

## Mentoring GBIF Cameroon – GBIF Benin – GBIF France

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**Programme:** CESP

**Project ID:** CESP2021-002

**Project lead organization:** Ministry of Environment, Protection of Nature and Sustainable Development (GBIF Cameroon)

**GBIF Participant Represented:** GBIF Cameroun

**Project implementation period:** 1/8/2021 - 31/7/2022

**Report approved:** 12/9/2022

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### Narrative Final report

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#### Project partners

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##### National Museum of Natural History

**Country:** France

**GBIF Participant Represented:** GBIF France

**Role in the project:** - hosting of the IPT ; - helps as a trainer on activity 4 and also for remote data connection

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##### University of ABOMEY-CALAVI, Benin

**Country:** Benin

**GBIF Participant Represented:** GBIF Benin

**Role in the project:** train members of GBIF-Cameroon and their partners in data digitization, data formatting using the spreadsheet of GBIF, and data publication on GBIF site

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### Executive Summary

Despite the occurrence of the pandemic in Covid-19, all the activities programmed in the amended budget were almost completely completed. The overall evaluation of the project was done in two aspects: the aspect related to the satisfaction of the participants during the capacity building workshops and the aspect related to the volume of data collected. We also noted that many teachers and researchers were not aware of the existence of GBIF during the various training workshops. This observation led us to reflect on the development of a national information strategy on GBIF. As far as capacity building activities are concerned, the availability of an online training platform by GBIF France has increased the level of knowledge of GBIF tools and standards among participants. However, the lack of funds allocated to the restitution workshops in the universities did not allow for further training of researchers on certain aspects related to the processing and publication of biodiversity data. The maximum number of three days per institution proved insufficient to cover all aspects of training. Regarding data collection, the late availability of data from our local partners did not allow for a thorough cleaning of these datasets. To overcome these obstacles, we plan to continue cleaning and publishing the data until August 31, 2022. This will allow us to increase the number of data occurrences from 7,000 as stated in the contract to approximately 13,000 by the end of August.

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### Report on Activities

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#### Activity progress summary

**Activity:** Mobilization of national data holders.

**Level of progress:** Fifty-two (52) data producers were mobilized from twelve (12) institutions.

**Activity:** New data providers connected to GBIF.

**Level of progress:** Four (04) new institutions have been registered on the GBIF portal.

**Comment:** Two other institutions have been enrolled by GBIF on behalf of Cameroon.

**Activity:** Design, multiplication and distribution of communication materials.

**Level of progress:** Two banners and two flyers were designed and produced.

**Comment:** The flyers were used in the different workshops organized by GBIF Cameroon.

Activity: Capacity building of stakeholders (node staff, data holders, primary data users).  
Level of progress: Twenty-two participants were trained in the use of GBIF tools and standards.  
Comment: Mentors from France and Benin provided online training.

Activity: Production of the mid-term report of the project.  
Level of progress: A mid-term report was produced and validated by the CESP committee.  
Comment: Non-critical observations made have been corrected.

Activity: Collection, processing, validation and dissemination of data on the Cameroon Biodiversity Information System and the GBIF Portal.  
Level of progress: Twelve thousand five hundred and forty-six (12,546) data occurrences were collected and published on the project page of GBIF portal.  
Comment: The datasets are available at <https://www.gbif.org/project/CESP2021-002/mentoring-of-gbif-cameroon-by-gbif-benin-and-gbif-france#datasets>. A dataset of about 500 data hits is being produced at the University of Dschang. The Cameroon Biodiversity Information System is not online due to migration.

Activity: Restitution of the training in an institution (University of Yaoundé I).  
Level of progress: The workshop was held from 01 to 03 March 2022 at the University of Yaoundé 1.  
Comment: Fourteen (14) teacher-researchers were trained.

