

Data use to inform decisions on biodiversity conservation and public health in Benin

Programme:BID

Project ID: BID-AF2020-083-USE

Project lead organization:University of Abomey-Calavi, Faculty of Agricultural Sciences

Project implementation period:1/4/2021 - 31/3/2023

Report approved: 14/6/2023

Final Narrative Report

Executive Summary

In the framework of the project, from 10 June 2021 and all along the project, through workshops, end-users of research products clearly expressed the decisions for which they need support of information. A workflow was therefore elaborated with important steps to enable achievements of the results of the project (see appendices 01, 02, 03, and 10 herein attached). In implementation of the workflow elaborated, the need of information were transformed in research topics for students and the data needed to achieved the research products to support decision were identified. Here are the key achievements of the project:

1) The project partners and GBIF-Benin partners were soundly capacitated in data digitization, data cleaning, and data publishing. This enabled:

- a) The publication of one hundred, twenty-four thousands, and one hundred and ten (124,110) occurrence records on GBIF-site (see appendix_07) against one hundred thousand (100,000) occurrence records initially planned for publication in the framework of the project.
- b) The publication of three checklists with a total number of eight hundreds and eighty four (884) species on GBIF site (see appendix_07) against three checklists with a total number of six hundreds (600) species initially planned for publication in the framework of the project.

2) The research activities were successfully carried out and the research products achieved were evaluated with satisfaction by end-users (see appendix_03). Out of the thirty (30) research products initially planned in the project, eighteen (18) are achieved as of today and the rest are still ongoing and will be released in September 2023.

3) Four (04) manuscripts of data papers are actually in the pipeline of Arpha Writing Tool and are in the process of improvement for publication against three (03) data papers initially planned for publication in the project. We set the deadline for submission of the manuscripts at September 2023.

4) Collaboration agreements are established with key end-users to enable more data mobilization and data use to inform decisions (see appendices 4, 5, and 6).

5) The best practices we identified during the implementation of the project is the necessity of setting in place a workflow with clear and interdependent steps to enable demand driven data mobilization and data use to inform expressed needs of information to support decisions.

6) As for lessons learned, the paradigm of knowledge is development was experienced all along the project. The end-users were quite interested in research products designed in a participatory method to satisfy their needs of information for decision making.

7) Because of COVID-19, a colleague who should come and contribute to the training of partners could not come. The budget line of that activity was converted in additional data mobilization and fully achieved. The local team could achieve the training of partners.

Progress against milestones

Has your project completed all planned activities?: Yes

Has your project produced all deliverables: No

Rationale: The deliverable related to data papers' publication is not yet produced. We are still in the process with four manuscripts in the pipeline

Also, research works are still going on for 12 students who will finish up in September 2023. The chief reason is that the duration of the project is not aligned on academic year

Report on Activities

Summary of the implementation of the project activities

Most of the activities planned in the project are achieved expect:

1) Activity 2.4: Publish data papers to improve the reusability of the mobilized biodiversity data

In fact, the deliverable related to data papers' publication is not yet produced. Four manuscripts of data papers are actually in the pipeline of Arpha Writing Tool in the process of improvement before submission to a journal for publication against three data papers initially planned.

2) Activity 3.1: Provide adequate research products to respond to expressed needs of information to support decisions

Indeed, 18 research products are achieved out of the 30 initially planned. Research works are still going on for 12 students who will finish up in September 2023. The chief reason is that the duration of the project is not aligned on the academic year

Completed activities

Activity: Activity 1.1: Organize 02 workshops to define policy questions, decision processes, and user needs to inform decisions

Description: The stakeholders of the project met in the framework of workshops to define policy questions, decision processes, and user needs to inform decisions

Start Date - End Date: 10/6/2021 - 26/1/2023

Verification Sources: Reports of workshops herein attached. See appendices 01, 02, and 03

Activity: Activity 1.2: Identification of key research questions to be answered to satisfy information needs to support decisions

Description: The needs of data and relevant research products identified in the activity 1.1 helped to define

key research questions that formed the research topics of the students of the master program under the umbrella of their supervisors

Start Date - End Date: 10/6/2021 - 26/6/2023

Verification Sources: Reports of workshops and abstracts of the research works of students, herein attached in appendices 01, 02, 03, and 09

Activity: Activity 1.3: Establish collaboration agreements between parties

Description: During our intensive collaboration in the frameworks of the project, we could reach collaboration agreements signed by representatives of the partner institutions

Start Date - End Date: 10/6/2021 - 15/3/2023

Verification Sources: Signed agreements herein attached in appendices 04, 05, 06

Activity: Activity 1.4: Assess available data and potential biodiversity data holdings

Description: Data users (students), according to their research topics identified data deficiency and proceeded to data collections to fill data gaps; furthermore people responsible of data holdings were identified and approached to release their data for publication. All those data were quite useful in data completeness and analysis

Start Date - End Date: 10/6/2021 - 15/3/2023

Verification Sources: Links to data published clearly showing data providers /holders. See appendix_07

Activity: Activity 2.1: Digitize and publish cleaned up data from data holdings and other sources

Description: In the framework of the research works of students and interactions with data holders, a total of 23 datasets were published on GBIF site for a total of 124,110 occurrence data. The links to the datasets are contained in appendix 2_datasets published

Start Date - End Date: 7/6/2022 - 24/2/2023

Verification Sources: Appendix 07_datasets published

Activity: Activity 2.3: Organize 3 workshops to train stakeholders in data mobilization and data management

Description: The workshops are organized to effectively train stakeholders in data mobilization and management and disseminate results of the research works achieved in the framework of the project

Start Date - End Date: 10/6/2021 - 26/1/2023

Verification Sources: Appendices 1, 2, and 3 on the workshops

Activity: Activity 2.4: Publish data papers to improve the reusability of the mobilized biodiversity data

Description: We already prepare four data papers from the datasets we published respectively on plant species, animal species, and vectors of vector-borne-diseases. We are improving them in order to get them published.

