

# Introduction to Rhakhis



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Pteridophyte Phylogeny Group Steering Committee

# Outline

- Introduction to WFO (~15 min)
- Introduction to Rhakhis and demo (~30 min)
- Hands-on session (remaining time)

**CORRECTION: there was no hands-on session because users must be granted permission to edit data in the Rhakhis sandbox**

# Goals

- To understand what are **WFO**, **TENs**, and **Rhakhis**, and the relationships between them
- To be able to carry out **basic** taxonomic data editing in Rhakhis
  - We don't have time to cover all the details. This is to get you started.
- To know where to look for help

# Disclaimers

- Disclaimer 1: **I am not a developer of Rhakhis.** I am here to share what I have learned from using it so far. **I cannot guarantee all information will be correct or answer all questions,** but I will do my best!
- Disclaimer 2: This workshop is open to anyone, but it will have a **focus on maintaining data for the Pteridophyte Phylogeny Group**

# Please get an ORCID

- **You need an ORCID** (unique ID for researchers) to access Rhakhis
- If you do not have one yet, please go to <https://orcid.org/> and obtain one before the hands-on session



# What is WFO?

- **World Flora Online (WFO)** seeks to provide a **classification system for all plants**
- Based out of Royal Botanic Garden Edinburgh, with a network of 55 partner institutions

<https://www.worldfloraonline.org/>

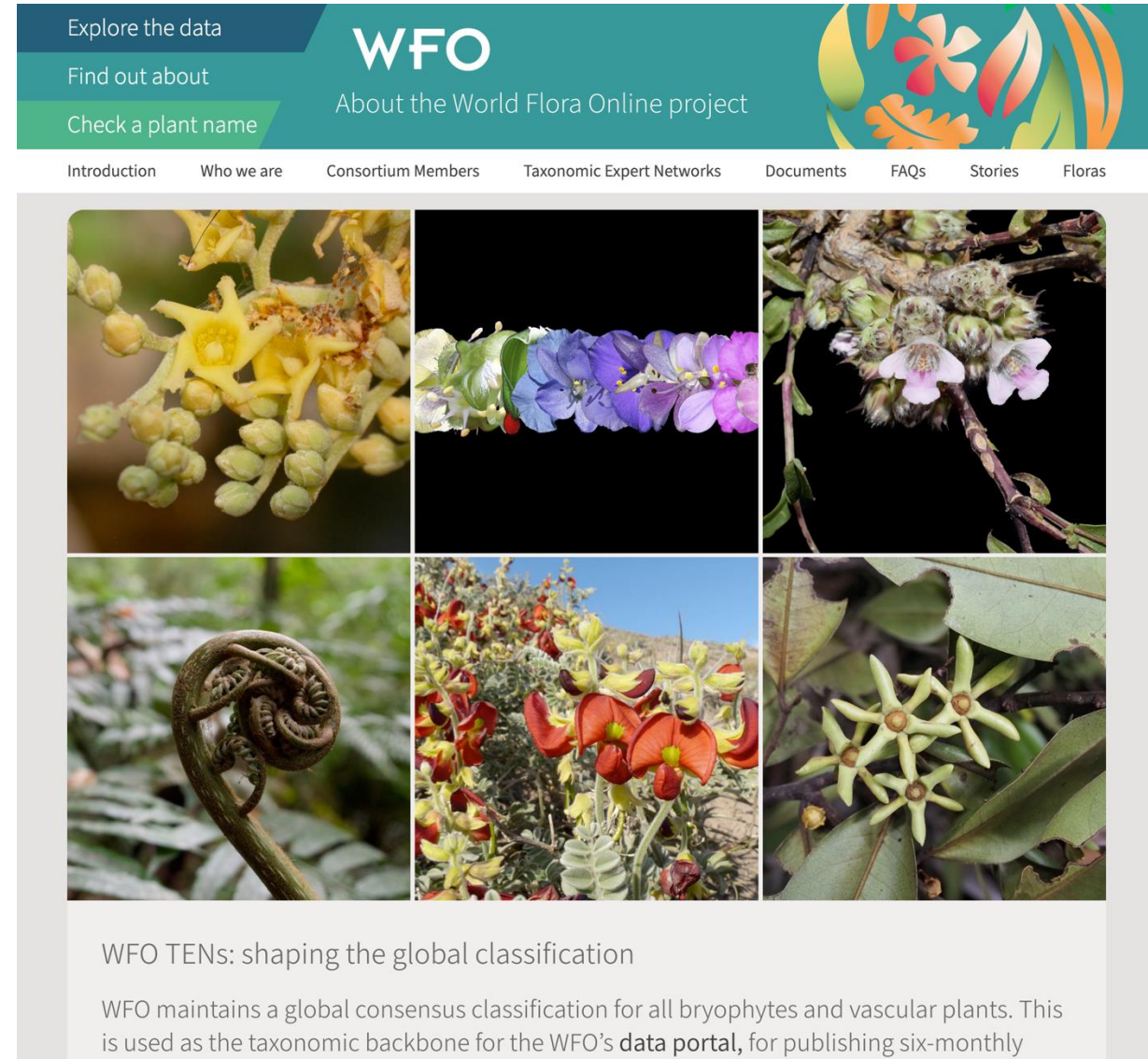
<https://wfoplantlist.org/>



# What are TENS?

- Data in WFO are managed by **Taxonomic Expert Networks (TENS)**
- Currently there are 47 TENS
  - Covers **45% of species** in the WFO classification
  - Conifers
  - Bryophytes
  - Pteridophytes (PPG) ←
  - Within angiosperms, **most TENSs are at the family level**
- This system allows for direct management of taxonomic data **by experts on those groups**

<https://about.worldfloraonline.org/tens>



The screenshot displays the WFO website header with navigation links: 'Explore the data', 'Find out about', and 'Check a plant name'. The main header features the WFO logo and the text 'About the World Flora Online project'. Below the header is a navigation bar with links: 'Introduction', 'Who we are', 'Consortium Members', 'Taxonomic Expert Networks', 'Documents', 'FAQs', 'Stories', and 'Floras'. The main content area shows a grid of six images: a close-up of yellow flowers, a row of purple and blue flowers, a branch with white flowers, a coiled fern frond, a cluster of red and yellow flowers, and a close-up of green star-shaped flowers. Below the grid, the text reads: 'WFO TENS: shaping the global classification' and 'WFO maintains a global consensus classification for all bryophytes and vascular plants. This is used as the taxonomic backbone for the WFO's data portal, for publishing six-monthly'.

