Improving national biodiversity data accessibility in Trinidad and Tobago

Programme: BID
Project ID: BID-CA2020-039-NAC
Project lead organization: The University of the West Indies Zoology Museum
Project implementation period: 1/7/2021 - 30/6/2023
Report approved: 19/7/2023

Final Narrative Report

Executive Summary

In total, we published 36,675 occurrence records as 11 distinct datasets, spanning all 3 data-providing partner organisations.

From the UWIZM, the datasets include taxa of human health importance such as the mosquitoes (originally part of the CABI collection) and agricultural importance such as the weevils.

We employed and trained 2 database assistants who conducted the majority of the data digitisation between October 2021-April 2023. In October 2022 we welcomed an additional assistant, through the government's Associate Professional Scheme, and he was subsequently trained in how to catalogue, digitise, clean and publish data. This allowed us to exceed the targets we set in the mid-term report for the UWIZM land arthropod collection.

Following discussions with the TTBIS team, we have generated checklists for 6 protected areas in T&T, using polygons provided by the Ministry and including data on occurrences and conservation status. These lists are currently being integrated into the TTBIS webpage, which is structured around protected area management. Here, they will serve as another access point for national biodiversity data. Information on how to use GBIF accompanies these checklists including a link directly back to GBIF.org.

We successfully held two workshops for stakeholders. The first focused on raising awareness of the project, GBIF, and how to find and use local biodiversity data on GBIF. The second focused on improving capacity for publishing data on GBIF among those stakeholders who have collections that could be mobilised. These were supplemented by online conference calls and one-on-one in person meetings with our data providing partners and the Ministry of Planning, who oversee the TTBIS database.

The efforts of this project have significantly increased the number of natural history specimen records for T&T that are on GBIF, from 145,000 to 182,000 - an increase of around 30%. Data from the National Herbarium of T&T was not represented on GBIF at all, is now a registered publisher as well as having nearly 20,000 records available. The National Museum and Art Gallery of T&T was also not represented, and now has its entire natural history collection published. The social media campaign and other communication efforts have been well-received with good engagement/reach, and have served to increase the UWIZM's following on these platforms.

Post project activities include working with the NMAG to develop educational resources in connection to specimens in their collection/datasets; the production of a peer-reviewed paper on the protected area checklists and their uses; a post-project press-release to celebrate the project's success and promote the new datasets; continued social media posts connected to the collections and datasets; an end-of-project press releae; continued mentorship with stakeholders preparing their own datasets for publication, and the continued digitisation and publication of the UWIZM land arthropod collection using existing capacity in the DLS.

Progress against milestones

Has your project completed all planned activities?: Yes

Has your project produced all deliverables: Yes

Report on Activities

Summary of the implementation of the project activities

1. Digitising biodiversity collections.

During the project we digitised a total of 36,675 specimens from the three data-providing partner institutions. This comprised 19,597 herbarium records, 813 records from the National Museum of Trinidad and Tobago, and 16,265 specimens from the UWIZM land arthropod collections. We exceeded our targets from the mid-term report for the UWIZM Land Arthropod collection, thanks to the addition of a new part-time team member, who was assigned to the Department as part of a government training scheme for new graduates. As a result, instead of 25% we managed to publish 36% of the collection.

2. Publishing data on the GBIF platform and integrating with national biodiversity platforms.

The 36,675 occurrences from the 3 partners have been successfully published as 15 datasets. Together, they represent 30% of all specimen-based occurrences for Trinidad and Tobago currently published on GBIF. Alongside this, following detailed discussions with the Ministry of Planning about the most useful and suitable integration strategy, we have generated checklists from GBIF for 6 protected areas in Trinidad and Tobago for integration with TTBIS. These have been received by the Ministry of Planning, who oversee the TTBIS database and will be posted publicly on their website shortly, alongside information for users on where these data came from and how to access GBIF directly

3. Training workshops for stakeholders

We had originally proposed to hold 3 training workshops. The first was intended to be a meeting between the partner organisations. Due to prolonged covid closures affecting year 1, we instead met individually with the partners via Zoom to discuss their collections and the best way to proceed with the digitisation, publishing and communication of their datasets. Therefore the first actual workshop we held was the one designed to introduce the project, GBIF and the availability and uses of local biodiversity data via GBIF and TTBIS, including training on how to search for and extract data from GBIF. As explained in the mid-term report, we delayed this workshop until late 2022 also because of the covid closures, which allowed us to have an in person workshop on campus. We collaborated with the IMA for this event, as we recognised that there was considerable overlap in both our objectives and invited stakeholders. We invited more than 80 stakeholders, and 34 attended what was a very productive, interactive and well-received workshop. The final workshop focused on those stakeholders who had expressed an interest in potentially mobilising their own collections, and involved an introduction to Darwin Core, digitisation, data cleaning and publishing. For both in person workshops the durations were reduced from the proposed 3 days to 1 day each, as we felt this was sufficient for the objectives and would improve attendance and therefore impact. Therefore, although we reduced the number and duration of workshops, we do not feel this had a negative impact on our ability to complete the deliverables and meet the objectives of the project.

