

Notable Additions and Changes to Washington's Flora



Photo by Fayla Schwartz



Photo by Ben Legler



Photo by David Giblin

David E. Giblin, Ph.D.
University of Washington Herbarium
Burke Museum

Talk Overview

- **Additions to Washington's flora**
- Notable taxonomic changes
- Notable nomenclatural changes

Ways Taxa are Added to WA Flora Checklist

- Newly described to science
- Resurrected out of synonymy*
- Previously misidentified/overlooked*
- Newly documented (collected) in WA*

* = how taxa were added in 2021

Addition of Native Species

- *Aphyllon franciscanum* (Orobanchaceae)
 - cryptic species within *A. fasciculatum*
 - supported by DNA, morphology, and host preference



- *A. franciscanum*
 - petals yellow, lobes acute, parasitic generalist but not on *Artemisia*
- *A. fasciculatum*
 - petals purple, lobes rounded, obligate on *Artemisia*



Photo by Fayla Schwartz

A. franciscanum



Photo by Ben Legler

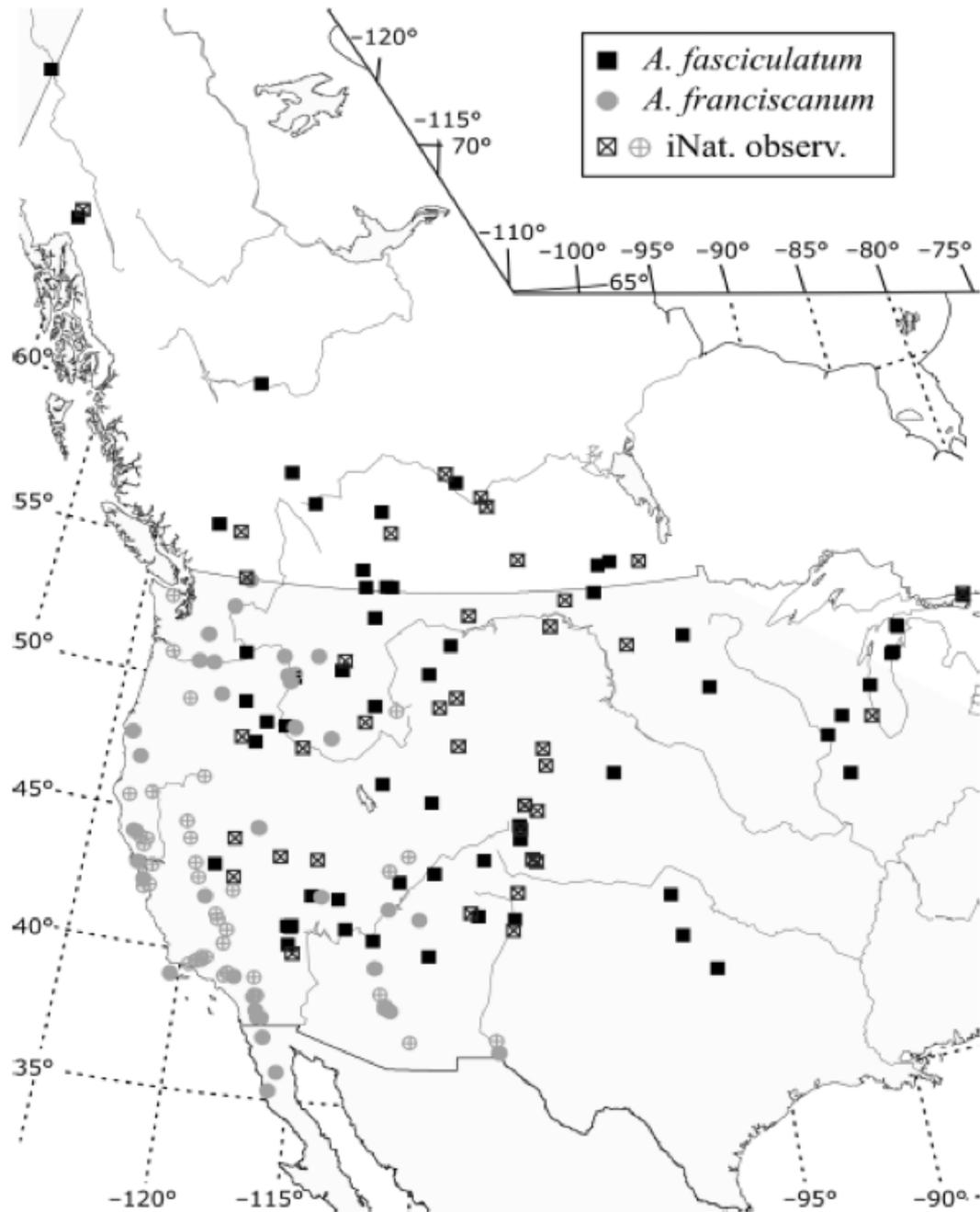


Photo by Gerry Carr

A. fasciculatum



Photo by Gerry Carr



Schneider and Benton.
2021. Systematic Botany,
46(2): 446-455

***Rhododendron
columbianum***



Photo by Gerry Carr



Photo by Ben Legler

MOLECULAR PHYLOGENETIC ANALYSIS OF THE NORTH-TEMPERATE
LABRADOR TEAS (ERICACEAE: RHODODENDRON SUBSECT. LEDUM)
SUGGESTS A COMPLEX GENETIC HISTORY