# How PPG handles taxonomic decisions

- **Genus** level and higher: voting by the whole community (once per month)
- **Species** level and below: committees will be set up for each genus (or family / similar level). Individuals will edit the data directly in Rhakhis. “mini-TENs”, if you will.
- We are currently in **Phase I** (only working on names at genus and higher)
- We want to transition soon into **Phase II** (working on names at species level and below)

# Where can I access the data?

- Public-facing databases
    - <https://www.worldfloraonline.org/>
    - <https://wfoplantlist.org/>
      - These are **versioned** data, released twice per year (on summer and winter solstices)
  - **Rhakhis**
    - You can both edit (once given permission) **and** view data on Rhakhis (anyone may view)
    - This is the **live** data
  - **PPG website** (overview of classification to the genus level)
  - **PPG GitHub repo** (CSV file of data to species level)
- 
- All plants**
- Ferns and lycophytes only**

# PPG Website



## Classification (IN PROGRESS)

Please note that this is a **work in progress**. The official PPG II has not been released yet. **Please do not cite this** as PPG II until it is officially released.

To see details such as synonyms, please browse the data on [Rhakhis](#) (most up-to-date version) or [World Flora Online \(WFO\)](#) (biannual snapshots). For more information about WFO, see [here](#).

On this page

Class **Lycopodiopsida** Bartl.

Order **Lycopodiales** DC. ex  
Bercht. & J.Presl

Order **Isoetales** Prantl

Order **Selaginellales** Prantl

Class **Polypodiopsida**  
Cronquist, Takht. & W.Zimm.

## Class Lycopodiopsida Bartl.

### Order Lycopodiales DC. ex Bercht. & J.Presl

Family **Lycopodiaceae** P.Beauv. ex Mirb.

Subfamily **Huperzioideae** W.H.Wagner & Beitel ex B.Øllg.

*Huperzia* Bernh.

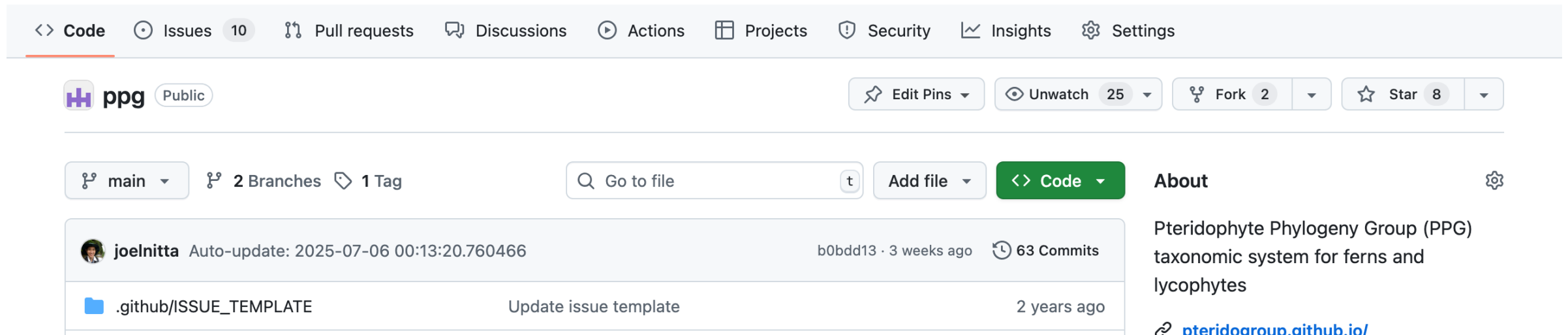
*Phlegmariurus* (Herter) Holub

*Phylloglossum* Kunze

<https://pteridogroup.github.io/ppg>

# PPG GitHub Repo

- Where we discuss and vote on taxonomic issues at genus level and higher
- Also where our copy of the taxonomic data “lives”



The screenshot shows the GitHub interface for the 'ppg' repository. At the top, there's a navigation bar with links for Code, Issues (10), Pull requests, Discussions, Actions, Projects, Security, Insights, and Settings. Below this, the repository name 'ppg' is displayed as 'Public'. To the right are buttons for 'Edit Pins', 'Unwatch' (25), 'Fork' (2), and 'Star' (8). The main section shows the 'main' branch selected, with '2 Branches' and '1 Tag' indicated. A search bar 'Go to file' and buttons for 'Add file' and 'Code' are present. Below this, a commit by 'joelnitta' is shown with the message 'Auto-update: 2025-07-06 00:13:20.760466' and 'b0bdd13 · 3 weeks ago'. It also shows '63 Commits'. A file entry '.github/ISSUE\_TEMPLATE' is listed with the description 'Update issue template' and '2 years ago'. On the right, the 'About' section describes the repository as the 'Pteridophyte Phylogeny Group (PPG) taxonomic system for ferns and lycophytes' and provides a link to 'pteridogroup.github.io/'.

<> Code Issues 10 Pull requests Discussions Actions Projects Security Insights Settings

ppg Public Edit Pins Unwatch 25 Fork 2 Star 8

main 2 Branches 1 Tag Go to file Add file Code

joelnitta Auto-update: 2025-07-06 00:13:20.760466 b0bdd13 · 3 weeks ago 63 Commits

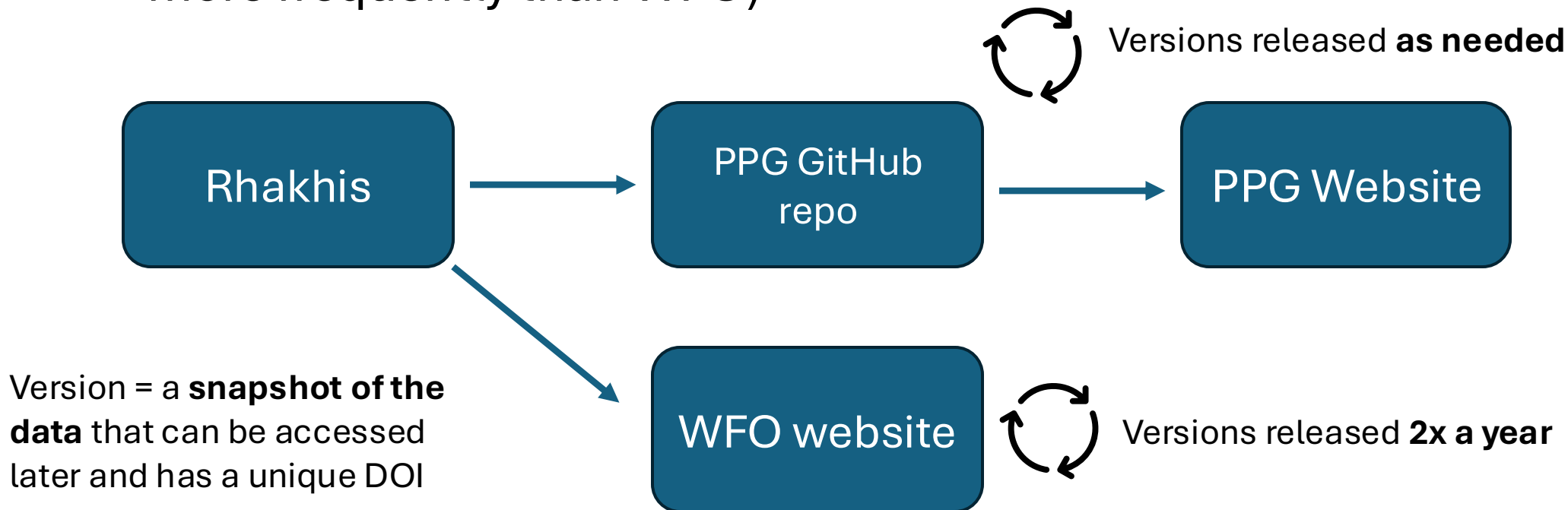
.github/ISSUE\_TEMPLATE Update issue template 2 years ago