Completed activities

Activity: Digitizing Biodiversity Collections

Description: During the project we digitised a total of 36,675 specimens from the three data-providing partner institutions. This comprised 19,597 herbarium records, 813 records from the National Museum of Trinidad and Tobago, and 16,265 specimens from the UWIZM land arthropod collections.
Start Date - End Date: 11/9/2021 - 21/6/2023
Verification Sources: Dalrymple A, Deacon A (2023). Ants (Formicidae) from the UWIZM Land Arthropod collection. The University of the West Indies Zoology Museum (UWIZM). Occurrence dataset https://doi.org/10.15468/p5d276 accessed via GBIF.org on 2023-06-20.

Dalrymple A, Johnson L, Rutherford M, Ramnarine J, Deacon A (2023). Natural history collection of

the National Museum and Art Gallery of Trinidad and Tobago (NMAGTT). The University of the West Indies Zoology Museum (UWIZM). Occurrence dataset https://doi.org/10.15468/6ra92j accessed via GBIF.org on 2023-06-20.

Dalrymple A, Maharaj T, Ramnarine J, Deacon A (2023). Flies (Diptera) from the UWIZM Land Arthropod collection. The University of the West Indies Zoology Museum (UWIZM). Occurrence dataset https://doi.org/10.15468/2sfd3c accessed via GBIF.org on 2023-06-20.

Dalrymple A, Ramnarine J, Deacon A (2023). Mosquitoes (Culicidae) from the UWIZM CAREC collection. The University of the West Indies Zoology Museum (UWIZM). Occurrence dataset https://doi.org/10.15468/q9jq6f accessed via GBIF.org on 2023-06-20.

Dalrymple A, Ramnarine J, Deacon A (2023). Weevils (Curculionoidea) from the UWIZM Land Arthropod collection. The University of the West Indies Zoology Museum (UWIZM). Occurrence dataset https://doi.org/10.15468/vydpgr accessed via GBIF.org on 2023-06-20.

Dalrymple A, Sankar S, Deacon A (2023). Wasps from the UWIZM Land Arthropod collection. The University of the West Indies Zoology Museum (UWIZM). Occurrence dataset https://doi.org/10.15468/r8egbb accessed via GBIF.org on 2023-06-20.

Dalrymple A, Sansom A, Rutherford M, Ramnarine J, Deacon A (2023). Bird eggs from the National Museum and Art Gallery of Trinidad and Tobago (NMAGTT). The University of the West Indies Zoology Museum (UWIZM). Occurrence dataset https://doi.org/10.15468/39wm7g accessed via GBIF.org on 2023-06-20.

Rutherford M G (2022). Terrestrial Mollusc Survey of Trinidad & Tobago from 2014-2017. The University of the West Indies Zoology Museum (UWIZM). Occurrence dataset https://doi.org/10.15468/3whypm accessed via GBIF.org on 2023-06-20.

Sankar S, Maharaj T, Manaure K, Falby N, Morales J F (2023). Specimens from the National Herbarium of Trinidad and Tobago. National Herbarium of Trinidad and Tobago. Occurrence dataset https://doi.org/10.15468/xbk3ar accessed via GBIF.org on 2023-06-20.

Whiby J, Deacon A (2023). True Bugs (Hemiptera) from the UWIZM Land Arthropod collection. The University of the West Indies Zoology Museum (UWIZM). Occurrence dataset https://doi.org/10.15468/h4596z accessed via GBIF.org on 2023-06-20.

Activity: Publishing data on the GBIF platform and integrating with national biodiversity platforms

Description: The 36,675 occurrences from the 3 partners have been successfully published as 15 datasets. Together, they represent 30% of all specimen-based occurrences for Trinidad and Tobago currently published on GBIF. Alongside this, we have generated checklists from GBIF for 6 protected areas in Trinidad and Tobago for integration with TTBIS. These have been received by the Ministry of Planning, who oversee the TTBIS database and will be posted publicly on their website shortly, alongside information for users on where these data came from and how to access GBIF directly.
Start Date - End Date: 20/1/2022 - 30/6/2023
Verification Sources: See list of datasets in previous activity

See Report Attachments:
"Species Checklists for TTBIS integration"