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J. Bot. Res. Inst. Texas 11(1): 53 – 65. 2017

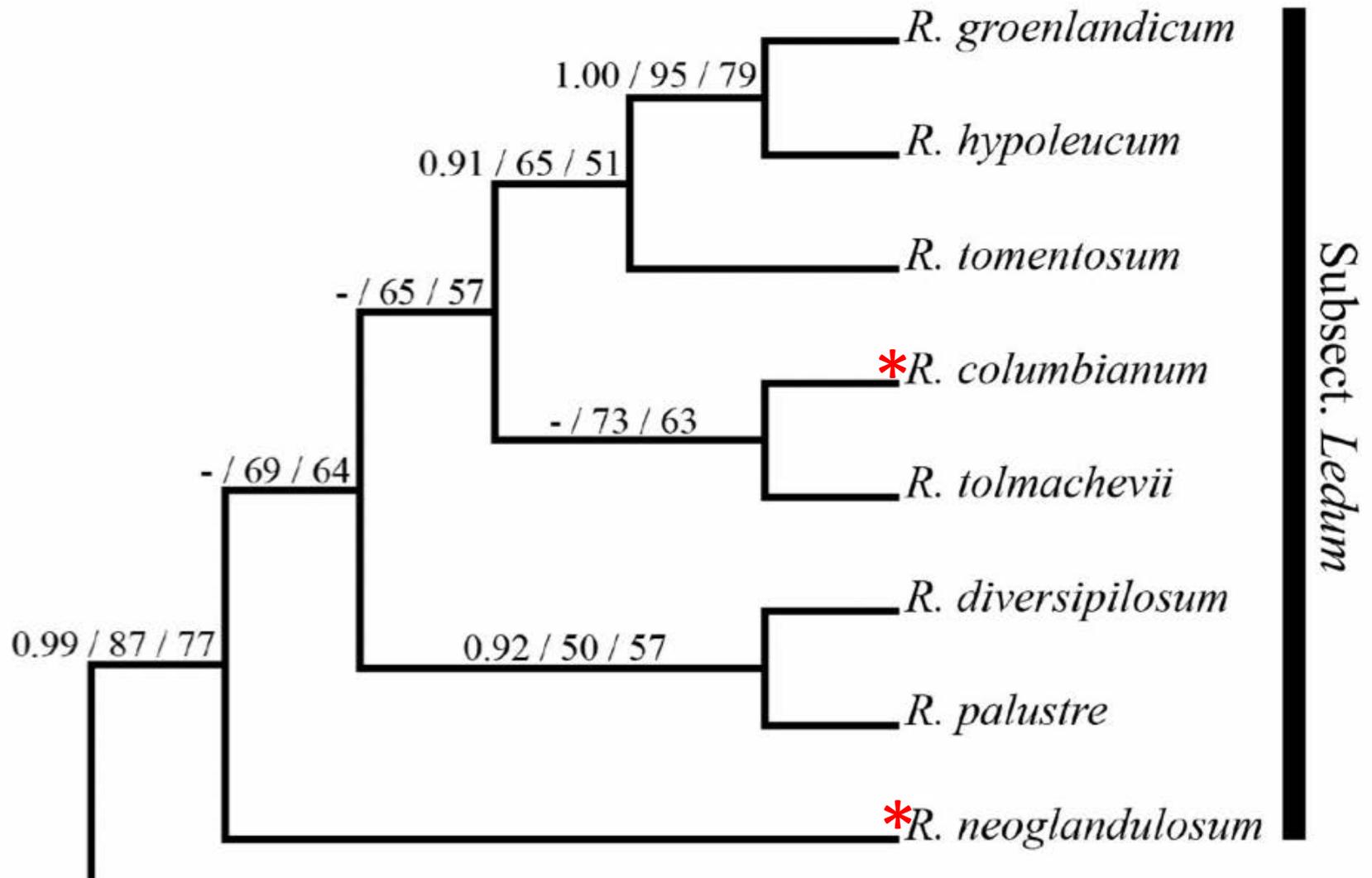
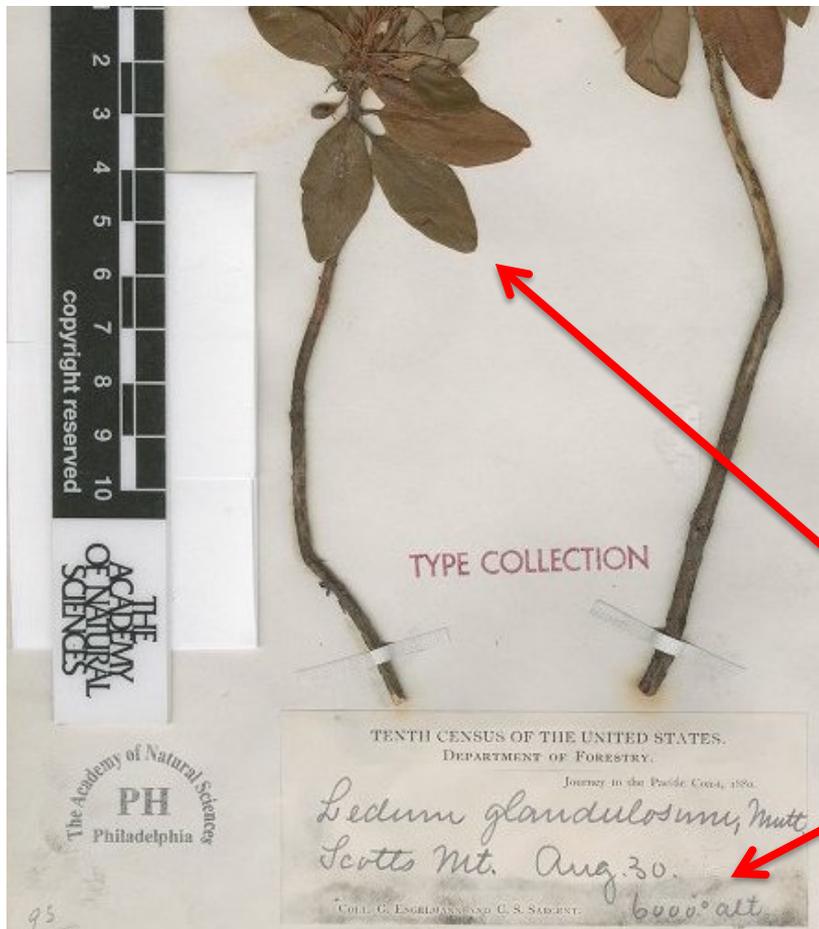