About Pteridophyte Phylogeny Group (PPG) taxonomic system for ferns and lycophytes [pteridogroup.github.io/](https://pteridogroup.github.io/)

<https://github.com/pteridogroup/ppg>

# Data versioning in PPG vs. WFO

- Taxonomic data of ferns and lycophytes are automatically imported from Rhakhis every few days into the PPG GitHub repo
- These data are used to generate the classification on the PPG website (and the forthcoming PPG II paper)
- We anticipate releasing versions of PPG data as needed (probably more frequently than WFO)



# Accessing Rhakhis

- Anybody can log on to Rhakhis using their ORCID
- There are **two versions** of Rhakhis
  - The [actual WFO database](#)
    - Only users who have been given permission can edit. Anyone can view.
  - The [sandbox](#) (AKA “staging server”): looks just like the real database, but any changes are erased overnight. **Used for testing.**
- For this workshop, **we will use the sandbox**



“Rhakhis” is an ancient Greek spelling and refers to the taxonomic **backbone**, i.e., the classification

# Getting help



Please read the **user manual** first:

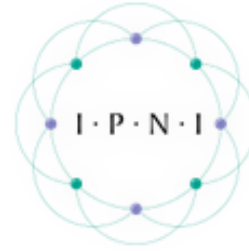
<https://plant-list-docs.rbge.info/rhakhis/>

- For **PPG**-specific questions, please ask me (Joel Nitta): [joelnitta@gmail.com](mailto:joelnitta@gmail.com)
- For questions about the **data**, ask Alan Elliott: [aelliott@rbge.org.uk](mailto:aelliott@rbge.org.uk)
- For questions about the **editor**, ask Roger Hyam: [rhyam@rbge.org.uk](mailto:rhyam@rbge.org.uk)
- You can also make suggestions or file bug reports on the Rhakhis GitHub repo: <https://github.com/worldflora/wfo-backbone-ui/issues>

# A word about taxonomy vs. nomenclature

- **“Names”** are any taxonomic name that has been published (nomenclature). The International Code of Nomenclature for algae, fungi, and plants (AKA “the Code”) sets the rules for valid publication.
- **“Taxonomy”** (AKA “classification”) is how we use those names (accepted vs. synonym). We (PPG or other TENs) determine what taxonomy to use.
- An analogy: names are points on a map. The taxonomic system draws lines around the points. **The points don’t move, but how the lines are drawn may change.**
- Rhakhis is a database of names. Not all of them are in the classification (some are **“unplaced”**).

# IPNI vs. WFO



International Plant  
Names Index

<https://www.ipni.org/>

- **IPNI** (International Plant Names Index) is a **nomenclatural** database
  - Stores names, but does not provide any taxonomic decisions
  - Important source of names in a **standardized format**
    - Especially authors and publications
- **WFO** (World Flora Online) is a **taxonomic** database
  - Stores names **and** their relationships and taxonomic status
  - **Relies on IPNI** as an authority for formatting of names
  - Tries not to duplicate information that you could obtain from IPNI (for example, information about the type)

