Draft Report of the 22nd Meeting of the World Flora Online Council

Forth Worth, 21 March 2024

The 22nd meeting of the World Flora Online (WFO) Council was held in person and with virtual participation on Thursday 21 March 2024, attended by 34 people (17 in person, 17 online) from 16 countries representing 20 organisations/institutes. The Council meeting was preceded by three days of meetings of the Working Groups (Communications, Taxonomic and Technical). On 22 March there was a workshop to discuss integration of geographic data into WFO, and a mini symposium of talks related to WFO.

Attendance

Adil Güner	Nezahat Gökyiğit Botanik Bahcesi, Istanbul, Turkey
Alan Elliott	Royal Botanic Garden Edinburgh, Edinburgh, UK
Alex Monro	Royal Botanic Gardens, Kew, UK
Andreas Müller[V]	Botanic Garden and Botanical Museum Berlin-Dahlem, Berlin, Germany
Catherine Martin	Missouri Botanical Garden, St Louis, Missouri, USA
Chuck Miller	Missouri Botanical Garden, St Louis, Missouri, USA
Ethan Fried	Leon Levy Native Plant Preserve, Eleuthera, Bahamas
Eve Lucas	Royal Botanic Gardens, Kew, UK
John Brinda	Missouri Botanical Garden, St Louis, Missouri, USA
John Parnell	Trinity College Dublin, Dublin, Ireland
Jordan Teisher	Missouri Botanical Garden, St Louis, Missouri, USA
Lauren Raz	Universidad Nacional de Colombia, Bogotá, Colombia
Lúcia Lohmann[V]	International Association of Plant Taxonomists, Berkley, California, USA
Marc Sosef[V]	Meise Botanic Garden, Meise, Belgium
Marianne Le Roux[V]	South African National Biodiversity Institute (SANBI), Pretoria, South Africa
Mark Watson[V]	Royal Botanic Garden Edinburgh, Edinburgh, UK
Martin Ricker[V]	National Autonomous University of Mexico (UNAM), Mexico City, Mexico
Mauricio Bonifacino[V]	International Association of Plant Taxonomists, Montevideo, Uruguay
Nancy Morin[V]	Flora of North America, California, USA
Nicola Schoenenberger	Conservatoire et Jardin Botaniques, Geneva, Switzerland
Nye Hughes[V]	Associate, Royal Botanic Garden Edinburgh, Edinburgh, UK
Olaf Bánki[V]	Catalogue of Life/Species2000, Leiden, Netherlands
Peter Fritsch	Fort Worth Botanic Garden, Botanical Research Institute of Texas, Texas, USA
Peter Moonlight	Trinity College Dublin, Dublin, Ireland
Peter Wyse Jackson	Missouri Botanical Garden, St Louis, Missouri, USA
Rashad Salimov[V]	Institute of Botany, Baku, Azerbaijan
Raoul Palese	Conservatoire et Jardin Botaniques, Geneva, Switzerland

Rob Turner[V]	Royal Botanic Gardens, Kew, UK
Roger Hyam[V]	Royal Botanic Garden Edinburgh, Edinburgh, UK
Ronell Klopper[V]	South African National Biodiversity Institute (SANBI), Pretoria, South Africa
Thomas Borsch[V]	Botanic Garden and Botanical Museum Berlin-Dahlem, Berlin, Germany
Tony Mast	Missouri Botanical Garden, St Louis, Missouri, USA
Visotheary Ung[V]	Muséum National d'Histoire Naturelle, Paris, France
Walter Berendsohn[V]	Botanic Garden and Botanical Museum Berlin-Dahlem, Berlin, Germany

[V] = virtual

The following is a summary report of the meeting of Council and decisions adopted. Recordings of the meeting, and associated documents and presentations, are available on the WFO OwnCloud online storage, https://cloud.worldfloraonline.org

1. Welcome

Patrick Newman, Chief Executive Officer and President of the Fort Worth Botanic Garden, warmly welcomed the WFO delegates at the start of the meeting, stressing the importance of the work of WFO to the conservation of plants and the value of plants to people's lives.

Council Co-chair Peter Wyse Jackson welcomed all participants, in person and online. Peter WJ thanked Patrick Newman and his team for their generosity and work in hosting the meetings, and Peter Fritsch and Erin Flinchbaugh for their work in the organisation for the week. Each participant then introduced themselves, their organisation and their participation in WFO.

The following draft agenda, with modifications made during the meeting, was adopted:

1. Welcome, introductions and adoption of the draft agenda *Lauren Raz, Mark Watson and Peter Wyse Jackson*
2. Apologies for absence
3. Adoption of the Minutes of the 21st meeting of the WFO Council (Virtual, 13 November 2023)
4. Update on the Global Strategy for Plant Conservation and links to WFO *Peter Wyse Jackson*
5. New WFO Consortium Members
6. Report from the WFO TEN Manager *Alan Elliott*
7. Report from the Taxonomic Working Group *Lauren Raz and Mark Watson*
   Discussion and adoption of recommendations
8. Report from the WFO Gatekeeper *Tony Mast*
9. Report from the Technical Working Group *Chuck Miller and Walter Berendsohn*
   Discussion and adoption of recommendations
10. Report from the Communications Working Group *Nicola Schoenenberger*
    Discussion and adoption of recommendations
11. WFO symposium at the XX International Botanical Congress (IBC), Madrid *Lauren Raz*
12. Report on progress with the WFO Strategic Plan and review of final draft *Peter Wyse Jackson*
13. Update on potential WFO Registration as a NGO *Nicola Schoenenberger*

14. WCVP integration with WFO – progress and future plans *Mark Watson*
15. Review Action Points from the last meeting (other than those covered above)
16. Plans for the 23rd WFO Council meeting (virtual) and 24th WFO Council meeting (in-person)
17. Election of Officers
18. Any Other Business

2. Apologies for absence

Apologies for absence from the meeting were received from Sebsebe Demissew (Ethiopia), Gunter Fischer (USA), Thomas Haavermans (France), and Joe Miller (GBIF, Copenhagen).

3. Adoption of the Report from the 21st meeting of the WFO Council

The Report of the 21st WFO Council meeting, held virtually on 13 November 2023, was adopted with minor corrections, and will be posted on the WFO About Pages.

4. Update on the Global Strategy for Plant Conservation and links to the WFO

Peter Wyse Jackson presented an update on the Global Strategy for Plant Conservation which had been included as an agenda item at the 25th meeting of the Subsidiary Body on Scientific, Technical and Technological Advice of the Convention on Biological Diversity (SBSTTA 25). He noted that a Recommendation on Plant conservation (Recommendation 25/3) had been adopted by the meeting, which met in Nairobi, Kenya (15-19 October 2023). This recommendation is the outcome of the SBSTTA 25's agenda item 3 (d). The recommendation now goes forward for consideration at the CBD's 16th Conference of the Parties, which will be held from 21 October to 1 November 2024 in Cali, Colombia.

SBSTTA 25 recommended that COP 16 adopt a set of 'voluntary complementary actions related to plant conservation', which were reviewed by the meeting, as an update to the Global Strategy for Plant Conservation (GSPC), to support the implementation of the Kunming-Montreal Global Biodiversity Framework. Peter Wyse Jackson pointed out that the adoption of this recommendation was of considerable importance to the World Flora Online, as several plant conservation actions were included of direct relevance to the World Flora Online, most notably the following:

Plant information systems

21 (b) Support the development and use of existing comprehensive, authoritative and accessible expertise and online information systems, documentation and inventories, as well as access to biological collections (e.g. through digitization) at the local, national and international levels, making available to all countries information on their floras and the status of known plant species and associated ecosystems, while ensuring the free, prior and informed consent of indigenous peoples with regard to access to traditional knowledge and taking into consideration the ongoing work and processes carried out under relevant organizations, such as the Food and

Agriculture Organization of the United Nations and its Commission on Genetic Resources for Food and Agriculture.

21 (d) Promote the continuous updating of the World Flora Online, including its identification support tools, information on plant distribution and the updating of regional floras.

Peter Wyse Jackson reminded the meeting that no other similar initiative had been recognised like this for inclusion in the GSPC and said that he believed that this is both an extremely important recognition for the WFO project and a valuable renewal of its mandate amongst the GSPC's priorities. He also noted that the SBSTTA 25 recommendation had expressed its appreciation to the Global Partnership for Plant Conservation, of which the WFO Consortium is a member, for supporting activities related to the development of the voluntary complementary actions related to plant conservation.

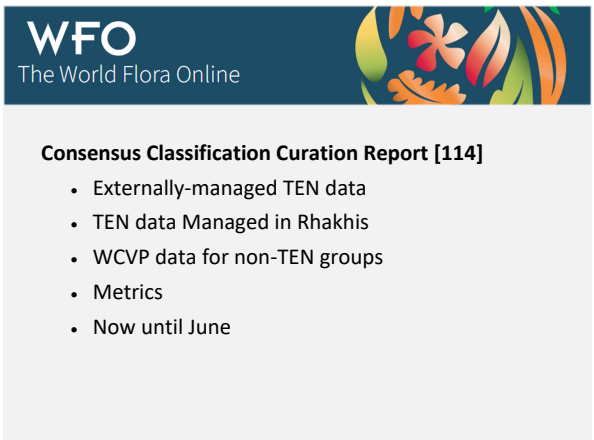
As the recommendation goes forward to the CBD's 16th COP, there is no guarantee that the Complementary Actions included in SBSTTA's recommendation will remain unchanged, but he expects it to stay substantially the same as recommended.

5. New WFO Consortium Members

There have been no new members since the last meeting of the WFO Council. Peter WJ requested that Consortium Members encourage other organisations to join as WFO partners.

6. Report from the WFO TEN Manager

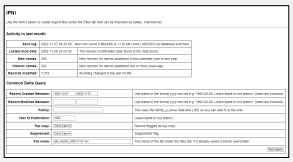
Alan Elliott, WFO TEN Manager, provided an update on progress made since the last meeting, including, developing the Rhakhis software to manage the WFO checklist (taxonomic backbone), improving data in Rhakhis, and activities of TENs. The report below is given in the form of the Powerpoint slides presented at the meeting Alan Elliott, WFO TEN Manager, provided an update on progress made since the last meeting, including, developing the Rhakhis software to manage the WFO checklist (taxonomic backbone), improving data in Rhakhis, and activities of TENs. The report below is given in the form of the Powerpoint slides presented and received (copy available in the WFO File store on OwnCloud).



WFO
The World Flora Online

June to December WFO Plant List release

38,063 additional names



	New names
WCVP-Kew	14,524
BryoNames	2188
IPNI	2109
Ericaceae TEN	154
Compositae TEN	131
Fabaceae TEN	102
Other TENs	28

932,926 records had nomenclatural or classification improvements.

