



Draft Report of the 16th World Flora Online (WFO) Council

The 16th World Flora Online Council meeting held on Tuesday, 16th March, 2021. The meeting was held virtually and was two hours and 15 minutes in duration, starting at 7.00am, St Louis, USA time.

Attendance:

- Adil Güner, Nezahat Gökyiğit Botanik Bahcesi, Istanbul, Turkey
- Alan Paton, Royal Botanic Gardens, Kew, London, UK
- Alan Elliott, Royal Botanic Garden Edinburgh, Edinburgh, UK
- Anthony Whalen, Australian Biological Resources Study, Canberra, Australia
- Bing Liu, Institute of Botany, Chinese Academy of Sciences, Beijing, China
- Chuck Miller, Missouri Botanical Garden, St. Louis, USA
- Colin Pendry, Royal Botanic Garden Edinburgh, Edinburgh, UK
- Demitry Geltman, Komarov Institute of Botany, Russian Academy of Sciences, St Petersburg, Russia
- Eduardo Dalcin, Instituto de Pesquisas Jardim Botânico do Rio de Janeiro, Rio de Janeiro, Brazil
- Erik Smets, Naturalis Biodiversity Center, Leiden, Netherlands and Flora Malesiana Foundation, Leiden, Netherlands
- Fabian Michelangeli, New York Botanical Garden, New York, USA
- Geoffrey Levin, Flora of North America Association, Illinois, USA
- James Miller, Missouri Botanical Garden, St. Louis, USA
- John Brinda, Missouri Botanical Garden, St. Louis, USA
- John Parnell, Botany Department of Trinity College Dublin, Dublin, Ireland
- Lauren Raz, Universidad Nacional de Colombia, Bogotá, Colombia
- Maïté Delmas, Muséum National d'Histoire Naturelle, Paris, France
- Marc Sosef, Meise Botanic Garden, Meise, Belgium
- Mark Watson, Royal Botanic Garden Edinburgh, Edinburgh, UK
- Maria Regina Barbosa, INCT- Instituto Nacional de Ciência e Tecnologia Virtual Herbarium of Flora and Fungi, Federal University of Paraíba, Brazil
- Maria Dalila Espírito-Santo, European Consortium of Botanic Gardens, Lisbon, Portugal
- Marianne Le Roux, South African National Biodiversity Institute (SANBI), Pretoria, South Africa
- Olaf Banki, Species2000/Catalogue of Life, Leiden, Netherlands
- Peter Fritsch, Botanical Research Institute of Texas, Fort Worth, Texas, USA
- Peter Wyse Jackson, Missouri Botanical Garden, St. Louis, USA
- Pierre-André Loizeau, Conservatoire et Jardin Botaniques, Geneva, Switzerland
- Quanita Daniels, National Botanical Research Institute, National Herbarium of Namibia, Windhoek, Namibia
- Raoul Palese, Conservatoire et Jardin Botaniques, Geneva, Switzerland

- Rashad Salimov, Institute of Botany, Azerbaijan National Academy of Sciences, Baku, Azerbaijan
- Rasim Murat Aydinkal, Nezahat Gökyiğit Botanik Bahcesi, Istanbul, Turkey
- Thomas Borsch, Botanic Garden and Botanical Museum Berlin-Dahlem, Berlin, Germany
- Thomas Haevermans, Muséum National d'Histoire Naturelle, Paris, France
- Valida Alizada, Institute of Botany, Azerbaijan National Academy of Sciences, Baku, Azerbaijan
- Taciana Cavalcanti, Empresa Brasileira de Pesquisa Agropecuária (EMBRAPA), Brazilia, Brazil
- Visothery Ung, Muséum National d'Histoire Naturelle, Paris, France
- Walter Berendsohn, Botanic Garden and Botanical Museum Berlin-Dahlem, Berlin, Germany
- Warren Wagner, Smithsonian National Museum of Natural History, Washington, DC, USA
- Wayt Thomas, New York Botanical Garden, New York, USA
- William Ulate, Missouri Botanical Garden, St. Louis, USA
- Xiaohua Jin, Institute of Botany, Chinese Academy of Sciences, Beijing, China & GBIF
- Kathy Farris, Support Staff - Missouri Botanical Garden, St. Louis, USA
- Nye Hughes, Support Staff – RBG Edinburgh, UK

1. Welcome

Peter Wyse Jackson and Pierre-André Loizeau

The Co-chairs Peter Wyse Jackson and Pierre-André Loizeau welcomed all participants in the meeting and noted the following new Council members were attending their first meeting: Fabian Michelangeli, New York Botanical Garden and Maria Regina Barbosa, INCT-Virtual Herbarium, Universidade Federal de Pernambuco, Recife, Brazil.

New members: The Co-chairs also welcomed one new institutional member of the World Flora Online Consortium since the last WFO Council meeting in November 2020. The International Association for Plant Taxonomy became a member when it signed the WFO MOU on 30th November. IAPT will be represented by Dr Patrick Herendeen on the Council.

Global Strategy for Plant Conservation (GSPC) developments: Peter Wyse Jackson outlined the background to the Convention on Biological Diversity's (CBD) Post-2020 Global Biodiversity Framework (GBF) that is currently being negotiated by the CBD Parties. He highlighted the current efforts being made to develop a post-2020 Global Strategy for Plant Conservation to be incorporated as a component of the GBF. He drew particular attention to a new paper prepared for the CBD meeting, SBSTTA 24, by the Global Partnership for Plant Conservation (GPPC) which had been made available by the CBD's Secretariat for these meetings.

<https://www.cbd.int/doc/c/08a5/5940/83a43eb11e4773bf4f4098bf/sbstta-24-inf-20-en.pdf>

Excellent support for the development of a post-2020 GSPC has been expressed by a number of countries at the informal SBSTTA meeting in February 2021, including from Australia, Austria, Colombia, France, Madagascar, Mexico and South Africa. Peter Wyse Jackson also mentioned that he had also spoken on behalf of the GPPC. He hoped that the CBD Secretariat and SBSTTA Co-chairs will now take forward proposals or a draft recommendation for SBSTTA 24 as next steps for the GSPC.