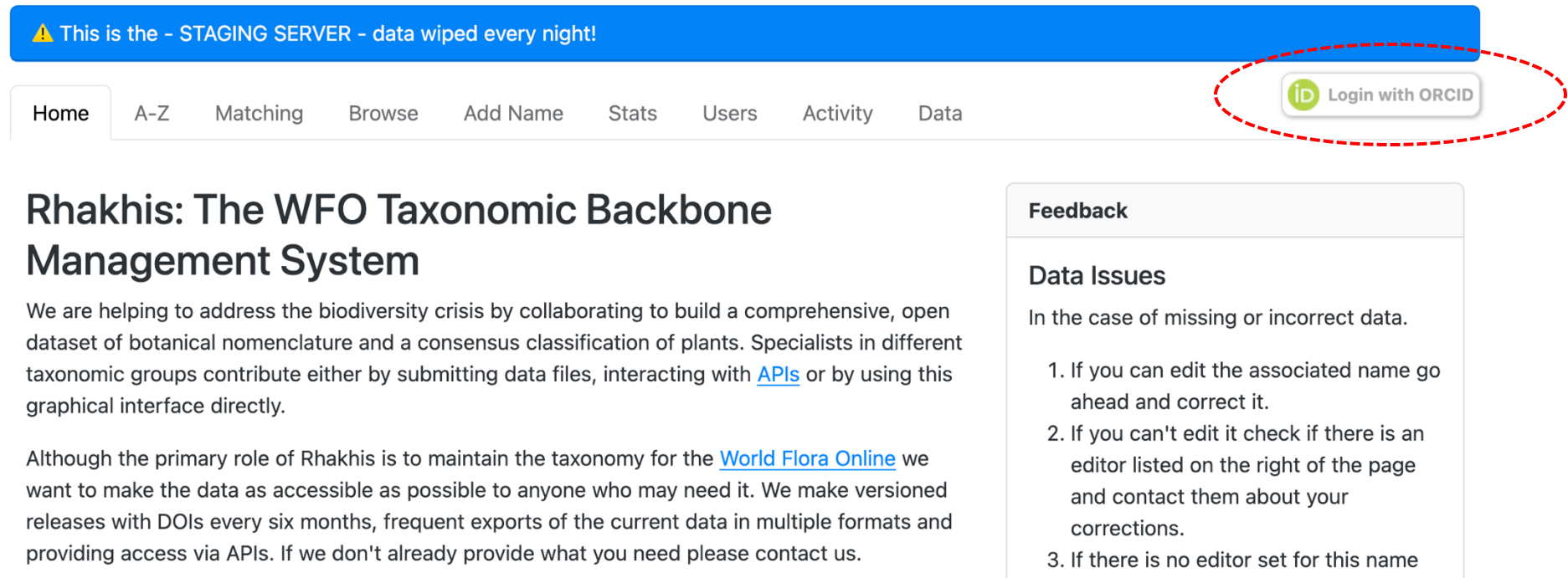
# Nomenclatural statuses in Rhakhis

- **Conserved:** These names have been conserved for continued use to improved nomenclatural stability. See <https://naturalhistory2.si.edu/botany/codes-proposals/>
- **Deprecated:** It is unlikely you would use this when creating a new record. If you find a record you want to remove from the public release use this status. Please add a note to the record stating why it has been deprecated.
- **Illegitimate:** The only placement activity you can do with illegitimate is to make it a synonym.
- **Invalid:** a name not validly published. The only placement activity you can do with invalid is to make it a synonym.
- **Rejected:** Name rejected by the Nomenclature Committee of the ICBN. See the lists here <https://naturalhistory2.si.edu/botany/codes-proposals/>
- **Sanctioned:** fungal name equivalent of conserved. Do not use for names in the WFO.
- **Superfluous:** The only placement activity you can do with unknown is make it a synonym.
- **Unknown: default status. The only placement activity you can do with unknown is make it a synonym.**
- **Valid: use this when you know a name meets the requirements set out in the Code. Only valid names can be placed in the classification as an accepted taxon.**

# Connecting to Rhakhis

- Navigate to the sandbox: <https://rhakhis.rbge.info/rhakhis/ui/>
- Click on “Login with ORCID” to login

Note the blue bar with warning that this is the staging server (sandbox)



The screenshot shows the Rhakhis web interface. At the top, a blue banner contains a warning icon and the text "This is the - STAGING SERVER - data wiped every night!". Below this is a navigation bar with links: Home, A-Z, Matching, Browse, Add Name, Stats, Users, Activity, and Data. On the right side of the navigation bar, a button labeled "id Login with ORCID" is circled with a red dashed line. The main content area has the heading "Rhakhis: The WFO Taxonomic Backbone Management System" and a paragraph explaining the project's goal to address the biodiversity crisis by building a comprehensive, open dataset of botanical nomenclature. It also mentions that specialists contribute by submitting data files, interacting with APIs, or using the graphical interface directly. A second paragraph states that the primary role of Rhakhis is to maintain the taxonomy for the World Flora Online, with the goal of making data as accessible as possible through versioned releases, frequent exports, and API access. On the right side of the main content area, there is a "Feedback" section titled "Data Issues" which provides instructions on how to report missing or incorrect data, including editing names, contacting editors, and reporting missing editors.

⚠ This is the - STAGING SERVER - data wiped every night!

Home A-Z Matching Browse Add Name Stats Users Activity Data

**id Login with ORCID**

## Rhakhis: The WFO Taxonomic Backbone Management System

We are helping to address the biodiversity crisis by collaborating to build a comprehensive, open dataset of botanical nomenclature and a consensus classification of plants. Specialists in different taxonomic groups contribute either by submitting data files, interacting with [APIs](#) or by using this graphical interface directly.

Although the primary role of Rhakhis is to maintain the taxonomy for the [World Flora Online](#) we want to make the data as accessible as possible to anyone who may need it. We make versioned releases with DOIs every six months, frequent exports of the current data in multiple formats and providing access via APIs. If we don't already provide what you need please contact us.

### Feedback

#### Data Issues

In the case of missing or incorrect data.

1. If you can edit the associated name go ahead and correct it.
2. If you can't edit it check if there is an editor listed on the right of the page and contact them about your corrections.
3. If there is no editor set for this name

# Main menu tabs

[Home](#)[A-Z](#)[Matching](#)[Browse](#)[Add Name](#)[Stats](#)[Users](#)[Data](#)

- **A-Z:** Look up a name exactly
- **Matching:** Look up a name using fuzzy matching
  - Handy when you aren't sure of the spelling
- **Browse:** Browse the taxonomic hierarchy
- **Add name:** Add a new name
  - Newly published names get added automatically from IPNI, so it is rare that you will need to do this
- **Stats:** Check current statistics (number of names, etc.)
- **Users:** View users
- **Data:** Export data



These can also be used to just view the data, without editing

# Looking up names (A-Z or matching)

- For infraspecific taxa, don't include rank.
  - Ex: *Poa annua supina* for *Poa annua* subsp. *Supina*
- Colors
  - **Yellow:** names placed in the classification (accepted or synonym)
  - **Red:** deprecated. DO NOT USE.
  - **Grey:** unplaced. Name is in the data, but not in the classification

The screenshot shows a web application interface with a navigation bar at the top containing links: Home, A-Z, Matching, Browse, Add Name, Stats, Users, and Data. Below the navigation bar is a search input field containing the text 'Rhodode'. The search results are displayed as a list of items, each with a colored background bar on the left and a text description on the right. The items are numbered in blue circles on the left of the text.

Rank	Name	Author	Status	Notes
8	<a href="#">Rhododendraceae</a>	Juss.	Deprecated	Do not use.
5	<a href="#">Rhododendron</a>	L.	Accepted	taxon name. [ <a href="#">Ericaceae</a> , <a href="#">Ericales</a> ]
17	<a href="#">Rhododendron aberconwayi</a>	Cowan	Accepted	taxon name. [ <a href="#">Ericaceae</a> , <a href="#">Ericales</a> ]
14	<a href="#">Rhododendron aberrans</a>	Tagg & Forrest	Synonym	of <a href="#">Rhododendron traillianum</a> var. <a href="#">traillii</a>
13	<a href="#">Rhododendron abhayae</a>	L.K.Rai	Unplaced	This name has not been placed in taxonomy.

# Name view

Where most of the action happens (moving, sinking into synonymy, raising to accepted, etc.)

⚠ This is the - STAGING SERVER - data wiped every night!

[Home](#)   [A-Z](#)   [Matching](#)   [Browse](#)   [Add Name](#)   [Stats](#)   [Users](#)   [Activity](#)   [Data](#)

 Joel Nitta

[Code](#) / [Plantae](#) / [Pteridobiotina](#) / [Polypodiophyta](#) / [Polypodiopsida](#) / [Polypodiidae](#) / [Polypodiales](#) / [Pteridineae](#) / [Pteridaceae](#) / [Parkerioideae](#) / [Acrostichum](#)

Species

wfo-0001107183 ↗

## *Acrostichum aureum* L.

## Name Parts

Rank  
species

Genus Part  
**Acrostichum**

Main Name  
**aureum**

## Synonyms 37

*Acrostichum emarginatum* Buch.; Roxb.

*Acrostichum fasciculatum* (Fourn.) C.Ch.

*Acrostichum urvillei* (Fée) C.Presl

*Acrostichum wightianum* C.Presl

*Chrysodium fasciculatum* E.Fourn.

*Chrysodium urvillei* Fée

*Chrysodium aureum* (L.) Mett.

*Acrostichum inaequale* Willd.

*Acrostichum juglandifolium* Kaulf.

