

Developing Digital Botanical Resources for in Pakistan

Mary E. Barkworth (Presenter), Mushtaq Ahmad, Mudassir Asrar, Raza Bhatti, Neil Cobb, Lubna Fareed, Shahid Jamil, Shakeel Khaskheli, Rabia Memon, Abdur Rashid, Amir Sultan, Zahid Ullah



HEC, PSF

Herbarium digitization effort

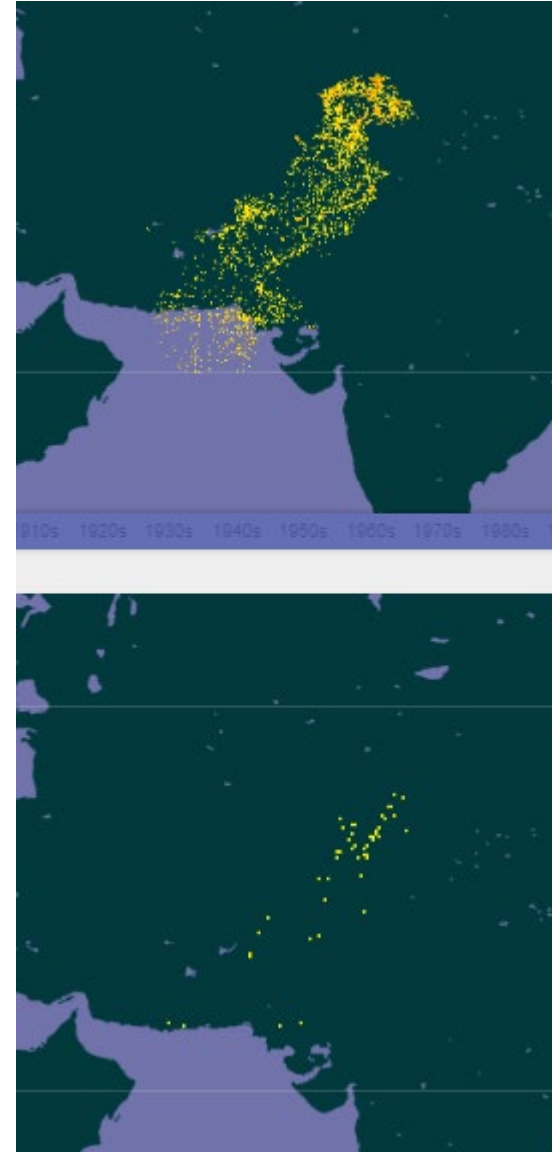
- 2014
 - Some presentations
 - OpenHerbarium and OpenZooMuseum
 - Build nomenclatural backbone
- 2016
 - More of same

Impediments

- Unreliable
 - Electricity
 - Internet
- Lack of software
- Cost of participation
 - Computers
 - People
 - Training
 - Barcodes

Why digitization?

- Make herbarium known
- Make researchers known
- Affordable, worthwhile research
- Tools for teaching and training
- National pride