The links to the data papers in the pipeline of Arpha Writing Tool are :

https://arpha.pensoft.net/preview.php?document_id=21269

https://arpha.pensoft.net/preview.php?document_id=21230

https://arpha.pensoft.net/preview.php?document_id=21252

https://arpha.pensoft.net/preview.php?document_id=21277

Start Date - End Date: 10/6/2021 - 30/3/2023

Verification Sources: DOI of the published data papers will be provided as soon as they are published

Activity: Activity 3.1: Provide adequate research products to respond to expressed needs of information to support decisions.

Description: Out of the 30 research products planned, 18 are already achieved and the 12 remaining will be achieved in September 2023. The research topics, taking into account the needs of information to support decision making are presented in appendix_06_research topics of the students. The abstracts of the research works already achieved are presented in appendix_07_abstracts of the research results achieved

Start Date - End Date: 1/7/2021 - 30/9/2023

Verification Sources: Topics of the research works in appendix_08
Abstracts of the research works achieved in Appendix_09

Activity: Activity 4.1: Enhance a user-led evaluation process of data solutions

Description: The results achieved by students were presented to the partners, end-users of the data products of the projects. They were evaluated and suggestions were made on their possible improvements in order to more fit the needs of information to support decisions (see appendix_03_workshop reports)

Start Date - End Date: 1/7/2021 - 26/1/2023

Verification Sources: Workshop report in appendix_03

Workflow of the activities of the project and beyond in appendix_10

Activity: Activity 4.3: Set up user groups

Description: The partnership agreements between institutions are the proof of the settlement of the users groups. Copies of the agreements are in appendices 04, 05, 06

Start Date - End Date: 10/6/2021 - 30/3/2023

Verification Sources: Copies of the agreements are in appendices 04, 05, 06

Activity: Activity 4.4: Document and share use cases with partners in the region

Description: Data solutions achieved in the project are the use cases documented. We also add other data use cases achieved outside the project in Benin. The report is in Appendix_09

Start Date - End Date: 10/6/2021 - 30/3/2023

Verification Sources: Extended abstracts of the research works achieved (Appendix_09)

Activity: Activity 3.2: Provide indicators to inform partner end-users from DGEFC, CENAGREF, and Hôpital Menontin on their achievements towards Sustainable Development Goals (SDG) or CBD targets related to their missions

Description: The research products effectively provided to partners of the project relevant indicators on their progress towards the achievements of SDG3, 12, 13, and 15. The partners also recognized the contribution of the research results to CBD targets.

Start Date - End Date: 10/6/2021 - 15/3/2023

Verification Sources: Report on the workshop (Appendix_03_workshop report)

Activity: Activity 4.2: Enhance the revision of national biodiversity policies through strategic communication of policy briefs and new articles with respect to the data solutions identified to support decisions

Description: On the basis of the research products presented, partners of the project and other participants to the workshop acknowledged the contribution of the results to possible review of National biodiversity policies

Start Date - End Date: 10/6/2021 - 15/3/2023

Verification Sources: Appendix_03_workshop report

Activity: Activity 3.3: Provide information on biodiversity assessments with respect to Red Lists and the World database of Key Biodiversity Areas (KBA)

Description: The research works of students concerned *Vitellaria paradoxa* a vulnerable species (VU) on IUCN red list. Among the other species like *Damaliscus lunatus korrugum* which population is in decline, *Pseudocedrela kotschy*, *Bombax costatum*, *Morinda citrifolia* which are quite useful and overexploited by populations, attention of the partners are drawn on their protection and the necessity to provide information to IUCN experts so that they can be evaluated and included on the red lists.

Six (06) Key Biodiversity areas are found in Benin. They are Lama Forests (center Benin), Lake Ahémé and Aho complex in South-West Benin, Lake Nokoué in South-Center Benin, Ouémé basin in North-Center Benin, Pendjari National Park in North-West Benin, and W national park in far North-West Benin. Although those key biodiversity areas were not directly addressed by the research works, the ecological niches of the species studied by the students showed that at least, the terrestrial KBAs such Lama forests (center Benin), Pendjari National Park (North-West Benin), and W national park (far North-West Benin) are habitats for the species and partners need to pay attention for their conservation

Start Date - End Date: 10/6/2021 - 15/3/2023

Verification Sources: Workshop report in appendix_03

Activity: Activity 2.2: Validate and publish national and local species checklists

Description: Publication of checklist derived from animal species published on GBIF through BID project

Start Date - End Date: 1/3/2023 - 25/3/2023

Verification Sources: <https://doi.org/10.15468/xqfc4f>

Activity: Activity 2.2: Validate and publish national and local species checklists

Description: Publication of check-List of neglected tropical disease datasets published under the BID project

Start Date - End Date: 1/3/2023 - 25/3/2023

Verification Sources: <https://doi.org/10.15468/nrh5g2>

Activity: Activity 2.2: Validate and publish national and local species checklists

Description: Publication of checklist derived from plant species published on GBIF through BID project

Start Date - End Date: 1/3/2023 - 1/3/2023

Verification Sources: <https://doi.org/10.15468/we9pft>

Activity: Activity 4.5: Establish workflows and institutional agreements to promote further data mobilization to update information resources developed in the project

Description: Collaboration agreements are established with partner institutions (see appendices 04 to 06). The workflow in appendix 10 is the guideline for the activities achieved during the project and beyond. All this will enable further collaboration, demand driven data mobilization and data use to provide data products to inform decisions of end-users.