FIG. 1. Total combined nuclear data (nrITS and exons 9-11 of GBSS-1/waxy). Support values are to the left of nodes in the format (Bayesian posterior probability/ML bootstrap/MP bootstrap). Support derived from 50 million Bayesian MCMC generations, 100 ML bootstrap replicates and 10,000 MP bootstrap replicates. Parsimony tree length = 225, CI = 0.6533, RI = 0.6977. RAxML Likelihood score = -4603.601284. Black bar indicates *Rhododendron* subsect. *Ledum*. The Bayesian topology is shown for both the cladogram and the inset phylogram.

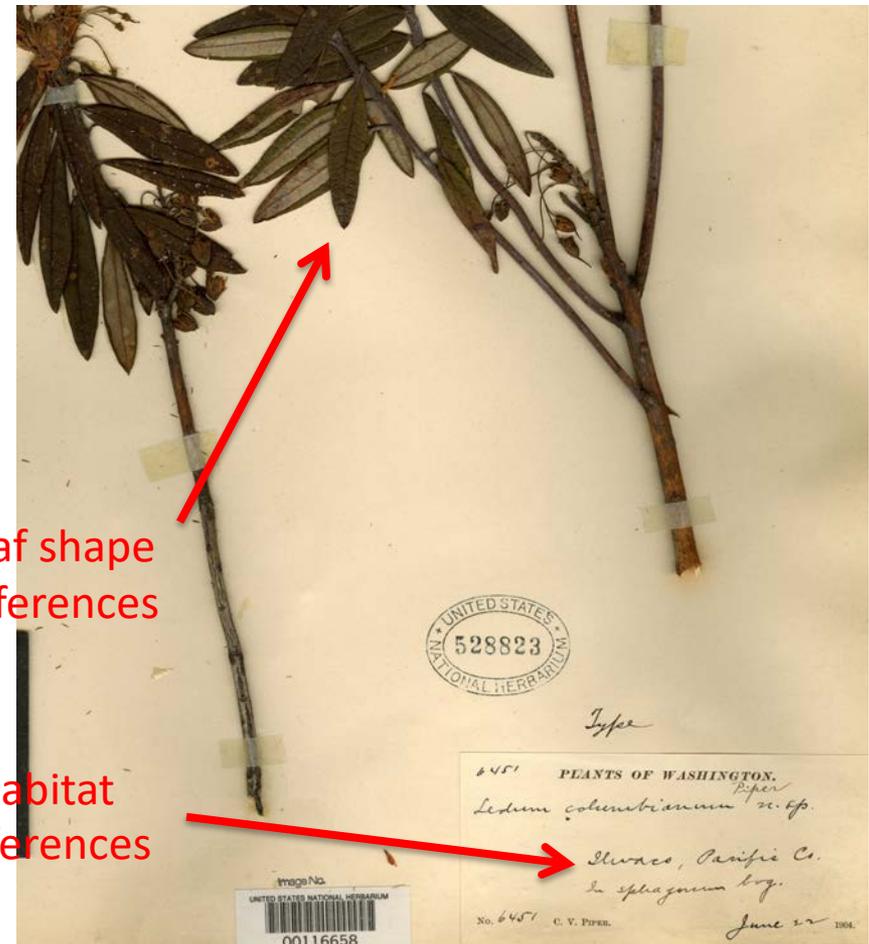
Rhododendron neoglandulosum

- Segregated from *R. columbianum* based on DNA analyses, leaf morphology, and habitat preference

Type specimen *Ledum glandulosum*



Type specimen *Ledum columbianum*



Leaf shape differences

Habitat differences

Rhododendron neoglandulosum

- Segregated from *R. columbianum* based on DNA analyses, leaf morphology, and habitat preference

270

DESCRIPTION OF NEW SPECIES

Thomas Nuttall - Transactions of the American Philosophical Society, new series 8:
270. 1843[1842]

LEDUM. (LINN.)

