

MID-TERM NARRATIVE REPORT

Guidelines on how to complete this report are included in italics.

Use the information included in your BIFA Full Proposal (reproduced in Annex 1 of your BIFA contract) as a baseline from which to complete this report.

Remember that this report will be made available on your project page on the GBIF website and therefore should not include any contact information, unless you have permission from all mentioned in the report that their contact information can be published.

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Project information

Main contact person and role:	Mushtaq Ahmed, Project leader and coordinator
Institution/network/agency affiliation:	Quaid-i-Azam University, Pakistan
BIFA Project ID:	BIFA40-06-FR
Project title:	Expanding the value and reach of plant data mobilization in Pakistan
Start date and end date of the reporting period:	1/5/2019 to 30/4/2019
Country in which the activities take place:	Pakistan

Executive summary

This project will add 15,500 herbarium records to GBIF from four herbaria in Pakistan, only one of which, the herbarium of Quaid-i-Azam University (ISL), had previous experience with data mobilization. Additional goals include demonstrating the value of data mobilization to research and education. Data mobilization is slightly behind schedule but is expected to accelerate since holding of the initial workshop in November. This was delayed for reasons

beyond the organizers' control. Following discussions at that workshop, the ISL leaders will be holding follow-up workshops at each institution in December. These will build the participants' skills, adding data cleaning to the basic data capture skills taught at the initial workshop. Draft outlines of papers about the data source and building on digital resources have been initiated. Specific tasks will be assigned to the leaders at each institution with specific requests for input. The papers should be ready for joint discussion and submission in March (or earlier). At the same time, efforts to obtain better metadata from Pakistani herbaria will be renewed. Feasibility of new activity is under discussion. It is designed to emphasize that the reason for data mobilization is to enhance research and education. It will be a small symposium for graduate students and young faculty in which they will be asked to explain how their research would benefit from or contribute to data mobilization. This will, it is hoped, help them see mobilizing data and using existing data sources as an important component of their research activities, not a task performed because someone is willing to pay for it. .

Progress against expected milestones

Please indicate the status of the expected milestones as outlined in Annex 3 of the contract, at the time of mid-term reporting. Please provide links in the sources of verification. In the event of unexpected delay(s), please provide detailed explanatory notes.

NOTE: Data sets and institutions are referred to by the internationally recognized code for the herbaria involved:

AKASH – University of Azad Jammu and Kashmir, Muzaffarabad

GCUSAH – Government College University, Lahore

ISL – Herbarium of Quaid-i-Azam University

SARGU - University of Sargodha, Sargodha

OH - OpenHerbarium

A significant problem was that Barkworth was, for various reasons, unable to visit Pakistan in 2019, something she had not foreseen. Political protests within Pakistan also made scheduling the initial workshop difficult.

Expected milestones	Completed? Yes/No	Explanatory notes	Sources of verification

Gain certification at BIFA Capacity Enhancement Workshop (Mid-term report milestone)	Yes and No	Ghulam Yaseen who attended the workshop left the project. On our request, he responded that he has submitted the assignment on 3 rd September, and resubmitted on 5 th October	
At least one dataset has been published to GBIF.org (Mid-term report milestone)	Yes and No	6161 records have been to the ISL dataset. Other funded herbaria will become GBIF data providers when they have at entered at least 200 records.	https://www.gbif.org/dataset/search?publishing_or_g=c254a6f2-87d8-440c-9da9-8f9161f47e3d Dr. Tariq Habib has been encouraged to apply to become a GBIF provider, having recently achieved the 200 record mark, an arbitrary requirement set by Barkworth.
Data capture 7000 specimens (full target 15,500) existing specimen records	Almost	Added 6891 to OH, 6424 from funded herbaria. Two problems a) late start because funding arrived at start of field season; b) Barkworth had to change plans.	see https://openherbarium.org/collections/index.php

District and tehsil geographic file acquisition	No	Wrote to Survey of Pakistan; no response. Probably need personal contact by influential person.	
Add 20 individuals to those able to use geolocate	No	Workshop not held yet	Reschedule to March to coincide with Barkworth's time in Pakistan.
Georeference 7500 records (target 15,500)	No	Georeferenced 6473 records, all from ISL, including captured during project.	https://OpenHerbarium.org
Data cleaning tools developed	No	See discussion later re changed approach	See attachments to report
Registration of 3 herbaria to OpenHerbarium (OH) and as GBIF providers	Added 4 to OH, none to GBIF	Waiting for herbaria to complete data capture for about 200 specimens before encouraging them to become GBIF data providers.	AKASH should become a data provider in December. POONCH added to OH after submission of the proposal.
Obtain/update and share collection metadata from all Pakistani herbaria via Index herbariorum	No	Have added 4 herbaria, not 5, to IH; no updates from those with seriously outdated entries.	