Start Date - End Date: 10/6/2021 - 15/3/2023

Verification Sources: Appendices 4, 5, 6, and 10

Report on Deliverables

Deliverables - Summary

In planning phase, apart from data paper publications which manuscripts are still in the pipeline of Arpha Writing tool at the following links: https://arpha.pensoft.net/preview.php?document_id=21269 https://arpha.pensoft.net/preview.php?document_id=21230 https://arpha.pensoft.net/preview.php?document_id=21252 https://arpha.pensoft.net/preview.php?document_id=21277, all other deliverables are achieved

In data mobilization phase, all the deliverables are achieved apart from 12 research works (out of the 30 planned) which are still ongoing till September 2023

in Evaluation phase of the project, all deliverables are achieved

Deliverables produced by the project

Dataset deliverables

Other deliverables

Deliverables - Project planning phase

Collaboration agreements between parties are established

Description: All along the project implementation, we could establish collaboration agreements with partner institutions

% complete: 100%

Status update: Completely achieved

Sources of verification: Appendices 4, 5, and 6

Plans to develop and refine data mobilization, monitoring and evaluation are achieved

Description: Workflow and plan of activities during the project phase and beyond are achieved

% complete: 100%

Status update: Completely achieved

Sources of verification: Appendix 10

Project partners are capacitated in data digitization, data formatting, data cleaning, and data publishing

Description: We organized workshops all along the project to capacitate partners in data digitization, data formatting, data cleaning, and data publishing

% complete: 100%

Status update: Completely achieved

Sources of verification: Appendices 1, 2, 3

Data papers are published on animal species from fauna reserve, on reforestation forest species, and on vectors of neglected vector-borne-diseases

Description: Four (04) data papers are prepared to inform more on datasets and therefore enable data reusability

% complete: 80%

Status update: Manuscripts are in improvement on Arpha Writing tool

Sources of verification: The links to the manuscripts: https://arpha.pensoft.net/preview.php?document_id=21269 https://arpha.pensoft.net/preview.php?document_id=21230

https://arpha.pensoft.net/preview.php?document_id=21252 https://arpha.pensoft.net/preview.php?document_id=21277

Available data and potential biodiversity data holdings are clearly identified and reported

Description: Data holdings to fill data gaps are identified. They are represented by data holders / data providers. Their names are associated to the datasets published which links are provided in appendix_07

% complete: 100%

Status update: Completely achieved

Deliverables - Project data mobilization phase

Neglected tropical diseases vectors occurrence data

Dataset type: Occurrences

Dataset scope: Neglected tropical diseases vectors occurrence data identified during medical consultations in hospitals in southern and central Benin

Number of records: 7,306

Data holder: ISSA A A

Data host institution: Published by Centre Hospitalier Universitaire de Zone d'Abomey Calavi/Sô-Ava (CHUZ/AS)

% complete: 100%

Status update: completely achieved

DOI: <https://www.gbif.org/dataset/50e87f1d-e5ce-457a-bdb8-395338de7a38>

Expected date of publication:

Occurrences data collection of *Simulium damnosum* (Theobald, 1903), vector of onchocerciasis

Dataset type: Occurrences

Dataset scope: Occurrences data collection of *Simulium damnosum* (Theobald, 1903), vector of onchocerciasis for spatial distribution and ecological niche modeling

Number of records: 221

Data holder: SEHOUETO K P Caroline

Data host institution: Laboratory of Forest Sciences

% complete: 100%

Status update: Completely achieved

DOI: <https://www.gbif.org/dataset/7f3c6711-370c-49ba-8039-b74e97aec890>

Expected date of publication:

Occurrences data collection of *Onchocerca volvulus*, pathogen agent of onchocerciasis

Dataset type: Occurrences

Dataset scope: Occurrences data collection of *Onchocerca volvulus*, pathogen agent of onchocerciasis, for spatial distribution and ecological niche modeling

Number of records: 894

Data holder: SEHOUETO K P Caroline

Data host institution: Laboratory of Forest Sciences

% complete: 100%

Status update: Completely achieved

DOI: <https://www.gbif.org/dataset/53eeb70a-b67f-4c06-889f-18cafd295d5d>

Expected date of publication:

Forest plant species inventory of Lama forest

Dataset type: Occurrences

Dataset scope: Forest plant species inventory of Lama classified forest in the framework of research activities of the students of the Laboratory of Applied Ecology

Number of records: 6,362

Data holder: DJEHO M C M

Data host institution: Laboratory of Applied Ecology

% complete: 100%

Status update: Completely achieved

DOI: <https://www.gbif.org/dataset/a32b923a-14b7-4023-9919-0af4d8198c9f>

Expected date of publication:

Woody species of Ouémé classified forest in Benin, West Africa

Dataset type: Occurrences

Dataset scope: Woody species of Ouémé classified forest in Benin, West Africa, assessed during the research activities of the students in the Laboratory of Applied Ecology, Faculty of agricultural Sciences

Number of records: 9,454

Data holder: HOUNTONDI H A

Data host institution: Laboratory of Applied Ecology

% complete: 100%

Status update: Completely achieved

DOI: <https://www.gbif.org/dataset/105cbc10-073a-4e4c-b18b-2c6f5c474d78>

Expected date of publication:

Diversity of plant species of great importance: the case of *Adansonia digitata*

Dataset type: Occurrences

Dataset scope: Data collected on plant species of great importance

Number of records: 3,927

Data holder: Farouckou WABI

Data host institution: Laboratory of Applied Ecology

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/bra4ur>

Expected date of publication:

Census of avian richness of the Park W Bénin (Fourth part)

Dataset type: Occurrences

Dataset scope: These occurrences are made on bird species in Parc W in northern Benin. Periodic and regular observations from 2010 to 2017 made it possible to establish this list of the different species of birds encountered and confirmed in order to develop strategies for good conservation and tourism development of this part of the biodiversity of the Park

Number of records: 3,710

Data holder: Amele Judith AMEDAHO and Tabithe Arabelle Metode AHOMAGNON

Data host institution: CENAGREF

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/4wdnkc>

Expected date of publication:

Diversity of bird fauna in the Ouémé Supérieur classified forest (part1)

Dataset type: Occurrences

Dataset scope: The dataset is about the diversity of bird species found in the Ouémé Supérieur classified forest in Benin