WFO
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Summary of changes between June 2023 & December 2023 snapshots

- **TEN** Updated Family classifications have been provided by TENs for:
- all 232 **Bryophyte** Families (added ca.20k synonyms).
- Additional curation in the 6 **Conifer** Families Araucariaceae, Cephalotaxaceae, Cupressaceae, Pinaceae, Podocarpaceae, & Taxaceae.
- **Asteraceae.** Updated classification for more than 40K names.
- The **Caryophyllales** Network provided classification updates for: 21 of their families.
- There have been updates and improvements for **Begoniaceae**, **Solanaceae** and **Zingiberaceae**.
- Updates to nomenclature and classification for **Apocynaceae** and **Asphodelaceae** (tribe **Aloeae**), **Calophyllaceae**, **Ericaceae** (specifically *Erica*), **Ochnaceae** subfam. **Quiinoideae**, **Putranjivaceae** have all been provided by the members of the TENs working in Rhakhis, the classification management tool of the WFO.

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Summary of changes between June 2023 & December 2023 snapshots

- The following **TEN groups** curate their classification in WCVP, and now follow **WCVP version 11**: Arecaceae, Annonaceae, Cyperaceae, Poaceae, Sapotaceae & Urticaceae.
- 200 default classification have been updated to WCVP version 10 or version 11 depending on which data set was available at the time of update.
- 120 non TEN Families have been updated to follow WCVP version 11 (April 2023).
- Full info on December Release: https://about.worldfloraonline.org/december-2023-release

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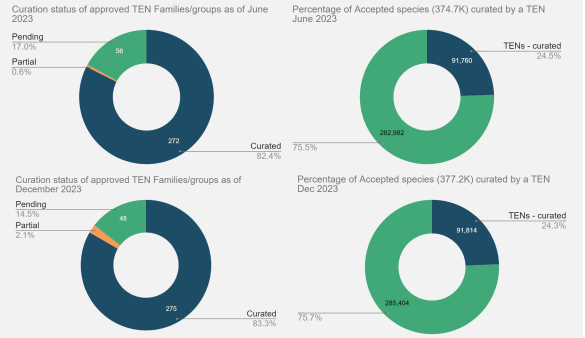
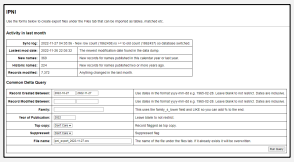


January to March 2023

30,412 additional names



	New Names
WCVP	26735
IPNI	3399
Asteraceaae TEN	119
Papaveraceae TEN	67
Melastomataceae TEN	47
Gesneriaceae TEN	30
Ericaceae TEN	15

492,402 records have had nomenclatural, classification and/or reference improvements.

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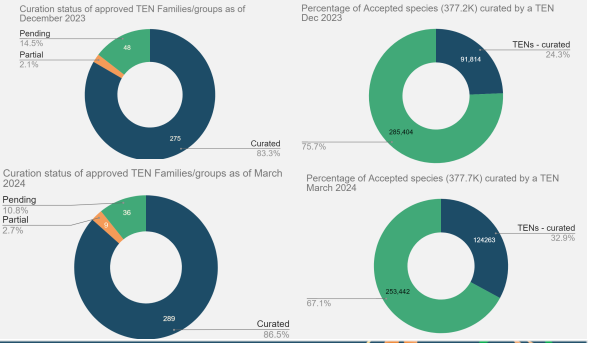

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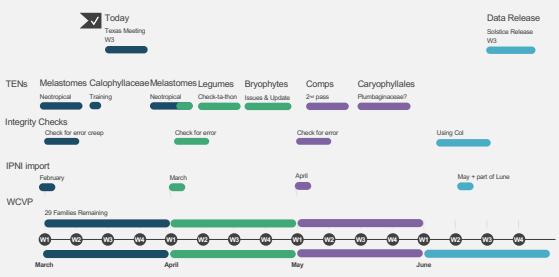
June 2024 release roadmap



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Completed changes for the June 2024 snapshot

- 209 default classifications are WCVP v.12
- 84 are WCVP v.11
- 8 are WCVP v.10
- 29 Angiosperm and all Pteridophyte remain on WCVP 2.0

- **301** of **387** default families (**77%**) updated.
- **140k** of **211k** of accepted species (**66%**) updated.

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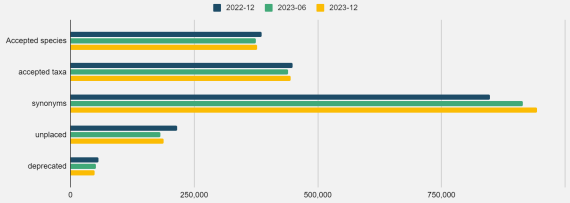
Integrity Checks	Number found
Incorrect character combinations	0
Author contain 'in'	0
Chained Basionyms	426
Duplicate Names	5234
Genus name mismatch	73
Homotypic names should be in the same taxon.	6507
Author string missing unless autonyms or deprecated.	291
Accepted name with no child taxa above rank of species.	827
Names below the rank of species should have a species part to their name.	6
Names of taxa are correct status.	15
Deprecated names in classification	6

WFO
The World Flora Online

Report on unplaced names, deduplication etc.

Comparison of last 3 data releases



	Accepted species	accepted taxa	synonyms	unplaced	deprecated
2022-12	386,165	449,666	848,271	215,521	56,546
2023-06	374,623	439,505	914,471	181,784	51,878
2023-12	377,218	444,878	943,145	188,039	49,096

WFO
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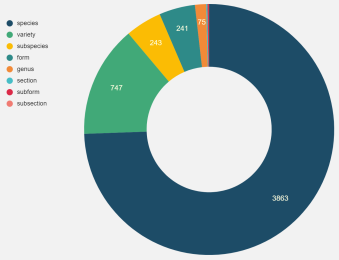
Report on unplaced names, deduplication etc.



Rank	Number
species	3863
variety	747
subspecies	243
form	241
genus	75
section	9
subform	9
subsection	2
Total names	5234
Total duplicates	10,544

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Potential TENs

PPG

Families	Species numbers
51 Families	ca. 13.5k

Who would be the members of the TEN?
The TEN would include all members of the global PPG community, which currently consists of 187 contributors. New members are always welcome.

Who would act as the focal (point of contact)?

The PPG organizing committee presently consists of Joel Nitta (email), Carl Rothfels (email), Harald Schneider (email), and Eric Schuettpelz (email).

What data management system are you using to manage the taxonomy of the Family? The taxonomy is maintained as a CSV file conforming to the Darwin Core (DwC) standard for taxonomic data. Custom R scripts are used to update the taxonomy so as to minimize erroneous entries.

Is your database continuously updated or is it updated periodically? Continuously. The database is continuously updated. We plan to implement semantic versioning starting from version 2.0.

Do you have dedicated resources to maintain your network?

At present, PPG operations are managed via GitHub, with minimal resource requirements.

Do you foresee any obstacles, such as getting permission to make data publicly available that would restrict your ability to share your data? No.

Guidelines for the formulation of the PPG II (and onwards) classification of extant ferns and lycophyte

https://pteridogroup.github.io/guidelines.html

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Potential TENs

Vitaceae (18 Genera)

Vitaceae	Species numbers
18 Genera	1,068

Who would be the members of the TEN?
Possible members

Jun Wen – Smithsonian Institution, US

Limin Lu – IBCAS, China

Betsy Jackes – James Cook University, Australia

Gaurav Parmar - National Botanical Garden, Kathmandu, Nepal

Who would act as the focal (point of contact)?

Anna Trias-Blasi – RBG-Kew

What data management system are you using to manage the taxonomy of the Family? No data management system used. POWO followed. Willing to use Rhakhis.

Is your database continuously updated or is it updated periodically? Continuously. N/A

Do you have dedicated resources to maintain your network?

No

Do you foresee any obstacles, such as getting permission to make data publicly available that would restrict your ability to share your data? No.

Jackes, B.R. & Trias-Blasi, A. 2023. Apocissus Jackes & Trias-Blasi, a new genus in the Vitaceae. Austrobaileya 13: 94–104.

Jackes B.R. & Trias-Blasi, A. 2023. Cissus montana (Lauterb.) Jackes & Trias-Blasi, a newly recognised species of Vitaceae from New Guinea. Austrobaileya 13: 16–19.

Trias-Blasi, A. 2023. Flora of Singapore precursors, 35: New records of Vitaceae in Singapore. Gardens' Bulletin Singapore 75(1): 43–48.

Trias-Blasi et al. 2022. Taxonomic revision of Causonis (vitaceae) in New Guinea. Edinburgh Journal of Botany 79, Article 1895: 1–10.

7. Report from the Taxonomic Working Group

Lauren Raz gave the report from the Taxonomic Working Group, incorporating the Joint Working Group sessions. The report below is given in the form of the Powerpoint slides presented at the meeting (copy available in the WFO File store on OwnCloud).

Report of the Taxonomic Working Group

Fort Worth Botanic Garden, Texas, 18 to 20 March 2024

Working Group Session Attendees (34)

V = virtual, ' = joint session, Tx = Taxonomic WG, Te = Technical WG, Co = Communication WG

Walter **Berendsohn**, Co-chair Te V,1Te	Berlin, Germany
Thomas **Borsch**, Co-chair Ta V,1 Ta	Berlin, Germany
Chuck **Miller**, Co-chair Te 1Te	Missouri, USA
Nicola **Schoenenberger**, Chair Co 1Ta,Co	Geneva, Switzerland
Mark **Watson**, Co-chair Ta V,1Ta	Edinburgh, UK
Alan **Elliott**, TEN Manager 1Ta,Te	Edinburgh, UK
Tony **Mast**, Gatekeeper 1Te	Missouri, USA
Dinesh Kumar **Agrawala** V,1Ta	Kolkata, India
Avishek **Bhattacharjee** V,1Ta	Kolkata, India
Nick **Black** V,1Te	London, UK
John **Brinda** 1Ta, Co	Missouri, USA
Ethan **Fried** 1Te, Co	Eleuthera, Bahamas
Peter **Fritsch** 1Ta,Co	Texas, USA
Adil **Güner** 1Ta,Co	Istanbul, Turkey
Roger **Hyam** V,1Ta	Edinburgh, UK
Sunitha **Katabathuni** V,1Te	Missouri, USA
Ronell **Klopper** V,1Ta	Pretoria, South Africa
Nadja **Korotkova** V,1Ta	Berlin, Germany
Marianne **Le Roux** V,1Te	Pretoria, South Africa
Eve **Lucas** 1Ta,Co	London, UK
Catherine **Martin** 1Co	Missouri, USA
Mulewell **Maswolledza** V,1,Ta	Pretoria, South Africa
Alex **Monro** 1Te	London, UK
Peter **Moonlight** 1Ta,Co	Dublin, Ireland
Nancy **Morin** V,1Ta	Philadelphia, USA
Andreas **Müller** V,1Te	Berlin, Germany
Nicky **Nicolson** V,1	London, UK
Raoul **Palese** 1Te	Geneva, Switzerland
John **Parnell** 1Ta,Co	Dublin, Ireland
Lauren **Raz** 1Ta,Co	Botogá, Colombia
Marc **Sosef** V,1Te	Meise, Belgium
Jordan **Teisher** 1Ta,Co	Missouri, USA
Peter **Wyse Jackson** 1Ta,Co	Missouri, USA
Visotheary **Ung** V,1Te	Paris, France

Report of the Taxonomic Working Group

Fort Worth Botanic Garden, Texas, 18 to 20 March 2024

Joint Discussion Topics

- WFO Portal development update (see Tony Mast's report)
- The Plant List, WFO Mailing Lists, and OwnCloud (see Tony Mast's report)
- Incorporation of new Content (see Tony Mast's report)
- Consensus classification and WFO Plant List update (see Alan Elliott's report) [Task 114]
- Rhakhis software development
- Technical Strategy update
- Integrating ID tools, including PI@ntNet collaboration [Tasks 125, 126, 127]
- WFO at the XX International Botanical Congress, Madrid, July 2024
- WCVP and WFO: a pathway towards integration
- ParseGBIF: filtered and consolidated GBIF occurence data (see Alex Monro's report)
- WFO Draft Strategic Plan

Report of the Taxonomic Working Group

Fort Worth Botanic Garden, Texas, 18 to 20 March 2024

Taxonomic Working Group Discussion Topics

- Revising the family classification and above family classification
- Development of the TEN community
- Promoting WFO as the taxonomic backbone for other systems
- Incorporating identification tools

Report of the Taxonomic Working Group

Fort Worth Botanic Garden, Texas, 18 to 20 March 2024

High level classification [Tasks 115 and 116]

See TEN Manager report for details

- Supra-order classification implemented for bryophytes, pteridophytes and gymnosperms
- This has resulted in an increase in the number of roundels displayed in the WFO Plant List landing page to nine, which are currently displayed in non-systematic order. Displaying in systematic order (or in a phylogenetic tree display) was considered preferable for when resources are available, but not a priority.
- Supra-order classification for angiosperms in process
- *Rhynchotheca* is currently treated in Geraniaceae in WCVP/POWO. It was decided that no change would be recommended to WFO's treatment of this genus in Francoaceae.