Activity: Training workshop "Improving Access to Biodiversity Data in Trinidad and Tobago"

Description: A one-day workshop with 35 external attendees from 23 different organisations with an interest using and/or providing biodiversity data in T&T. Participants were introduced to the GBIF database and its uses and functionality by GBIF-BID mentor, Leonardo Buitrago.
Dr. Amy Deacon, provided context and progress of the UWI project and its main objectives.
Stakeholders were taught to manoeuvre the GBIF user interface prior to taking part in an exercise on individual laptops to apply this knowledge to search for and extract specific data. Information regarding the Trinidad and Tobago Biodiversity Information System (TTBIS) and the use of the IMA Marine Datahub was presented by Dr. Lena Dempewolf of the TTBIS and Dr. Anjani Ganase of the IMA respectively.
There was lively discussion and networking during the day, as well as a tour of the UWIZM collections themselves.
Materials were also disseminated after the workshop, and to those stakeholders who were unable to attend.

As such, at least 35 people from 23 institutions were made fully aware of GBIF, the project, the potential to use GBIF data for various purposes and the possibility & advantages of publishing data there.
Start Date - End Date: 14/12/2022 - 14/12/2022
Verification Sources: https://amydeacon.weebly.com/news/biodiversity-workshop-how-can-we-improve-access-to-data-in-trinidad-and-tobago

Report Attachments:
IMA_UWI_GBIFWorkshop_Minutes
UWI GBIF Project Presentation
Workshop-UWIZM Practical Exercises
Biodiversity_GBIF_December2022WorkshopFlyer

Activity: Training workshop "Improving Capacity in Publishing Biodiversity Data in Trinidad and Tobago"

Description: A one day workshop with 8 staff from various departments and projects at the University of Trinidad and Tobago (UTT). A researcher from UTT approached us after Workshop 1 with an interest in digitising and publishing their collection of marine fishes. This workshop was designed to give general information on the digitisation, cleaning and publishing process, as well as some specific advice on the dataset they are working with. Dr Amy Deacon facilitated alongside Associate Professional Jacob Whiby.
Resources were also disseminated after the workshop for reference.
As a result, these 8 individuals are now well-equipped to complete the digitisation of their collection, and will continue to work with UWI beyond this project for mentorship and guidance in doing so.
Start Date - End Date: 24/5/2023 - 24/5/2023
Verification Sources: Report Attachments:
GBIF Seminar 2 Presentation

Report on Deliverables

Deliverables - Summary

1) UWIZM Land Arthropod Collection
We successfully published 16,265 specimens from the UWIZM land arthropod collections as 8 distinct datasets. This means that approximately 65 of the land arthropod collection is now accessible on GBIF (given that some were published in the previous GBIF-BID). We realised that we would not be able to complete 100% within the project, therefore prioritised taxa of particular public health and agricultural importance including 100% of the mosquitoes, weevils, flies, wasps, ants and true bugs in the collection. It is hoped that staff, interns and students can assist with the cataloguing of the remaining groups beyond the end of the project now that we have increased the department's capacity for doing so.

2) National Herbarium of Trinidad and Tobago
We successfully published 19,597 herbarium records to GBIF. This represents the majority of the collection and all of the available records for digitisation at this time. The records that we were unable to publish require additional data cleaning which will involve time-consuming checks with the physical collection by Herbarium staff to resolve discrepancies in the digital dataset that we worked with. We have been working closely with the Herbarium Curator and technicians throughout the project and anticipate that this will be an ongoing project for the Herbarium (who are now a registered publisher) resulting in additional records being published in the future.

3) National Museum and Art Gallery of Trinidad and Tobago (NMAGTT)
We successfully published 813 records from the NMAGTT as 2 distinct datasets. Our original estimate of 2000 records was an overestimate, and 813 represents 100% of the NMAGTT collection.

4) Trained Representatives from partner institutions and a range of other organisations in GBIF
Although we reduced the total number and duration of the proposed workshops, we were able to meet the 3 objectives of this deliverable. The first workshop focused on objective a) raising awareness of GBIF as a platform for both accessing & depositing data, and the second workshop focused on objective b) training stakeholders in the steps required to format and publish their own datasets on GBIF. Both encouraged cross-institutional coordination and collaboration. Indeed Workshop 1 was organised as a collaboration with the IMA, one of our partners, and we had 23 different organisations represented, including Government Ministries, Management Authorities, Research & Teaching Institiutions and NGOs. The session included discussions and Q&A, as well as networking opportunities over coffee and lunch. Workshop 2 expanded on this collaboration by forging cooperation

between UWI and the University of T&T, the second largest university in the country, working with staff there so that they can begin cataloguing and digitising their collections in a GBIF-compatible format, thanks to this initial training in types of data, Darwin Core and data cleaning. As well as supplying them with reference resources, we will continue to work closely with them on this.