Activity: Restitution of the training in an institution (University of Maroua).  
Level of progress: The workshop was held from March 21 to 22, 2022 at the University of Maroua.  
Comment: This activity was added following the savings realized from the non-physical participation of the mentors from France and Benin.  
Seventeen (17) teacher-researchers were trained.

Activity: Production of the final project report.  
Level of progress: The final report is produced and available online.

#### Completed activities

#### **Activity name: Mobilization of national data holders**

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**Description:** Prior to the capacity building workshop for national network members, the GBIF Cameroon team will mobilize national data holders through meetings and email communications.  
**Start Date - End Date:** 1/8/2021 - 15/10/2021  
**Verification Sources:** Report available in attachment.

#### **Activity name: New data providers connected to GBIF**

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**Description:** During the course of the project, new data publishers may be identified and join GBIF, as well as new data sources. Stakeholder needs will also be assessed through documentation. This activity will be conducted by GBIF Cameroon with technical support from GBIF France and GBIF Benin mentors.  
**Start Date - End Date:** 16/10/2021 - 30/11/2021  
**Verification Sources:** GBIF website at : <https://www.gbif.org/publisher/search?country=CM>

#### **Activity name: Design, multiplication and distribution of communication materials**

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**Description:** This activity includes the design and multiplication of communication materials, and their dissemination during the various activities planned in this project. This activity will be carried out by GBIF Cameroon with the technical support of GBIF France and GBIF Benin mentors.  
**Start Date - End Date:** 1/12/2021 - 31/12/2021  
**Verification Sources:** Invoice attached and images available on the following link:<https://www.flickr.com/photos/44353813@N02/sets/72177720297066161/>

#### **Activity name: Capacity building of stakeholders (node staff, data holders, primary data users)**

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**Description:** Training workshop organized to strengthen: 1- the capacities of data holders on the standards of publication of GBIF data; 2- the capacities of the staff of the GBIF Cameroon node on the management and publication of data; 3- the capacities of workshop participants on the use of GBIF tools; 4- the capacities of data users on the use of primary biodiversity data accessible through GBIF. During this activity, the GBIF Benin mentor assisted by the GBIF France mentor will be responsible for training members of the GBIF Cameroon network on formatting, digitizing and putting data online. GBIF France will put online a training IPT for the practical work of the participants.  
**Start Date - End Date:** 10/1/2022 - 14/1/2022  
**Verification Sources:** Report and attendance sheet available in attachment

#### **Activity name: Production of the mid-term report of the project**

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**Description:** This activity aims to produce the mid-term report of the activities implemented under this

project.

**Start Date - End Date:** 15/1/2022 - 31/1/2022

**Verification Sources:** Report available at:

<https://www.gbif.org/project/CESP2021-002/mentoring-of-gbif-cameroon-by-gbif-benin-and-gbif-france>

### **Activity name: Collection, processing, validation and dissemination of data on the Cameroon Biodiversity Information System and the GBIF Portal**

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**Description:** Data holders collect, process, and send data to the GBIF Cameroon node manager for validation. The node partners evaluate the data before publishing them via GBIF. During this activity, GBIF France will assist GBIF Cameroon in validating the data and making them available online through the Cameroon IPT that it hosts.

**Start Date - End Date:** 1/5/2022 - 10/7/2022

**Verification Sources:** Data available at:

<https://www.gbif.org/project/CESP2021-002/mentoring-of-gbif-cameroon-by-gbif-benin-and-gbif-france#datasets>

### **Activity name: Restitution of the training in an institution (University of Yaoundé I)**

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**Description:** Other teachers and researchers will be trained on the identification of interesting data sources for publication by GBIF, on their standardization and on the process of data publication. This feedback training will be conducted by members of GBIF Cameroon with remote assistance from GBIF France and GBIF Benin.