Report of the Taxonomic Working Group

Fort Worth Botanic Garden, Texas, 18 to 20 March 2024

TEN Engagement

See TEN Manager report for details of progress with existing TENs

TENs Proposed for approval [Task 13.1]

Taxon	# spp.	TEN Focal Point
Pteridophytes	13,500	PPG Organising Committee
Vitaceae	1,068	Anna Trias-Blasi (Kew, UK)
	TOTAL: 14,568	

Recommendation 1: Council to approve two Taxonomic Expert Networks: Pteridophytes and Vitaceae.

Report of the Taxonomic Working Group

Fort Worth Botanic Garden, Texas, 18 to 20 March 2024

TEN Engagement

See TEN Manager report for details

Nascent TENs in the pipeline/Gap Analysis [Task 13.3]

Araliaceae	Pete Lowry (Missiouri, USA)
Bromeliaceae	Lauren Raz exploring options
Malpighiaceae	Rafael Felipe de Almeida (Goias, Brazil)
Myrtaceae	Eve Lucas (Kew, UK)
Thymeleaceae	Zachary Rogers
Acanthaceae	Eve Lucas exploring options
Ochnaceae	Expanding existing TEN to complete taxonomic coverage
Santalales	Lauren Raz will contact Dan Nickrent
Euphorbiaceae	Outreach ongoing (John Parnell and Alan)
Magnoliaceae	Outreach to GCC Magnolia ongoing
Rubiaceae	Outreach to Rub community ongoing
Sea grasses	Outreach ongoing to IUCN Seagrass Specialist Group

Report of the Taxonomic Working Group

Fort Worth Botanic Garden, Texas, 18 to 20 March 2024

- Wish lists of families needing TENs have been included as linked pages on the About Pages for TENs
- Organisers of family-focussed sessions at IBC will be approached and invited to a WFO side event to promote the formation of new TENs (joint comms-taxonomic WG initiative).
- Opportunities at IBC will be used to engage the TEN community to see how to best support their work [Task 117] (joint comms-taxonomic WG initiative)

Report of the Taxonomic Working Group

Fort Worth Botanic Garden, Texas, 18 to 20 March 2024

Usage of WFO Consensus Classification

Botanic Gardens Conservation International (BGCI)

There are many formal and informal links with BGCI's Global Conservation Consortia, with many using WFO for their taxonomic backbone.

Other GCCs could contribute to the formation of new TENs, e.g. Magnoliaceae

Recommendation 2: Council Co-chairs write to BGCI to promote the usage of WFO by BGCI Global Conservation Consortia, recognising the important reciprocal arrangements.

IUCN

Peter Wyse Jackson has approached the Governor General of IUCN to highlight the issues with the taxonomy of plants used in Red Listing. Members of the Red List Committee continue to put pressure on IUCN to adopt a more appropriate global classification for plants.

Some other salient points from Tax WG Discussions

On vernacular name content

General interest was expressed in pursuing additonal datasets of vernacular names; we do have a substancial backlog of content (see below), but if a low-complexity dataset is offered we can probably ingest it without difficulty. It was mentioned that Euro+Med has a rich vernacular names dataset that is of interest, but it is not easily ingestible into WFO.

On other content generally

Following stock taking of content (Action item 6, reviewed during Tuesday's joint session), the Tax WG deferred discussion of the development of criteria for judging authorisation of potential content providers (Action Item 80) and for the time being will continue to evaluate offers of content on a case by case basis. Once we get through the backlog we can return to this action item.

Report of the Taxonomic Working Group
Fort Worth Botanic Garden, Texas, 18 to 20 March 2024

(Joint Session)

Towards the integration of geographic distribution data

Taking into consideration Target 3 of the draft Strategic Plan

Distribution data will be comprehensive, resolved to at least country-level distributions, supported by and with links to specimen data, and becoming an essential resource for the management of national plant lists.

Recommendation 1: Council to create a task force on geographical distribution data to explore options for integrating and displaying geographic data and report to next in-person council meeting

Report of the Taxonomic Working Group
Fort Worth Botanic Garden, Texas, 18 to 20 March 2024

(Joint Session)

Strengthening ties with NatureServe

Given the role of NatureServe in North America (where it largely replaces IUCN)

In conducting threat assessments and supporting species level and area based conservation programs throughout the continent, it is a potentially valuable ally for WFO and consumer of the taxonomic backbone.

Recommendation 2: Engage NatureServe to consider becoming a WFO Consortium member

Report of the Taxonomic Working Group
Fort Worth Botanic Garden, Texas, 18 to 20 March 2024

(Joint Session)

Collaboration with Pl@ntNet

Pl@ntNet has created a fast, user friendly Plant identification app trained on image data from around the world (but with a heavy European bias).

At the invitation of the WFO Plant ID Task Force, Pierre Bonnet of Pl@ntNet made a presentation about his organization, and the plant ID tools it offers. We discussed potential areas for collaboration with WFO: they can provide ID tools, we can provide the taxonomic backbone (and eventually geographic data), and access through consortium members to additional image data. We can also potentially collaborate on the automated extraction of trait data to improve ID algorithms. On the near horizon we can explore the use of their existing API and potentially integrate a plant ID service within WFO.

Recommendation 3: Engage Pl@ntNet to consider becoming a WFO Consortium member

Report of the Taxonomic Working Group
Fort Worth Botanic Garden, Texas, 18 to 20 March 2024

(Joint Session)

Parsed GBIF data

Alex Monro and collaborators have developed an R script to parse GBIF occurrence data

The parsed data can be used for gap analyses, generating preliminary national lists, cross-checking against WCVP country level data, among other applications, and are preferible to displaying raw, unfiltered GBIF distribution data. To best meet WFO user needs we offer a two-part recommendation.

Recommendation 4: A. Create a WFO branded GBIF hosted portal to display the parsed GBIF occurrence data B. Ingest the parsed GBIF occurrence data directly into the WFO portal to align with the WFO backbone (which is different from GBIF backbone) and generate maps via our GeoServer

Report of the Taxonomic Working Group
Fort Worth Botanic Garden, Texas, 18 to 20 March 2024

Summary of the Joint Working Groups Recommendations to Council

1. Council to create a task force on geographical distribution data to explore options for integrating and displaying geographic data and report to next in-person council meeting
2. Engage NatureServe to consider becoming a WFO Consortium member
3. Engage Pl@ntNet to consider becoming a WFO Consortium member
4. A. Create a WFO branded GBIF hosted portal to display the parsed GBIF occurrence data B. Ingest the parsed GBIF occurrence data directly into the WFO portal to align with the WFO backbone (which is different from GBIF backbone) and generate maps via our GeoServer

Summary of the Taxonomic Working Group Recommendations to Council

1. Council to approve two Taxonomic Expert Networks: Pteridophytes and Vitaceae.
2. Council Co-chairs write to BGCI to promote the usage of WFO by BGCI Global Conservation Consortia, recognising the important reciprocal arrangements.

Report of the Taxonomic Working Group
Fort Worth Botanic Garden, Texas, 18 to 20 March 2024

New Action Item for the Taxonomic WG

#128 Add information to About Pages about floras currently in the WFO portal, including contact person and percentage of the dataset that has been ingested.

Other Action Items are ongoing.

Council decisions on Joint Working Group recommendations

1) Council to create a task force on geographical distribution data to explore options for integrating and displaying geographic data and report to next in-person council meeting **APPROVED**

2) Engage NatureServe to consider becoming a WFO Consortium member **APPROVED**

3) Engage Pl@ntNet to consider becoming a WFO Consortium member **APPROVED**

4) **A.** Create a WFO branded GBIF hosted portal to display the parsed GBIF occurrence data. **B.** Ingest the parsed GBIF occurrence data directly into the WFO portal to align with the WFO backbone (which is different from GBIF backbone) and generate maps via our GeoServer. **APPROVED**

Council decisions on the Taxonomic Working Group recommendations

1) Council to approve two Taxonomic Expert Networks: Pteridophytes and Vitaceae. **APPROVED**

2) Council Co-chairs write to BGCI to promote the usage of WFO by BGCI Global Conservation Consortia, recognising the important reciprocal arrangements. **APPROVED**

8. Report of the WFO Gatekeeper

Tony Mast, the WFO Gatekeeper, gave a summary update on the WFO Portal. The report below is given in the form of the Powerpoint slides presented at the meeting (copy available in the WFO File store on OwnCloud).