GBIF FOR
PAKISTAN,
2016

GBIF FROM
PAKISTAN,
2016

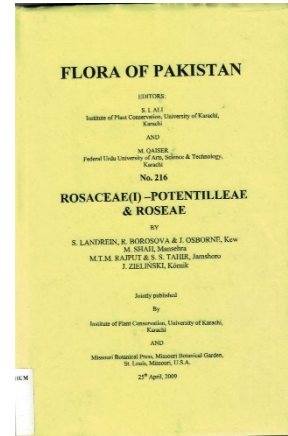
Another Goal: Improve infrastructure



DICHOTOMOUS KEYS

- From FoPK
- Modifying/replacing easy
- Link to OpenHerbarium – images, maps

Key for	Link
Tragus	https://openherbarium.org/taxa/index.php?taxon=Tragus

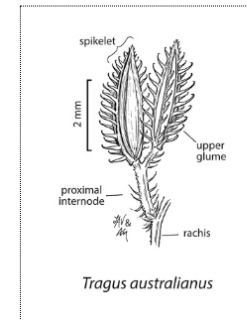


Tropicos

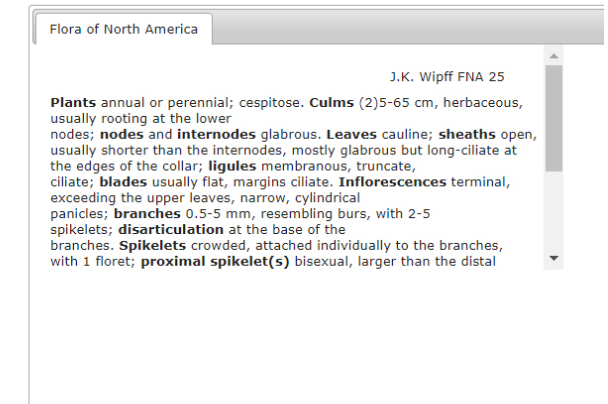


PAGES

Tragus spp.
Family: Poaceae



Tragus australianus
Linda Ann Vorobik and Annaliese Miller, Illustrators



2017, 2018 Biodiversity Information Fund for Asia

2018 Jan 1

- GBIF: No plant data from Pakistan
- [OpenHerbarium](#)
 - Herbaria 4
 - Records <50
- [Index herbariorum](#)
 - Herbaria 17
 - Total specimens 688,300
- Interactive access to Flora of Pakistan
 - [Keys](#) <20
 - [Citations](#) 31,635
 - Descriptions no count (few)

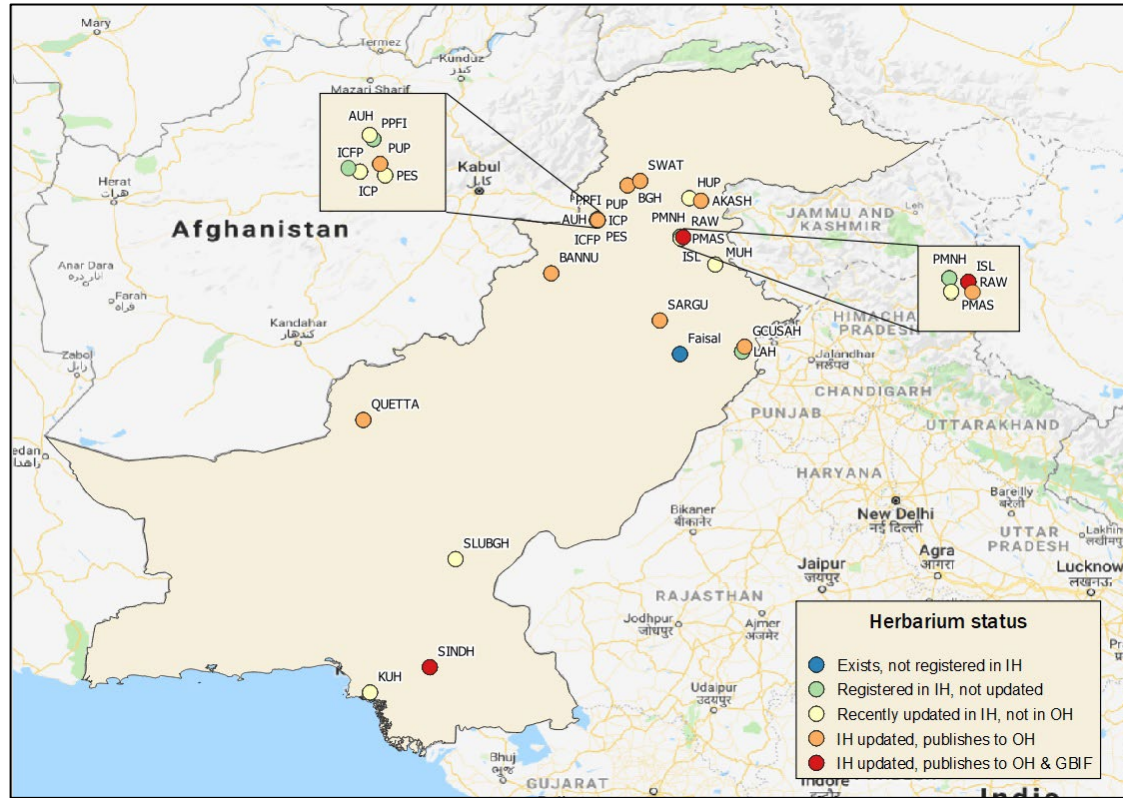
2018

- [Quaid-i-Azam received award](#)
 - 30,000 georeferenced records
 - Data papers
- Pakistani Govt. Funded presentations and workshops
 - Peshawar, Chitral, Sindh Jamshoro, Lahore