Number of records: 2,821

Data holder: Herman HOUNTONDI, Jeremie B. HOUNTON, Abdiel M. GNIMASSA, Hubert C. AGOSSOU

Data host institution: Laboratory of Applied Ecology

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/jnzha8>

Expected date of publication:

Preliminary inventory of the flora of the community forests of Bonou

Dataset type: Occurrences

Dataset scope: Derived from the list of species inventoried during the realization of a Sampling within the framework of a study on the species in the forests of Bonou (Benin)

Number of records: 2,417

Data holder: Mariano HOUNGBEDJI, Christelle DAKPOGAN, Nelson GOUDJO, Alfred OGA

Data host institution: Organisation pour le Développement Durable et la Biodiversité

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/s9j4ka>

Expected date of publication:

Floristic inventory of the classified forest of Dogo-Kétou in the year 2019

Dataset type: Occurrences

Dataset scope: Data derived from a systematic sampling of the Dogo-Kétou forest (Benin)

Number of records: 2,148

Data holder: Gorgias AIKPON, Melkisédek AYENON, Zoul-yadeini TABE

Data host institution: Laboratory of Forest Sciences (University of Abomey-Calavi)

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/8a253t>

Expected date of publication:

Occurrences data of vectors and pathogens responsible for buruli ulcer, onchocerciasis, bilharzia, and lymphatic filariasis collected in thesis documents

Dataset type: Occurrences

Dataset scope: Data derived from the list of vectors and pathogens responsible for buruli ulcer, onchocerciasis, bilharzia, and lymphatic filariasis collected in Benin during thesis researches at the Regional Institute of Public Health (IRSP) in Benin

Number of records: 1,918

Data holder: Tania Sandrine GBENOU, Boris TANDJI

Data host institution: Laboratory of Forest Sciences (University of Abomey-Calavi)

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/58snzy>

Expected date of publication:

Floristic diversity in some protected areas in southern Benin (Part 1)

Dataset type: Occurrences

Dataset scope: The data are derived from plant species encountered in certain protected areas in southern Benin

Number of records: 1,682

Data holder: Dedi Erasmo Ulrich GNANSOUNNOU

Data host institution: Direction Générale des Eaux, Forêts et Chasse

% complete: 100%

Status update: Completely achieved

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

Expected date of publication:

Floristic diversity of the protected areas of the Lama, Agrimey and Djigbe in the southern of Benin (Part 2)

Dataset type: Occurrences

Dataset scope: The data are derived from plant species encountered in certain protected areas in southern Benin

Number of records: 1,764

Data holder: Charbel Vivien Gérardy TOHINNOU HOUZE

Data host institution: Laboratory of Applied Ecology

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/yn63te>

Expected date of publication:

Occurrences data collection of *Schistosoma haematobium* (Bilharz, 1852), *Schistosoma mansoni* (Sambo, 1907) and their vectors for spatial distribution and ecological niche modeling

Dataset type: Occurrences

Dataset scope: Occurrence data of schistosomiasis pathogens (*Schistosoma haematobium* and *Schistosoma mansoni*) and their respective vectors (*Bulinus africanus*, *Bulinus truncatus*, *Bulinus globosus* and *Bulinus forskalii*) and *Biomphalaria pfeifferi* were collected from the literature (articles and statistical reports) and from fieldwork

Number of records: 1,692

Data holder: Emmanuel Schadrac TODO, Rock Yves AIKPON, Kourouma KOURA

Data host institution: Laboratory of Forest Sciences (University of Abomey-Calavi)

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/d2q8f6>

Expected date of publication:

Census of bird species carried out in Ramsar 1018 and 1017 sites of Benin

Dataset type: Occurrences

Dataset scope: The bird inventory was carried out in Ramsar 1018 and 1017 sites of Benin

Number of records: 1,387

Data holder: Hugues DEGLA, Abigail AZOCLY

Data host institution: Agence Béninoise pour l'Environnement (ABE)

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/z2qevh>

Expected date of publication:

Floristic inventory in the high conservation value forest of Agrimey, Lama and Djigbé

Dataset type: Occurrences

Dataset scope: Data are derived from understorey plant species inventory in Lama, Agrimey, and Djigné teak plantations (Benin)

Number of records: 954

Data holder: Roméo GBAGUIDI, Etienne DEGBOE, Noel GANGBE, Charbel TOHINNOU

Data host institution: SOS Biodiversity

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/8gq6wz>

Expected date of publication:

Census of plant species from sacred forests of south-Benin in 2013 (Part 2)

Dataset type: Occurrences

Dataset scope: Data are collected in the square plots in the sacred forests in South Benin

Number of records: 888

Data holder: Edmond kiki

Data host institution: Laboratory of Forest Sciences (University of Abomey-Calavi)

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/fte6bg>

Expected date of publication:

Inventory of species trees of *Terminalia superba* Engler and Diels in the Forest of Niaouli, Pobe, Bonou and Itchede-Toffo in Benin

Dataset type: Occurrences

Dataset scope: The occurrence data has been collected in south benin forest of Niaouli, Pobe, Bonou and Itchede-Toffo in Benin

Number of records: 807

Data holder: Edmond KIKI, Kourouma KOURA, ean Cossi GANGLO

Data host institution: Laboratory of Forest Sciences (University of Abomey-Calavi)

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/qdkw92>

Expected date of publication:

Inventory of agroforesteries plant species

Dataset type: Occurrences

Dataset scope: Occurrence data from survey carried out as part of thesis dissertation and environmental impact study

Number of records: 533

Data holder: Abigail AZOCLY, Hugues DEGLA

Data host institution: Agence Béninoise pour l'Environnement (ABE)

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/u974kh>

Expected date of publication:

Georeferencing of wildlife observations during patrol activities in Benin's W National W

Dataset type: Occurrences

Dataset scope: Inventory of *Mycobacterium ulcerans* occurrences in Buruli ulcer endemic areas in Benin