**Start Date - End Date:** 1/3/2022 - 3/3/2022

**Verification Sources:** Report and attendance sheet attached

### **Activity name: Restitution of the training in an institution (University of Maroua)**

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**Description:** Other teachers and researchers will be trained on the identification of interesting data sources for publication by GBIF, on their standardization and on the process of data publication. This feedback training will be conducted by members of GBIF Cameroon with remote assistance from GBIF France and GBIF Benin.

**Start Date - End Date:** 21/3/2022 - 22/3/2022

**Verification Sources:** Report and attendance sheet attached

### **Activity name: Production of the final project report**

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**Description:** This activity aims to produce the final report of the activities implemented under this project.

**Start Date - End Date:** 11/7/2022 - 31/7/2022

**Verification Sources:** Report available at

<https://www.gbif.org/project/CESP2021-002/mentoring-of-gbif-cameroon-by-gbif-benin-and-gbif-france>

## **Report on Deliverables**

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### **Deliverables progress summary**

Title: Four communication materials produced and used at the national workshop.

Result achieved: Two banners and two flyers designed and produced.

Title: Twenty-two (22) data holders and collection managers are trained.

Result achieved: Capacity building workshop for 22 members of the GBIF Cameroon node organized in Yaoundé from January 10 to 14, 2022.

Title: Fifteen (15) teachers and researchers are trained in one institution (University of Yaoundé 1).

Result achieved: Capacity building workshop for 14 teacher-researchers organized at the University of Yaoundé 1 from March 01 to 03, 2022 and production of a report.

Title: Fifteen (15) teachers and researchers are trained in one institution (University of Maroua).

Result achieved: Capacity building workshop for 17 teacher-researchers held at the University of Maroua from March 21 to 22, 2022.

Comment: Activity added after project budget amendment.

Title: At least two datasets and 7000 hits are published on GBIF.org (4000 hits related to the Cameroon flora dataset and 3000 hits from the Cameroon fauna datasets).

Result achieved: Three sets of 12,546 data occurrences were collected and available on the project page at:

<https://www.gbif.org/project/CESP2021-002/mentoring-of-gbif-cameroon-by-gbif-benin-and-gbif-france>

Comment: The animal kingdom occurrences and other plant kingdom occurrences are being

processed and will be available by the end of August 2022.

**Title:** At least three new organizations are registering on the GBIF network as data publishers.

**Result achieved:** Four new institutions have been enrolled on the GBIF portal.

**Comment:** Institutions visible at: <https://www.gbif.org/publisher/search?country=CM>

**Title:** One (01) mid-term report produced.

**Result achieved:** Report produced and available at: <https://www.gbif.org/project/CESP2021-002/mentoring-of-gbif-cameroon-by-gbif-benin-and-gbif-france>

**Title:** Final project report

**Result achieved:** Report produced and available at: <https://www.gbif.org/project/CESP2021-002/mentoring-of-gbif-cameroon-by-gbif-benin-and-gbif-france>

### Completed deliverables

**Title:** Four communication materials produced and used at the national workshop

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**Type:** Documentation

**Description:** This activity includes the design and multiplication of communication materials, and their dissemination during the various activities planned in this project. This activity will be carried out by GBIF Cameroon with the technical support of GBIF France and GBIF Benin mentors.

**Sources of verification:** Invoice attached and images available on the following link: <https://www.flickr.com/photos/44353813@N02/sets/72177720297066161/>

**Title:** Twenty-two (22) data holders and collection managers are trained.

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**Type:** Training Workshop

**Description:** Training workshop organized to strengthen: 1- the capacities of data holders on the standards of publication of GBIF data; 2- the capacities of the staff of the GBIF Cameroon node on the management and publication of data; 3- the capacities of workshop participants on the use of GBIF tools; 4- the capacities of data users on the use of primary biodiversity data accessible through GBIF. During this activity, the GBIF Benin mentor assisted by the GBIF France mentor will be responsible for training members of the GBIF Cameroon network on formatting, digitizing and putting data online. GBIF France will put online a training IPT for the practical work of the participants.