Research use – presentations on value of data mobilization.	No	In development.	
Research use – products	No	Will be initiated in January.	
Preparing high quality specimens	No	Have commented directly; online instructions in development.	Will be shared in January via https://biodiversitysharing.org/ (site opens but uploading information interrupted; will be started in December).

Activities

Please indicate the status of the activities as outlined in the BIFA Full Proposal (section 4.4), at the time of mid-term reporting.

The table below should be completed in the same way as in the BIFA Full Proposal, but should include information and updates on the status of each activity. Please indicate relevant source(s) of verification and provide links, or a copy of the source of verification mentioned if no links are available. Attachments should be provided in the Annex.

In the event of unexpected delay(s), please provide detailed explanatory notes and indicate new planned completion date(s) within the project implementation period.

In the event of any additional activities having being completed, please add rows as required.

Activity name	Expected deliverable	Contribution to goals listed in table 4.3 of the BIFA Full Proposal	Status of activity as of mid-term reporting Provide % complete and state either on-track or delayed	Explanatory notes, inc. new planned completion date if necessary	Source(s) of verification
Data capture workshop	20 additional individuals able to capture data	Goal 1, data capture.	21 participants (from GCUSAH, SARGU, POONCH, AKASH, PMAS Arid agriculture University, Women University Multan, Women University Rawalpindi, Gomal University D.I.Khan)	Planning on visiting primary herbaria for 2-3 days to involve more people. Also instructions specific to Pakistan will be posted online.	See attached evaluations for workshop. Instructions for use offline will be posted in December to https://biodiversitysharing.org/
Data capture	15,500 new records	Goal 1, data capture.	89% done.	Slow start. See previous line for new activity that is expected to be more effective for newly added herbaria.	https://openherbarium.org

Activity name	Expected deliverable	Contribution to goals listed in table 4.3 of the BIFA Full Proposal	Status of activity as of mid-term reporting Provide % complete and state either on-track or delayed	Explanatory notes, inc. new planned completion date if necessary	Source(s) of verification
District file acquisition & incorporation in Geolocate	Geographic files in Geolocate	Goal 2, georeferencing	No progress.	No response to request made to Survey of Pakistan; inquiries of other individuals also unsuccessful.	
Georeferencing workshop	20 more individuals able to georeference using Geolocate	Goal 2, georeferencing	No workshop held yet.	Need to get data capture well underway so as to take advantage of batch georeferencing.	
Georeference 15,500 records	Value added to 15,500 records	Goal 2, georeferencing	83% done. All from ISL.	Delayed start in data capture at additional herbaria	https://openherbarium.org
Data cleaning tools	For geography, names, and time	Goal 4, improving data quality	Switching to creation of instructions.	Barkworth has not been in Utah long enough to discuss this. Creating explanatory explanations of how to accomplish same goals in PowerPoint. SEE NOTE AT END OF SECTION.	Posting presentations to https://biodiversitysharing.org and sending, when feasible, as email attachments or via FTP. Some are too large for email.
Registration	Add herbaria to OpenHerbarium and make data providers.	Goal 5, increase data providers	50% complete.	Herbaria added to OpenHerbarium but, because not yet capturing data, not GBIF providers.	https://openherbarium.org

Activity name	Expected deliverable	Contribution to goals listed in table 4.3 of the BIFA Full Proposal	Status of activity as of mid-term reporting Provide % complete and state either on-track or delayed	Explanatory notes, inc. new planned completion date if necessary	Source(s) of verification
Collection metadata	Five more herbaria added to Index herbariorum; no outdated records improved	Goal 6, Expand knowledge of herbaria in Pakistan	90% complete; expect to update some federal herbaria in 2020.	Will focus on more obtaining support from more federal herbaria in March and April.	http://sweetgum.nybg.org/science/ih/herbarium-list/?AddPhysCountry=Pakistan
Research use - presentations	No presentations given in Pakistan yet.	Goal 7, research use	10% complete	In addition to 2 planned papers; will encourage initiation of activities by other institutions and individuals. .	Two articles initiated, one on grasses, the other on <i>Vitaceae</i> .
Research use - products	Some checklists posted but not by Pakistanis. No other evidence of use of data.	Goal 7, research use	10% complete	Primary focus, absent other local initiatives, is development by Pakistanis of more local checklists that are supported by keys, descriptions, and images.	Keys will be posted to https://keybase.rbq.vic.gov.au/projects/show/34 and descriptions, images, and maps generated in https://OpenHerbarium.org
Preparing high quality specimens	Provision of higher quality specimens and specimen information.	Goal 8, high quality specimens	25% complete. Improvement has taken place at some institutions.	Basic materials assembled; will be combined in PowerPoint presentations and short you tube videos.	Some specimen images in OpenHerbarium. Need more of new specimens to show improvement. Will post instructional presentations to https://biodiversitysharing.org/ .
Sustainability	Not started	Goal 9, sustainability	0% complete	Will focus on federal herbaria in 2020, and then develop a pamphlet about the resource.	Pamphlet is the goal; for now, focus must be on persuading more federal herbaria to contribute.