* *LEDADENDRON*. *Capsule subglobose; filaments pilose towards the base; stigma annulate, five-lobed.* A tall sempervirent shrub, with alternate entire leaves, smooth on both surfaces, beneath covered with resinous scales. Flowers umbellate, white.

LEDUM * *glandulosum*; a tall and stout shrub, leaves elliptic, entire, mostly obtuse, but mucronulate, long petiolate, smooth on both surfaces, beneath paler and resinously atomiferous; capsule globose-ovate.

HAB. In the central chain of the Rocky Mountains, on the sides of the mountains which close up Thornberg's ravine, growing in extensive thickets, the bushes four to six feet high, and as large as those of *Kalmia latifolia*. Bark brown and smooth. Branches coming out in circles at length from



Photo by Gerry Carr

R. columbianum

Photo by Ben Legler

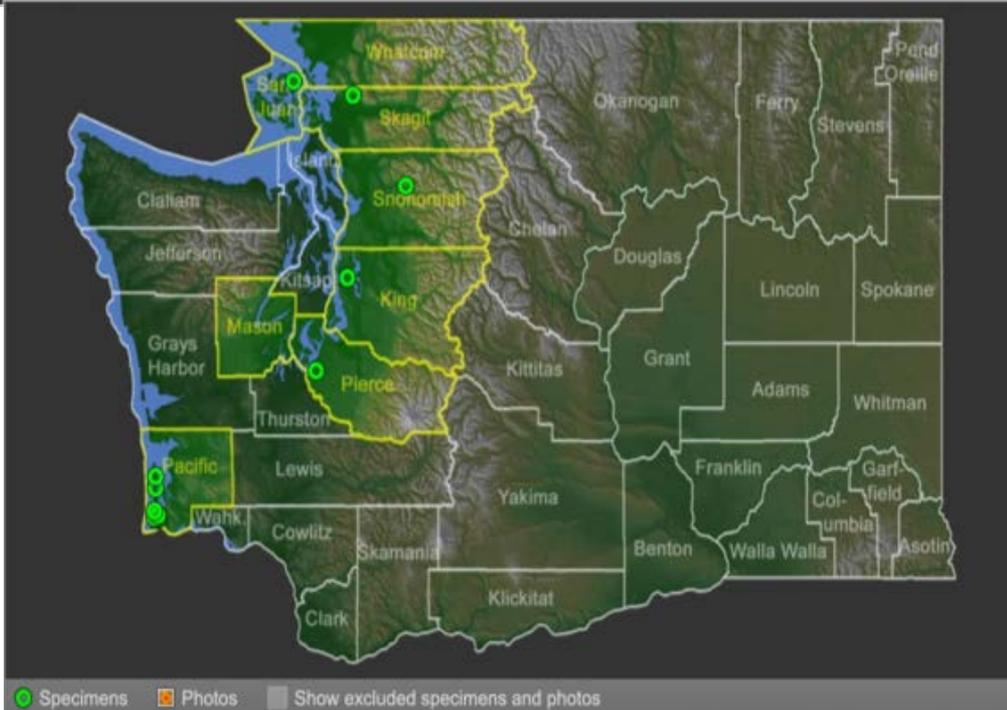


R. neoglandulosum



R. columbianum
low elevation, West Cascades

R. neoglandulosum
montane to alpine



Polystichum braunii

- Came across specimen image from ID herbarium at Consortium PNW Herbarium database – Pend Oreille Co, WA
- Identification confirmed by Ben Legler
- Locality appears to be behind gate on overgrown/semi-abandoned Forest Service Road