2019

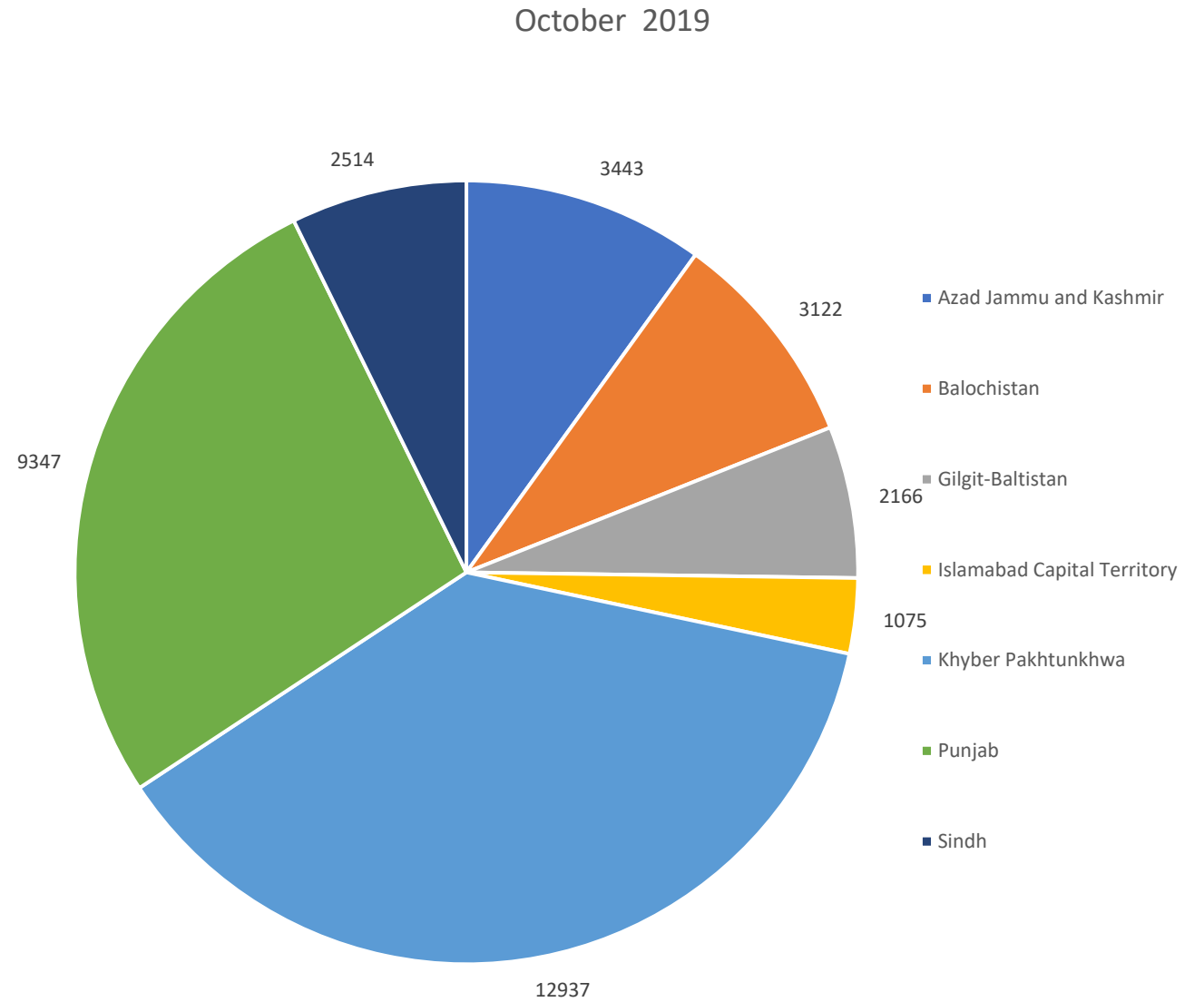
- [Quaid-i-Azam received award](#)
 - 14,500 more georeferenced records
 - Pamphlet on GBIF

October, 2019 – Summary



- Herbaria
 - Publishing data to GBIF +4
 - In Index Herbariorum (IH) +8
 - In OpenHerbarium (OH) +8
 - IH data updated since 2015 +8
- Specimen estimate(IH) -23,350
- Specimen records (OH) +34,859
- Keys in KeyBase +320

