Capacity building for strengthening biodiversity data mobilization in Venezuela

Programme: BID
Project ID: BID-CA2020-041-INS
Project lead organization: Provita
Project implementation period: 1/7/2021 - 31/8/2022
Report approved: 19/9/2022

Final Narrative Report

Executive Summary

By project closure, all of the activities and deliverables included in the project's proposal have been completed, including:

1. Completion of the "BID Capacity enhancement workshop" by three members of the project's team; two of them received an advanced badge in Biodiversity Data Mobilization.
2. Successful completion of an institutional capacity-building workshop on DwC and GBIF standards, with the participation of 12 of Provita's project coordinators and leaders.
3. Successful publication of the checklist of the "Venezuelan Red List of Endemic Trees" through GBIF.org (an updated version of the list was recently published to expand the number or records from 629 to 734; the metadata was also improved).
4. Submission of the midterm financial and technical report.
5. Development of a first version of Provita's institutional biodiversity data management guidelines, to be implemented by our entire team from now on.
6. Successful completion of a free introductory online training workshop on biodiversity data mobilization with 35 participants from academia, research institutions, museums and herbaria, NGOs and government institutions.
7. Successful publication of the checklist of the "Venezuelan Red List of Threatened Fauna" through GBIF.org (with 4,079 records).
8. Successful publication of three additional datasets from workshop participants (with a combined total of 262 records), and three more datasets expected to be published by 23 September 2022 (with a combined total of 5,901 records).
9. Successful completion of a biodiversity data advocacy online forum; up to 47 people joined the event live, while the recording has received 54 views since its publication.
10. Submission of the final financial and technical report.

In addition, our team was able to complete several other relevant activities not originally included in the proposal, including:

11. Participation in five other relevant GBIF workshops and short courses, to further build our team's capacities.
12. Completion of introductory and intermediate R courses available in DataCamp by team members, through the license granted by the BID program.
13. Partial development of a Venezuelan biodiversity portal, which aims to compile in a simple and friendly platform the data available for our country. The goal is to provide easy access to this information to our less technical audience as well as to serve as an example that incentivizes further collaborations towards the mobilization of data within the country (expected launch for the beta version in November 2022).

Since the beginning, we strived to share the project's information and goals with a wide audience through our social media networks and other channels, as well as to periodically communicate our progress and achievements. Overall, 18 different posts related to GBIF and this project were published through our Twitter, Instagram and Facebook accounts. The project's progress and achievements were also promoted through Provita's digital newsletter, two press releases published on our website and a radio interview.

Throughout, project progress was monitored following PMI standards. Early on, a detailed calendar of milestones and activities was developed, listing accountable team members and associated

stakeholders. Weekly follow-up meetings were held, which allowed team members to assess the status of each activity and milestone and implement corrective actions if needed. In addition, invaluable support was provided by the BID regional project advisor, Leonardo Buitrago, as well as by our partners and allies, particularly Fundación Caribe Sur.

The above allowed us to complete most of the activities and deliverables within the original project schedule, despite several challenges, including the departure of the original project coordinator towards the middle of the implementation. Given the prolonged learning curve required for the project, aiming to fill out the empty position with someone new was not considered feasible within the available time frame. Therefore, we opted for increasing the allocation of time to the project for the remaining members of the team and to redistribute responsibilities.

In addition, the continuing collapse of basic services in the country (notably electricity and internet) hampered the remote work of our team as well as access to portals for data compilation, validation and publication of the datasets. It also affected the ability of some of our workshop participant's to complete all the activities within the allotted time and to fulfill the requirements to receive the certificate of participation.

Finally, the worsening of the socio-economic crisis in Venezuela inevitably impacted both our team and our administrative processes.

Overall, we faced the most challenging period for implementation towards the end of the project, between June and August 2022, when our few team members were simultaneously trying to finalize several deliverables. Over this period, internet connectivity in Venezuela also experienced a severe decline, with prolonged failures of the service becoming more frequent. In consequence, we requested a one-month extension before the submission of our final report, which was granted by the GBIF Secretariat.

Now that we have reached the end of the project, we are very satisfied and proud that we were not only able to complete all of the proposed activities and deliverables, but actually accomplished more than we originally set out to do.

Furthermore, the success of the project is reflected in the high levels of satisfaction expressed by our partners and collaborators, workshop participants and the advocacy event's panelists and audience, both during and after the activities took place. Most of them expressed their interest to continue collaborating towards improving capacities and expanding the knowledge base for biodiversity in Venezuela.

Provita is very committed to continue building in-country capacities for data mobilization and helping to consolidate a culture of high-quality data-sharing, which is key to ensure that Venezuelan biodiversity data are available to inform evidence-based decision-making processes in the country.

In this sense, in the short term we will focus on helping finalize the publication of the datasets in development by workshop participants, as well as finalize the beta version of the Venezuelan biodiversity portal.

In the medium term, we would like to organize another training workshop aimed towards a wider number of researchers and collaborators, taking advantage of the materials already available but applying some of the lessons we learned and the suggestions shared by the participants. This includes providing more time to cover the more technical aspects of the publication process, and applying more practical exercises. However, this activity will be dependent on our ability to secure additional funds. We will also be working towards the implementation of our new institutional biodiversity data management guidelines with our team.

Finally, in the long term we would like to support the establishment of a Venezuelan GBIF Node and Hosted Portal. To achieve this, we will continue promoting the importance of open access biodiversity data and their timely mobilization with relevant national stakeholders, particularly governmental biodiversity offices, research institutions and curators of biological collections.

Progress against milestones

Has your project completed all planned activities?: Yes

Has your project produced all deliverables: Yes

Summary of the implementation of the project activities

All of the activities originally proposed were completed within the timeframe of the project. These activities were mostly focused on:

1. Building institutional capacities on biodiversity data mobilization within Provita

This was accomplished firstly through the participation of three of the project team members in the **BID Data Mobilization Workshop**, with two of them completing the certification process and obtaining **advanced badges in Biodiversity Data Mobilization**. Afterwards, the key learnings regarding good practices and standards for biodiversity data management and mobilization were shared with Provita's project coordinators and technical leaders through an **institutional capacity building workshop**.