**Sources of verification:** Report and attendance sheet available in attachment

**Title:** Fifteen (15) teachers and researchers are trained in one institution (University of Yaoundé 1)

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**Type:** Training Workshop

**Description:** Other teachers and researchers will be trained on the identification of interesting data sources for publication by GBIF, on their standardization and on the process of data publication. This feedback training will be conducted by members of GBIF Cameroon with remote assistance from GBIF France and GBIF Benin.

**Sources of verification:** Report and attendance sheet attached

**Title:** Fifteen (15) teachers and researchers are trained in one institution (University of Maroua)

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**Type:** Training Workshop

**Description:** Other teachers and researchers will be trained on the identification of interesting data sources for publication by GBIF, on their standardization and on the process of data publication. This feedback training will be conducted by members of GBIF Cameroon with remote assistance from GBIF France and GBIF Benin.

**Sources of verification:** Report and attendance sheet attached

**Title:** At least two datasets and 7000 are published on GBIF.org (4000 hits related to the Cameroon flora dataset and 3000 hits from the Cameroon fauna datasets).

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**Type:** Dataset

**Description:** Data holders collect, process, and send data to the GBIF Cameroon node manager for validation. The node partners evaluate the data before publishing them via GBIF. During this activity, GBIF France will assist GBIF Cameroon in validating the data and making them available online through the Cameroon IPT that it hosts.

**Sources of verification:** Data available at: <https://www.gbif.org/project/CESP2021-002/mentoring-of-gbif-cameroon-by-gbif-benin-and-gbif-france#datasets>

**Title:** At least three new organizations are registering on the GBIF network as data

**Type:** Resources

**Description:** During the course of the project, new data publishers may be identified and join GBIF, as well as new data sources. Stakeholder needs will also be assessed through documentation. This activity will be conducted by GBIF Cameroon with technical support from GBIF France and GBIF Benin mentors.

**Sources of verification:** GBIF website at : <https://www.gbif.org/publisher/search?country=CM>

**Title:** A report of the meetings with the data holders is produced

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**Type:** Documentation

**Description:** Prior to the capacity building workshop for national network members, the GBIF Cameroon team will mobilize national data holders through meetings and email communications.

**Sources of verification:** Report available in attachment.

**Title:** One (01) mid-term report produced

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**Type:** Documentation

**Description:** This activity aims to produce the mid-term report of the activities implemented under this project.

**Sources of verification:** Report available at: <https://www.gbif.org/project/CESP2021-002/mentoring-of-gbif-cameroon-by-gbif-benin-and-gbif-france>

**Title:** Final project report

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**Type:** Documentation

**Description:** This activity aims to produce the final report of the activities implemented under this project.

**Sources of verification:** Report available at <https://www.gbif.org/project/CESP2021-002/mentoring-of-gbif-cameroon-by-gbif-benin-and-gbif-france>

## Events

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### Capacity building workshop for stakeholders (node staff, data holders, primary data users)

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**Dates:** 10/1/2022 - 14/1/2022

**Organizing institution:** GBIF Cameroun

**Country:** Cameroon

**Number of participants:** 22

**Comments:** Report and attendance sheet attached

**Website or sources of verification:** <https://www.gbif.org/event/80ffd6-51a8-4768-a497-47c363f/capacity-building-workshop-for-members-of-the-gbif-cameroon-network-on-the-use-of-gbif-standards-and-publication-tools>

## Events

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### Training restitution workshop at the University of Yaoundé I

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**Dates:** 1/3/2022 - 3/3/2022

**Organizing institution:** University of Yaoundé 1

**Country:** Cameroon

**Number of participants:** 18

**Comments:** Report and attendance sheet attached

**Website or sources of verification:** <https://www.gbif.org/event/8b8d08-e9d7-4c34-b065-6b9f96d/restitution-workshop-at-university-of-yaounde-1>

