode work.

GBIF leads the Biodiversity Information for Development (BID), a programme funded by the European Union. The programme provides supplementary support for activities addressing the needs of regional researchers and policymakers through mobilization and use of biodiversity data.