Within the draft GSPC proposed by GPPC an objective for 2050 was proposed that is relevant to the World Flora Online: *'All plant species and areas important for plant diversity are understood, documented and effectively conserved.'*

A new draft GSPC target for 2030 was also proposed which would be a successor for the GSPC target on the WFO up to 2020: ‘Draft Target 19a: By 2030, all users, including country authorities, have access to comprehensive and authoritative global and national expertise, and online information systems, documentation and inventories of their floras and natural habitats.’ This target and objective are drafts and are likely to be edited or changed based on the results of further CBD deliberations and negotiations.

Forum on the Global Taxonomy Initiative Peter Wyse Jackson also mentioned that a Forum on the Global Taxonomy Initiative had been convened by the Convention on Biological Diversity and held in December 2020 and that recordings of the Forum are available on Youtube (<https://youtu.be/1gYRmP9npNE>, <https://youtu.be/LSOO4yZVLsg>, https://youtu.be/f_8hzdZikAQ). The World Flora Online received good coverage during the Forum, in particular by Thomas Borsch (Germany) who had spoken specifically about the progress being made on the World Flora Online and its contribution towards the achievement of the Global Strategy for Plant Conservation and its post-2020 future. The WFO was also highlighted by other GTI Forum participants and speakers, including Thomas Borsch (Germany), Ethan Freid (Bahamas), Michelle Price (Switzerland), and Mark Watson (U.K.)

Following the Forum, the CBD Secretariat circulated a draft ‘Background document (a draft Global Taxonomy Initiative in Support of the Post-2020 Global Biodiversity Framework)’ about which several WFO Council members submitted comments and the WFO was included.

Twitter: The number of Twitter followers of the WFO had now reached +500.

IAPT: In December 2020, a page went live on the website of the International Association of Plant Taxonomy (IAPT) which described its partnership with the WFO and provides information on how IAPT members can become involved in the project. Thanks were expressed to Pat Herendeen for facilitating this useful new resource.

2. Apologies for absence

Apologies had been received from Joe Miller (GBIF); David Middleton (Singapore); Karol Marhold (Bratislava) and Esmeralda Strauss (Windhoek, Namibia).

3. Adoption of the Report from the 15th meeting of the WFO Council (held virtual on 17th November, 2020)

This was circulated to the Council members on 24th November, 2020. The report was adopted by Council as circulated without any changes.

4. Update on the WFO Portal

William Ulate

William Ulate provided an update on progress made with the WFO portal since the last meeting. He illustrated the current data content of the portal and progress made in incorporating new data by providing the following tables.

Table 1. Number of Taxa with Descriptions per Taxon Rank:

Taxon Rank	Taxa
FAMILY	406
GENUS	7,214
SPECIES	133,348
SUBSPECIES	3,080
VARIETY	9,343
FORM	82

TOTAL	153,473

Table 2. Number of Taxa with Descriptions per Taxon Rank and Taxonomic Status

Taxon Rank	Taxonomic Status	Taxa	Total
SPECIES	Accepted	113,382	133,348
	Synonym	14,389	
	Heterotypic Synonym	63	
	Homotypic Synonym	16	
	Ambiguous	5,498	
SUBSPECIES	Accepted	1,587	3,080
	Synonym	1,432	
	Heterotypic Synonym	1	
	Homotypic Synonym	2	
	Ambiguous	58	
VARIETY	Accepted	3,315	9,343
	Synonym	5,751	
	Heterotypic Synonym	4	
	Ambiguous	273	
FORM	Accepted	71	82
	Synonym	11	