## Events

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### Training restitution workshop at the University of Maroua

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**Dates:** 21/3/2022 - 22/3/2022

**Organizing institution:** University of Maroua

**Country:** Cameroon

**Number of participants:** 20

**Comments:** Report and attendance sheet attached

**Website or sources of verification:** <https://www.gbif.org/event/61be7c-c827-459c-99ed-10a4342/restitution-workshop-of-the-training-on-the-use-of-the-standards-and-tools-of-publication-of-gbif-to-the-teachers-of-the-university-of-maroua>

## Communications and visibility

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Thanks to the support of GBIF, a project page has been created on its portal. This page will allow us to publish all the products of this project. To increase the visibility of the results of this project to stakeholders, GBIF Cameroon has undertaken a process with national authorities so that a budget line is allocated to GBIF Cameroon. The outcome of this process will allow GBIF Cameroon to extend the knowledge acquired during the Yaoundé workshop to other institutions. All these activities will be disseminated on all platforms of the Convention on Biological Diversity.

## Monitoring and evaluation

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### Monitoring, evaluation and lessons learned

#### **Final Evaluation:**

An evaluation of the project activities and their products/results: All of the activities programmed within the framework of this project were carried out. The results were not totally satisfactory, because the data were made available to the GBIF Cameroon team late. This resulted in the modification of the chronogram and the absence of cleaned data from the animal kingdom.

An evaluation of the overall results, impacts of the project and how it contributes to the overall goal of the CESP program: the project has resulted in the training of a large number of potential contributors and the joining of four new institutions to GBIF. It has also raised awareness of the importance of GBIF among a large number of researchers.

A description of the results of the self-assessments of individual capacity and institutional development compared to the beginning of the project: At the end of each training workshop, an online evaluation form was sent to each participant to assess individual satisfaction. These evaluations showed that approximately 97% of workshop participants were satisfied with the training content. However, they complained about the length of the training, which was considered very short to assimilate all this new knowledge. Finally, it should be noted that this project helped build the capacity of the GBIF Cameroon team, which now has the skills to administer its IPT. The node's self-assessment was completed at the end of the project and is available at <https://www.survey-xact.dk/answer?key=NGEY2ND5RXNU>.

Comments on project implementation, efficiency and effectiveness, strengths and weaknesses, etc. Comments on the implementation of the project, its efficiency and effectiveness, strengths and weaknesses, etc.: Thanks to the working materials made available to the trainers by GBIF, learning the GBIF tools and standards was facilitated during the various training workshops. This has enabled the learners to acquire certain skills in a very short time. The lack of knowledge of GBIF by data holders did not facilitate access to data. This has led to a delay in the publication of data for some kingdoms.

Any feedback on the relevance of the project from partners and stakeholders: During this project, the GBIF Cameroon partners wished that modular workshops be organized to facilitate the assimilation of this new knowledge. With regard to universities, they suggested that a funding mechanism be set up to support researchers in the collection, extraction, cleaning and publication of data. They also noted a concern about the ongoing accessibility of the data it publishes on the GBIF website. They pointed out that in the past, access to the data they have published on some platforms has been conditional on a fee for service.

Indications and reasons for any changes to the original project plans, and follow-up actions: At the beginning of the project, it was planned that mentors from France and Benin would physically participate; unfortunately, the onset of the pandemic in Covid-19 led us to plan a hybrid workshop. To assess the impact of this change, the GBIF Cameroon team attended the feedback workshops that were conducted by the Yaoundé training beneficiaries.

Project management arrangements, including support from the GBIF secretariat: Regarding project management arrangements, it should be noted that GBIF Cameroon was accompanied in its implementation by GBIF France and GBIF Benin mentors who have extensive experience in this area. As far as administrative matters were concerned, GBIF Cameroon benefited from the permanent support of the CESP secretariat.