# Efficient use of Rhakhis requires “**taxonomic logic**”

- Names that are **not valid** (nomenclatural status) **cannot be accepted** (taxonomic status)
- A name **cannot be synonymized with another synonym**, only an accepted name
- A name **cannot be synonymized if it has synonyms** (they all must be moved to the new accepted name first)
- **You will not see hints to indicate if what you are trying to do is breaking these rules**; those options will just be greyed out!

# Raise a name to accepted status

- Let's say we want to make *Acrostichum emarginatum* Buch.; Roxb. an accepted name. Click on it from the list of synonyms under *Acrostichum aureum* L.
- Next, click on **Placement**
  - This is where you can move it to be a synonym of a different name, or raise to an accepted taxon

Synonymous Name

wfo-0000150435 ↗

*Acrostichum emarginatum* Buch.; Roxb.

Name Parts

Rank  
species

Genus Part  
Acrostichum

Main Name  
emarginatum

Nomenclatural Status

unknown

Author String

Buch.; Roxb.

Validate

Placement

✓ -- Choose action --

Raise to accepted taxon within ...

Sink into synonymy within ...

Change parent taxon to ...

Change to synonym of ...

Remove from taxonomy.

<urn:lsid:ipni.org:names:17002690-1>

Based on the initial data import

Database: [The Pteridophyte Phylogeny Group \(PPG\)](#)

Edit

Based on data supplied by Pteridophyte Phylogeny Group Nov 2024

Add Source

Homotypic Names

Add Basionym ...

Editors

[Carl Rothfels](#) Editor

[Eric Schuettpelz](#) Editor

Synonymous Name

wfo-0000150435 ↗

*Acrostichum emarginatum* Buch.; Roxb.

Name Parts

Rank

species

▼

Genus Part

Acrostichum

Main Name

emarginatum

Nomenclatural Status

unknown

▼

Author String

Buch.; Roxb.

Validate

Placement

✓ -- Choose action --

Raise to accepted taxon within ...

Sink into synonymy within ...

Change parent taxon to ...

Change to synonym of ...

Remove from taxonomy.

<urn:lsid:ipni.org:names:17002690-1>

Based on the initial data import

Database: [The Pteridophyte Phylogeny Group \(PPG\)](#)

Edit

Based on data supplied by Pteridophyte  
Phylogeny Group Nov 2024

Add Source

Homotypic Names

Add Basionym ...

Editors

[Carl Rothfels](#) Editor

[Eric Schuettpelz](#) Editor

But we can't click  
on "raise to accepted taxon"  
Why not??

Synonymous Name wfo-0000150435 ↗

*Acrostichum emarginatum* Buch.; Roxb.

Name Parts

Rank  
species

Genus Part  
Acrostichum

Main Name  
emarginatum

Nomenclatural Status

unknown

Author String

Buch.; Roxb. Validate

The answer is **here**:  
**nomenclatural status is still “unknown”**

But **we can’t click**  
on “raise to accepted taxon”  
Why not??

Placement

✓ -- Choose action --

Raise to accepted taxon within ...

Sink into synonymy within ...

Change parent taxon to ...

Change to synonym of ...

Remove from taxonomy.

[urn:lsid:ipni.org:names:17002690-1](https://nomenclature.pensoft.net/urn:lsid:ipni.org:names:17002690-1)

Based on the initial data import

**Database:** [The Pteridophyte Phylogeny Group \(PPG\)](#) Edit

Based on data supplied by Pteridophyte  
Phylogeny Group Nov 2024

Add Source

Homotypic Names

Add Basionym ...

Editors

[Carl Rothfels](#) Editor

[Eric Schuettpelz](#) Editor

Synonymous Namewfo-0000150435 ↗

*Acrostichum emarginatum* Buch.; Roxb.

Name Parts

Rankspecies

Genus Part

conserved

deprecated

illegitimate

invalid

orthovar

rejected

sanctioned

superfluous

✓ unknown

**valid**

Author String

Buch.; Roxb.

Validate

Placement

-- Choose action --

Taxonomic Sources

Database: POWO record for urn:lsid:ipni.org:names:17002690-1Edit

Based on the initial data import

Database: The Pteridophyte Phylogeny Group (PPG).Edit

Based on data supplied by Pteridophyte Phylogeny Group Nov 2024

Add Source

Homotypic Names

Add Basionym ...

Editors

Carl RothfelsEditor

Eric SchuettpelzEditor

Change this from “unknown” to “**valid**” first,  
Then click “**Update**”



After clicking “Update”, an error will briefly appear, but you can safely ignore this. Then it will say “Success”.

## Synonymous Name

wfo-0000150435 ↗

***Acrostichum emarginatum*** Buch.; Roxb.

## Name Parts

Rank  
species

Genus Part  
Acrostichum

Main Name  
emarginatum

## Nomenclatural Status

valid

## Author String

## Placement

✓ -- Choose action --

Raise to accepted taxon within ...

Sink into synonymy within ...

Change parent taxon to ...

Change to synonym of ...

Remove from taxonomy.

[urn:lsid:ipni.org:names:17002690-1](https://nomenclature.pensoft.net/urn:lsid:ipni.org:names:17002690-1)

Based on the initial data import

**Database:** [The Pteridophyte Phylogeny Group \(PPG\)](#).

Edit

Based on data supplied by Pteridophyte  
Phylogeny Group Nov 2024

Add Source

## Homotypic Names

Add Basionym ...

## Editors

Now we can raise it to  
accepted!

Note that we can only choose *Acrostichum* (binomials can't be put in a different genus)

Synonymous Namewfo-0000150435 ↗

*Acrostichum emarginatum* Buch.; Roxb.

Name Parts

Rankspecies

Genus PartAcrostichum

Main Nameemarginatum

Nomenclatural Status

valid

Author String

Placement

Raise to accepted taxon within ...

Acrostichum L.

Taxonomic Sources

Database: POWO record for urn:lsid:ipni.org:names:17002690-1Edit

Based on the initial data import

Database: The Pteridophyte Phylogeny Group (PPG).Edit

Based on data supplied by Pteridophyte Phylogeny Group Nov 2024

Add Source

Homotypic Names

Add Basionym ...

# Sinking names into synonymy

- Say now that we want to make *Acrostichum aureum* L. a synonym of our newly accepted *Acrostichum emarginatum* Buch.; Roxb.
- Use the “back” button on your browser to get back to the taxon page for *Acrostichum aureum* L.
  - You can also use the A-Z or Matching tabs, but the back button is often easier
  - Any taxonomic changes you have made will be up-to-date

Species

wfo-0001107183 ↗

*Acrostichum aureum* L.

Name Parts

Rank

species

▼

Genus Part

Acrostichum

Main Name

aureum

Nomenclatural Status

valid

▼

Author String

L.

Validate

Publication

Synonyms 36

*Acrostichum fasciculatum* (Fourn.) C.Chr.