Number of records: 557

Data holder: Faï CHABI-YAOURE, Gabriel M. MONTEIRO, Frédéric A. ABIODOUN

Data host institution: CENAGREF

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/8npdgc>

Expected date of publication:

Floristic inventory and installation of permanent plots in the high conservation value forest of Agrimey, Lama and Djigbé

Dataset type: Occurrences

Dataset scope: Data collected from forest inventories in natural and planted forests in South and Center Benin

Number of records: 572

Data holder: Roméo GBAGUIDI, Etienne DEGBOE, Noel GANGBE, Charbel TOHINNOU, Etienne GBAGUIDI

Data host institution: SOS Biodiversity

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/7h5cfa>

Expected date of publication:

Tree species occurrences of *Bombax costatum* Pellegr. & Vuillet collected in five communes of Benin

Dataset type: Occurrences

Dataset scope: Data derived from tree species occurrences of *Bombax costatum* collected in five communes of Benin

Number of records: 458

Data holder: Christian OGOU, KOURA Kourouma, AOUDJI Augustin, GANGLO Jean

Data host institution: Laboratory of Forest Sciences

% complete: 100%

Status update: Completely achieved

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

Expected date of publication:

Vectors and pathogens responsible for Lymphatic Filariasis

Dataset type: Occurrences

Dataset scope: Data derived from list of vectors and pathogens responsible for lymphatic filariasis collected in the communes of Za Kpota, Ouinhi, Covè and Zagnanado

Number of records: 538

Data holder: Tania Sandrine GBENOU, Rock Yves AÏKPON, Kourouma KOURA, Jean Cossi GANGLO

Data host institution: Laboratory of Forest Sciences

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/npau6r>

Expected date of publication:

Occurrences data of *Eichhornia crassipes* in Southern Benin, inventoried in the framework of master degree in Biodiversity Informatics

Dataset type: Occurrences

Dataset scope: Data derived from occurrence points of *Eichhornia crassipes* collected in Benin within the framework of the research work of master Biodiversity Computer FSA/UAC.

Number of records: 199

Data holder: Aphrodite Y OGOUVIDE, Kourouma KOURA, Jean GANGLO

Data host institution: Laboratory of Forest Sciences

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/d6fhae>

Expected date of publication:

Identification and inventory of wildlife populations: Case of state-owned plantations of Pahou

Dataset type: Occurrences

Dataset scope: Data derived from inventory of wildlife populations in Pahou states-owned plantations

Number of records: 340
Data holder: Josué KPETERE, Gbati O. DARE, Matilo OROU
Data host institution: Centre d'Etudes de Recherches et de Formation Forestières (CERF)
% complete: 100%
Status update: Completely achieved
DOI: <https://doi.org/10.15468/cwku67>
Expected date of publication:

Floristic diversity of the protected areas of the Lama, Agrimey and Djigbe in the southern of Benin (Part 1)

Dataset type: Occurrences
Dataset scope: Occurrences of plant species encountered in some protected areas in southern Benin
Number of records: 140
Data holder: Charbel Vivien Gérardy TOHINNOU HOUZEZ
Data host institution: Laboratory of Applied Ecology
% complete: 100%
Status update: Completely achieved
DOI: <https://doi.org/10.15468/khhx6g>
Expected date of publication:

Spatial distribution of *Mansonia altissima* (A.Chev) A.Chev; C.S .; Drum. in the context of climate change in Benin

Dataset type: Occurrences
Dataset scope: Data derived from research work on the spatial distribution of *Mansonia altissima* in the context of climate change in Benin
Number of records: 343
Data holder: Alban G. ZOSSOU-AKETE, Ordo M. SEGBOZO, Rodrigue IDOHOU
Data host institution: Laboratory of Forest Sciences
% complete: 100%
Status update: Completely achieved
DOI: <https://doi.org/10.15468/cxxgt3>
Expected date of publication:

Impacts of climate change on *Vitellaria paradoxa* in Benin

Dataset type: Occurrences
Dataset scope: Data derived from research work on *Vitellaria paradoxa* accross the departments of Collines, Borgou and Alibori (Benin)
Number of records: 211
Data holder: Melkisédek AYENON, Rodrigue IDOHOU, Gafarou AGOUNDE
Data host institution: Laboratory of Forest Sciences
% complete: 100%
Status update: Completely achieved
DOI: <https://doi.org/10.15468/cncdns>
Expected date of publication:

Checklist derived from plant species published on GBIF through BID project

Dataset type: Checklist
Dataset scope: This checklist was compiled from plant occurrence data published on GBIF through the BID project (BID-AF2020-083-USE)
Number of records: 497
Data holder: Sunday Berlioz KAKPO, Eben-Ezer APELETE, Kourouma KOURA

Data host institution: Laboratory of Forest Sciences

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/we9pft>

Expected date of publication:

Check-List of neglected tropical disease datasets published under the BID project

Dataset type: Checklist

Dataset scope: Checklist derived from datasets published on Neglected Tropical Diseases of Benin

Number of records: 35

Data holder: Tania Sandrine GBENOU, Eben-ezer APELETE, Gorgias AIKPON, Kourouma KOURA

Data host institution: Laboratory of Forest Sciences

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/nrh5g2>

Expected date of publication:

Occurrences data collection of *Simulium damnosum* (Theobald, 1903) for spatial distribution and ecological niche modeling

Dataset type: Occurrences

Dataset scope: Occurrences of *Simulium damnosum* were obtained on the basis of data collected from WHO-AFRO website and literature

Number of records: 221

Data holder: Kpêyéton P. C. SEHOUE TO, Rock Yves AIKPON, Jean Cossi GANGLO

Data host institution: Laboratory of Forest Sciences

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/2wp9zm>

Expected date of publication:

Inventory of *Civettictis civetta* potential presence zone in South Benin

Dataset type: Occurrences

Dataset scope: Data derived from inventory of *Civettictis civetta* potential presence zone in South Benin