Areas of success to build on after the project implementation period and best practices identified: In terms of areas of success for the project, it should be noted that the node team was trained to take ownership of the administration of their TPI. It is also worth noting that this project provided an opportunity to educate researchers on the services offered by GBIF to biodiversity data holders and users. Finally, thanks to the experience of the mentors, the GBIF Cameroon node has learned new techniques for transmitting knowledge, which has enabled it to effectively support institutions during restitution workshops in universities.

Key lessons learned from the project that could be applied in other contexts: In terms of lessons learned from the project, it should be noted that the constant contact between the GBIF Cameroon



team and its partners allowed it to identify points that make data sharing difficult at the national level. The team emerged from this project enriched by a communication experience that allowed it to bring some researchers to make their data available. Finally, one of the achievements of this project is the mastery of certain indispensable applications for cleaning and publishing data on biodiversity.

Conclusions from your experience during the implementation of the project and recommendations for the GBIF secretariat or the community to strengthen the success of the project: In conclusion, we can note that this project has been a great contribution to the capacity building of the Cameroonian node. However, it is important to note the difficulty in sharing data between local actors and GBIF. Data collection in the field is generally funded by organizations that are not linked to GBIF. It is therefore the intention of GBIF to launch an inventory project of organizations funding data collection at the country level in order to build partnerships with those who are not yet affiliated with GBIF. To promote the integration of GBIF data into national decision-making, GBIF should encourage the mobilization of data that facilitate ecosystem modeling and inform national indicators. Above all, GBIF should encourage projects to develop biodiversity information systems in countries to visualize the impact of human activities on the country's biodiversity. These systems can help anticipate the loss of certain endemic species at the country level.

#### **Best Practices and Lessons Learned:**

- The organization of the feedback workshops in the universities has brought an important improvement to the content of the training, as well as to the impact it can have.
- This type of project makes it possible to identify new key players who can then do work relevant to the network.
- In this type of project, it is often difficult to obtain the full commitment of all partners. Nevertheless, those partners who do show commitment always go beyond what is expected.
- The implementation of this type of project facilitates the identification of new partner needs and barriers to open data sharing among network members.
- Face-to-face training has always provided a better understanding of common problems, problem solving and strengthening collaboration between institutions.

#### **Post Project Activity(ies):**

- Rely on regional support contractors to continue cleaning, validating and publishing the data collected in the project.
- Organized a few online courses using reusable training materials and documentation (<https://www.gbif.org/training>) to support node institutions in updating their institutional page on the GBIF portal.
- Fundraising for the organization of awareness and capacity building workshops for producers and holders of biodiversity data.
- Finalize the upgrade of the Cameroon Biodiversity Information System and take advantage of the Hosted Portals Program (<https://www.gbif.org/hosted-portals>) to link the national system to the GBIF portal through the APIs provided.

#### **Sustainability plans**

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- Continue to develop and strengthen the capacity of network partners on data quality issues, primarily through educational and self-study tools and this in collaboration with regional support contractors.
- Find a way to reach more universities to have more courses on data quality issues.
- Organize some online workshops with the collaboration of Benin to sensitize university teachers and researchers on bioinformatics concepts.
- Create a data analysis module to combine data from other sectors with GBIF data to generate content that can be easily integrated into local biodiversity management policies.
- Support the planning and implementation of additional capacity building activities at at least six (6) additional academic institutions.

#### **Impact of COVID-19 pandemic on project implementation**

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The occurrence of the Covid-19 pandemic led to the cancellation of the physical participation of the mentors from France and Benin in the workshop organized in Yaoundé from January 10 to 14, 2022. As a result, a network infrastructure has been set up to facilitate their remote intervention. The direct impact of this modification was that it was impossible for the mentors to effectively assist the learners in the training room. However, it allowed the training of more members through the organization of a second workshop at the University of Maroua.

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The Capacity Support Enhancement Programme (CESP) is funded by GBIF