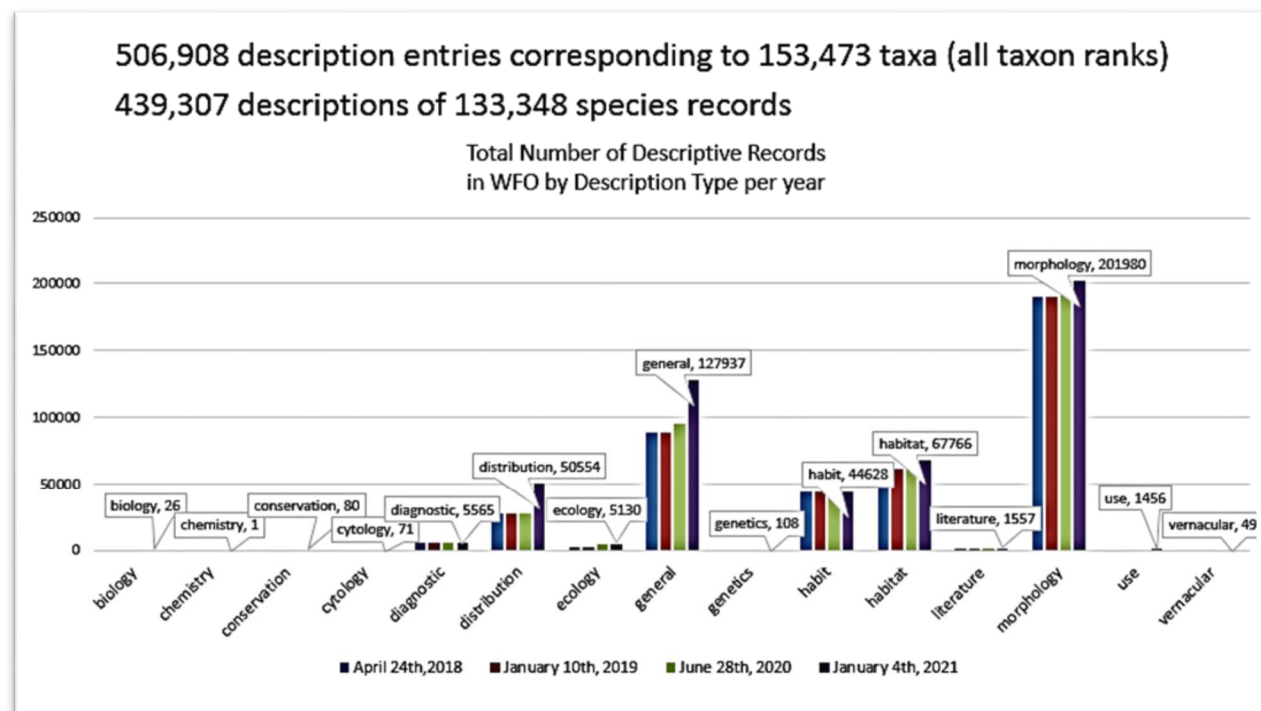
TOTAL			145,853

Table 3. Number of Descriptions per Taxon Rank

Taxon Rank	Descriptions
FAMILY	5,588
GENUS	41,693
SPECIES	439,307
SUBSPECIES	5,582
VARIETY	14,590
FORM	148

TOTAL	506,908

The following slide demonstrated the progress made in adding new descriptive data to the WFO Portal over the last four years.



The following tables include the new datasets that have recently been harvested for inclusion in the WFO portal, or are pending.

Flora	Status
NYBG	Harvested all descriptions in Test : NorthEastern (5,804), Neotropica (18,541), Brittonia (11,272) & NYBG Memoirs (22,133)
Fl. Helvetica	Descriptions in German harvested in the Production Portal (6,069). French pending.
Flora of Central Africa (Meise)	Descriptions received and Harvested in the Production Portal (17,507).
Leon Levy Nature Preserve Flora (Bahamas)	647 taxa – 1,396 descriptions harvested in Production
Irish Vernacular Names	1070 taxa – 4,819 vernacular names, 1,063 distributions in Prod.
Australian Floras	First set received and reharvested in Test (606).
New FNA data	Got data and content sample. Issues with Authors format. Reviewed file's DwCA format. Redid Name Matching process.
Flora of Ireland	Working on Observations to Name Matching Report
Caryophyllales	Pending Content

Flora	Status
eMonocot descriptions (Kew)	– PalmWeb descriptions pending harvesting
Flora of Nepal	– No data received yet. Clarification with Description Types.
Illustrated Treatments for Korea	– Got a response but asking to convert Word documents into tables.
Catalogo de las Plantas de Colombia	– Waiting for content.
African Plants Database	– 200K names, 78K taxa (distributions, ecology, biology). Pending from Geneva.
eFloramaghreb.org	- 6400 taxa – Pending from Geneva.
Flora do Brazil	– More descriptions present In Website– but unavailable until provider has resources
Illustrated Flora of Turkey	– No new version in 2020
Solanaceae Source	Contacted Tiina back to coordinate an updated dataset

William highlighted the special importance of having achieved the goal to over 500,000 descriptions having been included in the WFO by the end of 2020. He gave special thanks for the effort to reach the goal to the following: Geneva's Beat Baumlmer with Flora Helvetica; Meise's Pieter Huybrechts with Flora d'Afrique Central; NYBG's Melissa Tulig; Anne Fuchs with Flora of Australia; Bahamas' Ethan Freid with Levy Preserve, and other data WFO providers, and Sunitha Katabathuni at the Missouri Botanical Garden.

He also reported on progress with other tasks and Action Items undertaken over the last period:

- Fixed 500 Server error in TPL – Done!
- Finalized SANBI Endemics added – Done in preHarvest DB!
- Updated Taxonomic and Nomenclatural Status according to WCVP for non-TEN names. – Done in pre-Harvest DB
- Implemented Alan Elliott's recommendations about updating Taxon Source to <https://wcvp.science.kew.org/taxon/{IPNI ID}> when taxonomic status was modified to WCVP value – Done in preHarvest DB
- Reported Species with 2 specific epithets – Done in pre-Harvest DB
- Analyzed Species group names with a major group different from the major group of the family. – Done in pre-Harvest DB

A major task of recent months has been to continue to work on updating and enhancing the WFO taxonomic backbone with the addition of data from the World Checklist of Vascular Plants (WCVP) and the International Plant Names Index (IPNI). This require the complex matching of WFO IDs and IPNI IDs, and the resolution of problems of duplicated records, errors and other technical issues.

5. Report from the Taxonomic Working Group Mark Watson and Alan Elliott

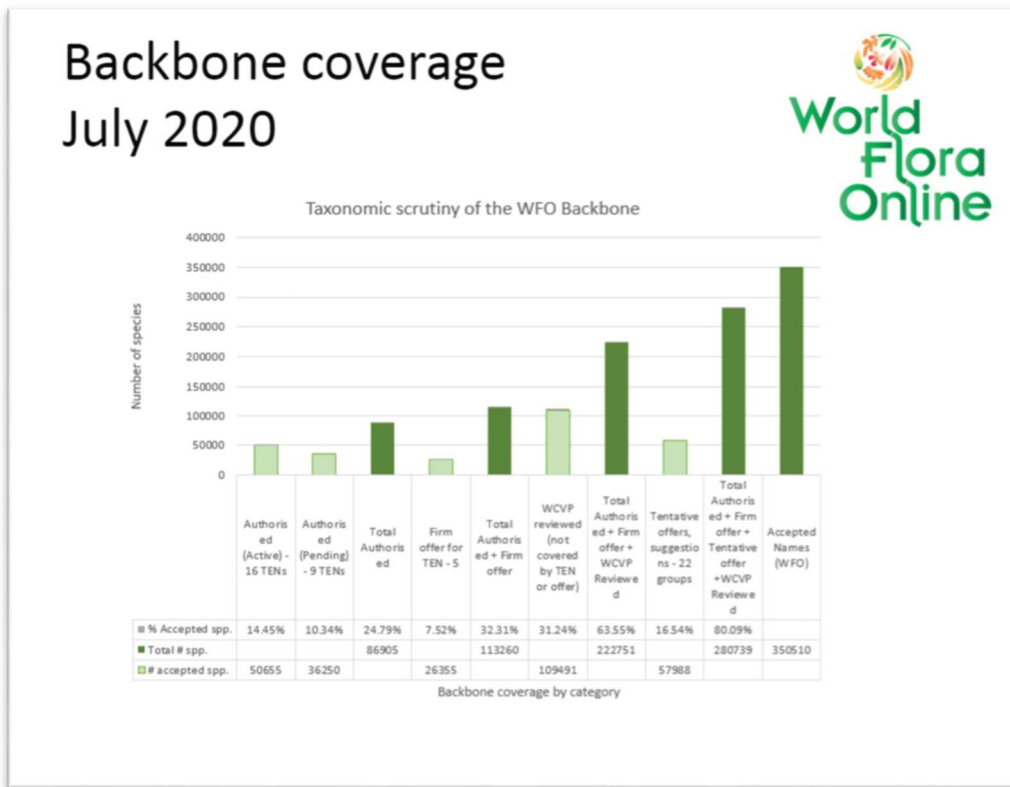
Alan Elliott began by describing the IPNI & WCVP Batch Update for the taxonomic backbone. He continued with a report on the activities of approved TENs and reviewed several TENs that would considered by the Council for approval. He highlighted other completed tasks, such as the addition of South African endemic plants from SANBI that had been added to the pre-Harvest database. Also, updated were Taxonomic and