Number of records: 114

Data holder: Yves M. AVOCE, Gérard N. GOUWAKINNOU, Georges C. HEDEGBETAN, Jean Cossi GANGLO

Data host institution: Laboratory of Forest Sciences

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/fmf3c7>

Expected date of publication:

Tree species occurrences of *Anogeissus leiocarpa* (DC.) Guill. & Perr. collected in six communes of Benin

Dataset type: Occurrences

Dataset scope: Data derived from the inventory of *Anogeissus leiocarpa* across Benin

Number of records: 119

Data holder: Eben-ezer APELETE, Kourouma KOURA, Jean Cossi GANGLO

Data host institution: Laboratory of Forest Sciences

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/kth5vm>

Expected date of publication:

census of plant species from sacred forests of south-Benin in 2013

Dataset type: Occurrences

Dataset scope: Data was derived from plant inventory achieved by the Cesaren ONG in the sacred forests of southern Benin.

Number of records: 1,225

Data holder: Edmond kiki

Data host institution: Laboratory of Forest Sciences

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/ne6cqc>

Expected date of publication:

Census of avian richness of the Parc du W Bénin (First part)

Dataset type: Occurrences

Dataset scope: The data were derived from inventory of bird species in Parc W in northern Benin

Number of records: 4,639

Data holder: Amele Judith AMEDAHO, Tabithe Arabelle Metode AHOMAGNON

Data host institution: Direction Générale des Eaux, Forêts et Chasse

% complete: 100%

Status update: Completely achieved

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

Expected date of publication:

Census of avian richness of the Parc du W Bénin (Second part)

Dataset type: Occurrences

Dataset scope: Data were derived from inventory of . of bird species in Parc W in northern Benin

Number of records: 4,174

Data holder: Amele Judith AMEDAHO, Tabithe Arabelle Metode AHOMAGNON

Data host institution: CENAGREF

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/hkdk5y>

Expected date of publication:

Census of avian richness of the Park W Bénin (Third part)

Dataset type: Occurrences

Dataset scope: Data derived from inventory of of bird species in Parc W in northern Benin

Number of records: 4,093

Data holder: Amele Judith AMEDAHO, Tabithe Arabelle Metode AHOMAGNON

Data host institution: CENAGREF

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/ta8b3w>

Expected date of publication:

Census of avian richness of the Parc du W Bénin (Fourth part)

Dataset type: Occurrences

Dataset scope: Data derived from inventory of bird species in Parc W in northern Benin

Number of records: 3,710

Data holder: Amele Judith AMEDAHO, Tabithe Arabelle Metode AHOMAGNON

Data host institution: CENAGREF

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/4wdnkc>

Expected date of publication:

Study of specific plant diversity in forest reserves and riparian areas in Benin

Dataset type: Occurrences

Dataset scope: Data were derived from the inventory of forest reserves in Benin

Number of records: 8,488

Data holder: Roméo GBAGUIDI, Coffi Florent DOSSA GBO, Etienne DEGBOE

Data host institution: Direction Générale des Eaux, Forêts et Chasse

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/yx8ay6>

Expected date of publication:

Occurrences of neglected tropical disease vectors identified during medical consultations at Mènontin Hospital

Dataset type: Occurrences

Dataset scope: Data are related to distribution of neglected tropical disease vectors in Benin

Number of records: 4,258

Data holder: Ignace TCHANOU

Data host institution: HOPITAL MENONTIN

% complete: 100%

Status update: Completely achieved

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

Expected date of publication:

Study of specific plant diversity in forest reserves and riparian areas in Benin (Part 2)

Dataset type: Occurrences

Dataset scope: Data are derived from the inventory carried out in Benin forest reserves

Number of records: 6,188

Data holder: Roméo GBAGUIDI, Florent C. GBO DOSSA, Etienne DEGBOE

Data host institution: Direction Générale des Eaux, Forêts et Chasse

% complete: 100%

Status update: Completely achieved

DOI: <https://doi.org/10.15468/b4b24a>

Expected date of publication:

Plant specific diversity in forest reserves and riparian areas of Benin

Dataset type: Occurrences

Dataset scope: Data were derived from the inventory carried out in Benin forest reserves

Number of records: 6,441

Data holder: Roméo GBAGUIDI, Coffi Florent DOSSA GBO, Etienne DEGBOE

Data host institution: SOS Biodiversity

% complete: 100%

Status update: Completely achieved
DOI: <https://doi.org/10.15468/uq5xe6>
Expected date of publication:

Disease vectors recorded at the OUEME-PLATEAU University Hospital, Porto-Novo clinic and Cotonou clinic

Dataset type: Occurrences
Dataset scope: Data were derived from inventory of some vectors of human diseases encountered in Benin
Number of records: 4,922
Data holder: Akanni O. M. El'Mourchid BELLO
Data host institution: CHUD-OP
% complete: 100%
Status update: Completely achieved
DOI: <https://doi.org/10.15468/6kmtaq>
Expected date of publication:

Census of avian richness of the Pendjari Park in Northern of Benin (Part 1)

Dataset type: Occurrences
Dataset scope: Data were derived from inventory of bird species in Parc W in northern Benin
Number of records: 16,371
Data holder: Warissatou IDJADESSIBA SINDJALLOUM
Data host institution: Direction Générale des Eaux, Forêts et Chasse
% complete: 100%
Status update: Completely achieved
DOI: <https://doi.org/10.15468/vu37jz>
Expected date of publication:

Abundance and diversity of birdlife in the "Trois Rivières" forest, Benin, West Africa

Dataset type: Occurrences
Dataset scope: This dataset concerns the avian species of "Trois Rivières" forest
Number of records: 8,915
Data holder: René Tundé MIWAKLOUNNOU, Francis ADOUTE, Guillaume AFFOIGNON, Jonas GAKPE
Data host institution: Faculté des Sciences et Techniques (FAST)
% complete: 100%
Status update: Completely achieved
DOI: <https://doi.org/10.15468/bj2pjr>
Expected date of publication:

Checklist derived from animal species published on GBIF through BID project

Dataset type: Checklist
Dataset scope: This checklist was achieved from the animal occurrence data published on GBIF through BID projet
Number of records: 351
Data holder: Eben-Ezer APELETE, Sunday Berlioz KAKPO, Kourouma KOURA
Data host institution: Laboratory of Forest Sciences
% complete: 100%
Status update: Completely achieved
DOI: <https://doi.org/10.15468/xqfc4f>
Expected date of publication:

Deliverables - Project evaluation phase

Adequate research products to respond to expressed needs of information to support decisions are available

Description: Research products are achieved and provided to end-users, partners of the project

% complete: 53%

Status update: 12 (47%) research works are still ongoing and will be achieved in September 2023

Sources of verification: Extended abstracts of the research products in appendix_09

Information on biodiversity assessments with respect to Red Lists and the World database of Key Biodiversity Areas (KBA) are made available

Description: The research works of students concerned *Vitellaria paradoxa* a vulnerable species (VU) on IUCN red list. Among the other species like *Damaliscus lunatus korrigum* which population is in decline, *Pseudocedrela kotschy*, *Bombax costatum*, *Morinda citrifolia* which are quite useful and overexploited by populations, attention of the partners are drawn on their protection and the necessity to provide information to IUCN experts so that they can be evaluated and included on the red lists. Six (06) Key Biodiversity areas are found in Benin. They are Lama Forests (center Benin), Lake Ahémé and Aho complex in South-West Benin, Lake Nokoué in South-Center Benin, Ouémé basin in North-Center Benin, Pendjari National Park in North-West Benin, and W national park in far North-West Benin. Although those key biodiversity areas were not directly addressed by the research works, the ecological niches of the species studied by the students showed that at least, the terrestrial KBAs such Lama forests (center Benin), Pendjari National Park (North-West Benin), and W national park (far North-West Benin) are habitats for the species and partners need to pay attention for their conservation

% complete: 100%

Status update: Completely achieved

Sources of verification: Workshop results in appendix_03

User-led evaluation process of data solutions is achieved

Description: The results of the research works were presented to end-users who had the opportunity to evaluate them and made recommendations on their possible improvements as well as their needs for future research products

% complete: 100%

Status update: completely achieved

Sources of verification: Workshop report in appendix_03

Revision of national biodiversity policies is achieved

Description: On the basis of the research products presented, partners of the project and other participants to the workshop acknowledged the contribution of the results to possible review of National biodiversity policies

% complete: 100%

Status update: Completely achieved with regards to our responsibility. The revision itself is not under our responsibility

Sources of verification: Workshop report in appendix_03

Workflows and institutional agreements to promote further data mobilization to update information resources developed in the project are established

Description: Collaboration agreements are established with institutions of key end-users of research products (appendices 4, 5, and 6). The workflow of the project implementation and beyond is elaborated in appendix_10

% complete: 100%

Status update: Completely achieved

Sources of verification: Appendices 4, 5, 6, and 10

Data user groups are set in place

Description: Data user groups are formalized through the collaboration agreements with institutions

% complete: 100%

Status update: Completely achieved

Sources of verification: Appendices 4, 5, and 6

Use cases are documented and shared at national, regional, and global levels

Description: Extended abstracts of the research products achieved in the framework of the project are compiled in appendix_09

% complete: 53%

Status update: Other research activities are still going on till September 2023

Sources of verification: Appendix_09

Indicators to inform partner end-users on their achievements towards Sustainable Development Goals (SDG) or CBD targets related to their missions are made available

Description: The research results contributed to the achievements of UN SDG 03, 12, 13, and 15 as well as to CBD targets

% complete: 100%

Status update: Completely achieved

Sources of verification: Workshop report in appendix_03

Events

Master theses defenses of students

Dates: 2022-05-01 - 2022-12-31

Organizing institution: Faculty of Agricultural Sciences of the University of Abomey-Calavi

Country: Benin

Number of participants: 80

Comments: The visibility of the regional master and Ph. D program was raised by the graduates who ranked among the best graduates of the Faculty

Website or sources of verification: Theses of students and extended abstracts in appendix_09

Communications and visibility

1) As a result of our communication plan as requested, project narrative and financial reports are regularly elaborated and submitted to BID project coordinating team and are shared on GBIF page of the project

2) The occurrence datasets and checklists datasets are published on GBIF site and their links are provided in appendix_07. They are worldwide available from GBIF site.

3) Data use cases achieved in the framework of the project are summarized in appendix_09 and will be available and worldwide accessible from GBIF site.

4) The national report of GBIF-Benin is elaborated and addressed to the Dean of the Faculty of Agricultural Sciences, the Rector of the University of Abomey-Calavi, the Ministry of tertiary education, and to the Ministry of Living Environment and Sustainable development. The ministries represent the government. In the report, the achievements of the project are taken into account.

5) As for the data papers publications, already four (04) data papers are in the pipeline of Arpha Writing tool, and will be published as soon as possible

Monitoring and evaluation

Final Evaluation

- An evaluation of the project activities and their outputs/deliverables

1) This project was quite successfully implemented with great achievements of most activities and deliverables planned. Two activities and related deliverables are still in progress. They are:

a) Activity 2.4: Publish data papers to improve the reusability of the mobilized biodiversity data. Here, at least three data papers are planned. We actually have four (04) data papers in the pipeline of Arpha Wring tool at the following links:

https://arpha.pensoft.net/preview.php?document_id=21269 https://arpha.pensoft.net/preview.php?document_id=21230 https://arpha.pensoft.net/preview.php?document_id=21252
https://arpha.pensoft.net/preview.php?document_id=21277

They are in improvement for submission. If we don't yet publish them it is because we had to publish the datasets before engaging with data papers.

b) Activity 3.1: Provide adequate research products to respond to expressed needs of information to support decisions.