Geographic origin of specimens

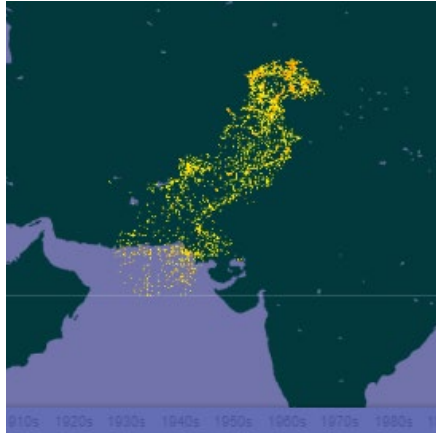


Change approach

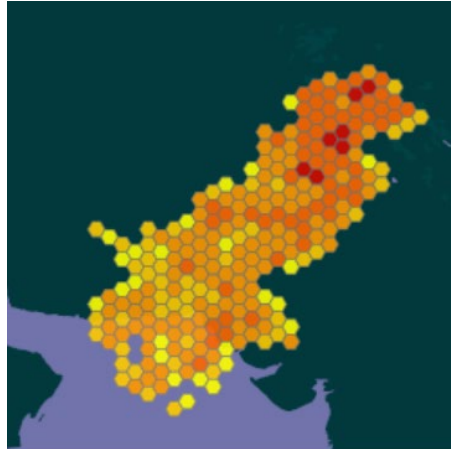
- Workshops
 - Small
 - Focused
- Doing stuff
 - Answering needs
 - Develop leaders
- Encourage involvement



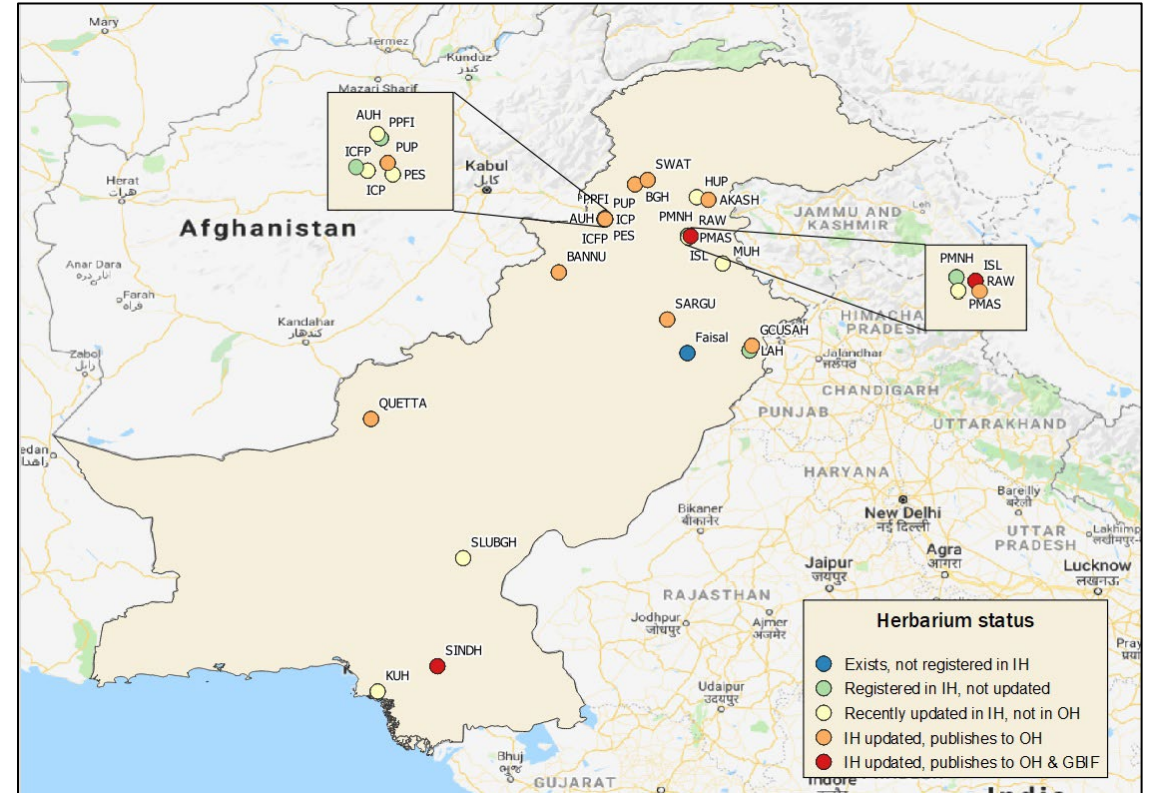
Noteworthy progress – always room for more



2016



2019



47% increase in herbaria

Taxonomy is dynamic, beautiful,
fascinating, frustrating and challenging,
all at the same time.

Tod Stuessy

cited by Zahid Ullah on [Facebook page](#) for Pakistan Society of Plant Taxonomists

Too often regarded as static, settled, and
authoritarian – NOT just in Pakistan

Developing resources: what resources?