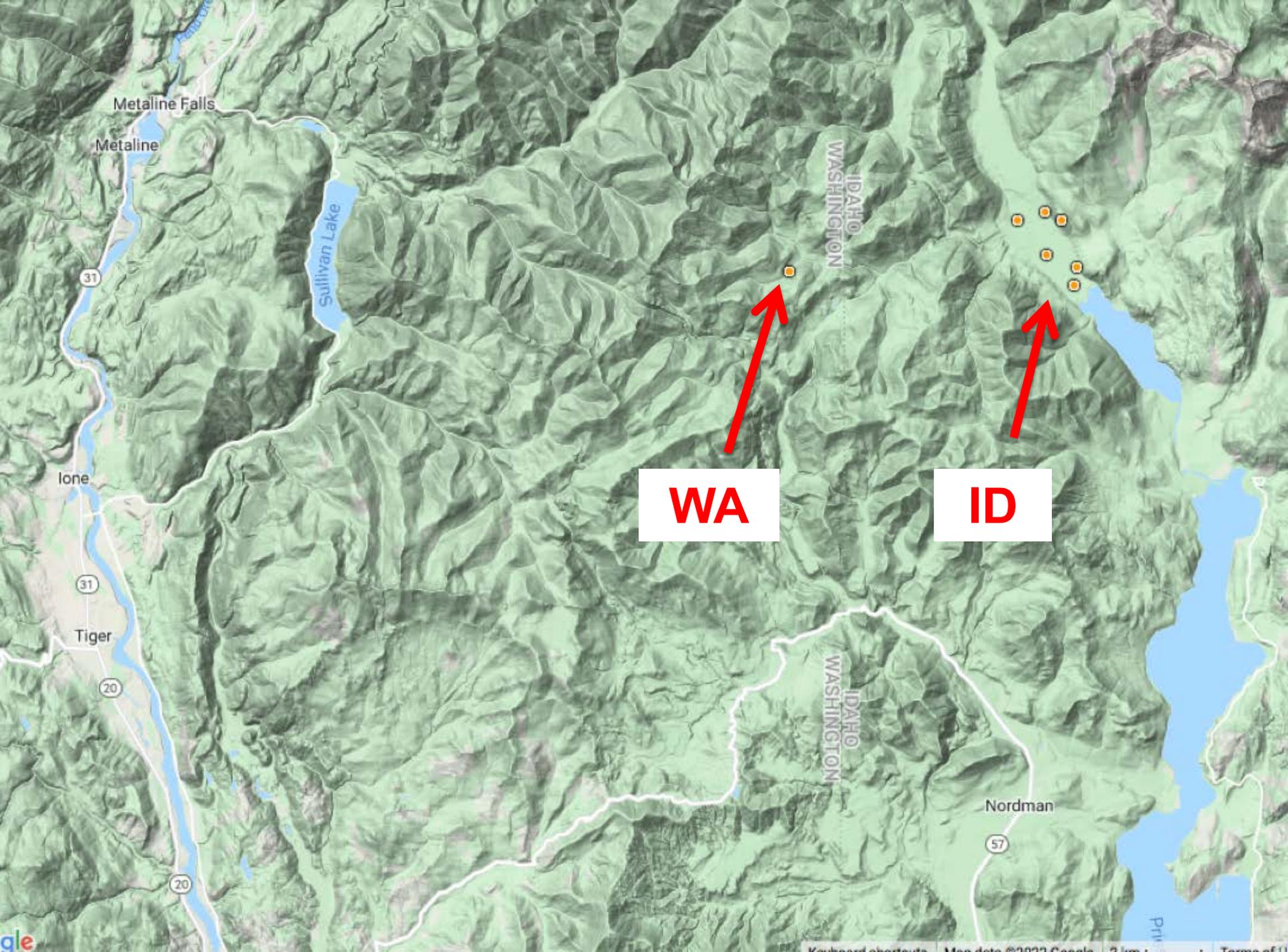


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Photo by Ben Legler



Metaline Falls

Metaline

Sullivan Lake

31

Lone

31

Tiger

20

20

IDAHO
WASHINGTON

IDAHO
WASHINGTON

Nordman

57

WA

ID

Addition of Non-Native Species

Panicum virgatum – switchgrass (Poaceae)



Distribution in PNW

Addition of Non-Native Species

Panicum virgatum – switchgrass (Poaceae)