Nomenclatural Status according to WCVF which had also been added to the pre-Harvest database for species that are not covered by existing TENS.

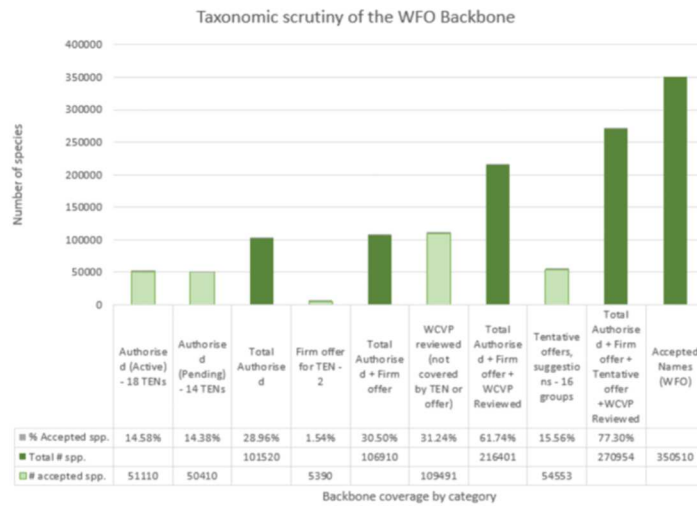
Activity updates from approved TENS

Alan pointed out that the WFO now currently had 32 approved TENS, of which 18 are particularly active.

- 2 that are preparing data: Aquifoliaceae, Bryophytes
- 16 that have name matched (including partial): Arecaceae, Begoniaceae, Bryophytes, Caryophyllales, Conifers, Cordiaceae, Ericaceae, Irvingiaceae, MADCAT, *Meconopsis* & *Cathcartia*, Musaceae, Solanaceae, Styracaceae, Zingiberaceae, *Cycads*, *Hypericum*.
- 3 that have partial backbone updates: Caryophyllales, Begoniaceae, Zingiberaceae
- 2 that have fully updated: Irvingiaceae, Solanaceae
- *Meconopsis* & *Cathcartia*: Name matched, waiting WFO assigned.
- Musaceae: Botalista is looking to ingest so we can curate and test.
- Styracaceae: Rather than wait for Botalista, this TEN is looking to move forward with the name match provided by William.



Backbone coverage March 2021



Possible new TENs:

- Urticaceae
- Paeoniaceae

New 'About Pages' for the WFO website:

42 of the 46 Consortium Members have text describing each institution/organization and most have at least one image included. Still to be added are -

- National Biodiversity Institute (INBio) of Costa Rica
- Institute of Botany, Azerbaijan National Academy of Sciences (completed on 16th March, 2021)
- Universidad Nacional de Colombia
- Instituto Nacional de Ciência e Tecnologia (INCT) Virtual Herbarium, Recife, Brazil

All the approved TENS have a web page.

Taxonomic Backbone Development

Mark Watson then took over the Taxonomic Working Group report and further elaborated progress of the work that has proceeded to incorporate and integrate new data into the taxonomic backbone, which has particularly focused on updates using Kew's 'International Plant Names Index' (IPNI) and the 'World Checklist of Vascular Plants' (WCVF). Significant advancements have been made since November 2020 by Sunitha, William and Alan. All WFO names with IPNI IDs have been compared with data in WCVF and the classification updated from WCVF for groups that have not had TEN groups formed. These revisions to the Taxonomic Backbone have almost been completed and are due to be 'launched' in the public portal in May

2021. The Taxonomic Backbone is therefore due to be frozen to all but essential (below family-level) changes on 24th March to allow for this work to be finalised.

TEN Engagement

Several new Taxonomic Expert Networks (TENs) were proposed for approval (Task 13.1)

• Taxon	# spp.	TEN Focal Point
• Boraginaceae subtribe Amsinckiiinae	290	Michael Simpson (San Diego)
• Apocynaceae	5,100	Sigrid Liede Schumann (Bayreuth)

WFO 'About Pages' Redesign

The 'About Pages' Content Management System (Craft CMS) has been installed and running on a virtual server, administrated by Roger Hyam and Nye Hughes (Edinburgh). The pages are currently available on the following web link for review: <https://wfo-about.rbge.info>

Further refinement of the 'About Pages' has continued led by the TEN Manager and the About Pages Task Group. Porthole logos used in a draft of the new 'About Pages' had been redesigned. Missing logos had been completed, partner institute pages mostly completed, but still needing information for four consortium partner pages. The TEN Manager had continued to add images and text as supplied. More 'Stories' are in the pipeline ... contributions gratefully received. It was reported that the About Pages Task Group considered the 'About Pages' ready to go live.