*Acrostichum urvillei* (Fée) C.Presl

*Acrostichum wightianum* C.Presl

*Chrysodium fasciculatum* E.Fourn.

*Chrysodium urvillei* Fée

*Chrysodium aureum* (L.) Mett.

*Acrostichum inaequale* Willd.

*Acrostichum juglandifolium* Kaulf.

*Hemionitis arifolia* (Burm.f.) T.Moore

*Chrysodium vulgare* Fée

*Chrysodium inaequale* Fée

*Asplenium arifolium* Burm.f.

Placement

-- Choose action --

▼

Taxonomic Sources

Database: [The Pteridophyte Phylogeny](#)

Edit

(Note that *Acrostichum emarginatum* no longer appears in the list of synonyms)

Click on “Placement” menu to sink into synonymy

Species

wfo-0001107183 ↗

*Acrostichum aureum* L.

Name Parts

Rank

species

▼

Genus Part

Acrostichum

Main Name

aureum

Nomenclatural Status

valid

▼

Author String

L.

Validate

Publication

Synonyms 36

*Acrostichum fasciculatum* (Fourn.) C.Chr.

*Acrostichum urvillei* (Fée) C.Presl

*Acrostichum wightianum* C.Presl

*Chrysodium fasciculatum* E.Fourn.

*Chrysodium urvillei* Fée

*Chrysodium aureum* (L.) Mett.

*Acrostichum inaequale* Willd.

*Acrostichum juglandifolium* Kaulf.

*Hemionitis arifolia* (Burm.f.) T.Moore

*Chrysodium vulgare* Fée

✓ -- Choose action --

Raise to accepted taxon within ...

Sink into synonymy within ...

Change parent taxon to ...

Change to synonym of ...

Remove from taxonomy.

-- Choose action --

Taxonomic Sources

Database: [The Pteridophyte Phylogeny](#)

Edit

“Sink into synonymy” is  
greyed out!  
Why??

Species
wfo-0001107183 ↗

*Acrostichum aureum* L.

Name Parts

Rank  
species

Genus Part  
Acrostichum

Main Name  
aureum

Nomenclatural Status

valid

Author String

L.
Validate

Publication

Synonyms 36

Acrostichum fasciculatum (Fourn.) C.Chr.

Acrostichum urvillei (Fée) C.Presl

Acrostichum wightianum C.Presl

Chrysodium fasciculatum E.Fourn.

Chrysodium urvillei Fée

Chrysodium aureum (L.) Mett.

Acrostichum inaequale Willd.

Acrostichum juglandifolium Kaulf.

Hemionitis arifolia (Burm.f.) T.Moore

Chrysodium vulgare Fée

✓ -- Choose action --

Raise to accepted taxon within ...

Sink into synonymy within ...

Change parent taxon to ...

Change to synonym of ...

Remove from taxonomy.

-- Choose action --

Taxonomic Sources

Database: [The Pteridophyte Phylogeny](#)
Edit

- The answer is **here: This name still includes synonyms.**
- If we synonymized it, we would end up with a synonym having synonyms, and that is not allowed!
- **Each of these needs to be moved first.**
- **Click on the first one (*A. fasciculatum*)**

“Sink into synonymy” is greyed out!  
Why??

Synonymous Name

wfo-0000150439 ↗

*Acrostichum fasciculatum* (Fourn.) C.Chr.

Name Parts

Rank  
species

Genus Part  
Acrostichum

Main Name  
fasciculatum

Nomenclatural Status

unknown

Placement

✓ -- Choose action --  
Raise to accepted taxon within ...  
Sink into synonymy within ...  
Change parent taxon to ...  
Change to synonym of ...  
Remove from taxonomy.  
[urn:lsid:ipni.org:names:17002780-1](#)

Based on the initial data import

Database: [The Pteridophyte Phylogeny Group \(PPG\).](#)

Edit

Based on data supplied by Pteridophyte  
Phylogeny Group Nov 2024

Add Source

Homotypic Names

Add Basionym ...

We can synonymize  
**each** of these names

Synonymous Name

wfo-0000150439 ↗

*Acrostichum fasciculatum* (Fourn.) C.Chr.

Name Parts

Rank  
species

Genus Part  
Acrostichum

Main Name  
fasciculatum

Nomenclatural Status

unknown

Placement

Change to synonym of ...

Acrostich

*Acrostichum* L.

*Acrostichum aureum* L.

*Acrostichum danaeifolium* Langsd. & Fisch.

*Acrostichum durvillei* (Fée) C.Presl

*Acrostichum emarginatum* Buch.; Roxb.

*Acrostichum schlimense* Fée

*Acrostichum sculpturatum* (Fée) C.Presl

*Acrostichum speciosum* Willd.

Taxonomic Sources

Start typing the accepted name and the choices will narrow down



If the name you are looking for is not accepted, it will not appear!

Note that the taxonomic hierarchy now reflects the new accepted name  
(*A. emarginatum*)

[Code](#) / [Plantae](#) / [Pteridobiotina](#) / [Polypodiophyta](#) / [Polypodiopsida](#) / [Polypodiidae](#) / [Polypodiales](#) / [Pteridineae](#) / [Pteridaceae](#) / [Parkerioideae](#) / [Acrostichum](#)  
/ [A. emarginatum](#)

Synonymous Name

wfo-0000150439 ↗

*Acrostichum fasciculatum* (Fourn.) C.Ch.

Placement

-- Choose action --

Name Parts

Rank  
species

Genus Part  
Acrostichum

Main Name  
fasciculatum

Nomenclatural Status

unknown

Taxonomic Sources

**Database:** [POWO record for urn:lsid:ipni.org:names:17002780-1](#)

Edit

Based on the initial data import

**Database:** [The Pteridophyte Phylogeny Group \(PPG\).](#)

Edit

Based on data supplied by Pteridophyte  
Phylogeny Group Nov 2024

Add Source

Homotypic Names

Add Basionym ...

# Bulk editing of synonyms

- Click on the “back” button in your browser to get back to *A. acrostichum*
- We need to move the rest of the synonyms **before** we can synonymize *A. acrostichum*

Species

wfo-0001107183 ↗

*Acrostichum aureum* L.

Name Parts

Rank  
species

Genus Part  
Acrostichum

Main Name  
aureum

Nomenclatural Status

valid

Synonyms 35

*Acrostichum urvillei* (Fée) C.Presl

*Acrostichum wightianum* C.Presl

*Chrysodium fasciculatum* E.Fourn.

*Chrysodium urvillei* Fée

*Chrysodium aureum* (L.) Mett.

*Acrostichum inaequale* Willd.

*Acrostichum juglandifolium* Kaulf.

*Hemionitis arifolia* (Burm.f.) T.Moore

*Chrysodium vulgare* Fée

*Chrysodium inaequale* Fée

*Asplenium arifolium* Burm.f.