5) Integration of T&T GBIF data with Trinidad and Tobago Biodiversity Information System (TTBIS)
This deliverable had to be delayed until the end of the project so that all published data could be potentially included. TTBIS representatives attended our first workshop, to gain a fuller understanding of GBIF and what it offers. Then, after detailed discussions to consider the most effective way to integrate the GBIF datasets with TTBIS, given their platform, audience and objective, we agreed to generate and format individual species checklists for each of 6 major protected areas in T&T, that can be posted on the TTBIS platform. These protected areas were the subject of a recent FAO-GEF project to improve T&T's management and protection of biodiversity, and the TTBIS website is focused on them as a result. Links back to GBIF and the project will accompany the datasets, but this additional platform will increase the visibility of the data to those who may visit a government website as a first port of call when looking for national biodiversity data - including policy makers, local NGOs and institutes. Currently these checklists have been sent to TTBIS and we are waiting for their technical team to add them to the website (https://ttbis.planning.gov.tt/ttbis/protected-areas).

NEW DELIVERABLES
6) Poster presentation at Royal Society conference
Dr Amy Deacon was selected to present a poster at the Commonwealth Science Conference in January 2023. She chose to produce a poster focused on GBIF, museum data and citizen science as ways of improving the accessibility of biodiversity data regionally. The inter-disciplinary conference was organised by the Royal Society andn attended by scientists from several Caribbean islands as well as from the UK. The poster was physically printed out and displayed throughout the 3 day meeting. It generated interesting and useful discussions during the poster sessions and included a QR code linking back to the BID project page.

Deliverables produced by the project

Dataset deliverables

Weevils (Curculionidea) from the UWIZM Land Arthropod collection
Dataset type: Occurrences
Dataset scope: 1902-1996; Trinidad, Tobago, the Caribbean, North America, South America, Africa, Europe, Asia, Australia; Families include Anthribidae, Attelabidae, Brachyceridae, Curculionidae, Dryophthoridae, Eurhynchidae, Lycaenidae and Lycidae.
Number of records: 933
Data holder: The University of the West Indies Zoology Museum
Data host institution: The University of the West Indies Zoology Museum
% complete: 100%
Status update: Catalogued, Digitized (including Imaging), Cleaned and Published.
DOI: https://doi.org/10.15468/vydpgr
Expected date of publication:

Flies (Diptera) from the UWIZM Land Arthropod collection
Dataset type: Occurrences
Dataset scope: 1910-2018; Trinidad, Tobago, the Caribbean, North America, South America, Africa, Europe, Asia; Families include Agromyzidae, Anthomyiidae, Asilidae, Bibionidae, Bombyliidae, Calliphoridae, Cecidomyiidae, Ceratopogonidae, Chloropidae, Culicidae, Diopsidae, Dolichopodidae, Drosophilidae, Ephydridae, Fanniidae, Glossinidae, Hippoboscidae, Lauxaniidae, Limoniidae, Lonchaeidae, Mesembrinellidae, Micropezidae, Muscidae, Mycetophilidae, Mydidae, Neriidae, Otitidae, Pantophthalmidae, Phoridae, Piophilidae, Pipunculidae, Platystomatidae, Psychodidae, Rhiniidae, Richardiidae, Sarcophagidae, Scatopsidae, Simuliidae, Sphaeroceridae, Stratiomyidae, Syrphidae, Tabanidae, Tachinidae, Tephritidae, Tipulidae and Ulidiidae.
Number of records: 2,509
Data holder: The University of the West Indies Zoology Museum
Data host institution: The University of the West Indies Zoology Museum
% complete: 100%
Status update: Catalogued, Digitised (including imaging), Cleaned and Published
DOI: https://doi.org/10.15468/2sfd3c
Expected date of publication:

Mosquitoes (Culicidae) from the UWIZM CAREC collection
Dataset type: Occurrences
Dataset scope: 1945-1997; Trinidad, Tobago, Brazil, Curacao, Panama; Families include Chaoboridae, Corethrellidae and Culicidae
Number of records: 2,203

Data holder: The University of the West Indies Zoology Museum
Data host institution: The University of the West Indies Zoology Museum
% complete: 100%
Status update: Catalogued, Digitised (including imaging), Cleaned and Published
DOI: https://doi.org/10.15468/q9jq6f
Expected date of publication:

Ants (Formicidae) from the UWIZM Land Arthropod collection
Dataset type: Occurrences
Dataset scope: 1928-2013; The Caribbean and the tropical territories of Asia and South America; Families include Formicidae.
Number of records: 1,092
Data holder: The University of the West Indies Zoology Museum
Data host institution: The University of the West Indies Zoology Museum
% complete: 100%
Status update: Catalogued, Digitised, Cleaned and Published
DOI: https://doi.org/10.15468/p5d276
Expected date of publication:

Wasps from the UWIZM Land Arthropod collection
Dataset type: Occurrences
Dataset scope: 1833-2016; The Caribbean, South America, North America, Africa, Europe and Asia; Families included Ampulicidae, Crabronidae, Eumenidae, Mutillidae, Pompilidae, Sphecidae, Tiphiidae, Vespidae
Number of records: 5,248
Data holder: The University of the West Indies Zoology Museum
Data host institution: The University of the West Indies Zoology Museum
% complete: 100%
Status update: Catalogued, Digitised, Cleaned and Published
DOI: https://doi.org/10.15468/r8egbb
Expected date of publication:

Bird eggs from the National Museum and Art Gallery of Trinidad and Tobago (NMAGTT)
Dataset type: Occurrences
Dataset scope: 1921-1933; Specimens are mostly from unknown locations. It is likely many are from Trinidad and Tobago but few are confirmed.; Families included Accipitridae, Alcedinidae, Anatidae, Anhingidae, Apodidae, Aramidae, Caprimulgidae, Cardinalidae, Cathartidae, Ciconiidae, Coerebidae, Columbidae, Cotingidae, Cuculidae, Fregatidae, Fringillidae, Furnariidae, Galbulidae, Hirundinidae, Icteridae, Jacanidae, Momotidae, Pandionidae, Parulidae, Pelecanidae, Picidae, Pipridae, Podicipedidae, Psittacidae, Rallidae, Steatornithidae, Strigidae, Thamnophilidae, Thraupidae, Tinamidae, Tyrannidae, Tytonidae
Number of records: 823
Data holder: The University of the West Indies Zoology Museum
Data host institution: The University of the West Indies Zoology Museum
% complete: 100%
Status update: Catalogued, Digitised, Cleaned and Published
DOI: https://doi.org/10.15468/39wm7g
Expected date of publication:

True Bugs (Hemiptera) from the UWIZM Land Arthropod collection
Dataset type: Occurrences
Dataset scope: 1902-2018; The Caribbean, South America, North America, and Asia; Families included Aetalionidae, Alydidae, Belostomatidae, Cercopidae, Cercopoidea, Cicadellidae, Cixiidae, Coreidae, Cydnidae, Delphacidae, Derbidae, Dictyopharidae, Flatidae, Fulgoridae, Issidae, Largidae, Lygaeidae, Macroveliidae, Membracidae, Miridae, Nabidae, Nogodinidae, Pentatomidae, Pyrrhocoridae, Reduviidae, Saldidae
Number of records: 3,411
Data holder: The University of the West Indies Zoology Museum
Data host institution: The University of the West Indies Zoology Museum
% complete: 100%
Status update: Catalogued, Digitised, Cleaned and Published
DOI: https://doi.org/10.15468/h4596z
Expected date of publication:

Terrestrial Mollusc Survey of Trinidad and Tobago from 2014-2017
Dataset type: Checklist
Dataset scope: 2014-2017; Trinidad and Tobago; Families included Achatinidae, Amphibulimidae, Ampullariidae, Annulariidae, Bulimulidae, Charopidae, Cochliopidae, Diplommatinidae, Ellobiidae, Euconulidae, Ferussaciidae, Gastrocoptidae, Gastrodontidae, Helicarionidae, Helicinidae,

Helicodiscidae, Neocyclotidae, Orthalicidae, Philomycidae, Physidae, Planorbidae, Sagdidae, Scolodontidae, Sphaeriidae, Streptaxidae, Strophocheilidae, Succineidae, Thiaridae, Thysanophoridae, Trichodiscinidae, Truncatellidae, Urocoptidae, Valloniidae, Vertiginidae
Number of records: 743
Data holder: The University of the West Indies Zoology Museum
Data host institution: The University of the West Indies Zoology Museum
% complete: 100%
Status update: Catalogued, Digitised (including imaging), Cleaned and Published
DOI: https://doi.org/10.15468/3whypm
Expected date of publication:

Natural history collection of the National Museum and Art Gallery of Trinidad and Tobago (NMAGTT)
Dataset type: Occurrences
Dataset scope: 1918-1992; Trinidad and Tobago, The Caribbean, South America, North America and, Australia; Classes included Actinopterygii, Amphibia, Aves, Elasmobranchii, Mammalia, Reptilia, Bivalvia, Cephalopoda, Gastropoda.
Number of records: 589
Data holder: The University of the West Indies Zoology Museum
Data host institution: The University of the West Indies Zoology Museum
% complete: 100%
Status update: Catalogued, Digitised (including imaging), Cleaned and Published
DOI: https://doi.org/10.15468/6ra92j
Expected date of publication:

Hummelinck Trinidad and Tobago Mollusca Collection
Dataset type: Occurrences
Dataset scope: 1954-1964; Trinidad and Tobago; Families include Helicinidae, Urocoptidae, Neocyclotidae, Achatinidae
Number of records: 126
Data holder: The University of the West Indies Zoology Museum
Data host institution: The University of the West Indies Zoology Museum
% complete: 100%
Status update: Catalogued, Digitised, Cleaned and Published
DOI: https://doi.org/10.15468/ps9gjx
Expected date of publication: 2023-06-21

Specimens from the National Herbarium of Trinidad and Tobago
Dataset type: Occurrences
Dataset scope: 1845-2021; Specimens include many from Trinidad and Tobago, as well as others from the wider Caribbean and from the continents of North America, South America, Africa and Europe; Classes include Dicotyledonae, Liliopsida, Lycopodiopsida, Magnoliopsida, Pinopsida, Polypodiopsida
Number of records: 19,597
Data holder: National Herbarium of Trinidad and Tobago
Data host institution: National Herbarium of Trinidad and Tobago
% complete: 100%
Status update: Formatted, Cleaned and Published.
DOI: https://doi.org/10.15468/xbk3ar
Expected date of publication:

Other deliverables

Trained representatives from partner institutions and a range of other organisations in the use of GBIF
Description: Two workshops were organised in order to train representatives from local organisations with an interest in biodiversity data. The first concentrated on raising awareness of GBIF and how to access local data on GBIF, as well as the project itself. The second focused on training others in how to prepare and publish their own data on GBIF.
% complete: 100%
Status update: The first took place on 14th December 2022, and the second on the 24th May 2023.
Sources of verification: Report Attachments

Conference Poster: "Improving Access to Caribbean Biodiversity Data"
Description: Dr Amy Deacon presented a poster at the Commonwealth Science Conference in January 2023. The poster focused on GBIF, museum data and citizen science as ways of improving the accessibility of biodiversity data regionally. The inter-disciplinary conference was organised by the Royal Society andn attended by scientists from several Caribbean islands as well as from the UK.
% complete: 100%

Status update: The poster was physically printed out and displayed throughout the 3 day meeting. It generated interesting and useful discussions during the poster sessions and included a QR code linking back to the BID project page. The original poster is now on display at UWI.
Sources of verification: https://www.mona.uwi.edu/news/uwi-co-hosts-commonwealth-science-conference-royal-society Report Attachments: CSC Caribbean Biodiversity Poster; Photo of AED with CSC Poster in Jamaica

Integration of T&T GBIF data with Trinidad and Tobago Biodiversity Information System (TTBIS)
Description: T&T GBIF Data will be made available on the newly established Government-managed Biodiversity platform: https://ttbis.planning.gov.tt/ttbis/. We will be working closely with the Ministry of Planning and Development (MPD) via regular integration sessions to ensure that we can provide the data in a form that best suits the purpose of the TTBIS and its users, as well as fully incorporating TTBIS into our stakeholder workshop sessions.
% complete: 100%
Status update: TTBIS representatives presented at and attended our first workshop, to gain a fuller understanding of GBIF and what it offers, as well as promote their platform to stakeholders. Then, after detailed discussions to consider the most effective way to integrate the GBIF datasets with TTBIS, given their platform, audience and objective, we agreed to generate and format individual species checklists for each of 6 major protected areas in T&T, that can be posted on the TTBIS platform. These protected areas were the subject of a recent FAO-GEF project to improve T&T's management and protection of biodiversity, and the TTBIS website is focused on them as a result. Links back to GBIF and the project will accompany the datasets, but this additional platform will increase the visibility of the data to those who may visit a government website as a first port of call when looking for national biodiversity data - including policy makers, local NGOs and institutes. Currently these checklists have been sent to TTBIS and we are waiting for their technical team to add them to the website. We are also working on publishing these checklists as part of a peer-reviewed paper, as a post-project activity.
Sources of verification: https://ttbis.planning.gov.tt/ttbis/protected-areas Report Attachments: Species Checklists for TTBIS integration; IMA_UWI_GBIFworkshop_Minutes

Events

Workshop: "Improving Access to Biodiversity Data in Trinidad and Tobago"