WFO Plant List

The need for a static list similar to The Plant List was evident by complaints received whilst The Plant List website was down over the Christmas 2020 period, and with the publication of the Leipzig List by a group of ecologists. A WFO Plant List website has therefore been developed using the About Pages CMS and the WFO Plant List API written by Roger Hyam. Nye Hughes is working on the WFO Plant List website with the Edinburgh WFO team, Roger, Alan, Colin and Mark. The WFO Plant List aims to replicate the functionality of The Plant List 1.1, but not overlap with functionality in the WFO portal. It was reported that the WFO Plant List has been released for testing to the Taxonomic and Technical Working Groups on 12th March. Feedback so far has been positive with constructive suggestions on refinements. Work prior to public release will focus on:

- Extending user testing to non-taxonomists
- Refining the way search functions
- Refining the display of synonyms
- Moving the search box into the navigation bar so it is seen on all pages
- Incorporating taxon statistics – graphics/tables. Data currently not in the downloads, but are displayed on the portal under Visualise Data
- Checking for screen size and accessibility compliance

<https://wfo-about.rbge.info/plant-list>

The TEN Manager will work with William and Sunita to complete work on the Taxonomic Backbone for a re-launch (provisionally 1 May 2020). TEN Manager to resume proactive engagement with TENs, finalise new TENs for approval at next Council. TEN Manager (Alan Elliott) to continue help WFO Gatekeeper (William Ulate) with Content name-matching. Conduct a stock take of Content providers (TEN Manager and WFO Gatekeeper). Finish development of the WFO Plant List using user feedback for inclusion in the re-launch of the website.

It was proposed that an exploration of replacing the WFO portal header and footer to match the 'About Pages' and WFO Plant List be undertaken.

Recommendations

Council adopted the following four recommendations proposed by the Taxonomic Working Group:

1. Council approved the creation of two new Taxonomic Expert Networks (TENs) for the Boraginaceae subtribe Amsinckiiinae and for the Apocynaceae.
2. Council approved the new WFO 'About Pages' to go live at the re-launch of the WFO website (provisionally 1 May 2021)
3. Council approved the WFO Plant List pages to go live at the re-launch of the WFO website (provisionally 1 May 2021)
4. Council asked the Taxonomic WG to form a task group from amongst its members and other WFO participants to prepare a response paper to the 'Leipzig Catalogue of Vascular Plants' and use this opportunity to maximise scientific and other awareness of the WFO around the launch of the new 'WFO Plant List' in May 2021.

6. Report from the Technical Working Group Chuck Miller and Walter Berendsohn

Chuck Miller presented the Technical Working Group's report and outlined the areas where progress had been made since the last meeting, as follows:

- i) the addition of new descriptive data, as reported by William;
- ii) the finalization of matching of names in IPNI and from TENs for the WFO taxonomic backbone;
- iii) some modifications to the WFO Portal;
- iv) the creation of a Harvester/Admin Guide – Ongoing;
- v) DOIs for datasets and downloads - Ongoing. Lauren Raz is leading this work;
- vi) the assessment of adding the BGCI Threat Search and Global Tree Search Databases;
- vii) updating Protologue information for matched names using IPNI data – Ongoing;
- viii) create a data paper of the WFO Backbone data with a DOI – Ongoing.

The upcoming priorities for the Technical work on the WFO would be to:

- Load More Content Data
- Reload Updated Taxonomic Backbone Data by May 1
- Replace About Pages – led by RBG Edinburgh WFO team
- Add WFO Plant List – led by RBG Edinburgh WFO team

- Continue to evaluate addition of DOIs in collaboration with GBIF – Lauren

There were no recommendations proposed at this Council Meeting by the Technical Working Group.

7. Botalista Developments

Pierre-André Loizeau and Raoul Palese

Pierre-André Loizeau and Raoul Palese presented an update on the Botalista software and highlighted that its current WFO objective and priority would be to provide a module for TENS to use for the development of taxonomic backbone content related to their Family. Raoul provided a demonstration of current Botalista functionality related to this objective.

8. 17th Council meeting

The next WFO Council meeting will be held virtually, on Tuesday 6th July, 2021. Zoom meeting instructions will be circulated closer to the date.

10. Any Other Business

There being no further business, the meeting was closed at 9.15 St Louis time.

WORLD FLORA ONLINE –ACTION ITEMS FROM COUNCIL MEETING - ZOOM MARCH 2020 (fully completed or merged tasks are shaded grey pending deletion at next meeting of Council)

#	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 and next presentations: None
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	New signatories since last meeting of Council: • IAPT
3	Update Facebook page. Keep updating FB page with news and current information.	Comms Working Group	Ongoing	Richelle Wiehe (MBG) will update FB, send images and news items to her.
5	Videos. Links to videos by partner institutions to be included on WFO Website.	All	Ongoing	Anyone with videos relevant to WFO, please send to the William Ulate & Alan Elliott.
6	Enhance Production Portal with Descriptive Data. Production portal should be enhanced with	William	Ongoing When ready, William Ulate will touch base with the intermediary	See Tax WG report for revised priority list for harvesting.