Based on the knowledge gained, a bibliographic review and several work sessions with Provita's key project leaders, a first version of **Provita's institutional biodiversity data management guidelines** was developed. This document establishes core guidelines that can be implemented in the short term by our entire team in order to ensure that our biodiversity datasets are appropriately digitized, documented and backed up. To complement this effort, we are aiming to develop an additional document to provide more precise technical guidelines for following DwC standards and the publication process through GBIF, specifically aimed towards institutional projects that regularly produce data that can be mobilized through this platform.

Although not originally scheduled within the project, our team's capacities have been further complemented by the team's **participation in five other relevant GBIF workshops and short courses**, covering topics such as cleaning biodiversity data with OpenRefine, data processing and using GBIF mediated data for assessing conservation status of species against IUCN categories and criteria and ecological niche modeling. In addition, two team members have been **working through the introductory and intermediate R courses available in DataCamp**, to which we gained access through the BID program.

2. Building capacities on biodiversity data mobilization among or partners and allies

Improving our institution's capacities for biodiversity data mobilization is important, but not enough. In order to truly make an impact in reducing the gap between the immense amount of biodiversity data that has been collected over decades within the country and how much of it is actually available to the public, it is essential to build capacities for biodiversity data mobilization at the national level. To contribute to this goal, we organized a **free online training workshop** between 09 May and 10 June 2022, directed to members of academia, research institutions, museums, herbaria, NGOs and government institutions.

We received **89 postulations** from a very diverse group of interested people. Of the ones accepted to the training, **35 registered on the online platform** (Google Classroom) that was set up for the workshop and therefore had access to all the training materials, including videos, presentations, assignments and weekly synchronous discussion sessions.

A post workshop survey indicates that **he level of satisfaction of the participants was on average 4.9/5.0** based on 13 respondents, all of whom considered the workshop **"extremely useful"**. This survey also allowed us to receive feedback on potential improvements to be considered for future workshops.

3. Publishing relevant Venezuela biodiversity datasets through GBIF.org

In the framework of this project, Provita became an accredited publisher in the GBIF platform, which allowed us to publish two key checklists compiling valuable information of the conservation status at the national level of the country's biodiversity, as originally planned in the proposal:

- **The Venezuelan Red List of Endemic Trees** compiles the preliminary list of Venezuelan endemic trees that have been assessed following IUCN's standards, many of them by Provita's team. A first version was published on December 17th 2021, including 629 records from 68 plant families. In mid-2022, the dataset was updated to include additional species. The version currently available includes **734 records from 75 plant families** (https://doi.org/10.15468/vfkuxf) and will continue to be updated as ongoing assessments are completed and published.

- **The Venezuelan Red List of Threatened Fauna** compiling **4,079 records** covering the entire list of Venezuelan mammals, birds, reptiles, amphibians and freshwater fish, as well as some invertebrates, for which the risk of extinction was assessed at the national level in 2015 following

IUCN's red list standards (https://doi.org/10.15468/gw8f6g).

In addition, we **established key collaborations** with the team of Provita's Yellow-shouldered Parrot Conservation Program and from the Laboratorio de Sistemas de Información Geográfica y Modelado Ambiental of Universidad Simón Bolívar LSIGMA-USB, for both of which two or more team members participated in the training workshop. As a result, **three datasets** related to Margarita Island's birds were **published through GBIF.org** (for a combined total of 262 records), and an **additional three datasets** related to the abundance of the Yellow-shouldered Parrot (Amazona barbadensis) in the Macanao Peninsula and the dominant tree species of the Orinoco's Oil Belt **will be published** before the end of September 2022 (for a combined total of 5,901 records).

These **eight datasets include checklists, occurrences and sampling events**, which allowed our team to further understand the requirements and challenges of different types of datasets, gaining valuable experience to better support our partners in future efforts of biodiversity data mobilization.

4. Promoting the importance of mobilizing open access biodiversity data

The fourth and final component of this project focused on promoting the importance of mobilizing the significant amounts of Venezuelan biodiversity data that have been gathered over many decades of institutional and individual research efforts, but that are not yet digitized, standardized and/or publicly available. This was done mainly by:

- **Sharing the project's information and goals**, as well as its progress and achievements, with a wide audience through our **social media networks and other communication channels**. Overall, 18 different posts related to GBIF and this project were published through our Twitter, Instagram and Facebook accounts. The project's progress and achievements were also promoted through Provita's digital newsletter, two press releases published on our website and a radio interview.
- **Organizing an online discussion forum** with a diverse group of invited panelists to discuss progress, needs, challenges and opportunities to better achieve the mobilization of national biodiversity data to inform research and evidence-based management decision making and to promote the establishment of collaboration networks towards this end. The forum took place on 21 June 2022 via Zoom. Up to **47 people joined the event live** from different cities in Venezuela, as well as Buenos Aires, Bogotá and Madrid, and **the recording of the event has received 54 views** since its publication through Provita's YouTube channel (https://www.youtube.com/user/ProvitaONG).

In addition, and given that Venezuela does not yet have a GBIF node and a country portal, and their formal establishment might take some time given the current situation of the country, we decided to collaborate with one of our volunteers to **develop a simple portal that provides easy access to the available Venezuelan biodiversity data**, including Provita's own data and data available for the country through GBIF. Although not part of the original proposal, we hope that this portal (which does not seek to substitute an eventual official GBIF country portal for Venezuela) will serve to incentivize further collaborations towards the mobilization of data within the country. The main functionalities of the portal are already in place and over the next couple of months we will be working on adding the text descriptions and static images, and improving the look and feel of the site. Our goal is to release the beta version of the portal to the public in early November 2022.

Completed activities

Activity: BID Capacity enhancement workshop

Description: Three of our project's team members completed the BID Capacity enhancement workshop over the duration of the project. One of them (Haidy Rojas) participated in the official workshop organized for the BID program, while two of them (Alejandro Gallardo and Irene Zager) completed the course between December 2021 and March 2022. Both Haidy Rojas and Alejandro Gallardo completed the certification requirements and received advanced badges for biodiversity data mobilization.