SPECIMENS

- Why
- How
- Label
- Database
 - Build
 - Clean
 - Use

KEYS

- How
- Post

IMAGES

INSTRUCTIONS

- Local languages
- Local examples

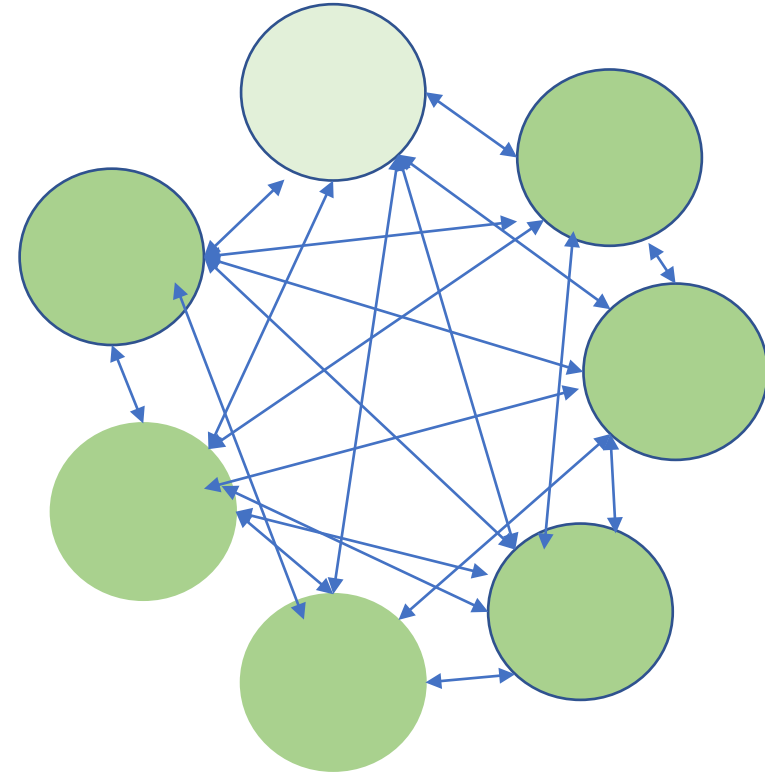
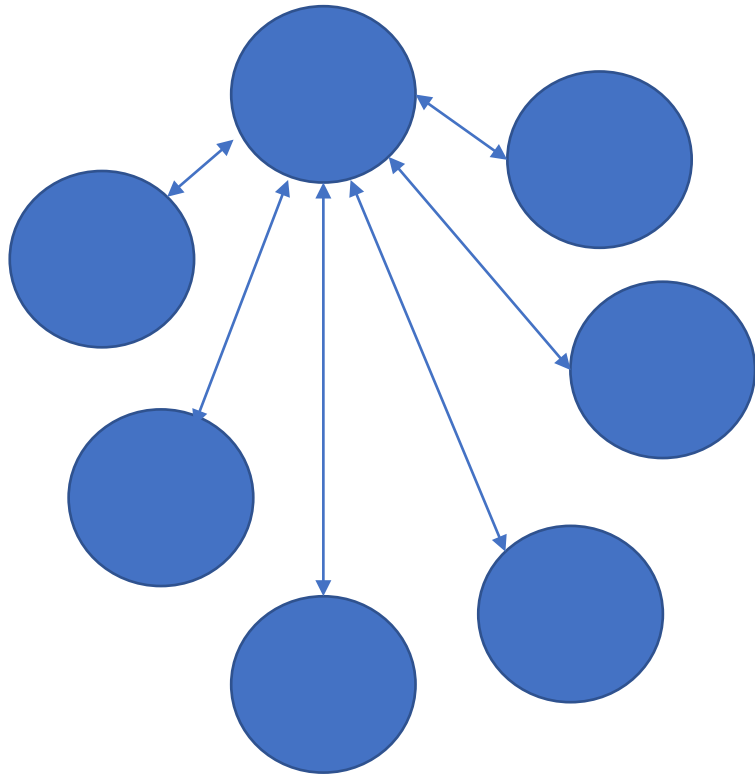
KEYS & DESCRIPTIONS

- Local languages
- Regionalize

ANNUAL CONFERENCE

- Registration fee
- Focus

Developing a Digital Biodiversity Infrastructure in Pakistan



How?

Thank you



Botanists in Pakistan



GBIF
Biodiversity
Fund for Asia
Ben Brandt
Evin Dunn
Neil Cobb