NOTE: Barkworth stated in the proposal that she would work with Dyreson, a computer scientist at Utah State University, to develop cleaning routines for three kinds of data (scientific names, names of administrative regions, and dates) in specimen records. After talking with Dyreson at greater length, it seems best to record PowerPoint presentations on how to achieve the same goal without developing new routines. A major reason for this decision is that Symbiota, the program that runs OpenHerbarium, is being completely rewritten in order to make it easier to develop. It would not be productive to write routines for use with the current version. Instead, Barkworth is recording PowerPoint presentations that show how to achieve the same goals using existing resources, namely Excel, Taxonomic Names Resolution Service, and OpenRefine. Of these, only Excel has a cost associated with it but all universities in Pakistan provide their faculty and staff with free access to it. An additional advantage of this approach is that it involves providing short explanations of taxonomy and nomenclature that those responsible for preparing data may not understand. The presentations will probably also enhance users' ability to work with Excel and OpenRefine, something that may benefit

Deliverables

This section should summarize the project deliverables as outlined in the BIFA Full Proposal (section 4.5), at the time of mid-term reporting. Please highlight any changes from the original plans.

If no result has been achieved on a specific point, please clearly indicate this and provide expected date of completion.

In the event of unexpected delay(s), please provide detailed explanatory notes and indicate new planned completion date(s) within the project implementation period.

In the event of any additional deliverables having being completed, please add rows as required.

a. Data

Details of datasets published and/or pending publication as an outcome of the project. The table below should be completed in the same way as in the BIFA Full Proposal but should include information and updates on the status of each dataset. Please provide links in sources of verification.

If the dataset is not yet published, please provide a detailed explanation, % of digitization and expected date of publication. Add rows as required.

Title of dataset	Data type (checklist/occurrences/sampling event) ¹	Estimated number of records (specimens)	Status of dataset: Published or % of digitization/pending publication and expected date of publication	Data holding institution agreed to publish its data via GBIF.org (Yes/No)	Explanatory notes	Source(s) of verification: DOI or URL
ISL	Occurrence data	6161	51%	Yes		https://gbif.org
AKASH	Occurrence data	1500	16%	Yes	Will initiate in December	https://openherbarium.org
SARGU	Occurrence data	500	1%	Yes	Waiting till more records available	https://openherbarium.org
GCUSAH	Occurrence data	500	3%	Yes	Waiting till more records available	https://openherbarium.org

¹ Dataset classes: <http://www.gbif.org/publishing-data/summary#datasetclasses>

b. Other deliverables

Describe other deliverables (e.g. publication of data papers, analysis, reports etc.) produced and/or planned to be produced/completed as part of the project. Please provide percentage complete and status of deliverable, together with an indicative dates/estimated time for completion.

Please provide links in the sources of verification. Attachments should be provided in the Annex.

Name and type of deliverable	Status of deliverable Provide % complete and on-track/ delayed	Explanatory notes	Source(s) of verification
Online resources concerning preparation of high-quality specimens, label generation, and data capture	25%	High quality specimens: January 31 Label generation: December 31 Data capture: December 31	https://biodiversitysharing.org
National, provincial, and district checklists derived from publications and mobilized specimen data.	Not started.	Will download online data and initiate composition in January. Hope to persuade some checklist authors to engage in updating and “going digital”. Goal is to persuade students and faculty to integrate development of digital resources into their floristic research. There is resistance.	Will be published initially via https://openherbarium ,
Addition or significant updating of metadata data for at least five more herbaria in Index herbariorum.	Some herbaria added; no seriously out of date entries updated.	Those in charge of old, established herbaria tend not to see the value of updating information. The problem is by no means unique to Pakistan. Will keep pushing – and some are becoming more receptive.	http://sweetgum.nybg.org/science/ih/herbarium-list/?AddPhysCountry=Pakistan