The time and effort required to go over all of the course materials were larger than originally expected due to our lack of prior knowledge regarding the GBIF standards and publication process, and the vast amount of information and associated documentation available. However, the thorough documentation and regular exchanges with the BID regional project advisor, Leonardo Buitrago, have allowed us to address many of our doubts regarding the DwC standards and GBIF publication process. We have also continued to build upon our knowledge through the other project activities, and currently feel much more confident regarding our data mobilization skills, as well as how to access the available resources when new doubts arise.
Start Date - End Date: 19/7/2021 - 17/3/2022

Activity: Institutional capacity building on Darwin Core and GBIF standards

Description: Between October and November 2021, a training workshop on good practices for biodiversity data management and mobilization, as well as GBIF's standards and publication process was held for 12 key Provita team members responsible for gathering and managing biodiversity data. The training was based on the materials from the BID Data Mobilization Workshop and available documentation and followed a mixed format, with each participant going over key materials ahead of two synchronous virtual sessions for discussion and Q&A. In addition, all participants were asked to complete simple exercises based on the data regularly gathered within the framework of their work. The results of these exercises informed the development of Provita's Institutional biodiversity data management guidelines.

Even though the course served as a good introduction to the topic for all of our project's leads, it was obvious that more time and practice was required in order for them to feel comfortable with the standards. Therefore, some of them also participated in the in-depth training workshop that our team organized between May and June 2022.
Start Date - End Date: 4/10/2021 - 15/11/2021
Verification Sources: All submitted with the Midterm Narrative report, and therefore not attached to this report:

a) Workshop agenda and training materials:
1.a_Temario TALLER INTERNO PROVITA-GBIF.docx, 1.a_Presentaciones_Taller_PDF.rar
b) List of participants:
1.b_List of participants institutional workshop.pdf
c) Partial draft of the Checklist of Venezuelan Red List of Endemic Trees:
1.c_20211025_checklist_ipt_AEV.xlsx

Activity: Digitize and publish the checklist of the Venezuelan Red List of Endemic Trees through GBIF.org

Description: Between August and December 2021 our team compiled a preliminary list of the Venezuelan endemic trees that have been assessed following IUCN's standards in the framework of the Global Tree Assessment initiative, led by Botanic Gardens Conservation International (BGCI).
A first version of the checklist was published in December 2021, including 629 records from 68 plant families corresponding to those species that were originally assessed by Provita's team and that had been already available in both the Global Tree Portal and the IUCN Red List of Threatened Species at the time of publication.
A new version of the checklist was published in August 2022, expanding the list to 734 records from 75 families. The additional records correspond to assessments led by Provita that were recently published by IUCN, as well as assessments of endemic Venezuelan trees that have been completed by others (appropriately referenced for each record). This version also includes improvements to the metadata. The checklist will continue to be updated in the future, as ongoing assessments are completed and published.
Start Date - End Date: 16/8/2021 - 30/8/2022
Verification Sources: doi.org/10.15468/vfkuxf

Activity: Institutional biodiversity data management policy

Description: Starting in October 2021, the project's team conducted a bibliographic review to identify relevant examples of biodiversity data management guidelines and good practices. Based on these examples, and several work sessions with Provita's key project leaders, a first version of Provita's institutional biodiversity data management guidelines were developed, taking into account the ample diversity of projects we carry out (in terms of resources available; duration; location of implementation; type of data gathered; data collection requirements, efforts and purposes; and technical expertise of the team involved).

This document establishes some pragmatic core guidelines that can be implemented in the short term by our entire team in order to ensure that our biodiversity datasets are appropriately digitized, documented and backed up, without affecting the different project's implementation.

Every ongoing and new project will be working towards implementing these guidelines within the next year. Our plan is to revise this document periodically to incorporate any necessary changes identified after its initial implementation.
To complement this effort, we are aiming to develop an additional document to provide more precise technical guidelines for following DwC standards and the publication process through GBIF, specifically aimed towards projects that regularly produce data that can be mobilized through this platform (which

is only a subset of the institutional projects).
Start Date - End Date: 18/10/2021 - 15/3/2022
Verification Sources: Lineamientos institucionales para la gestión de datos de biodiversidad_v1_Marzo 2022.pdf

This document is for internal use. Please do not add it to the project's website.

Activity: Training workshop for research collaborators

Description: A free online training workshop was led by our team between 09 May and 10 June 2022 in order to build national capacities for biodiversity data mobilization. It was widely publicized beforehand through our social networks and relevant mailing lists.

Workshop preparation initiated in December 2021, and finalized in July 2022, when the certificates of participation were sent out. Training materials were mostly based on the BID capacity enhancement workshop and SibColombia webinar series. To maximize accessibility, some of the materials were adapted and translated into Spanish. Furthermore, we added both the video files and pdf versions of the presentations to the online learning classroom (Google Classroom) that was created for the training.

We received 89 postulations, 45 of which were accepted based on several criteria, including: area of work and relevance of the training, geographic location and stated availability to participate in all the activities. Of these, 35 participants from academia, research institutions, museums, herbaria, NGOs and government institutions, actually registered in the online platform.

Weekly activities included the revision of the teaching materials, quizzes and assignments, as well as synchronous sessions to review key ideas, address any doubts and go over examples. Participants were given the opportunity to work through some of the assignments using their own data, if they so desired.

Finally, 25 participants maintained an active participation throughout the entire course and completed most or all of the assigned activities and were granted a certificate of participation.

A post workshop survey indicates that the level of satisfaction of the participants was on average 4,9/5 based on 13 respondents, all of whom considered the workshop "extremely useful".
Start Date - End Date: 1/12/2021 - 20/6/2022
Verification Sources: a) Promotional pieces through Provita's website and social networks:
GBIF publications in RRSS_Provita.xlsx

b) Workshop agenda and training materials:
Temario Taller GBIF-Provita_participantes.pdf

c) GBIF Event page:
https://www.gbif.org/event/755b64-77bd-4ea6-a5fe-dd7829e/taller-introduccion-a-la-movilizacion-de-datos-primarios-de-biodiversidad-in-spanish-only

d) Link to Google Classroom:
https://classroom.google.com/c/NDcxODMwOTkyNDQz?cjc=e5sojpo

Please, do not include the link ito the classroom n the project's website

e) List of participants for the training workshop:
List of Training Workshop Participants_Provita.xlsx

Please, do not include this document in the project's website

f) Workshop evaluation responses from participants:
Formulario Evaluación Taller GBIF (Responses).xlsx

Please, do not include this document in the project's website

g) News release on Provita's website: https://www.provita.org.ve/noticias/provita-realizo-taller-de-introduccion-a-la-movilizacion-de-datos-primarios-de-biodiversidad

Activity: Digitize and publish the checklist of the Venezuelan Red List of Threatened Fauna through GBIF.org

Description: Between January and August 2022 our team adapted the latest available version of the Venezuelan Red List of Threatened Fauna to the Darwin Core and GBIF checklist's standards. This included completing a thorough taxonomic review and inputting missing information.