World Flora Online

Summary Update on the WFO Portal

Presented by: *Tony Mast, WFO Gatekeeper*

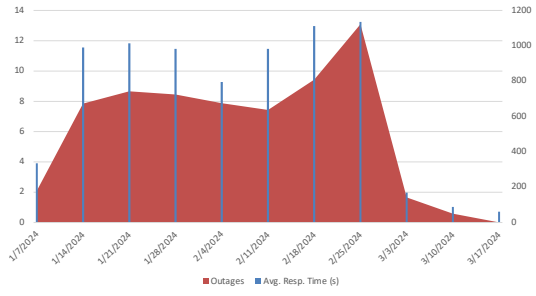
2024 WFO Council Meeting, BRIT, Fort Worth, TX, USA
March 18th, 2024

Performance Issues Timeline

- (Summer 2023-December 2023) – Site running after the move from the Google hosted servers to the MBG servers
- Late December – work on the SSL certificate and site updated with the June 2023 Backbone Data
- Mid-January – Notified and observed slowness and downtimes on the site
  - Weekly working group sessions attempted to review logs – the server reboots during these sessions would give us hours of uptime/improved response time
- Through February – Attempted a variety of fixes, narrowing the issue down to a problem with the SSL Certificate
- 2/26 – Removed the SSL certificate to verify that this was the issue
  - Immediate Response time improvement
  - Site accessible only through HTTP URL not the published and search engine cached HTTPS URL
- 2/26 to 3/1 – Made various unsuccessful attempts to redirect or apply a new SSL certificate
  - The site maintained 100% uptime during this period.
- 3/4 – Found and fixed the issue with, then reapplied, the SSL certificate
- 3/5 – Applied settings within the server to prevent rampant server resource usage and reduce the timeout of stalled page loads
- 3/18 – The site is experiencing sub-second response time with no further unplanned outages

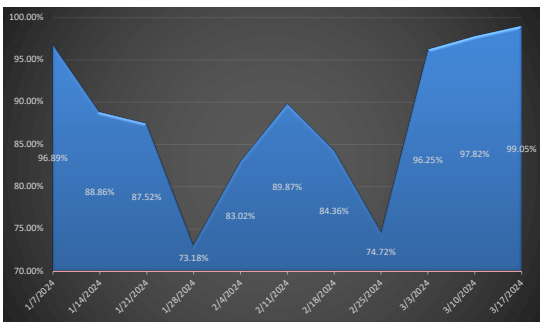
03/21/2024 Summary WFO Portal Report 2

Average Response Time and Outages Jan 2024 to March 2024



03/21/2024 Summary WFO Portal Report 3

Site Uptime

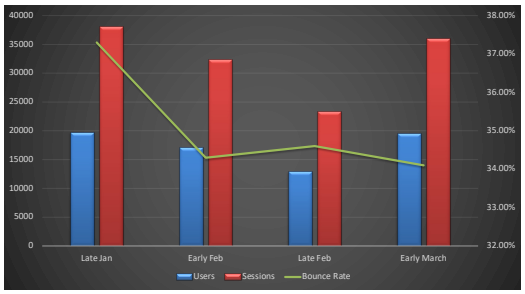


03/21/2024 Summary WFO Portal Report 4

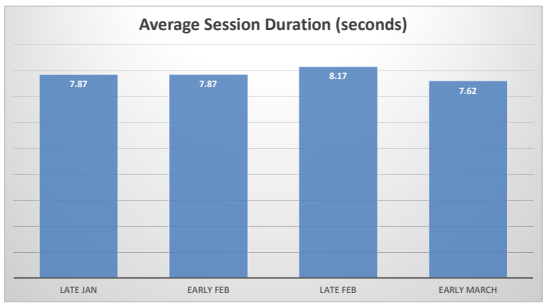
Update to Google Analytics 4

- worldfloraonline.org was updated to GA4 in December 2023 after the June 2023 backbone data
- We began collecting reliable, consistent data during the second week of January 2024 from GA4

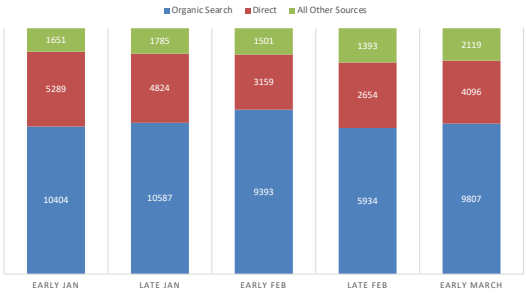
WFO Portal Top Performance Metrics Jan 2024 to March 2024



Average Session Uptime Jan 2024 to March 2024



User Acquisition Jan 2024 to March 2024



WFO Portal

www.worldfloraonline.org

Action Items Update

- Content data updates – Item 6
- WCVP distributions and Geoserver – Item 112
- Portal modifications – Item 48
- Data Downloads page on Portal – Item 108
- Create TEN Network and COMM mailing lists – Item 123

ThePlantList Status

- ThePlantList.org has experienced extended periods of downtime as our focus was on WFO.org
- We have identified resource usage issues and excessive log files that were preventing database usage
- Clearing the log files, increasing resources, scheduling regular reboots have all appeared to increase stability to the site

WFO Active Mailing Lists and Current Address Counts

- WFO-Comm – 11 Addresses
- WFO-Council – 108 Addresses
- WFO-Taxa – 54 Addresses
- WFO-Tech – 31 Addresses
- WFO-TENs – 23 Addresses
- Amendments: tony.mast@mobot.org

OwnCloud

- Our installation of Owncloud recently experienced issues that resulted in the loss of data to the server.
- We restored this data from back up
- We are continuing to monitor the server and are researching changes to permissions to prevent the issue from occurring again

Pending…

- IUCN Data
- Mahgreb Data
- Geoserver back online
- Continued monitoring of ThePlantList.org
- Review of Mailing List members

9. Report of the Technical Working Group

Chuck Miller, co-chair of the Technical Working Group, presented the report of the Technical Working Group. The report below is given in the form of the Powerpoint slides presented at the meeting (copy available in the WFO File store on OwnCloud).

World Flora Online
www.worldfloraonline.org

FORT WORTH BOTANIC GARDEN

World Flora Online Technical Working Group Report to WFO Council

Chuck Miller
Walter Berendsohn

Fort Worth Botanical Garden
Fort Worth, Texas
March 21, 2024

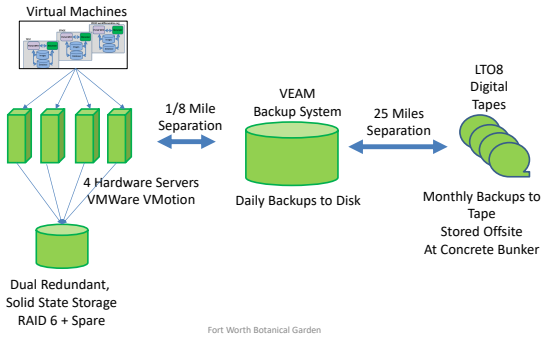
Technical Working Group

Chuck Miller, Co-Chair	Missouri BG
Walter Berendsohn, Co-Chair	Berlin BG and Botanical Museum (Zoom)
Nick Black	RBG Kew (Zoom)
Alan Elliott	RBG Edinburgh
Roger Hyam	RBG Edinburgh (Zoom)
Sunitha Katabathuni	Missouri BG (Zoom)
Marianne LeRoux	South African National Biodiversity Institute (Zoom)
Tony Mast	Missouri BG
Alex Monro	RBG Kew
Andreas Müller	Berlin BG and Botanical Museum (Zoom)
Raoul Palese	Geneve BG
Visotheary Ung	Muséum National d'Histoire Naturelle Paris (Zoom)

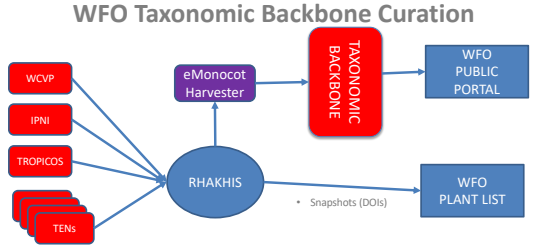
Technical Working Group Progress Since November 2023

- **1 Virtual Meeting**
- **WFO Servers performance issues resolved**
- **OwnCloud files restored from backup**
- **Comm WG & TEN mailing lists added**
- **Updated Portal to Google Analytics 4**
- **Technical Strategy discussions begun**
- **Portal, Backbone and Content Progress**
  - Tony's report
- **Rhakhis, WFO Plant List Progress**
  - Roger's report

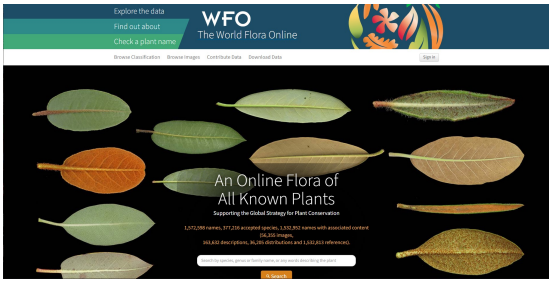
WFO Server Resilience



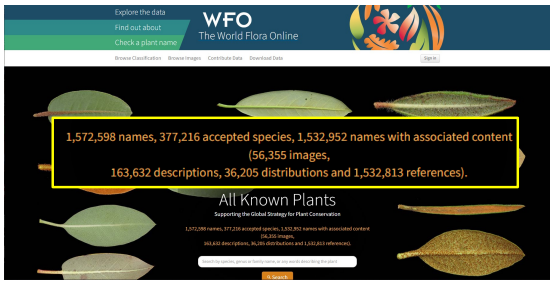
WFO Taxonomic Backbone Curation



WFO Portal (Mar 21, 2024))



WFO Portal (Mar 21, 2024))



Taxonomic Backbone Data

- Portal currently using December 2023 data from Rhakhis

Content Data Update

- All content updated using December 2023 backbone

Current Content Harvested

Brittonia
Central_American_Mosses
Flora d'Afrique Centrale
Flora of Australia
Flora do Brazil 2020
Flora of China
Flora of Colombia
Flora Helvetica
Dendroflora of Hungary
Flora of Levy Preserve (Bahamas)
Flora_Mesoamericana
Flora Neotropica
Flora_of_Nicaragua
Flora of NE US
Flora of North America
Flora of Pakistan
Flora of Panama
Flora of South_Africa
eFlora of Thailand
Flora of E & W Tropical Africa
Flora of Turkey
Flora Zambesiaca
Global Tree Search
Irish Names
IUCN (Latest)
Manual_de_Plantas_de_Costa_Rica
Memoirs NYBG
MBG_Images
Moss_Flora_of_China
Novon_Content

56,355 images -161,632 descriptions - 36,295 distributions

Content Data Pending…

- Flora do Brasil – looking for file, may recontact Eduardo
- Flora of China images metadata - pending
- Flore du Gabon – in process
- Flora of Ireland – looking for file
- Plants of Nepal – dataset in prep
- eFlora of S Africa – available, pending
- eFlora Maghreb – looking for file
- New FNA – looking for files, 2 new vols available
- Solanaceae Source images metadata – pending
- Solanaceae Source update - pending
- Flora Helvetica – French descriptions, pending, Raoul to contact
- eMonocot, PalmWeb – looking for file
- African Plants Database descriptions – pending names matched
- Caryophyllales content from EDIT - pending

Content Data Pending…

- Illustrated Treatments of Korea – Word document
- Flora of Bahamas – looking for file
- Begonia TEN descriptions – pending
- Flora of Central Africa – Expected late 2024
- Illustrated Flora of Turkiye – Additional vols in 2024
- WCVP Distributions

WFO Technical Strategy

- Take a step back and scan the horizon
- **"Black/Cold Start"**
  - Limited meaning: Kick it off again if all hardware was destroyed
  - Challenging meaning: Could someone start from our data but no code or people?
- **Succession planning**
  - Systems
  - People
- **Resource commitments**
  - Systems
  - People
- Nobody can predict the future but we should have a narrative explanation of how we see things evolving.
- Role of subgroup would be to maintain a single, short document that provides this narrative.