#	TASKS	WHO?	WHEN?	COMMENTS
	<p>descriptive data content as advised by Taxonomic WG/Council. Send a tweet as content is loaded to Production.</p>		<p>contacts of the Content providers for the next digital resources to bring into the WFO Portal, as determined by the Taxonomic WG in order to increase the diversity of content and geographic coverage.</p>	<p>Initial harvesting of content for names matched in first name-matching process prioritized for as many datasets as possible (rather than resolving the residual un-matched names).</p> <ul style="list-style-type: none"> • 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 <p>Continue to load remaining and new datasets:</p> <ul style="list-style-type: none"> • Solanaceae Source – Contacted back to coordinate an updated dataset • NYBG – Harvested all descriptions in Test: NorthEastern US, Neotropica, Brittonia & NYBG Memoirs • Catalogo de las Plantas de Colombia –26K names - Waiting for content. • Australian Floras – First dataset of descriptive data harvested in Test. • Flora of Nepal – No data received. • Illustrated Flora of Turkey – done. No new version in 2020 • Illustrated Treatments for Korea - Got a response, coordinating to convert Word documents into structured data • Fl. Helvetica – Name matching done. Descriptions in German harvested. French pending. • Flora do Brazil – more descriptions present In Website– unavailable until Provider has resources • 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

#	TASKS	WHO?	WHEN?	COMMENTS
				<p>Name Matching process as requested.</p> <ul style="list-style-type: none"> • Flora of Central Africa (Meise) Descriptions received - 7993 taxa – Done Harvested in Prod • African Plants Database – (distributions, ecology, biology) 200K names, 78K taxa. - Pending. • eFloramaghreb.org - 6400 taxa – Pending. • Leon Levy Nature Preserve Flora (Bahamas) - 646 taxa – Done. Ninth version Harvested. • Irish Vernacular Names - 1069 taxa, 4819 vernacular names, 1063 distributions – Done. Harvested in Prod • Flora of Ireland – Implementing corrections to Name Matching Report. • Caryophyllales- Harvested Nepenthes taxa. Pending other taxa and all content from EDIT platform.
7	<p>Create a Harvester administration/operations guide. The development of a Harvester administration/operation guide should be carried out immediately through testing and collaboration.</p>	William	Ongoing	<p>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)</p>
10	<p>Implement Botalista software. Work together to further develop Botalista as collaborative tool for expert networks to contribute backbone data. (Related to Item 99)</p>	Pierre-André and Raoul	January 2021	<p>Announced by Pierre-Andre Loizeau at November 2020 Council meeting:</p> <ol style="list-style-type: none"> 1. Botalista will provide a taxonomy support tool on the Google Cloud for use by TENs by January. 2. All other WFO related functions planned for Botalista are unlikely to be completed.
13	<p>Taxonomic Expert Networks (TENs). 1) Identify specialists to review parts of the taxonomic backbone. When no networks exist, identify specialists to review parts of the taxonomic backbone and/or assess</p>	TEN Manager	Standing Item	<p>1) 1 TEN approved by Council March 2021: Apocynaceae Boraginaceae subtribe Amsinckiianae</p> <p>2) Ongoing</p>

#	TASKS	WHO?	WHEN?	COMMENTS
	<p>the quality of the treatment in the current WFO backbone.</p> <p>2) Make a survey of existing global taxonomic networks and the systems used and ask if they are willing to participate in WFO</p> <p>3) Update and publish the Order/Family coverage/gap analysis on About Pages of WFO website</p> <p>4) Engage with WCSP Reviewers for potential TENS</p> <p>5) Explore links with Yuri Roskov and COL GSDs as potential WFO TENS</p> <p>6) Build on the offer of a Fern TEN to involve wider community opinions</p>			<p>3) Gap analysis for plant families to be updated for higher classifications after backbone update early May. Ongoing.</p> <p>4) Ongoing.</p> <p>5) Ongoing.</p> <p>6) Ongoing. PPG Interested in developing an inclusive Fern TEN</p>
15	<p>Develop markup Tools for a Toolkit. Consolidate the Markup Tools being used; develop them to integrate them into a toolkit.</p> <p>- SANBI has developed Markup tools and are available for others to use. Available from GitHub: github.com/rudivs/SpeciesMarkupAddIn</p>	Technical Working Group	Deferred at St Louis	No current update, not priority for 2020, but continue for future
16	<p>Communicate document on web strategy based on CBD CHM work. Create a document on web strategy for the next meeting based on the work being done by the CBD CHM. Suggest ideas on materials like meetings where WFO should present a keynote or at least a Symposium on WFO.</p> <p>- Communications Committee will define Communication plan as a bigger topic.</p> <p>- Put someone in charge of the Social Media</p> <p>- Separate production of content from the website administration, tailor-make the strategy for each group in order to facilitate the prioritization.</p> <p>- Launch of our communications strategy to raise awareness when we have a portal that people could use. Communicate key advances and specific strategy.</p>	Comms WG. (Eduardo Dalcin, Barbara Thiers, John Parnell)	Pending	We need to have a clear strategy on how the WFO is integrated into all of the outcomes of CBD, which requires an understanding on how the CBD works and a lot of promotion of the WFO within the CBD Mechanisms. For the Communication Strategy, define what WFO is doing in the next 6 months to be able to know what to communicate. We need to define what audience we want to attend first and use appropriate platforms to reach them. Peter Wyse Jackson may send a message to the Council asking for names of specialists who could collaborate on a Communication Plan, once we know what we want to communicate.

#	TASKS	WHO?	WHEN?	COMMENTS
	<ul style="list-style-type: none"> - Demonstrate a joint Consortium web site to promote fundraising. -For a Strategy define Who they are? What to tell them? How to tell them? Who's going to tell them? And when are they going to be told? - Create a list of institutions relevant to promote WFO and interact with (previously #19) 			<ul style="list-style-type: none"> • Draft Web Strategy created. – Istanbul • ResearchGate WFO project has been set up
18	Save the Dates. Save the date for the 17 th meeting	Peter Wyse Jackson	17 th Meeting – Online, 6 th July 2021	Post the report of the previous Council Meeting on the WFO website Physical meetings at Meise and Canberra deferred
29	DOIs for datasets and downloads. Evaluate using GBIF-generated DOIs for WFO contributed datasets and downloads (related to #68 and #75)	Technical Working Group DOI Process Subgroup Lauren Raz, lead	Ongoing	Requires code change Creation of metadata for downloads for DOI. Evaluate the adding DOIs to uploaded datasets and downloaded reports. Tech WG recommended in Sep 2020 formation of a DOI subgroup to assess the GBIF DOI process. Adopted by Council.
30	WFO Darwin Core extensions. WFO Terms not included in Darwin Core standard: <ol style="list-style-type: none"> 1. localID: Record identifier used by the data contributor. E.g. Tropicos ID, Flora of S Africa ID, EDIT ID 2. Alternate Taxon/Name IDs: E.g. Catalogue of Life ID 3. taxonomicStatusReference: Accepted or Synonym status by/according to publication. E.g. Accepted according to GrassBase 4. sourceCitation (of the name record): Not namePublishedIn or bibliographicCitation. E.g. Solanaceae Source is source of the Backbone name record. 5. VerbatimSpecimenList: Currently using Specimens extension. 	Technical Working Group	Deferred at St Louis	Write a white paper on Darwin Core extensions needed for WFO Formally request Darwin Core extensions from TDWG for WFO