The published version includes 4,079 records covering the entire
list of Venezuelan mammals, birds, reptiles, amphibians and freshwater fish, as well as some
invertebrates, for which the risk of extinction was assessed at the national level in 2015, following
IUCN's red list standards

Although this activity was originally planned to be supported by the training workshop's participants, it
was completed entirely by the project's team.
Start Date - End Date: 15/1/2022 - 26/8/2022
Verification Sources: doi.org/10.15468/gw8f6g

Activity: Digitize and publish two additional datasets from workshop participants

Description: Participants of the online training workshop on biodiversity data mobilization were invited
to receive further support to complete the digitization, standardization and publication of their own
datasets.

In this context, two key collaborations were established by the project's team to further mobilize
biodiversity data: one with the team of Provita's Yellow-shouldered Parrot Conservation Program and
another with the Laboratorio de Sistemas de Información Geográfica y Modelado Ambiental de la
Universidad Simón Bolívar LSIGMA-USB.

As a result, instead of the two additional datasets considered in the proposal, three datasets were
published through GBIF.org (for a combined total of 262 records), and an additional three will be
published before the end of September 2022 (for a combined total of 5,901 records). Furthermore,
LSIGMA-USB became an accredited publisher institution within GBIF and is already planning the
publication of additional datasets in the future.

The published datasets include checklists, occurrences and sampling events, which has allowed our
team to further understand the requirements and challenges of different types of datasets, gaining
valuable experience to better support our partners in future efforts of biodiversity data mobilization.
Start Date - End Date: 9/5/2022 - 30/8/2022
Verification Sources: a) Datasets published by workshop participants:
doi.org/10.15468/4vu5cz
doi.org/10.15468/mzp8vv
doi.org/10.15468/nsg7wn

b) Datasets still in development by workshop participants, which will be published within the next
couple of weeks:
https://training-ipt-c.gbif.org/resource?r=cf_taxon
https://training-ipt-c.gbif.org/resource?r=pruebaocurrencias

Please do not include this links in the project's website. The final DOI will be available shortly.

c) LSIGMA's publisher profile within the GBIF platform:
https://www.gbif.org/publisher/5e690d82-fcde-43c2-ab7e-9578ccfc4030

Activity: Biodiversity data advocacy workshop

Description: An online forum with a diverse group of invited panelists was organized on 21 June 2022
to discuss progress, needs, challenges and opportunities to better achieve the mobilization of national
biodiversity data and to promote the establishment of collaboration networks towards this end. It was
widely publicized through our social networks and several relevant mailing lists to promote ample
participation.

Invited panelists included Quintin Arias, from the Museo del Instituto de Zoología Agrícola (MIZA) -
UCV; Jeannette Pérez, institutional coordinator of the project "Rescuing the knowledge base of
Venezuela's marine biodiversity (BID-CA2020-025-NAC)" for the Instituto de Zoología y Ecología
Tropical (IZET) - UCV; Rafael Gianni, independent researcher associated with the eBird and iNaturalist
platforms for citizen science, and Leonardo Buitrago, from the Biodiversity Information for Development
(BID) programme. Short presentations by the panelists were followed by an open Q&A and discussion
period.

During the discussion, participants mentioned the main barriers they have to face every day for the
mobilization of biodiversity data in Venezuela, highlighting the failure of public services, the lack of
knowledge of the platforms and the difficulty to collaborate with other specialists. They also highlighted
some of the opportunities, including different financing options available, the existence of institutions
within the country that can support capacity building in the area and the fact that part of the information
is already digitized and compiled in different platforms.

During the event, an online form was shared to be filled out by those participants interested in
continuing these discussions in the future and jointly working towards improving biodiversity data

mobilization in the country.

Up to 47 people joined the event live, while the recording has received 54 views since its publication in YouTube.
Start Date - End Date: 16/5/2022 - 24/6/2022
Verification Sources: a) GBIF event page: https://www.gbif.org/event/d6ee54-0fb6-4676-954a-9ed106b/necesidades-y-oportunidades-para-la-movilizacion-de-datos-abiertos-de-biodiversidad-en-venezuela-in-spanish-only

b) YouTube video of the event:
https://www.youtube.com/watch?v=NbU64WPkeAs&list=PLADMnII8ZLIfhhXEsYx07qcaxm1yUYVmv

c) News release on Provita's website: https://www.provita.org.ve/noticias/provita-realizo-el-foro-necesidades-y-oportunidades-para-la-movilizacion-de-datos-abiertos-de-biodiversidad-en-venezuela

Report on Deliverables

Deliverables - Summary

By August 30, 2022, all of the project deliverables have been completed, including:

Publication of the two datasets originally named in the proposal: The Venezuelan Red List of Endemic Trees (Lista roja de los árboles endémicos de Venezuela, .https://doi.org/10.15468/vfkuxf) and the Venezuelan Red List of Threatened Fauna (Lista Roja de la Fauna Venezolana 2015, https://doi.org/10.15468/gw8f6g). These checklists are directly derived from Provita's projects and are an important contribution to better understand the conservation status of Venezuelan biodiversity.

Training workshop for Porovita's team: An institutional training workshop allowed us to strengthen the institutional knowledge base among project coordinators and technical leaders to manage the standardization, systematization and publication of Venezuelan biodiversity data. This will help us expand the scope and impact of our work, and to better allow for data sharing within and outside Provita, particularly in the case of assessments of the conservation status of Venezuelan species and ecosystems, as well as species monitoring and conservation projects.