Dates: 2022-12-14 - 2022-12-14
Organizing institution: The University of the West Indies and the Institute for Marine Affairs
Country: Trinidad & Tobago
Number of participants: 34
Comments: This workshop was designed to introduce the project, GBIF and the availability and uses of local biodiversity data via GBIF and TTBIS, including training on how to search for and extract data from GBIF. We collaborated with the IMA for this event, as we recognised that there was considerable overlap in both our objectives and invited stakeholders. We invited more than 80 stakeholders, and 34 attended what was a very productive, interactive and well-received workshop.
Website or sources of verification: https://amydeacon.weebly.com/news; See Reporting Attachments: Biodiversity_GBIF_December2022WorkshopFlyer; UWI GBIF Project Presentation; Workshop - UWIZM Practical Exercises; IMA_UWI_GBIFworkshop_Minutes;

Events

Workshop: "Improving Capacity in Publishing Biodiversity Data in Trinidad and Tobago"

Dates: 2023-05-24 - 2023-05-24
Organizing institution: The University of the West Indies
Country: Trinidad & Tobago
Number of participants: 10
Comments: This workshop focused on those stakeholders who had expressed an interest in potentially mobilising their own collections, and involved an introduction to Darwin Core, digitisation, data cleaning and publishing. There were 8 external participants, plus 2 UWI facilitators.
Website or sources of verification: See Reporting Documents: Report on Workshop 2; GBIF Seminar 2 Presentation;

Communications and visibility

We have continued our social media campaign to raise awareness of the project, the collection and T&T's biodiversity. While the database assistants were employed on the project we were able to produce 2-3 posts per week on facebook, instagram and twitter. Since their contracts ended in April

2023 we have managed to keep up with a minimum of 1 per week using existing staff within the Department, which we hope will be able to continue beyond the end of the project. These posts continually get excellent engagement in terms of comments, likes and shares.

In January 2023, Project Lead Amy Deacon had the opportunity to present on Biodiversity at the Commonwealth Science Conference held in Jamaica by the Royal Society and UWI Mona. Her poster presentation was titled "Improving Access to Caribbean Biodiversity Data" and included information on the project, GBIF and the importance of making biodiversity data accessible. The poster also included a QR code to the project page.

While the primary purpose of the workshops was to improve capacity among local stakeholders in using and publishing GBIF data, the first workshop in particular had the additional objective of raising awareness of the two T&T GBIF-BID projects among local stakeholders in a wide range of sectors and jobs, but all with an interest in using or generating biodiversity data. Given that this workshop took place in the second year of the project, it was also used to give a progress update and disseminate results in terms of datasets digitised and published so far.

One of our post-project activities will be to publish a datapaper centred on the protected area species checklists that we have generated for the TTBIS. We plan to publish these in a local or regional journal as a means to raise awareness of the uses of GBIF in conservation, research and policy.

We had excellent press coverage when we launched the project in late 2021, and plans are underway to do another press release in the next month, to celebrate the achievements of the project and encourage momentum for the increased use, and continued mobilisation, of national biodiversity data.

Link to our bespoke ‘Introduction to GBIF’ video:
https://www.facebook.com/uwizoologymuseum/videos/537812064183922
Link to our Press Release, announcing the start of the project, and subsequent press coverage:
https://sta.uwi.edu/news/releases/release.asp?id=22327
https://tt.loopnews.com/content/uwis-life-sciences-dept-awarded-eu40000-biodiversity-research
Links to our social media pages:
https://www.facebook.com/uwizoologymuseum
https://twitter.com/UwiZoology
https://www.instagram.com/uwizoologymuseum/
Link to our blog post to mark International Museum Day 2022:
https://uwimuseum.wordpress.com/2022/06/01/exploring-the-uwi-museums-discovering-the-wonders-of-the-university-of-the-west-indies-zoology-museum/
Link to workshop 1 blogpost:
https://amydeacon.weebly.com/news/biodiversity-workshop-how-can-we-improve-access-to-data-in-trinidad-and-tobago

Report Attachments:

CSC Biodiversity Poster
Social Media report

Monitoring and evaluation

Final Evaluation

Although we published fewer records than initially proposed,we exceeded our adjusted mid-term targets. The available collections of both partner organisations are published, and the majority of the Land arthropod collection is now published and this includes several taxa of human interest - public health, agriculture etc as we prioritised these in our efforts. We overestimated the number of records in the Herbarium initially, hence the lower final number of records. There were also some Herbarium records that could not be verified and therefore were omitted.