*Gymnogramma arifolia* (Burm.f.) Kuhn

We are down to 35 synonyms (from 37 when we started)...

Do I have to do this for every name one a time?

No - **fortunately, there is a shortcut!**

## Species

wfo-0001107183 ↗

*Acrostichum aureum* L.

### Name Parts

Rank  
species

Genus Part  
Acrostichum

Main Name  
aureum

### Nomenclatural Status

valid

## Synonyms 35

*Acrostichum urvillei* (Fée) C.Presl

*Acrostichum wightianum* C.Presl

*Chrysodium fasciculatum* E.Fourn.

*Chrysodium urvillei* Fée

*Chrysodium aureum* (L.) Mett.

*Acrostichum inaequale* Willd.

*Acrostichum juglandifolium* Kaulf.

*Hemionitis arifolia* (Burm.f.) T.Moore

*Chrysodium vulgare* Fée

*Chrysodium inaequale* Fée

*Asplenium arifolium* Burm.f.

*Gymnogramma arifolia* (Burm.f.) Kuhn

Click on the blue number

Brings up menu  
to move all names  
to another  
accepted name

[Code](#) / [Plantae](#) / [Pteridobiotina](#) / [Polypodiophyta](#) / [Polypodiopsida](#) / [Polypodiidae](#) / [Polypodiales](#) / [Pteridineae](#) / [Pteridaceae](#) / [Parkeri](#)

Species wfo-0001107183 ↗ Synonyms 35

## *Acrostichum aureum*

**Name Parts**

Rank  
species

Genus Part  
Acrostichum

Main Name  
aureum

**Move or remove all synonyms.** ✕

This will affect all 35 synonyms of *Acrostichum aureum* L. **This action cannot be undone.**

✓ -- Select action --

Unplace: Remove all the synonyms from the classification entirely.

Move: Pick a new accepted name from a list.

Cancel Save

*Acrostichum juglandifolium* Kaulf.

*Hemionitis arifolia* (Burm.f.) T.Moore

*Chrysodium vulgare* Fée



There is no “Undo” button, so  
use these bulk editing options  
with caution!

This is the - STAGING SERVER

Home

A-Z

Matching

Code

Plantae

Pteridobioti

Species

Acrostichum au

Name Parts

Rank  
species

Genus Part  
Acrostichum

Main Name  
aureum

Nomenclatural Status

valid

Move or remove all synonyms.

This will affect all 35 synonyms of *Acrostichum aureum* L. **This action cannot be undone.**

Move: Pick a new accepted name from a list.

Acrostichum em

*Acrostichum emarginatum* Buch.; Roxb. wfo-0000150435

Move all synonyms to *Acrostichum emarginatum* Buch.; Roxb.

Cancel

Save

Type in the accepted name and click “Save”

**Tip:** copy and paste from the accepted name page to avoid typos

The bulk move does not move the accepted name. The last step is to now sink *A. acrostichum* into synonymy

Species

wfo-0001107183 ↗

*Acrostichum aureum* L.

Name Parts

Rank

species

Genus Part

Acrostichum

Main Name

aureum

Nomenclatural Status

valid

Placement

✓ -- Choose action --  
Raise to accepted taxon within ...  
**Sink into synonymy within ...**  
Change parent taxon to ...  
Change to synonym of ...  
Remove from taxonomy.

[Group \(PPG\).](#)  
Based on data supplied by Pteridophyte  
Phylogeny Group Nov 2024

Add Source

Taxon Status

☐ Check to make this a **hybrid** taxon.

☐ Check to make this a **fossil** taxon.

Homotypic Names

# Adding names

- Most names are already in the data (newly published names are automatically imported from IPNI), so you rarely need to add a new name yourself
- There is a check to make sure the name does not already exist
  - If it does, you must acknowledge that you are adding a homonym

⚠ This is the - STAGING SERVER - data wiped every night!

[Home](#) [A-Z](#) [Matching](#) [Browse](#) [Add Name](#) [Stats](#) [Users](#) [Activity](#) [Data](#)

### Add Name

#### Proposed New Name String

Acrostichum aureum

Enter the full name without rank or authors. It should just be 1, 2 or 3 words.

#### Homonyms Found

☐ *Acrostichum aureum* L. (wfo-0001107183)

☐ *Acrostichum aureum* Cav. (wfo-1000067762)

You must confirm you wish to create a homonym by checking the boxes next to the existing names.

Create

### Instructions

This form is used to add new names to the database. The priority is not to create duplicated records and therefore mint new WFO IDs that will later need to be merged. Only the minimum information needed to create an unplaced name is collected initially. Further details can be added by editing the new record.

If homonyms are detected, you must acknowledge these

### Similar Names

*Acrostichum aureum* L. (wfo-0001107183)

*Acrostichum aureum* Cav. (wfo-1000067762)

*Acrostichum aureonitens* Hook. (wfo-0001112300)



Please do not duplicate data!

⚠ This is the - STAGING SERVER - data wiped every night!

[Home](#) [A-Z](#) [Matching](#) [Browse](#) [Add Name](#) [Stats](#) [Users](#) [Activity](#) [Data](#)

Adding a name with  
no homonyms

### Add Name

#### Proposed New Name String

Acrostichum foobar

Enter the full name without rank or authors. It should just be 1, 2 or 3 words.

Create

### Instructions

This form is used to add new names to the database. The priority is not to create duplicated records and therefore mint new WFO IDs that will later need to be merged. Only the minimum information needed to create an unplaced name is collected initially. Further details can be added by editing the new record.

### Similar Names

*Acrostichum* L. (wfo-4000000472)

*Acrostichum* Fée (wfo-4100004662)

Acrostichinae Payer (wfo-4100004307)



Do not include rank or author  
in the name (that will be done later)

# Adding data for a new name

The form is divided into several sections:

- Unplaced Name** (grey header): *Acrostichum foobar* (wfo-1000082018 ↗)
- Name Parts** (grey header):
  - Rank: species
  - Genus Part: Acrostichum
  - Main Name: foobar
- Nomenclatural Status** (grey header): unknown
- Author String** (grey header): Abbreviated author names (with a Validate button)
- Publication** (grey header):
- Placement** (yellow header): -- Choose action --
- Taxonomic Sources** (yellow header): Add Source
- Homotypic Names** (grey header): Add Basionym ...