WFO Technical Strategy

See Google Doc

Action Items Progress

6. **Add descriptive data – As reported by Chuck**
93. **Conduct stock take of Content and approved providers – Done**
110. **Send request to Pensoft for adding WFO papers to Zenodo WFO Community – Done**
121. **Create a subgroup to develop a Technical Strategic Plan – Tech WG is developing and ongoing.**
123. **Create mailing lists for the TEN network and the Communications Working Group – Done**

Ongoing/Pending Action Items

7. **Create a Harvester/Admin Guide - Ongoing**
15. **Develop Markup Tools for a Toolkit – Deferred at St Louis**
48. **Make modifications to the Portal - Ongoing**
81. **Give percentages of what data have been uploaded from what is published for each source of Content – Pending**
108. **Review guidance on Data Downloads on the WFO website – Pending**

Ongoing/Pending Action Items

109. **Explore use of badges for kind of object on Portal pages – Tied to rebranding of WFO, low priority**
111. **Update Contributor Guides with Rhakhis info – Pending**
  - New Rhakhis data paper may contribute to Backbone contributor guide.
  - Walter is working on name matching process, handling of WFO-IDs could contribute.
112. **Complete Harvesting of WCVP Distributions. Restore Geo Server. – Pending, Delayed.**

Recommendation

1. **Change WFO Strategic Plan, Taxonomic Working Group, Item 23 to replace "database system" with "information system".**

Technical Working Group Next Steps

- **Continue development of Technical Strategy**
- **Complete June Taxonomic Backbone Data Reload on Public Portal**
- **Reload Content Data with June 2024 Backbone**
- **Recover pending Content Data files from William Ulate's data storage**
  - **Continue name matching**
- **Restart communications with Content Providers**
- **Harvest new content with June 2024 Backbone on Public Portal**
- **Continue integration of Rhakhis into Content Harvesting process**
  - **Update Contributor Guides**

Council decisions on the Technical Working Group recommendations

1) Change WFO Strategic Plan, Taxonomic Working Group, Item 23 to replace “database system” with “information system”. **APPROVED**

10. Report from the Communications Working Group

Nicola Schoenenberger, co-chair of the Communications Working Group, presented the report of the Communications Working Group. The report below is given in the form of the Powerpoint slides presented at the meeting (copy available in the WFO File store on OwnCloud).

Communications Working Group Meeting

Attendees: in person- Nicola Schoenenberger, Catherine Martin, Peter Wyse Jackson, Lauren Raz, Eve Lucas, Alex Monro, Adil Güner; online: Burcin Cingay, Ronell Klopper, Nancy Morin, Nicky Nicholson

Goals

Communication doesn’t set goals, but helps the Consortium fulfill its goals.

What aspects of the Strategic Plan can communications support?

We want to drive user community to WFO and make it easier for them to use, and to support national checklists for example.

Who is our audience?

For the next year:

Communications efforts will concentrate on the WFO user community rather than the general public.

Who is our audience?

- Plant Scientists/taxonomists
  - Current and potential TENS
- Conservationists/conservation organizations/multilateral treaties
  - Particularly the Convention of Biological Diversity Community (to be reached via CBD, GSPC national focal points) since the new GSPC explicitly mentions WFO.

What do we want to communicate?

To the scientific community:

- Creation of a consensus taxonomic backbone, push collaboration through data generated at national level, opportunities to share research.
- Latest news from the Council
- Number of accepted species and names. We’ll have to see how often those stats are updated on the platform.
- Advances (e.g. uploading of large datasets, national floras, …)

What do we want to communicate?

To conservationists/conservation organizations:

- WFO provides the taxonomy and related info (BGCI, CITES, IUCN, etc.)
- WFO supports national checklists for projects in conservation and restoration and make the link with the GSPC. However, this functionality is not totally installed. We should communicate advances, next steps. We eventually will be able to say that 90% of the world's plants have distribution info.
- Highlight when species of economic or conservation concern have name changes.
- At/after COP16: have a big announcement that WFO is approved as a conservation action within GSPC.

How can we communicate with our audiences? Social Media

Existing platforms

- WFO Facebook: Inactive since 2020. General public.
- WFO Twitter: Inactive since 2023. Scientific audience.

New opportunities

- WFO LinkedIn

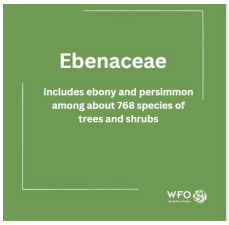
Social Media Examples: Meeting Recap

Social Media Examples: Reintroduction

Social Media Examples: Reintroduction

Social Media Examples: TENS Highlight

Social Media Examples: TENS Highlight



Social Media Examples: TENS Highlight

Social Media Examples: Call to Action for TENS

Social Media Examples: Call to Action for TENS

How can we communicate with our audiences? Building on botanical / conservation meetings

- IBC Madrid (21-27 July 2024)
  - Two-side leaflet highlighting what is WFO it can be used and a call for action recruiting TENS
- CBD COP16 (Oct 21- Nov 1)
  - Include WFO in a GPPC side event
  - Distribute same leaflet produced for IBC
  - Communicate at/after COP that WFO has been adopted as a conservation complementary action in the new GBF.

How can we communicate with our audiences? Building on botanical / conservation meetings

- SBSSTA (Subsidiary Body on Scientific, Technical and Technological Advice of the CBD) meetings. May 13-18th in Kenya.
  - Participate in / organise a side event?
  - Leaflet
- Latin American Botanical Congress, Brazilian Botanical Congress November, Colombian Botanical Congress in November-

How can we communicate with our audiences? Other opportunities

- Press releases
- Regular updates to CBD focal points on WFO progress
- June and December solstices: WFO Plant List releases
- When particular datasets will be included in the WFO portal
  - Stagger content ingestion strategically to be able to make announcements & a contact for each dataset provider to outline, visuals)

How we communicate with diverse audiences: considering multilingualism

- For local dissemination: consortium members are invited to help with translations.
- It is symbolically important to have at least some of the content translated and individual institutions can offer to help translate.
- Main portal content to be translated into six UN languages on the portal.
- Multilingual content (descriptions) can also be more actively solicited.

Questions for Technical Working Group

- Is the web portal able to display/support translated content?
- Is it possible to make the site's stories more prominently featured on the website? (Adding a tab on the home page)

Questions for Taxonomic Working Group

- How to generate the number of new species uploaded to WFO and what is the lag time between getting the info and distributing it.
- What important dates in the coming year should we be aware of?

What does the working group need from WFO?

- A validated strategic plan
- An updated document on use cases
- Calendar of WFO-related events
- Commitments from consortia members to disseminate info through their comms staff ->Allows communications to reach a wider network of journalists.
  - We can provide a template
- Eventual changes to the portal to improve communications (for example making "Stories" easier to find or sharable).

Action Items

1. Develop a timetable of WFO-related events for the year.
2. Invite WFO consortium members to assist with translation of materials in other languages because we don't have resources for translation. The priority is the 6 UN languages: Arabic, Russian, French, Chinese, Spanish and English. (The alternative is Google Translate).
3. Inquire about multilingual capabilities of the current website.
4. Initiate a review of the website to see what improvements can be made from a communication perspective. Provide recommendations for improvements.
5. Develop leaflets for distribution at IBC and translate them (Geneva will be able to pay for producing, printing, and shipping).

Recommendations to the Council

1. The communications Working Group will liaise with the Technical Working Group in order to set up a schedule for publication of new content on WFO webpage (Stories) so that we can coordinate related (social) media communications.
2. Consortium members will be encouraged to include a communications professional from their institutions in the Communications Working Group.
3. Communications actions targeting the general WFO user community (rather than the taxonomic community or the general public) will be prioritized this year.

Thank You

Questions?

The Communications Working Group needs the following to move forward:

- a validated strategic plan
- an updated document on use cases

- calendar of WFO-related events
- commitments from consortia members to disseminate info through their comms staff. Relying on their wider network of journalists. There needs to be some benefit for them to do this. Suggestion to make a banner that say "Member of the World Flora Online Consortium" that institutions can take to events and post on their stands.
- eventual changes to the portal to improve communications (for example making "Stories" easier to find or sharable).

Action items for the Communications Working Group:

1. Develop a timetable of WFO-related events for the year.
2. Invite WFO consortium members to assist with translation of materials in other languages because we don't have resources for translation. The priority is the 6 UN languages: Arabic, Russian, French, Chinese, Spanish and English. (The alternative is Google Translate).
3. Inquire about multilingual capabilities of the current website.
4. Initiate a review of the website to see what improvements can be made from a communication perspective. Provide recommendations for improvements.
5. Develop leaflets for distribution at IBC and translate them (Geneva will be able to pay for producing, printing, and shipping).

Council decisions on the Communications Working Group recommendations

1) The communications Working Group will liaise with the Technical Working Group in order to set up a schedule for publication of new content on WFO webpage (Stories) so that we can coordinate related (social) media communications. **APPROVED**

2) Consortium members will be encouraged to include a communications professional from their institutions in the Communications Working Group. **APPROVED**

3) Communications actions targeting the general WFO user community (rather than the taxonomic community or the general public) will be prioritized this year. **APPROVED**

11. WFO Symposium at XX International Botanical Congress (IBC), Madrid, July 2024

Lauren Raz updated the meeting on the developments of the WFO Symposium at IBC, which has been accepted. There will be six presentations covering a broad range of WFO-related subjects, chaired by the Council Co-chairs. These are:

The phylogeny to classification gap at genus and species levels to obtain the best possible taxonomic knowledge in the Caryophyllales TEN. Nadja Korotkova and Thomas Borsch Botanic Garden and Botanical Museum Berlin, Dahlem Centre of Plant Science (DCPS), Berlin, Germany.

Integrating taxonomic and floristic data into a global perspective: The case of the South African flora. Marianne Le Roux South African National Biodiversity Institute (SANBI), Pretoria, Gauteng, South Africa

Electronic tools and social networks: resolving names and integrating newly described taxa in developing a global consensus classification for land plants. Alan Elliott Royal Botanic Garden Edinburgh

Consensus classifications are crucial for conservation: How CITES utilises checklists, Ronell R Klopper South African National Biodiversity Institute (SANBI), Pretoria, Gauteng, South Africa

Catalogue of Life and the need for a global consensus classification for plants. Olaf Banki, Catalogue of Life, the Netherlands

Catching up on plant diversity: the online flora of México "eFloraMex". Victoria Sosa, Instituto de Ecología, Xalapa, México

In addition, a request has been made for a side event to focus on WFO TENs, existing and potential. The Communications Working Group offered to produce promotional leaflets to hand out to delegates to stimulate TEN recruitment and raise awareness of WFO. These would be in Spanish, French and English, with Consortium members helping with translations. Geneva generously offered to cover the cost of production and printing of the leaflets.

Lauren Raz and Thomas Borsch have arranged with TAXON for the IBC Symposium presentations, along with other WFO relevant presentations, to be published as a series of papers.