We circulated pre and post workshop surveys, however, we received relatively few responses to our post-workshop survey (25% of respondents). While these generally indicate that the workshop was well-received and increased participants’ confidence in using GBIF, it is not a large sample for coming to strong conclusions. Rather, it will be useful to keep track of the longer term evaluation criteria such as citations of datasets and additional local biodiversity datasets being published over the next 2-5 years. It is however a promising sign that one institution, UTT, has already taken steps to begin preparing their collection for publication as a direct result of one of their professors attending the workshop and taking up our subsequent offer of a follow up training workshop in preparing and publishing data (workshop 2).

Best Practices and Lessons learned

It was extremely valuable to have access to a specific mentor (Leo). Especially at the start, and with the prep of our first dataset for publication, but also helping check each dataset and correct any final issue. It was also great to have him as a virtual guest speaker at our first workshop to speak to our attendees about GBIF in the broader sense before we introduced our project and more specific National-level objectives. We have also benefited from other secretariat staff going out of their way to assist with other troubleshooting - such as when we needed to extract checklists using shape files for TTBIS integration. For future similar regional projects, some additional networking could be beneficial - like a monthly online discussion group for example where each project takes turns to present on something they are doing and share lessons learned, best practices, achievements etc.

We were fortunate to capitalise on the Government's Associate Professional Scheme in the last 6 months of the project, which allowed us to have a recent graduate spend some time devoted to the project, including learning how to catalogue, digitise and publish datasets. It is hoped that the Department will continue to have Associate Professionals and On-the-Job trainees (a similar scheme) assigned, in which case they can also be trained up to continue to gradually mobilise the remainder of our collections over time. It is an excellent task for such trainees, as it equips them with transferable skills in data management, and museum skills.

We learned a lot in Training of database assistants in the first couple of months. Having regular weekly meetings was extremely beneficial, where issues could be discussed as a team and decisions made. For smaller issues at the start, they would compile these questions together and bring the list to the Project leads for troubleshooting. This was more efficient than coming to ask about every individual question, without delaying until the next meeting.
Involving the database assistants in the social media as well as the digitising seemed to work well in terms of adding some variety to their daily routine, especially given how tedious working with very small specimens and spreadsheets can be after some time. However, we also learned that creating high quality social media takes more time than we imagined, and therefore we pulled back from 3 posts per week to 2 posts, to ensure that creating these did not impact digitisation progress. Project leads checked all posts for scientific accuracy and style, and we had mentorship from the Faculty's media technician at the start, including a short training course, which was extremely useful.

This funding has allowed a significant amount of Nationally important biodiversity data to be made available on GBIF, which would not have been possible without the funding primarily due to a lack of dedicated and trained personnel. Our institution is well placed to continue to promote GBIF among other National stakeholders, and through our workshops we have reached the key organisations and individuals and made them aware of GBIF and the potential to use and add data. While the end of the database contracts means that progress with digitising remaining collections will be slower, but hopefully we can incorporate digitization into the duties of some of our current and future APs, OJTs and museum-assigned technicians.

Post Project activities

1) Checklist paper based on the lists produced and curated for the TTBIS.

2) Press release to publicise the project's achievements and promote GBIF and use of national biodiversity data in national media

3) Work with the National Museum to create educational resources based on their collection & digitised dataset.

4) Continue to (gradually) digitise and publish UWIZM collection - remainder of land arthropods - using permanent and temporary staff and specifically using the AP/OJT scheme.

5) Work with UTT to assist them in publishing their collection of marine fishes and other organisms.

Sustainability

Sustainability Plans

The National Museum and Art Gallery are keen to develop teaching materials based around some of the objects in their collection and the GBIF data. UWIZM will work with them to do this, by providing additional information and guidance.

The National Herbarium continues to accession specimens on a weekly basis. It now has staff who are familiar with Darwin Core, and is a registered publisher on GBIF, so is in a position to continue to publish updates on GBIF. Some existing occurrence data was not possible to publish within the

project, but is already digitised and in Darwin Core, so the Herbarium staff can proceed to make the necessary checks with physical specimens and record books before adding these records to GBIF too.

Despite the considerable achievements of the last two GBIF-BID projects, the UWIZM has more specimens in need of cataloguing and digitising. During this project, some of the largest and most human-relevant collections were published, but there is still much to do. As we managed to train an Associate Professional who remains in the department beyond the project, this means we can hope to continue to digitise specimens, and also to recruit and train students or other interns/trainees to assist with mobilising other datasets.

Impact of COVID-19 pandemic on project implementation

Covid closures and restrictions delayed our workshops, as we were keen for these to be in person. Ultimately this meant we only ran 2 instead of 3, but we feel these nonetheless allowed us to meet the objectives of the workshops/project and that it was worth waiting for them to run in person.

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.