Distribution in PNW

Addition of Non-Native Species

Cytisus striatus - Portuguese broom



Photo by Gerry Carr



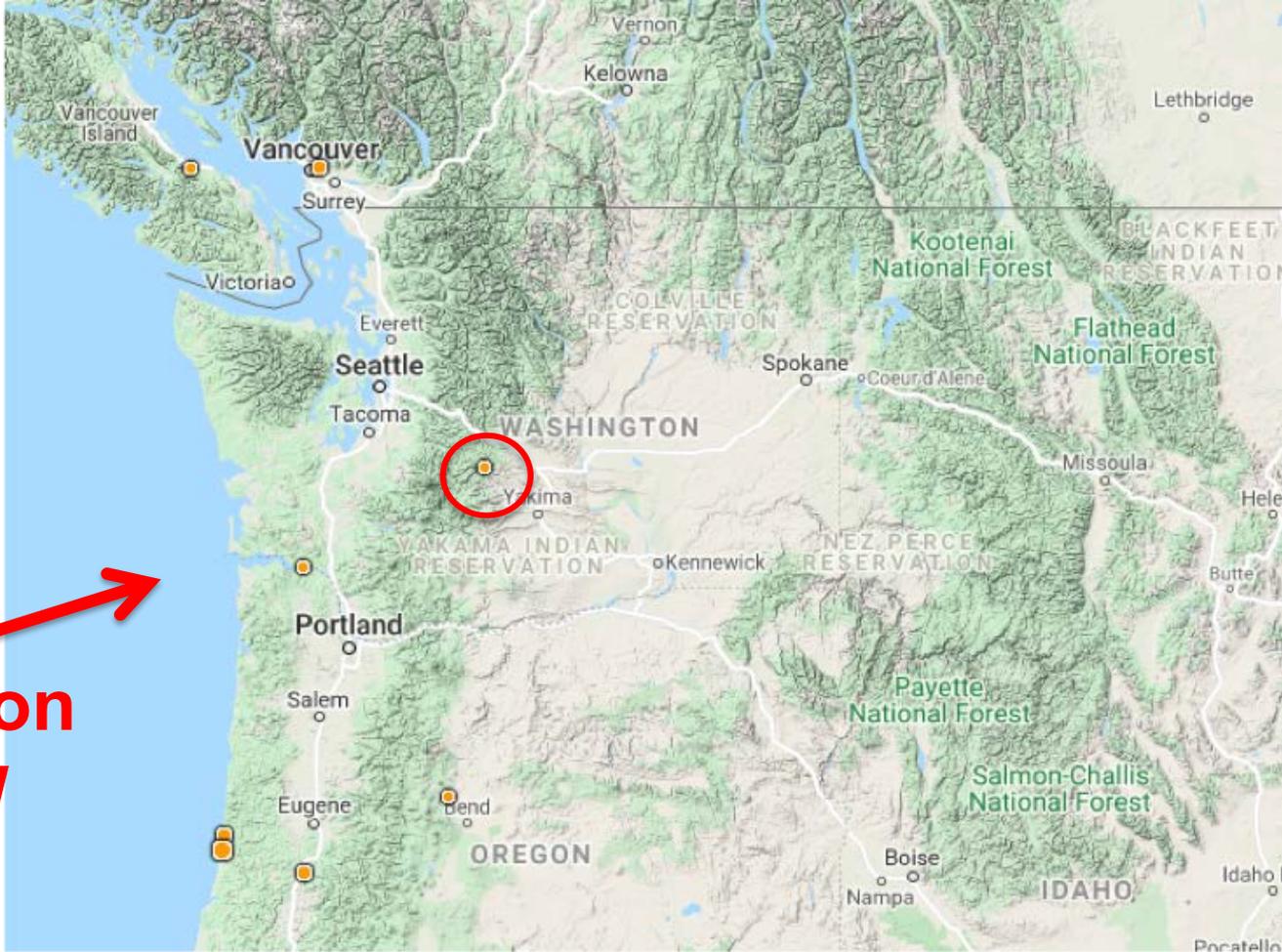
Photo by Gerry Carr

C. striatus vs. *C. scoparius*





**Distribution
in PNW**



**Distribution
in PNW**



**Distribution
in PNW**

Life > Plants > ... > Brooms > Portuguese Broom > Photo Browser

Search Species...

Photos of Portuguese Broom (*Cytisus striatus*)

Washington, US

Order by: Faves Photo Licensing: Any Quality Grade: Research

No observations from this place yet.