Here, out of the 30 research project planned, 18 are achieved and 12 are still going on till September 2023. The main reason is inadequacy between the duration of the project and time needed to completely achieve the research work engaged.

- Comments on the project implementation, and its efficiency and effectiveness, strength and weaknesses etc.

2) According to our opinion on the project, its implementation was one of the most successful and because most of the activities and related deliverables are achieved. The implementation of the project was quite efficient and effective. This success is due to the experience of the project coordinator supported by a well-structured team and voluntary staff

- Any feedback on the project's relevance from the partners and stakeholders

3) In subsection "training evaluation" of appendix_03, partners have very positive impression of the project and are willing to have more knowledge in terms of running of algorithms like Maxent and other modeling algorithms (such as RF, BRT etc.), open-Refine, Ecological Niches Modeling (ENM), field data collection tools such as Kobo-collect and even some of the participants wish to have at least two weeks of practical training on all the tools presented during the workshop.

- Indications and reasons for any changes which have been made to the project's original plans, and actions to follow-up

4) Due to COVID-19, the partner from the University of Kansas (USA) could not travel and we therefore asked for amendment to use related funds for data mobilization and data publication

- The management arrangements for the project, including support from the GBIF Secretariat

5) All went well in this project and I thank the members of BID coordinating team members

- Areas of success to build on, after the project implementation period and best practices identified

6) The efficiency of data mobilization and publication is surely one of the success areas we can continue to build on by raising funds to support financially data digitization and the process of data formatting, data cleaning, and data publishing

Capacity building to GBIF-Benin partners who are quite voluntary today to release their data with a minimum of financial support.

The team of GBIF-Benin is quite well organized and is the motor of the successes achieved

Academic training of students at master and Ph. D levels that enabled the achievement of data products

- Main lessons from the project experience that could be applied in other contexts

7) Success of data mobilization and publication

Efficiency and effectiveness of a well-organized team of GBIF-Benin

Data use to inform decisions through achievements of data products by research activities of students in academic training program

- Conclusions from your experience during the implementation of the project and recommendations for the GBIF Secretariat or the community to reinforce the success of the project

8) This project is a great success and I thank GBIF Secretariat and EU for their kind support. My recommendation is that GBIF secretariat continues to offer such opportunities to enable more data mobilization and data use to inform decisions

Best Practices and Lessons learned

Best Practices identified

The best practices we identified during the implementation of the project is the necessity of setting in place a workflow with clear and interdependent steps:

- 1) Clearly expressed decisions of end-users to be supported by research products
- 2) Identification of the need of information to support decisions expressed
- 3) Definition of data need to be processed in order to satisfy information needs for decisions
- 4) Demand driven research topics to elaborate data products to satisfy need of information to support decisions
- 5) Achievements of research products needed
- 6) Presentation of the research products to end-users for evaluation and recommendation for possible improvements
- 7) New data collection to achieve more adequate research products to satisfy information needs to support decisions

Lessons learned

The paradigm of knowledge is development was experienced all along the project. The end-users were quite interested in research products designed in a participatory method to satisfy their needs of information for decision making. We found out that progressively, time will come that they can design in their budgets at least small funds to support demand driven research to satisfy their needs of information

Post Project activities

The post project activities will first concern the achievement of the activities still in progress:

1) Activity 2.4: Publish data papers to improve the reusability of the mobilized biodiversity data

Here, we will improve and submit for publication, the four manuscripts of data papers actually in the pipeline of Arpha Writing Tool.

2) Activity 3.1: Provide adequate research products to respond to expressed needs of information to support decisions

Here, we will achieve the research works still ongoing till September 2023 when the students will defend their theses.

We will also continue with other activities like:

3) Establish cooperation agreements with partners from abroad to raise funds to support financial needs of data mobilization and data use through the research activities of students in the academic training at master and Ph. D levels

4) Steer up the cooperation agreements with national partners' institutions to progressively find the way towards their more engagements in research activities to support their decisions on biodiversity conservation as well as risk prevention against vector-borne diseases

Etc.

Sustainability

Sustainability Plans

In order to ensure the sustainability of the project's outcomes we will: 1) with respect to data publication, raise awareness of data providers and publishers on the advantages of data publication

With respect to point 1 of the plan, we signed cooperation agreements with partner institutions (see appendices 4, 5, and 6) so that the partners will be more engaged in demand driven data mobilization to support their decisions on biodiversity conservation and sustainable use. Data will then be more available from those institutions. Their publication will raise the visibility of data providers because their datasets will be used worldwide and yield possible cooperation with data users. We will show up cases of the visibility of data providers during workshops.

2) With respect to data use, enhance data use in the framework of research activities ongoing in the Master program of Biodiversity informatics in Benin. Maintain and reinforce collaboration with data user groups.

3) With respect to data end-users, encourage the use of data solutions in decision making by refining data mobilization and data uses to provide more adequate research products where required.

4) Continuously remind the engagements of the parties involved in the project through the signed agreements.

With respect to points 2, 3, and 4 above, the workflow we successfully implemented in the framework of the project is plenty of lessons learned. Through cooperation agreements (see appendices 4, 5, and 6), we will keep in touch with decision makers and find out their information needs to support decisions and therefore take this into account to design the research topics of the students in the master and Ph. D program in biodiversity informatics. The workflow (see appendix_10) will be followed up to achieve more and more adequate research products to support decisions

Impact of COVID-19 pandemic on project implementation

COVID-19 pandemic prevented a colleague from the University of Kansas to travel as planned to contribute to the following activities:

Activity 1.2: Identification of key research questions to be answered to satisfy information needs to support decisions

Activity 2.3: Organize 3 workshops to train stakeholders in data mobilization and data management

Activity 3.1: Provide adequate research products to respond to expressed needs of information to support decisions.

The budget lines of the travel and accommodation of the colleague were used for data mobilization through requirement of amendment to the project

His activities were achieved by the project team in place

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.