- The new name is in the database, but **not yet in the classification** (it is “unplaced”)
- At a minimum, to **place** the name in the classification, you need to set the nomenclatural status and choose a placement.
- I also recommend adding the author (next slide)

# Adding an author

- You should enter the author name(s) in IPNI format
- **No spaces within a name**
- Rhakhis aims for maximally inclusive data, so include “ex.” authors

Author String

(Copel.) J.H.Nitta

Validate

Update

Click on “Validate”  
**before** clicking update

# Adding an author

(Copel.) J.H.Nitta

**Copel.:** [Edwin Bingham Copeland \(1873-1964\)](#)  
Author is **not** linked from the references.

**Add Reference**

**J.H.Nitta:** [Joel Hamilton Nitta](#)  
Author is **not** linked from the references.

**Add Reference**

**Close**

Click on “Add Reference”  
**before** clicking “Close”



Note that if names have been correctly entered in IPNI format, the full name will also appear

(Copel.) J.H.Nitta, F.B.Foo

Copel.: [Edwin Bingham Copeland \(1873-1964\)](#)

Author is **not** linked from the references.

Add Reference

J.H.Nitta: [Joel Hamilton Nitta](#)

Author is **not** linked from the references.

Add Reference

**F.B.Foo:** No botanist was found in [Wikidata](#) with the author abbreviation ([P428](#)) set to 'F.B.Foo'.  
Either correct the abbreviation here or create a record in Wikidata with this author abbreviation.

Close

You will see this warning message if no matching author name could be found in the database

### Author String

(Copel.) J.H.Nitta

Validate

#### Success



Name integrity check

### Publication

Citation, abbreviated

Year

### Nomenclatural References

**Person:** [Edwin Bingham Copeland \(1873-1964\)](#)

Based on occurrence of 'Copel.' in the author string.



Edit

**Person:** [Joel Hamilton Nitta](#)

Based on occurrence of 'J.H.Nitta' in the author string.

Edit

Add Reference

# Adding publication

- Enter the publication in **IPNI format**
- Enter the year (even though it may be in the publication already)

Publication
<div>Citation, abbreviated Phytotaxa 183(1): 28 (2014).</div>
<div>Year 2014</div>



Getting the format correct is tricky... that is why it is better to use names that have already been automatically added to Rhakhis from IPNI (they already have this data)

# Adding a basionym

- Click on a name that looks like it has a basionym, for example *Acrostichum urvillei* (Fée) C.Presl
- Click on “Add basionym” under “Homotypic names”

Homotypic Names
<a href="#">Add Basionym ...</a>

# Adding a basionym

- Rhakhis will automatically find a likely basionym. If incorrect, you can use the search bar to look for another name.

Homotypic Names
<input type="text" value="Type for alphabetical search"/>
<i>Chrysodium urvillei</i> Fée [1845]



**Basionym chains are not allowed** (a name with a basionym cannot be the basionym of another name). Such names will not appear in the search results.

# What about hybrids?

- “Hybrid” is a taxonomic status, not a nomenclatural status
- **You don’t need to enter “ × ” in the name**
- Just click on the “Is this a hybrid taxon?” box
  - The “ × ” will automatically appear

**Taxon Status**  
☐ Check to make this a **hybrid** taxon.  
☐ Check to make this a **fossil** taxon.



“Taxon Status” only appears for accepted names

# Your turn...

- You can either start browsing names **in your taxon of expertise** and try editing them (**recommended**)
- Or, have a look at the list of recently imported, unplaced names:  
<https://github.com/worldflora/wfo-tens/tree/main/IPNI/2025/PPG>
- Or, start working from a recently accepted taxonomic change in PPG (example: <https://github.com/pteridogroup/ppg/issues/97>)



We are all editing the same database simultaneously,  
so **try to avoid working on the same name at the same time.**  
(you shouldn't need to worry about this outside of the workshop)

# Recently imported, unplaced names

[wfo-tens](#) / [IPNI](#) / [2025](#) / [PPG](#) / [PPG\\_May.csv](#) 

 **AlanElliott82** May IPNI records commit

Preview

Code

Blame

11 lines (11 loc) · 1.72 KB

 Search this file

1	WFOID	IPNID	scientificName	authorship
2	wfo-1000081440	urn:lsid:ipni.org:names:77361326-1	Danaea x deltoidea	Keskiniva & Tuomisto
3	wfo-0001128852	urn:lsid:ipni.org:names:77362106-1	Polystichum braunii var. kamtschaticum	C.Chr. & Hultén
4	wfo-1200101813	urn:lsid:ipni.org:names:77362117-1	Arthropteris orientalis var. humblotii	(Baker) Pic.Serm.
5	wfo-1200104030	urn:lsid:ipni.org:names:77362132-1	Pellaea boivinii var. tripinnata	C.Chr.

<https://github.com/worldflora/wfo-tens/tree/main/IPNI/2025/PPG>

# A recently accepted change to PPG

- “A phylogenetically informed generic reclassification of the hemionitid ferns” (Schuettpelz et al. 2025)
- <https://github.com/pteridogroup/ppg/issues/97>
- Seven new genera, other changes

*sticum* (Balb.) L.Sáez & Aymerich in Orsis 31: 33. 2017 ≡ *Hemionitis acrostica* (Balb.) Mosyakin in Phytotaxa 373 (2): 165. 2018.

*Aleuritopteris belangeri* (Bory) Windham & Schuettp., **comb. nov.** ≡ *Pteris belangeri* Bory in Bélanger, Voy. Indes Or. 2: 44. 1833 ≡ *Pteridella belangeri* (Bory) Mett. ex Kuhn in Kersten, Reis. Ost-Afr. 3(3): 16. 1879 ≡ *Cheilanthes belangeri* (Bory) C.Chr., Index Filic. 3: 172. 1905 ≡ *Cheilosoria belangeri* (Bory) Ching & K.H.Shing, Gloss. Terms Names Ferns: 39. 1982 ≡ *Oeosporangium belangeri* (Bory) Fraser-Jenk. in Fraser-Jenkins & al., Annot. Checkl. Ind. Pterid. 1: 255. 2016 ≡ *Hemionitis belangeri* (Bory) Christenh. in Christenhusz & al., Global Fl. 4: 10. 2018.

*Aleuritopteris ×duriensis* (Mendonça & Vasc.) Windham & Schuettp., **comb. nov.** ≡ *Cheilanthes ×duriensis* Mendonça & Vasc. in Anais Inst. Vinho Porto 15(4): 47. 1956.

*Aleuritopteris elegans* (Poir.) Windham & Schuettp., **comb. nov.** ≡ *Pteris elegans* Poir. in Lamarck, Encycl. 5: 718. 1804 ≡ *Oeosporangium elegans* (Poir.) Fraser-Jenk. & Pariyar in Fraser-Jenkins & al., Annot. Checkl. Ind. Pterid. 1: 256. 2016.

*Aleuritopteris erythraea* (Pic.Serm.) E.A.Hooper, **comb. nov.** ≡ *Cheilanthes erythraea* Pic.Serm. in Webbia 27: 420. 1973 (“1972”) ≡ *Hemionitis erythraea* (Pic.Serm.) Christenh. in Christenhusz & al., Global Fl. 4: 13. 2018.

Taxonomic treatment  
in the paper can be  
used as basis for  
editing

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