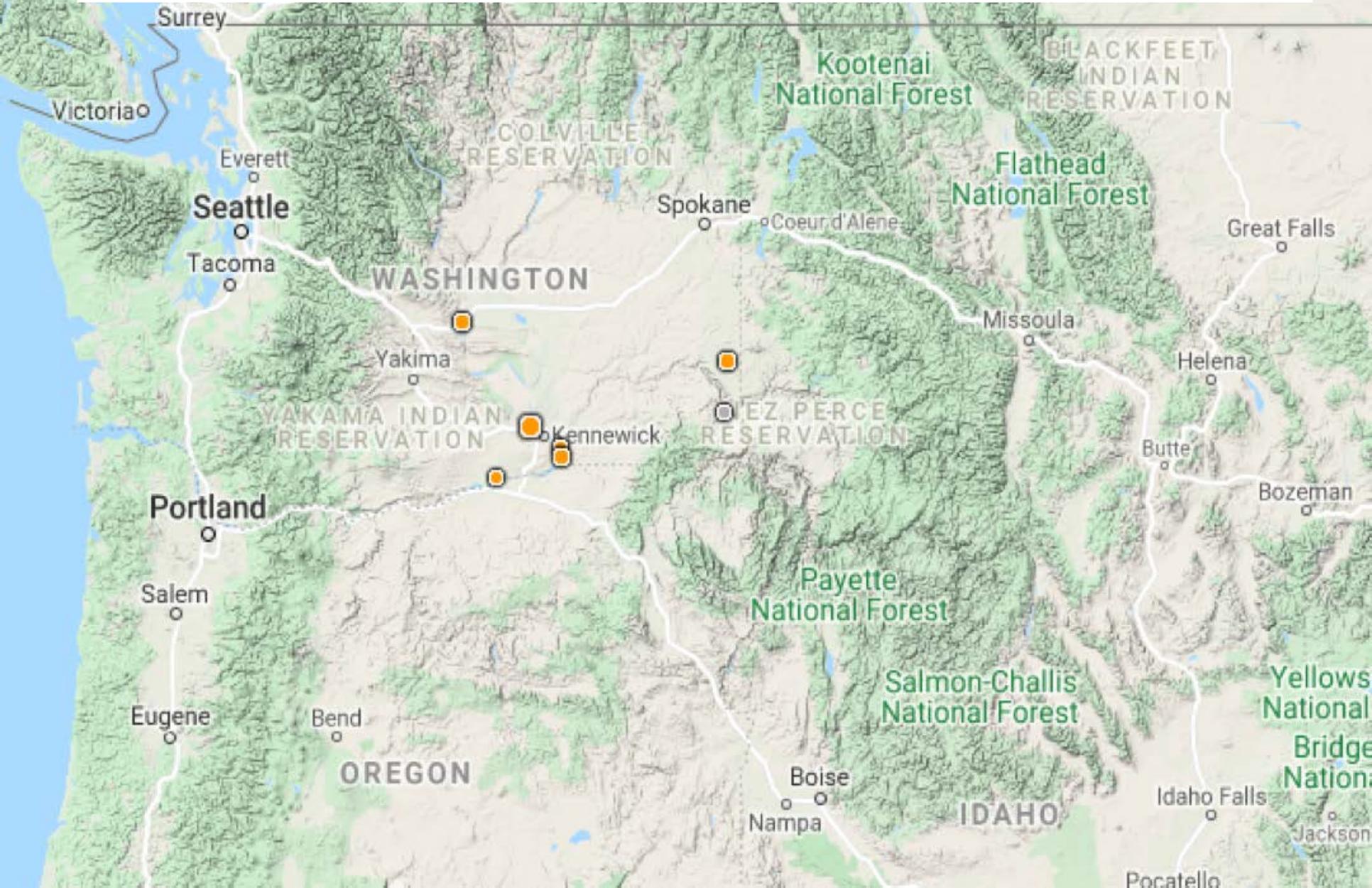


Platanus (planetree; sycamore)



Photos by Ben Legler

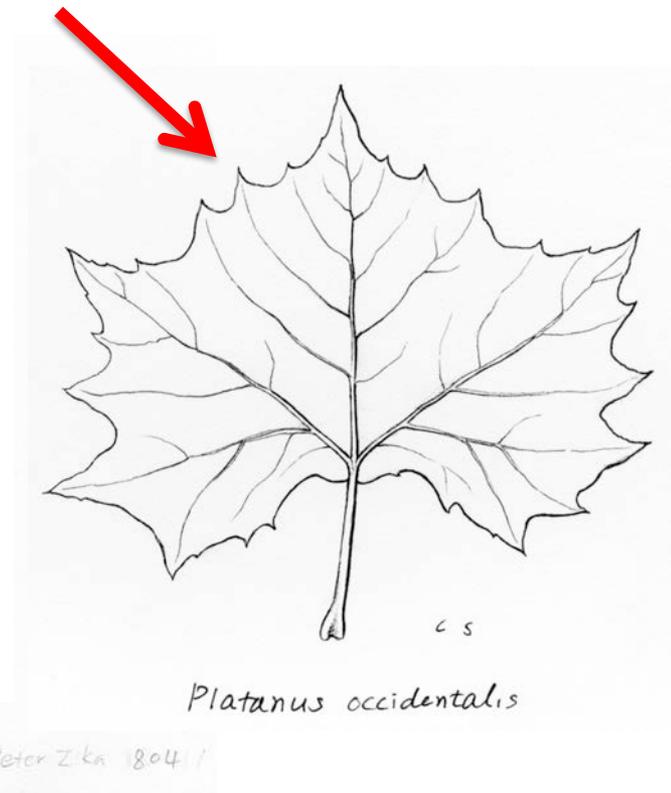
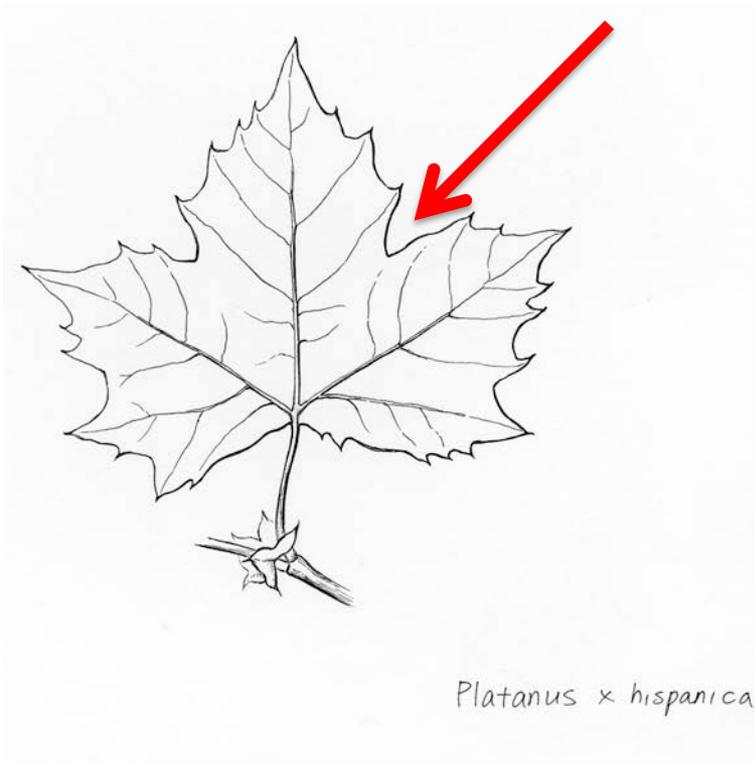
Escaping along Columbia River