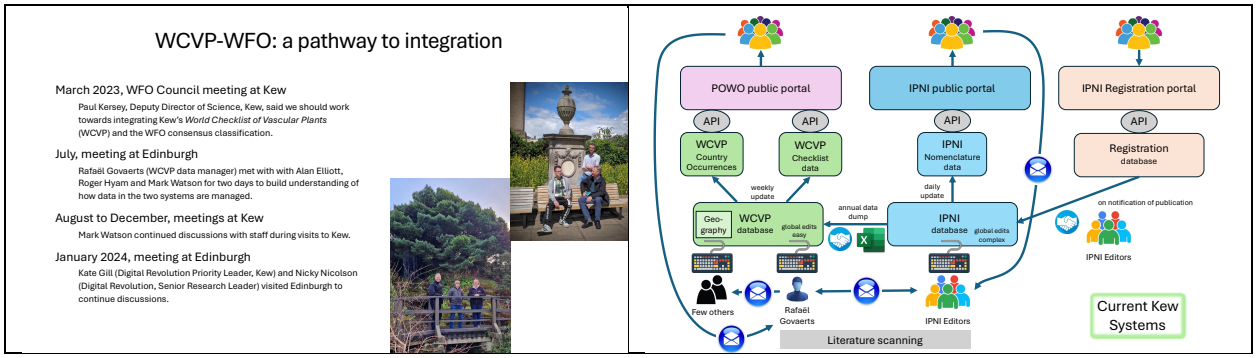
12. Report on progress with the WFO Strategic Plan

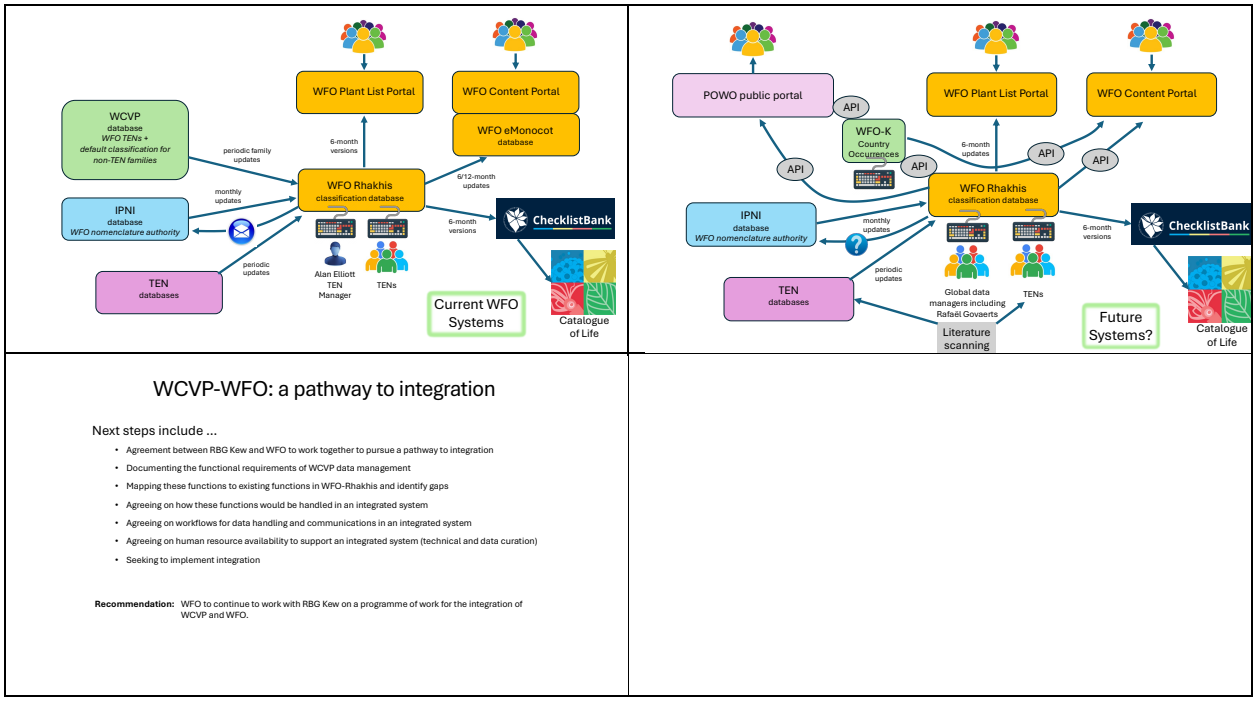
Peter Wyse Jackson presented the final draft Strategic Plan, which included updates following suggestions received since the November virtual meeting of Council. The final draft was accepted as the WFO Strategic Plan for the period up to 2030, see Annex 1.

13. Update on WFO registration as a NGO

Nicola Schoenenberger presented the possibility of registering WFO as an NGO under Swiss Law. Registering as an Association was considered most appropriate, and a set of draft statutes of Association was considered, based the WFO MoU signed by Consortium partners. Nicola reviewed some of the conditions the organization would have to fulfill in order to register in the country, mostly regarding governance. Council recognises the benefits of establishing WFO as a legal entity and decided to pursue the option of being registered as an Association under Swiss Law. It was agreed that the statutes be further developed by Nicola in consultation with a lawyer, with a view to keeping the statutes as simple as possible and presenting a final draft at the next in-person meeting of Council for decision on adoption.

14. WCVP integration with WFO





Mark Watson reported on the discussions between the staff of RBGs Kew and Edinburgh on the possible integration of the World Checklist of Vascular Plants (WCVP) and WFO, which have been ongoing since the last in person meeting of Council in March 2023. WCVP provides the taxonomy used by Plants of the World Online (POWO). WCVP also provides country-level distribution and other trait data to POWO. There is no real-time link between data in IPNI and WCVP, although WCVP uses an annual export of updates from IPNI to fill in missing data.

WFO Rhakhis uses IPNI as a authority source for nomenclature, integrating updates from IPNI on a monthly basis. Rhakhis uses WCVP as the default classification for families without a TEN. Twice a year Rhakhis generates a WFO Plant List for publication on the WFO portal and for Checklist Bank.

It was agreed to form a WFO Task Group to continue the discussions on pursuing a pathway to integration, documenting functional requirements of WCVP data management, mapping those functions to WFO-Rhakhis and identify gaps, agreeing on workflows, and agreeing on human resource availability to carry out this work.

15. Review of Action Points from the last meeting

Action Points not already covered in the meeting were reviewed and updated (see Annex 2)

16. Plans for the 23rd meeting of Council

The 23rd meeting of Council will be held virtually in September/October 2024. The generous offer by Ethan Fried to host the 24th meeting of Council in person at the Leon Levy Native Plant Preserve on Eleuthera, The Bahamas, in February 2025 was accepted.

17. Election of Officers

The term of office for Officers is considered to be from one in-person meeting to the next.

Peter Wyse Jackson, Lauren Raz and Mark Watson indicated that they would be happy to continue as a Council Co-chairs. Peter Wyse Jackson said that would be happy to continue providing WFO secretariat support (maintaining registry of MoUs, etc.). There being no other proposals, these were accepted by the Council.

Thomas Borsch and Mark Watson accepted renewal of their terms as co-chairs of the Taxonomic Working Group, and Technical Working Group will continue under the leadership of Walter Berendsohn and Chuck Miller. Nicola Schoenenberger, Catherine Martin and Thomas Haavermans were appointed as co-chairs of the Communications Working Group.

18. Any Other Business

Building on the experience of working with WCVP country-level distribution data, there was a wider discussion on how to include geographic data in WFO. It was agreed to establish a Geographic Distribution Task Force, under the leadership of Alex Monro, as a think tank to come up with ideas.

Annex 1

World Flora Online, Strategic Plan 2022-2030

Adopted by the WFO Council on 22 March, 2024

Introduction

A widely accessible flora of all known plant species has been recognized as a fundamental requirement for plant conservation. The development of the World Flora Online (WFO) was therefore stimulated and encouraged by the Global Strategy for Plant Conservation (GSPC), first in 2002 when the GSPC was adopted by the United Nations Convention on Biological Diversity (CBD), and subsequently when it was updated in 2010.

The first WFO-related target was included in the 2002-2010 GSPC: to develop "*a widely accessible working list of known plant species as a step towards a complete world flora*". This target was achieved at the end of 2010, with the publication of 'The Plant List' (TPL, www.plantlist.org). Drawing from knowledge gained in producing TPL, WFO was projected to meet the updated first target of the 2010-2020 GSPC: to produce "*an online flora of all known plants*".

The WFO portal (www.worldfloraonline.org) was launched in 2017 at the 19th International Botanical Congress, in Shenzhen, and the first edition of the WFO Plant List (replacing the outdated TPL) was published in May 2021 (www.wfoplantlist.org). Of all GSPC targets, only Target 1 had been achieved, through the work of WFO.

The scope of the GSPC is as defined by the Decisions of the CBD, to include all vascular plants and other well-known plant groups, such as bryophytes. During the upcoming period (up to 2030) it is not proposed to broaden the WFO to include other groups, such as algae or fungi.

Alignment with the Montreal-Kunming Global Biodiversity Framework, 2022

The Montreal-Kunming Global Biodiversity Framework (GBF) was adopted by the 15th Conference of the Parties to the CDB (December, 2022)[1]. Of GBF's 23 targets, six explicitly require species level information and so have particular relevance for WFO: Target 4 (threatened species), 5 (harvesting and trade of wild species), 6 (alien species), 9 (management and use of wild species), 10 (sustainable use of managed areas), and 21 (biodiversity information).

As an open access, comprehensive and authoritative resource of global and national expertise, WFO includes documentation and inventories for countries on floras and the status of known plant species and natural habitats, and as the authoritative global resource for up-to-date information on accepted names for plant species, WFO will support monitoring and reporting of these targets. In particular, WFO

[1] https://www.cbd.int/doc/c/179e/aecb/592f67904bf07dca7d0971da/cop-15-l-26-en.pdf

will make a significant contribution to the achievement of Target 21: to "*Ensure that the best available data, information and knowledge, are accessible to decision makers, practitioners and the public to guide effective and equitable governance, integrated and participatory management of biodiversity, and to strengthen communication, awareness-raising, education, monitoring, research and knowledge management and, also in this context, traditional knowledge, innovations, practices and technologies of indigenous peoples and local communities should only be accessed with their free, prior and informed consent, in accordance with national legislation*".

This GBF target for 2030 provides an entry point for the WFO to contribute to the achievement of the GBF objectives to ensure that the best available data are accessible to support biodiversity conservation at all levels.

In 2023, the CBD's Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) at its Twenty-fifth meeting held in Nairobi, 15–19 October 2023 adopted a recommendation on the future of the Global Strategy for Plant Conservation for the period up to 2030, linked to the GEF targets. A set of draft 'complementary actions in plant conservation', aligned with the GBF targets were recommended for adoption by the CBD's upcoming COP in October 2024.

The Complementary Actions related to Plant Information Systems for the updated GSPC include the following:

21 (b) Support the development and use of existing comprehensive, authoritative and accessible expertise and online information systems, documentation and inventories, as well as access to biological collections (e.g. through digitization) at the local, national and international levels, making available to all countries information on their floras and the status of known plant species and associated ecosystems, while ensuring the free, prior and informed consent of indigenous peoples with regard to access to traditional knowledge and taking into consideration the ongoing work and processes carried out under relevant organizations, such as the Food and Agriculture Organization of the United Nations and its Commission on Genetic Resources for Food and Agriculture.