Development of a first version of Provita's Institutional biodiversity data management guidelines: This document aims to establish the core guidelines to be followed by the entire technical team in order to ensure that our biodiversity datasets are appropriately digitized, documented and backed up, while also facilitating their mobilization though GBIF, whenever possible.

Training workshop for research collaborators: A free online training workshop was led by our team between 09 May and 10 June 2022 in order to build national capacities for biodiversity data mobilization with the participation of 35 members of NGOs, museums, herbaria, academia, and research and government institutions.

Additional datasets published by workshop participants: Our project team, together with the BID regional project advisor, Leonardo Buitrago, provided technical support to members of Provita's Yellow-shouldered Parrot Conservation Program and the Laboratorio de Sistemas de Información Geográfica y Modelado Ambiental de la Universidad Simón Bolívar (LSIGMA-USB) who participated in the training workshop to accomplish the publications of relevant biodiversity datasets within the framework of the project. Instead of the two additional datasets considered in the proposal, three datasets have been published through GBIF.org (with a combined total of 262 records), and an additional three will be published before the end of September 2022 (with a combined total of 5,901 records).

Biodiversity data mobilization advocacy event: An online discussion forum was organized on 21 June 2022 via Zoom in order to discuss progress, needs, challenges and opportunities to better achieve the mobilization of national biodiversity data and to promote the establishment of collaboration networks towards this end. Up to 47 people joined the event live, and the recording has been viewed 54 times since its publication on Provita's YouTube channel.

In addition to the deliverables originally included in the proposal, in the framework of this project we also:

Supported the accreditation of LSIGMA-USB as a publisher on GBIF: The lab became an accredited publisher on July 4, 2022 (https://www.gbif.org/publisher/5e690d82-fcde-43c2-ab7e-9578ccfc4030)

Initiated the development of a Venezuelan Biodiversity Data Portal: This portal aims to provide easy access to available Venezuelan biodiversity data, including Provita's own data and data available for

the country through GBIF. The main functionalities of the portal are already in place. Our goal is to release the beta version of the portal to the public in early November 2022.

Deliverables produced by the project

Dataset deliverables

Checklist of the Venezuelan Red List of Endemic Trees

Dataset type: Checklist
Dataset scope: Preliminary list of Venezuelan endemic trees (from 75 families), with information on their risk of extinction at the global level based on IUCN's red list standards
Number of records: 734
Data holder: Provita
Data host institution: GBIF Secretariat
% complete: 100%
Status update: A first version of the checklist (with 629 species from 68 families) was published on December 17, 2021. The data set has since been updated to include information from recent assessments published by the IUCN Red List of Threatened Species, as well as to improve the metadata. Currently, version 1.15 is publically available and includes 734 records from 75 families. The checklist will continue to be updated in the future, as ongoing assessments are completed and published.
DOI: https://doi.org/10.15468/vfkuxf
Expected date of publication:

Checklist of the Venezuelan Red List of Threatened Fauna

Dataset type: Checklist
Dataset scope: Complete list of Venezuelan mammals, birds, reptiles, amphibians and freshwater fish, as well as some invertebrates, for which the risk of extinction was assessed at the national level in 2015, following IUCN's red list standards.
Number of records: 4,079
Data holder: Provita
Data host institution: GBIF Secretariat
% complete: 100%
Status update: A first version of the checklist was published in late June, 2022, after completing the taxonomic review and inputting the missing information. The original publication has since been updated to address some suggestions from the project's assessors and improve the metadata. Currently, version 1.5 is publicly available.
DOI: https://doi.org/10.15468/gw8f6g
Expected date of publication:

Checklist of the birds of the Macanao Peninsula

Dataset type: Checklist
Dataset scope: This list includes information on 158 species of Non-Passeriformes and Passeriformes birds that have been recorded in the Macanao Peninsula, Margarita Island, Venezuela. The compilation is mainly based on information obtained through the review of scientific articles, as well as information available on the eBird platform.
Number of records: 158
Data holder: Provita
Data host institution: GBIF Secretariat
% complete: 100%
Status update: A first version of the checklist was published on 29 July 2022, after revision by the project's team and technical assessor. We aim to update this checklist in the future, if additional information becomes available to our field team.
DOI: https://doi.org/10.15468/4vu5cz
Expected date of publication:

Checklist of birds of the Chacaracual Community Conservation Area, Macanao Peninsula
Dataset type: Checklist
Dataset scope: This list includes information on 49 species of Non-Passeriformes and Passeriformes birds that have been recorded in the Chacaracual Community Conservation Area, Macanao Peninsula, Margarita Island, Venezuela. The compilation is based on field samplings conducted by Provita's team in 2018 and 2021, and complemented with information available on the eBird platform.
Number of records: 49
Data holder: Provita
Data host institution: GBIF Secretariat
% complete: 100%
Status update: A first version of the checklist was published on 29 July 2022, after revision by the project's team and technical assessor. We aim to update this checklist in the future, if additional information becomes available to our field team.
DOI: https://doi.org/10.15468/mzp8vv

Expected date of publication:

Checklist of birds of La Chica creek, Macanao Peninsula
Dataset type: Checklist
Dataset scope: This list includes information on 55 species of Non-Passeriformes and Passeriformes birds that have been recorded in the La Chica creek, Macanao Peninsula, Margarita Island, Venezuela. The compilation is based on field samplings conducted by Provita's team in 2018 and 2021, and complemented with information available on the eBird platform.
Number of records: 55
Data holder: Provita
Data host institution: GBIF Secretariat
% complete: 100%
Status update: A first version of the checklist was published on 29 July 2022, after revision by the project's team and technical assessor. We aim to update this checklist in the future, if additional information becomes available to our field team.
DOI: https://doi.org/10.15468/nsg7wn
Expected date of publication:

Censo anual de la población de la Cotorra Cabeciamarilla (Amazona barbadensis) residente en la Península de Macanao, isla de Margarita, Venezuela en el periodo 2002-2021
Dataset type: Sampling Event
Dataset scope: This dataset contains annual census data (2002 to 2021) for the population of Amazona barbadensis residing in the Macanao Peninsula, Margarita Island, Venezuela. The data was gathered as part of the field protocol of the Yellow-shouldered Parrot Conservation Program carried out by Provita and its eco-guardianes in the Macanao Peninsula.
Number of records: 58
Data holder: Provita
Data host institution: GBIF.org
% complete: 60%
Status update: The dataset is still being adjusted to the DwC standards. A first version of the core tables was already reviewed by the technical assessor of the BID Regional Project Support Team. An extension file still needs to be created to link the parentEventID with the total number of individuals recorded each year, and complete the metadata description.
DOI:
Expected date of publication: 2022-09-23

Catálogo florístico de la Faja Petrolífera del Orinoco
Dataset type: Checklist
Dataset scope: The Floristic Catalog of the Orinoco Oil Belt is a list consisting of 86 plant species with the highest relative abundance in the ecosystems and agrosystems present in the Orinoco Oil Belt, Venezuela.
Number of records: 86
Data holder: Laboratorio de Sistemas de Información Geográfica y Modelado Ambiental (LSIGMA-USB)
Data host institution: GBIF Secretariat
% complete: 95%
Status update: The dataset is complete and has been uploaded to a test IPT (https://training-ipt-c.gbif.org/resource?r=cf_taxon), where it was reviewed by the technical assessor of the BID Regional Project Support Team as well as Provia's team. Minor changes to the data and metadata are still pending in order to address the comments from the reviewers before publication. These changes will be completed within the next couple of weeks, upon the return of the dataset creator from his annual leave. Expected Date of Publication: 23 September 2022
DOI:
Expected date of publication: 2022-09-23

Herbarium digital del Catálogo florístico de la Faja Petrolífera del Orinoco
Dataset type: Occurrences
Dataset scope: The digital Herbarium of the Floristic Catalog of the Orinoco Oil Belt includes 5,753 observations of 74 of the 86 plant species with the highest relative abundance in the ecosystems and agrosystems present in the Orinoco Oil Belt, Venezuela.
Number of records: 5,757
Data holder: Laboratorio de Sistemas de Información Geográfica y Modelado Ambiental (LSIGMA-USB)
Data host institution: GBIF Secretariat
% complete: 95%
Status update: The dataset is complete and has been uploaded to a test IPT (https://training-ipt-c.gbif.org/resource?r=pruebaocurrencias), where it was reviewed by the technical assessor of the BID Regional Project Support Team as well as Provia's team. Minor changes to the data and metadata are still pending in order to address the comments from the reviewers before publication. These changes will be completed within the next couple of weeks, upon the return of the dataset creator from his

annual leave.
DOI:
Expected date of publication: 2022-09-23

Other deliverables

Training workshop for Provita's team
Description: An institutional training workshop was held, with the participation of 12 project leaders and managers to build their capacities on Darwin Core and GBIF standards. The workshop had a virtual modality, with participants going over videos and documentation prior to two online work sessions.
% complete: 100%
Status update: The workshop was completed between October and November 2021.
Sources of verification: All submitted with the Midterm Narrative report, and therefore not attached to this report: a) Workshop agenda and training materials: 1.a_Temario TALLER INTERNO PROVITA-GBIF.docx, 1.a_Presentaciones_Taller_PDF.rar b) List of participants: 1.b_List of participants institutional workshop.pdf c) Partial draft of the Checklist of Venezuelan Red List of Endemic Trees: 1.c_20211025_checklist_ipt_AEV.xlsx

Institutional biodiversity data management policy
Description: A first version of Provita's Institutional biodiversity data management guidelines was developed by the project's team with the support of other project leaders. This document establishes core guidelines to be followed by our entire team in order to ensure that our biodiversity datasets are appropriately digitized, documented and backed up, while promoting their compatibility with Darwin Core standards and also covering institutional needs.
% complete: 100%
Status update: A first version of the document was completed in March 2022.
Sources of verification: a) Lineamientos institucionales para la gestión de datos de biodiversidad_v1_Marzo 2022.pdf This document is for internal use. Please do not add it to the project's website.

Training workshop for research collaborators
Description: A free online training workshop was held between 09 May and 10 June 2022. We received 90 postulations, 45 of which were accepted. Of these, 35 participants from academia, research institutions, museums, herbaria, NGOs, and government institutions registered in the online platform (Google Classroom) that was set up for the course and completed at least part of the activities. Twenty-five participants maintained an active participation throughout the entire duration of the workshop and completed most or all of the assigned activities and were thus granted a certificate of participation. A post workshop survey indicates that the level of satisfaction of the participants was on average 4,9/5 based on 13 respondents, all of whom considered the workshop "extremely useful".
% complete: 100%
Status update: The workshop took place between 09 May and 10 June 2022. Certificates of participation were sent out to 25 participants who maintained an active participation throughout the entire course and completed most or all of the assigned activities.
Sources of verification: a) Promotional pieces through Provita's website and social networks: GBIF publications in RRSS_Provita.xlsx b) Workshop agenda and training materials: Temario Taller GBIF-Provita_participantes.pdf c) GBIF Event page: https://www.gbif.org/event/755b64-77bd-4ea6-a5fe-dd7829e/taller-introduccion-a-la-movilizacion-de-datos-primarios-de-biodiversidad-in-spanish-only d) Link to Google Classroom: https://classroom.google.com/c/NDcxODMwOTkyNDQz?cjc=e5sojpo Please, do not include the link ito the classroom n the project's website e) List of participants for the training workshop: List of Training Workshop Participants_Provita.xlsx Please, do not include this document in the project's website f) Workshop evaluation responses from participants: Formulario Evaluación Taller GBIF (Responses).xlsx Please, do not include this document in the project's website g) News release on Provita's website: https://www.provita.org.ve/noticias/provita-realizo-taller-de-introduccion-a-la-movilizacion-de-datos-primarios-de-biodiversidad