#	TASKS	WHO?	WHEN?	COMMENTS
	<p>6. VerbatimDistribution: Using “Distribution” Description Type in Descriptions.txt file</p> <p>7. Protologue: Using Description Type of Original Publication in Descriptions.txt file</p> <p>8. nomenclaturalNote</p>			
31	Send formal request to GBIF for WFO-tailored versions of IPT and DwCA Validator, involving SANBI and Flora do Brasil	Technical Working Group	Deferred at July 2020	Botalista replaces tailored version of DwCA Validator. Tailored IPT still needed for taxonomic and descriptive data.
33	Resolve insufficient resources to support: a) Software development staffing. b) Institution to maintain OwnCloud	WFO Council	Deferred to next meeting	a) Missouri is committed to providing William's role, but we have an issue with software development staffing b) Defer decision to next meeting.
38	Formalize relation with IAPT	WFO Council	Done	IAPT is a Member of WFO. Patrick S. Herendeen, new IAPT chair, was interested, according to Michelle Price and collaboration was examined during their last meeting in October. 2019
39	Catalogue of Life/GBIF	Pierre-André Loizeau	Ongoing	Pierre-André Loizeau is the WFO representative on CoL Advisory Board, Lauren Raz and Ann Fuchs are members of CoL Global Team CoL+ project nearing completion, CoL has been restructured GBIF will conduct a comparison between WFO taxonomy and CoL (see #85). Ongoing – delayed due to delays in CoL+ project
42	New Names. Implement a mechanism to deal with new names coming from Content Providers or IPNI and updating the Taxonomic Backbone, as recommended by the Taxonomic Working Group.	Technical Working Group	<ul style="list-style-type: none"> IPNI IDs done, awaiting reharvesting of Taxonomic Backbone. New IPNI names were loaded with Status of Unchecked. 	Create a feedback mechanism as needed to alert TENs when a new name is incorporated in the pre-harvesting Taxonomic

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	A 'new name' is an Effectively Published name not already in the Taxonomic Backbone. Content Providers only provide one name, their accepted name of the taxon for which they are providing content		<ul style="list-style-type: none"> New TEN names will be loaded with Status of Accepted, Synonym or Ambiguous 	<p>Backbone (eventually in Botalista).</p> <p>Make an agreement with IPNI to receive their annual updates of new names and new combinations.</p> <p>Treat new names from IPNI as if coming from a non-TEN Content Provider</p> <p>Export new names in the backbone in a data format appropriate for the TENs to incorporate into their own system.</p>
44	Duplicates. There were 17.7k name duplications in the Taxonomic Backbone due to TPL artifacts	Taxonomic Working Group	In progress	<p>Significant de-duplication has been done.</p> <p>Remaining duplicate names will be reviewed in May 2021</p>
47	Nomenclatural Registration.	Pierre-André Loizeau	Ongoing	<p>Expression of interest to become a Registration Centre made.</p> <p>Further work pending future developments in other Registration Centres</p>
48	<p>Make modifications to the Portal</p> <ol style="list-style-type: none"> Add Acknowledgements section to About page Add URL Link to External Links higher taxon names to Angiosperm Phylogeny Website (orders and above) and explore similar link for Bryophyte higher ranks. Add responsive GUI (size auto adjustable, upgrade to Bootstrap 4) (code change) low priority Assess if order of Descriptions can be prioritized (for display). Assess how to provide page hit statistics by data provider. On Taxon Page revise wording as follows [with underlined 	Technical Working Group	Ongoing	<p>NB Code changes required</p> <ol style="list-style-type: none"> Project level acknowledgements to be incorporated into the new About Pages (see #73) APG done. PPG1 done. Bryophytes done Not started. Need developers. Pending Pending Done Deferred at St. Louis Deferred at St. Louis Pending

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	<p>words hyperlinked/popup to definitions/glossary]:</p> <ul style="list-style-type: none"> • Accepted: 'This name is reported by <TEN Name> as an <u>accepted</u> name' • Synonym 'This name is reported by <TEN Name> as a <u>synonym</u> of <ACCEPTED NAME>' • Ambiguous 'This name is reported by <TEN Name> as <u>ambiguous</u>' • Unchecked 'This name is currently <u>unchecked</u> and awaiting taxonomic scrutiny <p>28. Reveal hidden fields (e.g. Basionym)</p> <p>29. Enable alternate classifications</p> <p>30. Advise on display options to have descriptive data on the Taxon Page with alternate views: order by content provider vs by description type.</p>			
58	<p>Assess adding the BGCI Threat Search database as this includes national level and non-standard conservation assessments</p> <p>BGCI Global Tree Search country-level distribution data into mapping in WFO when this functionality is developed (merged from #83).</p>	William	Pending	
59	<p>Re-run IPNI-WFO Name Matching after the WCSP/IPNI Update to improve the number of matching names from 68% and analyse the results.</p> <p>Update Protologue information for matched names using IPNI data (Related to #44 and #77)</p>	William	WFO/IPNI matching done after WCVP update. Ongoing.	
66	Negotiate with Kew to add a WFO link to IPNI name pages.	WFO Council	Ongoing	Discussed in March 2021 Council. Alan Paton to follow up
68	Create a data paper of the WFO Backbone data with a DOI. Use this DOI for backbone download. (related to #29)	Technical Working Group	Ongoing.	