21 (c) Explore ways to consider various knowledge systems, including traditional knowledge, innovations, practices and technologies, to support plant conservation action.

21 (d) Promote the continuous updating of the World Flora Online, including its identification support tools, information on plant distribution and the updating of regional floras.

Action 21(d) in particular provides a powerful specific mandate for the WFO to continue its work and contribute to the achievement of the GBF.

The development of the WFO Vision

When the WFO project was launched in 2012 it clearly defined its vision. It was agreed that it was not intended to be a critical, monographic revision of each of the world's plant species. Nor was it envisioned to be a detailed local flora with vouchered distributional data. It was proposed to be a synoptic flora with a defined, descriptive data set containing largely pre-existing information on the

world's plant species. Limited resources, by and large, make it unrealistic to develop new or collated descriptions. Although these may be required in the future, it has been necessary first to collect and mobilise existing data. Once the foundation is available, new technologies can be employed to analyse, manipulate, and enhance WFO. In the vision outlined for the period up to 2020, it was recognized that in the future it would be important to explore mechanisms, including capacity-building at national level, to fill the gaps in existing knowledge. This aspiration remains a part of the ongoing vision of the WFO.

The data infrastructure of the WFO was determined to ensure that it could be a framework capable of accommodating regional floristic data (at national or lower level) to provide information in both regional and global contexts. Hoped for enhancements included more complete synonymy; geographic distributions to at least country level, drawing on national floras, checklists, and monographs; habitat data; identification tools, principally interactive keys, images, and descriptions; conservation status; and other enhancements as practicable, e.g., vernacular names. Much of these data already exist in digital or printed format, and they have been used to populate WFO. Such work needs to continue in the period following 2020.

The vision for the WFO recognizes that the project is much more than an information technology project, and plant taxonomists have and will continue to play a crucial role in:

- resolving nomenclature and taxonomy to ensure that the WFO can include as close as possible to a 'consensus classification' of the world's plants, and;
- generating new floristic and monographic work to update old information and fill in the considerable gaps that exist.

The primary technical challenge of the WFO has been to develop an open and transparent, web-based data collection, manipulation, and storage facility. Secondly, the system must provide open access to this accumulated data resource for the scientific community and other users of botanical data. The system is required to support research and conservation as an authoritative information system to facilitate the implementation of the CBD, and in particular, the elements related to plant conservation.

The WFO Consortium sees the WFO as a critical resource for the conservation and sustainable use of plants by providing the information necessary to establish a baseline on the plant diversity of each region or country. WFO is also needed to identify the organisms under study, evaluate their distributions, and help improve both regional and global estimates of status of threatened or endangered taxa supporting their long term survival. WFO's open access website provides free access to the recorded information on the world's plants and allows for data to be extracted and used to support a wide variety of purposes, particularly related to facilitating plant conservation planning and action.

While the WFO already provides a valuable and comprehensive baseline on the world's plants, further work is required to ensure that accessibility is improved to meet the needs of users, including verification of the correct names and synonymy, up-to-date geographic distributional information, comprehensive descriptions, verified images (as far as possible and feasible) and conservation assessments. Furthermore, the plant diversity of some countries, regions, and of specific plant groups is still inadequately known and understood.

WFO and Taxonomic Expert Networks (TENs)

The World Flora Online (WFO) Consortium has welcomed engagement by the global botanical community to create and join the Taxonomic Expert Networks (TENs) to help improve the WFO taxonomic backbone and curate a global consensus classification. The WFO Taxonomic Backbone aims to include all effectively published plant names, with every name being assigned a unique WFO identifier, regardless of its taxonomic and nomenclatural status. From the Taxonomic Backbone a single classification of taxon names and their synonyms is built to which descriptions, images, geographic distributions and other content can be attached. TENs are encouraged to adopt a Family level approach in curation of the Taxonomic Backbone but recognise that in some cases a different taxonomic rank may be more appropriate depending on the size of the group in question.

The WFO Strategic Plan

Vision

The ongoing vision of the WFO will therefore be to contribute towards ensuring that access to comprehensive and authoritative global and national expertise, and online information systems, documentation and inventories is available in all countries on floras and the status of known plant species and natural habitats.

For the period 2023 to 2030, the specific elements of the Vision of the WFO Strategic Plan are as follows:

- To build on the two decades of endeavor on the WFO to provide the most comprehensive and accurate knowledge base on the plants of the world;
- To ensure that the data content of the WFO continues to be enhanced, improved and substantially increased, and that new data (such as on recently discovered species) can be added in a timely and sustainable manner;
- To improve and develop the means by which data are stored and accessible so that they will be increasingly usable and available for plant conservation planners and practitioners;
- To develop and refine the means and efficiency by which data are added to the WFO;
- To provide an increasingly authoritative consensus classification on the world's plants;
- To provide a platform for plant taxonomists to share their expert knowledge on the diversity of the world's plant species;
- To promote the recognition of plant taxonomy as an innovative field of science, appreciating continuing methodological innovations (e.g. integrative morphological and molecular approaches to species delimitation) that lead to the generation of quality information on plant species;
- To be reactive to the needs of users for additional information on plants, providing an accessible platform for existing and novel data (for example, on vernacular names and other cultural knowledge of plants);
- To improve and enhance the user interface so that WFO data will increasingly be used to support plant conservation planning and actions;
- To continue to build the global cooperative WFO community and build capacity for plant taxonomy and floristics throughout the world;

- To safeguard and enhance the cooperative and collaborative ethos of the WFO organization whereby shared ownership of the project is recognized as a fundamental part of its ongoing operations, focus and governance.

Mission

The Mission of WFO is to support the conservation, restoration and sustainable use of plant diversity and natural habitats by collating, compiling, developing, organizing, make accessible and disseminating accurate and up-to-date scientific information on all known plant species of the world, and to ensure that this information is available using FAIR principles.

Objectives

1. WFO will be strengthened as the best global source of data on the world's plants, supporting the conservation of plant diversity worldwide.
2. Increase the coverage and scope of WFO data to increase its utility for ensuring the conservation and sustainable use of global plant resources.
3. Enhance the relevance of WFO to governments, plant conservationists, scientists, decision makers and other stakeholders.
4. Strengthen the governance and inclusiveness of WFO.
5. Improve and invest in the software systems that allow and improve the management and dissemination of WFO data.
6. Improve the resilience and sustainability of WFO.
7. Strengthen global capacity for biodiversity documentation and contribution to WFO.

Targets

Coverage and scope

1. By 2030, taxonomic coverage by the TENs will be comprehensive, covering over 80% of all known plant species.
2. Descriptive Content of WFO will grow to include information from over 90% of all known plant species, and comprehensive for every region of the world. Indicators will be included as to whether the occurrence of species at national levels represents the native distribution of the species, as well as when they are naturalized or invasive.
3. Distribution data will be comprehensive, resolved to at least country-level distributions, supported by and with links to specimen data, and becoming an essential resource for the management of national plant lists.

Relevance

4. WFO will be recognized as the best source of global checklist data, providing the plant content for Catalogue of Life/GBIF, and be the discovery portal for biodiversity data.
5. WFO will contribute to the development, achievement and monitoring of goals of the Montreal-Kunming Global Biodiversity Framework 2022, and GSPC's plant conservation agenda of complementary actions supporting the GBF.

6. WFO will enhance the utility and use of WFO to support plant conservation, and habitat conservation, restoration, and the sustainable use of plant resources, e.g. monitoring of protected areas, food security, and combatting invasive species.

Resourcing WFO development

7. WFO will put in place a multi-year business plan outlining resource needs to achieve its objectives and potential sources.
8. WFO will recognize that the primary long-term source of support for the development and maintenance of WFO will be the members of the WFO Consortium. However, it is accepted that significant financial contributions and support will be required from external sources to allow the achievement of its targets and goals.

Governance and inclusiveness

9. WFO will double the number of Consortium members, to at least 100, with emphasis on the inclusion of research institutions from biodiverse countries.
10. The WFO Council will achieve a balanced diversity at its meetings and within its membership.
11. WFO will seek to increase the diversity of the leadership of TENs.
12. WFO Council will meet regularly, both in-person and virtually.
13. The Memorandum of Understanding will continue to provide the governance document but will be updated as necessary to meet future organizational requirements.
14. The registration of WFO as an international organisation will be agreed by Council .

Resilience and sustainability

15. WFO will recognize that the primary long-term source of support for the development and maintenance of WFO will be the members of the WFO Consortium. However, it is accepted that significant financial contributions and support will be required from external sources to allow the achievement of its targets and goals.
16. WFO will put in place a ten-year business plan outlining resource needs to achieve its objectives and potential funding sources.
17. WFO will strengthen resilience of its informatics architecture by moving off the eMonocot system into a new, modular infrastructure.

Global capacity for biodiversity research

18. WFO will promote collaborative capacity building programs for early career taxonomists, with special emphasis on working with biodiverse countries, focusing on addressing knowledge gaps, and promoting fieldwork and career development.
19. WFO will support and encourage increased activity in collaborative global level taxonomic revisionary studies.
20. WFO will provide a platform of the work of taxonomists to have global impact in field of conservation (e.g. WFO used as the basis for plant classification used in IUCN Red List Assessments

Taxonomic Working Groups

21. The network of Taxonomic Expert Groups (TENs) will be further developed to ensure taxonomic expert coverage of the majority of all plant families by 2030.
22. TENs will develop and curate the most authoritative consensus overview possible of up-to-date information on the plant diversity of the Families or other groups for which they have a mandate to represent for WFO.
23. TENs will manage backbone data using an information system that can provide an output of tabular data format for incorporation into the WFO data management software. Technical Guidelines for Taxonomic Backbone contributors will be available and updated as required.

Taxonomic data that are received from TENs will undergo technical data format checks and subsequently will be incorporated as the update of the taxonomic backbone.

Communications

24. WFO will develop and implement a comprehensive communications plan to achieve:
    - Widespread use of the WFO data by conservation practitioners;
    - Greater engagement with the plant conservation community;
    - further international recognition of the importance of WFO and the data it includes;
    - Efficient reporting on WFO data and its use to support monitoring the achievement of the GSPC and GBF.
    - The use of WFO data in the provision of taxonomic backbones for many conservation-related initiatives and global biodiversity databases;
    - Successful financial and other resource generation.