Training workshop for research collaborators Biodiversity data advocacy workshop
Description: An online forum with a diverse group of invited panelists was organized on 21 June 2022 to discuss progress, needs, challenges and opportunities to better achieve the mobilization of national biodiversity data and to promote the establishment of collaboration networks towards this end. It was widely publicized through our social networks and several relevant mailing lists to promote ample participation. Up to 47 people joined the event live, while the recording has received 54 views since its publication in YouTube.
% complete: 100%
Status update: The forum took place on 21 June 2022. A recording is available through Provita's YouTube channel.
Sources of verification: a) GBIF event page: https://www.gbif.org/event/d6ee54-0fb6-4676-954a-9ed106b/necesidades-y-oportunidades-para-la-movilizacion-de-datos-abiertos-de-biodiversidad-en-venezuela-in-spanish-only b) YouTube video of the event: https://www.youtube.com/watch?

v=NbU64WPkeAs&list=PLADMnII8ZLIfhhXEsYx07qcaxm1yUYVmv c) News release on Provita's website: https://www.provita.org.ve/noticias/provita-realizo-el-foro-necesidades-y-oportunidades-para-la-movilizacion-de-datos-abiertos-de-biodiversidad-en-venezuela

Events

Taller Introducción a la movilización de datos primarios de biodiversidad (in Spanish only)

Dates: 2022-05-09 - 2022-06-10
Organizing institution: Provita
Country: Venezuela
Number of participants: 35
Comments: This five-week workshop aimed to strengthen capacities for the mobilization and use of biodiversity data in Venezuela.

The program included 7 short modules, which were developed by combining synchronous virtual sessions and self-guided asynchronous activities.
Website or sources of verification: https://www.gbif.org/event/755b64-77bd-4ea6-a5fe-dd7829e/taller-introduccion-a-la-movilizacion-de-datos-primarios-de-biodiversidad-in-spanish-only

Events

Necesidades y oportunidades para la movilización de datos abiertos de biodiversidad en Venezuela (in Spanish only)

Dates: 2022-06-21 - 2022-06-21
Organizing institution: Provita
Country: Venezuela
Number of participants: 47
Comments: This online discussion forum with four invited panelists was organized to discuss progress, needs, challenges and opportunities to better achieve the mobilization of national biodiversity data and to promote the establishment of collaboration networks towards this end.
Website or sources of verification: https://www.gbif.org/event/d6ee54-0fb6-4676-954a-9ed106b/necesidades-y-oportunidades-para-la-movilizacion-de-datos-abiertos-de-biodiversidad-en-venezuela-in-spanish-only

Communications and visibility

To generate awareness on the project and promote biodiversity data mobilization in the country, we made an effort to regularly publish posts related to the project and GBIF through Provita's social media accounts. Initial posts were mostly focused on describing GBIF and our project's goals, while later posts showcased progress and particularly, the datasets published through gbif.org. We also prepared two dedicated series of posts to promote the training workshop for research collaborators and the biodiversity data mobilization advocacy forum. A final series published in August 2022 highlighted the project's achievements. The total number of social media posts and their reach is presented below:

Facebook: 18 posts / scope: 12.343

Twitter: 18 posts / scope: 21.148

Instagram: 18 posts / impressions: 10.521

The details for each post, including links to the original publications, can be found in the file "GBIF publications in RRSS_Provita.xlsx."

The project's progress and achievements were also promoted through Provita's digital newsletter, two press releases published on our website (one focused on the training workshop and another on the advocacy forum) and a radio interview.

An updated text for the project's webpage was added as an attachment (Final updates to project page_Strengthening biodiversity data mobilization in Venezuela_BID-CA2020-041-INS.docx).

Monitoring and evaluation

Final Evaluation

Throughout, project progress was monitored following PMI standards. Early on, a detailed calendar of milestones and activities was developed, listing accountable team members and associated stakeholders. Weekly follow-up meetings were held, which allowed team members to assess the status of each activity and milestone and implement corrective actions if needed. In addition, permanent contact was maintained with the BID regional project advisor, Leonardo Buitrago, who provided invaluable technical support throughout the project. We also reached out to our partners and allies whenever necessary. Inputs from the coordinators of the project "Rescuing the knowledge base of Venezuela's marine biodiversity BID-CA2020-025-NAC", in particular, were key for the preparation of the training workshop and advocacy forum.

The above allowed us to complete most of the activities and deliverables within the original project schedule, despite several challenges, including the departure of the original project coordinator towards the middle of the implementation. Given the prolonged learning curve required for the project, aiming to fill out the empty position with someone new was not considered feasible within the available time frame. Therefore, we opted for increasing the allocation of time to the project for the remaining members of the team and to redistribute responsibilities.

In addition, the continuing collapse of basic services in the country (notably electricity and internet) hampered the remote work of our team as well as access to portals for data compilation, validation and publication of the datasets. It also affected the ability of some of our workshop participant's to complete all the activities within the allotted time and to fulfill the requirements to receive the certificate of participation.

Finally, the worsening of the socio-economic crisis in Venezuela inevitably impacted both our team and our administrative processes.

Overall, we faced the most challenging period for implementation towards the end of the project, between June and August 2022, when our few team members were simultaneously trying to finalize the workshop activities and update the checklists, while also providing support to several of our collaborators for the publication of the additional datasets. At the same time, the BID regional project advisor, whose support was also needed to complete the publication process, was having to support the reporting processes for several other BID projects and had limited time available. Over this period, internet connectivity in Venezuela experienced a severe decline, with prolonged failures of the service becoming more frequent and affecting our team's activities, especially since all of them were carried on through remote work. In consequence, we requested a one-month extension before the submission of our final report, which was granted by the GBIF Secretariat.

By the end of the project, all activities and deliverables have been successfully completed.

Now that we have reached the end of the project, we are very satisfied and proud that we were not only able to complete all of the proposed activities and deliverables, but actually accomplished more than we originally set out to do. Most importantly, we are very satisfied with the knowledge we gained, and the strengthening of the data mobilization skills not only of the team directly involved with the project, but of other members of Provita's team and among our partners and allies as well.

The success of the project is not only reflected in the timely completion of our goals, but in the high levels of satisfaction expressed by our partners and collaborators, workshop participants and the advocacy event's panelists and audience, both during and after the activities took place. Most of them expressed their interest to continue collaborating towards improving capacities and expanding the knowledge base for biodiversity in Venezuela.

Notably, a post workshop survey indicates that the level of satisfaction of the participants was on average 4,9/5 based on 13 respondents, all of whom considered the workshop "extremely useful". This survey also allowed us to receive feedback on potential improvements for future workshops.