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69	Explore use of Frictionless Data for backbone data ingestion	Technical Working Group	Pending more community adoption	Walter is interested.
70	Assess addition of Annual Snapshot download – “WFO Plant List 2020” - without causing user confusion (Related to #71 and #72)	Technical Working Group	Done	Available in Data Download on Portal? Item 72 provides the ability for an Annual Snapshot, as well as periodic snapshots.
71	Static versions of the Taxonomic Backbone should be produced, to be called ‘WFO Plant List <YEAR>’. RBG Edinburgh to lead on developing a prototype for Meise (Related to #70 and #72)	RBG Edinburgh	Done	Demo version of WFO Plant List released internally. Will be refined following user feedback. Item 72 provides static versions of the Taxonomic Backbone for different dates.
72	Develop prototype ‘WFO Plant List’ and Taxonomic Backbone viewer (Related to #70 and #71)	Roger Hyam (Edinburgh)	Done	These views to be included in a separate tab on the Portal (as is done for the About Pages), and RBG Edinburgh offers to develop and maintain this area of the Portal At Online Council July 2020: Approved the continued development of the WFO Plant List WFO Plant List adopted by March 2021 Council to go live in May 2021.
73	Redevelop the ‘About Pages’ on the WFO Portal Develop FAQs for TENS for inclusion in the About pages. Provide TEN webpages, linked to the TEN table on About pages, to give more detailed information on TENS (e.g. membership) for those who do not have their own website. Order TEN table – to be included in About Pages redesign.	About Pages Subgroup	Done	Peter Wyse Jackson to lead Task Group, including John Parnell, Alan Elliott, and others <ul style="list-style-type: none"> • CMS-driven website is being developed using new About Page layout design • Majority of Partner pages now with content – six remaining • Council members are requested to update

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	Suggest the deletion of the FAQ on the About Pages referring to Citation of WFO.			<p>information on their institutes</p> <ul style="list-style-type: none"> • Virtual Machine has been set up on Google Cloud managed by RBGE. • New About Pages to be put to Council for adoption in March 2021
76	Update the Taxonomic Backbone with data from Kew's WCVP	WCVP Update Task Group	Done	<p>Procedure has been agreed by task group and test families are underway.</p> <p>Aiming to update the Taxonomic Backbone by end of 2020 so that the WFO Plant List will be at least as good as WCVP</p> <p>Updated Taxonomic and Nomenclatural Status in pre-Harvest DB according to WCVP for non-TEN names, updating Taxon Source to https://wcvp.science.kew.org/taxon/{IPNI ID}</p>
80	Develop Criteria for judging authorisation of potential Content Providers	Taxonomic Working Group	Pending	Criteria (scientific credibility, completeness, substantial contribution, currency, etc.), similar to those used for assessing TENS
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
84	Contact Consortium Members to solicit additional Content datasets	WFO Council Co-chairs	Ongoing	
85	Review results of the comparison of WFO Taxonomic Backbone with CoL (Related to #39)	Taxonomic Working Group	Pending the completion of the comparison of the two datasets by GBIF/CoL	

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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	
87	Investigate repurposing the WFO Plant List software developed by RBG Edinburgh as the Taxonomic Browser for viewing the current Public Portal Backbone, replacing the Browse/Classification submenu. (Related to #72)	Technical Working Group	Ongoing	Roger Hyam has joined the Tech WG. The software is being reimplemented as a JSON Web Service to facilitate use as the Taxonomy Browser
90	Updating institute information on the new About Pages	All Council Members	Done	Council members are to communicate with the TEN Manager to provide information on their institutes for the new About Pages. TEN Manager to provide a guide to what is needed.
91	Google Cloud servers Credit for use of the Google Cloud will run out in 2021. Investigate options for additional sponsorship by Google and other options for hosting WFO servers	Council	Early in 2021	Awaiting outcomes of various contacts
92	WFO post 2020 strategic review and forward planning	Council to lead	2021 (when physical meetings possible)	Consider Garnett et al. (2020) ' <i>Principles for creating a single authoritative list of the world's species</i> ' Review the WFO Portal interface (previously #63) – Tax WG Review suppressing display of Taxonomic Status for names above Species in the search results and Taxon Page and adding them to Taxon Pages (previously #77) – Tax WG
93	Conduct stock take of Content and approved providers	WFO Gatekeeper and TEN Manager	For next Council	To be done after May relaunch

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94	Request Naturalis to authorize the Flora Malesiana text content now in the EDIT platform to be ingested into the WFO Portal until the full Linneaus NG-based dataset becomes available in 2022 and will then replace the EDIT text.	WFO Council	2021	Using the available EDIT text enables WFO to include the available 10,500 Flora Malesiana descriptions while awaiting the new more complete version in 2022.
95	Modify TPL to add a disclaimer to all Taxon Pages similar to TPL 1.0 to 1.1 disclaimer.	Technical Working Group	Done	TPL code was modified.
96	Investigate modification of TPL and WFO Portals to lower Google Search result standings for TPL below WFO.	Technical Working Group	2021	Requires portal code changes
97	Explore replacing WFO Portal header and footer to match About Pages and WFO Plant List	RBG Edinburgh with William	As soon as feasible	Functionality supported in current portal should be supported in revised portal. Should not delay completing updates to the WFO Portal with new backbone and reloading content.
99	Evaluate needs for pre-harvesting process tools.	Technical Working Group	2021	Without the planned Botalista system, the pre-harvesting process lacks automation. Earlier Botalista designs need to be re-evaluated to document gaps to be filled.
100	Use the major upgrade to promote WFO, especially in response to Leipzig List	Taxonomic Working Group	In line with the major update to the WFO website	Form a task group from amongst its members and other WFO participants to prepare a response paper to the 'Leipzig Catalogue of Vascular Plants' and use this opportunity to maximise scientific and other awareness of the WFO around the launch of the new 'WFO Plant List' in May 2021