Name and type of deliverable	Status of deliverable Provide % complete and on-track/ delayed	Explanatory notes	Source(s) of verification
Lectures and training classes at colleges to demonstrate several ways how to access the published records and other procedures involved and how this online data can be useful and handy for them.	Delayed.	The initial plan was to offer such trainings in August but this proved impossible. Team members from ISL and Barkworth will be offering workshops at various universities in spring, In the meantime, presentations are being developed and will be provided, with audio, in December via a new web site that Barkworth is developing.	The web site where presentations will be shared in https://biodiversitysharing.org .
Data paper highlighting resources becoming available for Pakistan (intended for Taxon);	0%	Focus has been completely on data capture. Start planned for December.	Have started to draft outline. Will complete, with list of responsibilities, in December.
Data paper demonstrating increased value of checklists when shared via OpenHerbarium (Possibly Pakistan Journal of Botany).	0%	Will draw on presentation being prepared for celebration of completion of the Flora of Pakistan.	Have started to draft outline. Will complete, with list of responsibilities, in December.

Events organized as part of the project

Please indicate the status of the events as outlined in the BIFA Full Proposal (section 4.6), at the time of mid-term reporting.

The table below should be completed in the same way as in the BIFA Full Proposal, but should include information and updates on the status of each event. Please provide links to any documents or web pages documenting the event(s) in the sources of verification. Attachments should be provided in the Annex

In the event of unexpected delay(s), please provide detailed explanatory notes and indicate new planned completion date(s) within the project implementation period.

In the event of any additional events having being completed, please add rows as required.

Event title	Organizing institution	Date held / expected dates	Number of participants	Explanatory notes	Source(s) of verification
Workshop on data capture	Quaid-i-Azam University	13 th -14 th November	21 participants (from GCUSAH, SARGU, POONCH, AKASH, PMAS Arid agriculture University, Women University Multan, Women University Rawalpindi, Gomal University D.I.Khan)	Delayed from August to November	See attached evaluations for workshop.
Data mobilization & research	Quaid-i-Azam University	March 2020		This is a new idea; we need to work out feasibility.	

Calendar of activities

The calendar should be completed in the same way as in the BIFA Full Proposal (section 4.7) but should also clearly indicate and include any changes (e.g. use of colour-coding to indicate expected changes and/or delays). Please provide explanations for any changes in the “Notes” column and/or the explanatory notes section.

Activity	2019								2020				Notes
	M	J	J	A	S	O	N	D	J	F	M	A	
Georeferencing workshop, emphasizing collaborative georeferencing of records from Pakistan											X		Postponed from October because of late start.
Georeferencing at all participating institutions, collections other than ISL focussing on specimens from their province.											X	X	Postponed from October onward to January onward.
Mandatory attendance of a project team member to the BIFA Capacity Enhancement Workshop (expenses for attending the workshop are covered by the BIFA programme)			X										
Deadline for mid-term report – 31 October 2019 Mandatory milestones attached to the mid-term report: - Gain certification at BIFA Capacity Enhancement Workshop - At least one dataset has been published to GBIF.org							X						GBIF agreed to postponement.
Presentation at Symposium at University of Malakand on Biodiversity data mobilization in Pakistani herbaria and botanic gardens. (Barkworth; separately funded).													Cancelled; funding program cancelled.
Presentation at TDWG (Barkworth; separately funded)						X							https://biss.pensoft.net/article/35885/ ; pdf of presentation attached
Meeting at ISL to discuss draft papers and project progress											X		Barkworth is committed to being in Pakistan at this time.
(Tentative) Mini-symposium for graduate students and young faculty on using or developing mobilized data as part of their thesis/dissertation research.											X		This is a new idea that is under discussion.

Activity	2019								2020				Notes
	M	J	J	A	S	O	N	D	J	F	M	A	
Deadline for final reporting – 30 April 2020 Mandatory milestones attached to the final report: - All deliverables have been produced - Sustainability and next steps have been documented												X	GBIF agreed to postpone to May

a. Explanatory notes

The timing of some of the proposed activities assumed that Barkworth would be in Pakistan in August or October but this became impossible. This delayed some of them. For example, the introductory workshop, planned for the first month, was not held until early November and was led by Lubna Fareed of Quaid-i-Azam University and others she has worked with. It was very well-received and, at the participants’ suggestion, will be followed by the three team leaders conducting 2-3 day workshops at the herbarium of each participating institution, including one (POONCH, the herbarium of the University of Poonch Rawalakot) not included in the initial proposal. This will help embed data mobilization into the culture of these institutions. The workshops will also introduce participants to some elements of data cleaning, an aspect that, in addition to the obvious benefits, will increase awareness of resources and tools of value in biodiversity research.