Best Practices and Lessons learned

Here we summarize some reflections and lessons learned from our project:

1. Since this was Provita's first involvement with DwC standards and biodiversity data mobilization through GBIF, we underestimated the amount of time and effort that would be required to build capacities around them not only for our project's team but among our partners. For the latter, it was particularly difficult to take on the responsibility to both learn the process and publish datasets within a very short time frame, especially when facing many other responsibilities related to their own ongoing projects. In the future, we will be more careful when estimating the time required to learn a new technical skill, as well as avoid committing deliverables that are dependent on third parties, unless they are involved since the proposal inception or the project implementation is long enough to better allow addressing uncertainties.

2. We also did not take into account that at least part of the process of publishing biodiversity data through GBIF.org for the first time requires the support from members of GBIF's team (for example, to become an accredited institution and to obtain IPT credentials) and the time required for this must be considered in the project's schedule.

3. The complexities of the DwC standards, associated with the wide number of possible fields and the very technical vocabulary involved, were the main source of doubts for our team. Even though there's ample documentation, the sheer amount of information available is very daunting when first working through the standardization and publishing process. A major source of confusion, even towards the end of the project, was related to the appropriate assignment of the roles of the different people involved in the metadata (we particularly struggled with the differences between Author, Editor, Reviewer and Creator, given that they are used differently in other publication contexts). We think it would be useful to include in the IPT information sections some concrete examples of the differences between these roles, referencing "real life" datasets.

4. Regular communication with key stakeholders was key for the success of the project. Without the constant technical support and accompaniment of the BID regional project advisor, Leonardo Buitrago, we probably would not have been able to achieve all our goals in time.

Regular communication with our allies from Fundación Caribe Sur, who were carrying out similar activities and facing similar challenges, was also key. In particular, the lessons they shared from their own training workshop were very useful to the preparation of our own workshop. Thus, we suggest that future BID projects who are conducting similar activities could benefit from a space that allows them to exchange experiences and brainstorm for solutions to the challenges. Furthermore, setting up a space where former BID project teams can share what worked and what did not work in their own projects, could also be very useful to others even from the proposal development stage.

5. It would have been useful knowing beforehand that the BID program could offer additional opportunities for the grantees for better planning and scheduling. For example, having access to the vast array of courses available through DataCamp has been an exciting opportunity for us. However, given that this was not originally considered in our schedule, our project's team has struggled to find the necessary time to appropriately go over the materials and take more advantage of this resource, given our other responsibilities and day to day activities.

Being able to continue to have access to this resource in the future, and having the opportunity to better plan the courses within our schedules, would be highly valuable not only for this project's team, but for other members of Provita as well.

6. Finally, we found that although the instructions were very clear and straightforward, using the GBIF Grants Portal for reporting on the project through the available online forms was a very cumbersome process. The information is divided in such a way (many individual tables with many attributes) that it takes a very long time to fill out the information. We also experienced many instances of our changes not being saved, despite receiving a confirmation message that they had been applied successfully. We understand that this is likely directly related to our poor internet connections, but since this is a common issue in many of the countries that the BID program benefits, we kindly suggest that improvements to this platform could be beneficial to future grantees.

Post Project activities

Provita is very committed to continue building in-country capacities for data mobilization and helping to consolidate a culture of high-quality data-sharing to ensure that Venezuelan biodiversity data are available to inform evidence-based decision-making processes in the country.

In this sense, in the short term we will focus on helping finalize the publication of the datasets in development by workshop participants, as well as finalize the beta version of the Venezuelan biodiversity portal in order to launch it in November 2022.

In the medium term, we would like to organize another training workshop to reach out to other researchers and collaborators, taking advantage of the materials already available but applying some of the lessons we learned and the suggestions shared by the participants. This includes providing more time to cover the more technical aspects of the publication process, and apply more practical exercises. However, this activity will be dependent on our ability to secure additional funds. We will also be working towards the implementation of our new institutional biodiversity data management guidelines with our team.

Finally, in the long term we would like to support the establishment of a Venezuelan GBIF Node and Hosted Portal. To achieve this, we will continue promoting the importance of open access biodiversity data and their timely mobilization with relevant national stakeholders, particularly governmental biodiversity offices, research institutions and biological collections.

Sustainability

Sustainability Plans

In order to ensure the sustainability of the project's outcomes, we made sure to involve all of Provita's project leads in the capacity-building activities and development of the institutional guidelines for biodiversity data management. At this time, they are all aware of the general requirements and benefits of data standardization and mobilization, and are already working with their teams to implement the new institutional guidelines, which include developing Biodiversity Data Management Plans (BDMP) for each project. To facilitate this process, we have also started developing appropriate formats. Our goal is that within a year, all ongoing and new institutional projects will have a BDMP in place that includes plans for data publication in relevant platforms by project completion, whenever possible, including publication through GBIF.org and/or the Venezuelan biodiversity data portal currently under development as appropriate.

Depending on its initial reception, we will aim to make improvements to the Venezuelan biodiversity portal over time, including inviting partners and interested parties to also share their relevant biodiversity data through the portal in order to continue improving accessibility to the country's biodiversity data and to incentivize further mobilization.

Complementarily, we plan to seek further funding to allow us to organize additional workshops and capacity-building events directed to data holders and users. In the meantime, we will strive to continue providing technical support to our partners and workshop participants for the publication of their own datasets, to the best of our abilities and time constraints.

Finally, we will continue using our communications channels and any relevant opportunity to continue promoting within the country the importance of open access biodiversity data and their timely mobilization.

Impact of COVID-19 pandemic on project implementation

The biggest impact of the COVID-19 pandemic for the project implementation was the limitation to conduct in-person meetings, training and events. All work was conducted remotely by the team. In addition, one of the key team members was personally affected by the pandemic and had to take a couple of weeks off in the first semester of implementation.

Even though this was taken into account since the preparation of the proposal, the impact was somewhat larger than initially expected due to the additional progressive failure of public services in the country, which limited effective and timely online and phone communications. Nonetheless, we were aware since the beginning that this might happen, and therefore aimed to assign additional time for each activity to allow for delays without severely affecting the overall project goals and timeline.

GBIF