Annex 2

WFO ACTION ITEMS FROM 22nd COUNCIL MEETING, FORT WORTH, MARCH 2024

#	TASKS	WHO?	WHEN?	COMMENTS
1	**Presentations on WFO.** Take advantage of the meetings we attend to promote the WFO. Presentations to be uploaded to WFO Presentations folder in ownCloud.	All	Standing Item	Recent/next presentations: XX IBC 2024, Madrid, July, WFO symposium accepted, side event requested. Several WFO-related presentations at TDWG-SPNCH conference, Okinawa, September. COP16 in Cali, Colombia. Latin American Botanical Congress, Brazilian Botanical Congress November, Colombian Botanical Congress in November
2	**Update current signatories.** Secretariat to maintain an archive of hard copies of any formal agreements with WFO. List of Consortium members on the WFO website to be updated.	Peter Wyse Jackson	Standing Item	No new members had joined the Consortium since the November 2023 virtual meeting.
3	**Update Social Media.** Keep updating FaceBook, Twitter, etc with news and current information.	Comms Working Group	Standing Item	Send items for social media to Catherine Martin (Missouri BG)
5	**Videos.** Links to videos by partner institutions to be included on WFO Website.	All	Standing Item	Send videos relevant WFO to Alan Elliott(RBG Edinburgh)
6	**Enhance Production Portal with Descriptive Data.** Production portal should be enhanced with descriptive data content, as advised by Taxonomic WG/Council, in order to increase the diversity of content and geographic coverage. Send a tweet as content is loaded to Production.	Tony Mast	Standing Item When ready, Tony Mast will touch base with the intermediary contacts of the Content providers for the next digital resources to bring into the WFO Portal	See Meise Tax WG report for revised priority list for harvesting. • Fl. Trop. East Africa & Fl. Trop. West Africa (Kew) – descriptions divided, need to be combined • IUCN Conservation Status – Pending new Version. • Improve Metadata for Images from Solanaceae & Flora of China - Pending Continue to load remaining and new datasets: • Solanaceae Source – Contacted back to coordinate an updated dataset • NYBG – Harvested all descriptions in

#	TASKS	WHO?	WHEN?	COMMENTS
				Test: NorthEastern US, Neotropica, Brittonia & NYBG Memoirs • Catalogo de las Plantas de Colombia –26K names - harvested. • Australian Floras – First dataset of descriptive data harvested. • Flora of Nepal – No data received. • Illustrated Treatments for Korea - Got a response, coordinating to convert Word documents into structured data • Fl. Helvetica –French descriptions pending. • Flora do Brazil – more descriptions being provided. • eMonocot descriptions (Kew, TBC) –PalmWeb descriptions pending harvesting • New FNA data - Got data and content sample. Issues with Authors format. Reviewed file's DwCA format. Repeated Name Matching process as requested. • African Plants Database – (distributions, ecology, biology) 200K names, 78K taxa. - Pending. • eFloramaghreb.org - 6400 taxa – Pending. • Flora of Ireland – Implementing corrections to Name Matching Report. • Caryophyllales- Harvested Nepenthes taxa. Pending other taxa and all content from EDIT platform.
7	**Create a Harvester administration/operations guide.** The development of a Harvester administration/operation guide should be carried out immediately through testing and collaboration.	Tony Mast	Ongoing	New updates should be included. Created documentation for "Name-Matching" process and made code and SQL Stored Procedures available for Geneva in Github (private MBG-CBI repository)
13	**Taxonomic Expert Networks (TENs)** 1) Encourage proposals of new TENs by contacting potential taxonomic experts and supporting them in the formulation of a TEN.	TEN Manager Alan Elliott	Standing Item	1) TENs approved by Council March 2024: Pteridophytes Vitaceae

#	TASKS	WHO?	WHEN?	COMMENTS
	2) Update and publish the Order/Family coverage/gap analysis on About Pages of WFO website 3) Build on the offer of a Fern TEN to involve wider community opinions 4) Connect with CoL Brassicaceae experts 5) Highlight inactive TENs for consideration of removal 6) Connect with leads on family/order taxonomic symposia at IBC for non-TEN groups [new]			2) Done. Wish list from results for gap analysis for plant families needing TENs published on About Pages. 3) Done. 4) Follow up at IBC at the Brassicaceae symposium. 5) Hypericaceae TEN flagged as of concern. Tax WG decided to await response from the TEN before taking action.
15	**Develop markup Tools for a Toolkit.** Consolidate the Markup Tools being used; develop them to integrate them into a toolkit. - SANBI has developed Markup tools and are available for others to use. Available from GitHub: github.com/rudivs/SpeciesMarkupAddIn	Technical Working Group	Deferred at St Louis	
18	**Save the Dates** of next meetings of Council	Peter Wyse Jackson	23rd Meeting: virtual 3 October 2024. 24th Meeting, in-person February 2025 at Leon Levy Native Plant Preserve, Bahamas	Post the report of the 21st Council Meeting on the WFO website.
33	**Resolve insufficient resources to support:** Software development staffing.	WFO Council	Ongoing	Missouri is committed to providing Tony Mast's role, but has an issue with software development staffing. Rhakhis software developed by Roger Hyam (RBGE).
48	**Make modifications to the Portal** 18. Assess how to provide page hit statistics by data provider. 28. Reveal hidden fields (e.g. Basionym) 29. Enable alternate classifications	Technical Working Group	Ongoing	NB Code changes required 18. Pending 28. Deferred at St. Louis 29. Deferred at St. Louis

#	TASKS	WHO?	WHEN?	COMMENTS
80	**Develop Criteria for judging authorisation of potential Content Providers**	Taxonomic Working Group	Pending (revisit with strategic review)	Criteria (scientific credibility, completeness, substantial contribution, currency, etc.), similar to those used for assessing TENs. Another approach is to list what we would not accept.
81	**WFO to give percentages of what data have been uploaded from what is published for each source of Content**	Technical Working Group	Pending	Possibly include in a Content stock take and show against source in the Flora page in About Pages. Derive percentages from table of content data records maintained by Tony Mast.
84	**Contact Consortium Members to solicit additional Content datasets**	WFO Council Co-chairs	Ongoing	
86	**Explore formalising WFO's relationship with IPNI with a written agreement covering the nature of the collaboration and the exchange of data**	WFO Council	Pending	Discussions initiated with RBG Kew on integration of WCVP and links with IPNI.
92	**WFO post 2020 strategic review and forward planning**	Council Co-chairs to lead	2023/24	Done: draft strategy approved at March 2024 Council
93	**Conduct stock take of Content and approved providers**	WFO Gatekeeper and TEN Manager	For next Council	To be done after December/January relaunch
105	**Reconstitute a Communications Working Group to promote WFO**	Communications Working Group	In process	Done
106	**Explore registration of WFO as an NGO in Switzerland**	Nicola Schoenen-berger	In progress	Continue planning for WFO to be registered as an Association, for decision at Feb 2025 Council.
108	**Review guidance on Data Downloads on the WFO website**	Tony Mast, Alan Elliott	Delayed to May 2024	Replace text and downloads on 'Download Data' page of the WFO Portal with instructions on how Content and classification data can be downloaded, e.g. links to Zenodo, ChecklistBank, WFO

#	TASKS	WHO?	WHEN?	COMMENTS
				Plant List, Portal downloads by registered users, etc.
109	**Explore use of badges for the kind of object and institution on Portal pages.**	Roger Hyam, Tony Mast	Deferred at November 2023 Council	Badges for kind of object to be deferred until a future rebranding of WFO. This is considered low priority.
110	**Send request to Pensoft Publishers to put papers that mention WFO into the WFO Zenodo community (DOIs).**	Technical Working Group	Next Council	Done
111	**Update Contributor Guides with latest data process changes after addition of Rhakhis.**	Tony Mast, Roger Hyam	Next Council	In progress.
112	**Complete harvesting of WCVP Distributions. Restore GeoServer on the Portal.**	Tony Mast	Next Council	In progress
114	**Consensus classification data development in Rhakhis** 1) Incorporate updates from TENs 2)Update non-TEN groups with data from WCVP, or other published classifications approved by the Taxonomic WG 3) Report on deduplication in curation metrics	TEN Manager Alan Elliott		1) 252 TEN families updated since Kew meeting 2) ca. 200 WCVP families updated since Kew meeting 3) currently stands at around 5,000 name pairs.
115	**Consider modifications to the Family and Higher order classifications**	Taxonomic Working Group	Ongoing	Activity on this is under Task 116
116	**Establishing a supra-order classification**	Lauren Raz Taxonomic Working Group	Next Council	Supra-order classification to be decided by Taxonomic WG and provided to Catalogue of Life. Higher classification under review, all bar Angiosperms done, to complete by next Council meeting.

#	TASKS	WHO?	WHEN?	COMMENTS
117	**Building a TEN global community** 1) Develop an annual WFO TEN online symposium to share lessons learned and promote collaboration between TENs 2) Connect with TEN representatives at IBC for feedback in how best to support them and their work [new]	Taxonomic Working Group	Ongoing	1) Seek to run an online symposium. Nadja Korotkova and Caryophyllales to organise the first of these in 2023. [not progressed yet]
118	**IUCN Red List to adopt WFO Plant List as its accepted classification**	Peter Wyse Jackson (Missouri and Kew)	Next Council	WFO has requested to the IUCN Governor General to adopt WFO Plant List as the accepted classification used by IUCN for plant groups covered by WFO.
121	**Create a subgroup to develop a Technical Strategic Plan**	Technical Working Group	Next Council	Subgroup to create a short document that outlines the systems and people/roles involved in running the WFO now and for each one a "vision" of what will replace it/them either in case of emergency or as part of planned improvements. This plan will address WFO current technical infrastructure only.
122	**Create a group to coordinate activities for the XX IBC, Madrid, July 2024**	Thomas Borsch, Council Co-chairs and Comm WG	In progress	To maximise opportunities for engagement with and promotion of WFO linked to the XX IBC, e.g. TEN side event, WFO symposium, linked publications in TAXON
123	**Create mailing lists for the TEN network and the Communications Working Group**	Missouri Botanical Garden	As soon as possible	Done
124	**Review inactive/unresponsive TENs and if necessary recommend to Council any to be de-listed**	Taxonomic Working Group	Next Council	Done: covered under 13
125	**Investigate the feasibility of building a resource of dichotomous keys.**	Taxonomic and Technical	Ongoing	Include in the future developments of software infrastructure

#	TASKS	WHO?	WHEN?	COMMENTS
		Working Groups		
126	**Pursue strategic alliances with Xper3, GIFT, etc. for collaborating with identification resources**	ID Task Force	Ongoing	To stimulate common efforts in developing a global plant character database, e.g, study the feasibility of using AI to datamine the WFO descriptive content.
127	**Develop a collaboration with Pl@ntnet to offer support to users in identifying images using AI image recognition tools**	ID Task Force	Ongoing	Increasing the usability of the WFO portal by offering support in identification to users.
128	**Establish a task group to undertake the next steps towards integration of WCVP and WFO and report to Council**	Council	Next Council meeting	New
129	**Produce promotional materials for WFO to be used at IBC etc.**	Comm WG	July 2024	New. Leaflet in Spanish, French and English. Consortium members to help with translations. Geneva will be able to pay for producing, printing, and shipping Priority for WFO materials are the 6 UN languages: Arabic, Russian, French, Chinese, Spanish and English. (The alternative is Google Translate)
130	**Explore recognition of WFO as a Core Biodata Resource byGlobal Biodata Coalition**	Taxonomic WG	Ongoing	New. Lauren Raz to look into Catalogue of Life experience with this and benefits it brings.
131	**Establish a Geographic Distribution Task Force**	Alex Monro		New. To bring forwards ideas on how best to incorporate geographic distribution data in WFO, starting with WCVP country-level data
132	**Develop a timetable of WFO-related events for the year**	Comm WG	Ongoing	New

#	TASKS	WHO?	WHEN?	COMMENTS
133	**Review the website to see what improvements can be made from a communication perspective**	Comm WG		New. Inquire about multilingual capabilities of the current website.