Outlines of proposed papers are being drafted, together with the responsibilities of potential co-authors. These will be circulated in December and drafts prepared in January and February, the goal being to submit them at the end of March.

The possibility of having a minisymposium for graduate students and young faculty and post docs on how their research could benefit from or contribute to existing mobilized data is under discussion.

Project communications and visibility

Describe the plans and how the results of your project have been and will be communicated and shared with the project stakeholders and broader GBIF community.

Please also review the page describing your project available from <http://www.gbif.org/programme/bifa> and highlight any additional documents, events, news items or links that you would like to add to your page and provide links/attachments in the Annex.

A few achievements have been posted to Facebook. Barkworth gave a presentation at TWDG.

Mid-term evaluation findings and recommendations for the remaining project implementation period

This section should cover for example:

- *An evaluation of the project activities by mid-term and their outputs/deliverables*
- *Comments on the project implementation, and its efficiency and effectiveness, strength and weaknesses etc.*
- *Any feedback on the project's relevance from the partners and stakeholders*
- *Indications and reasons for any changes which have been made to the project's original plans, and actions to follow-up*
- *The management arrangements for the project, including support from the GBIF Secretariat*
- *Areas of success to build on during the remaining project implementation period*
- *Any request for guidance and/or assistance in the form of a specific project mentor*

(Max. 300 words)

This project is behind schedule because scheduled activities had to be delayed until after the field season, when participants could not be available, and Barkworth's changed schedule which was not known until August. The initial data mobilization workshop, designed and led by ISL, was very well received and, at the suggestion of participants, will be followed up by visits from the ISL instructors to the participating institutions for further training. This will address the overall goal of embedding data mobilization as an integral part of each herbarium's activities. In addition, PowerPoint presentations designed for teaching different aspects of data mobilization are in preparation and will be made available through a new website, biodiversitysharing.org, starting in December. These include some on data cleaning both for csv files prepared from upload to OpenHerbarium and for cleaning within OpenHerbarium. Learning how to do this also requires providing information about resources that many in Pakistan are not aware of.

Preparation of the proposed papers will a major focus going forward. An important part of their preparation is developing outlines that include specific tasks for those who wish to be co-authors. The initial outlines will be circulated in December. Drafts of the papers will be developed January-February and discussed in March.

Persuading additional herbaria, particularly older, federal herbaria, to update their metadata in Index herbariorum, will be addressed in March. Previous experience indicates personal contact is essential. One meeting has already been tentatively arranged.

A new idea for enhancing sustainability, that of a minisymposium for graduate students, post-docs, and young faculty in the participating institutions is under discussion. Participants will be asked to prepare posters and/or give short presentations on how providing and/or using mobilized data will contribute to their research goals.

Sustainability plans

Please provide a description of how the partners involved will build on the results of this project in their future work. This could include future collaborative activities, such as plans to complete any unfinished project activities and how the future impact of the project could be monitored and/or measured. (Max. 200 words).

In the proposal, sustainability activities focussed on obtaining buy-in from more of the federal herbaria as this is seen as being important to federal support. The announcement by the Pakistan Science Foundation of an Advancing Digitization of Biological Collections program suggests that there is at least some buy-in by the federal government. We hope to build on this. Towards that end, we shall be initiating discussions with participants as well as representatives of other Pakistani herbaria, on how integrating data mobilization into student theses and dissertations is important to higher quality research. At present, it seems to be regarded as a separate activity.

Annex – Additional sources of verification

Sources of verification are for example links to relevant digital documents, news/newsletters, brochures, workshop related documents, pictures, etc.

1. For viewing data from participating herbaria: <https://openherbarium>
2. Information about collection metadata from Pakistan:
<http://sweetgum.nybg.org/science/ih/herbarium-list/?AddPhysCountry=Pakistan>
3. Web site that will include several of the items mentioned, starting in December, <https://biodiversitysharing.org/>. It is being developed by Barkworth but her travel in 2019 made it difficult to do more than prepare stuff offline. She will start posting the material in December.