Platanus (planetree; sycamore)

P. x hispanica

P. occidentalis



Illustrations by Crystal Shin

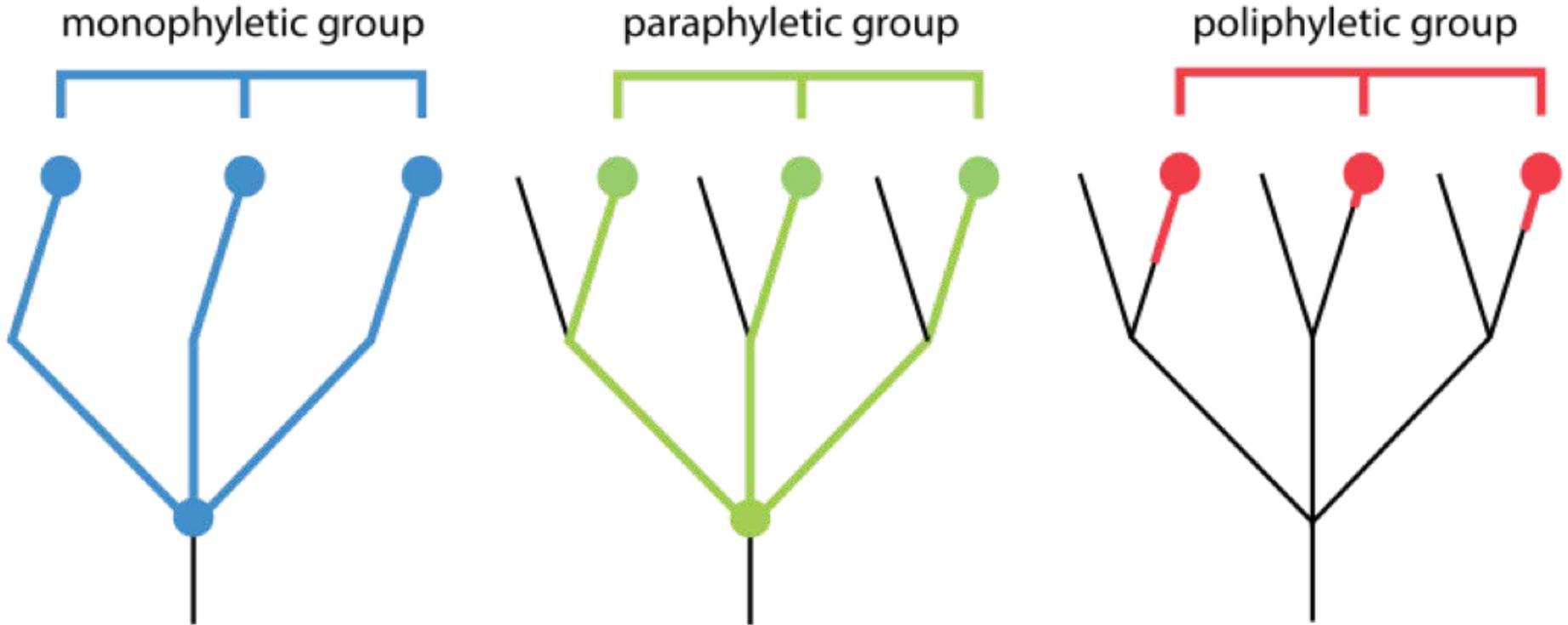
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- **Notable taxonomic changes**
- Notable nomenclatural changes

Using Molecular Phylogenetics Towards a Monophyletic *Flora* and flora

- Phylogeny - study of the evolutionary history and relationships among or within groups of organisms
- Monophyly – Groupings based on a single common ancestor and all lineal descendants
- Informs conservation (e.g., distinguish between relictual and recently derived species)

Uncovering Paraphyly and Polyphyly is Common Basis for Taxonomic Revisions



Primulaceae

- *Dodecatheon* → *Primula*



- *Douglasia* → *Androsace*



Rosaceae

- *Horkelia*



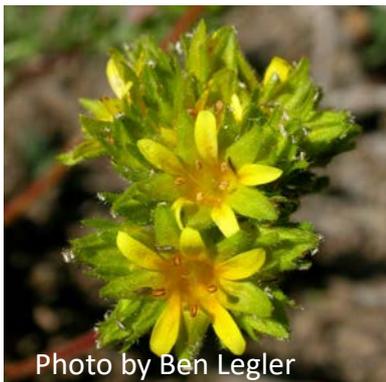
Potentilla



- *Ivesia*



Potentilla



Asteraceae

- *Eucephalus* → *Doellingeria*



Boraginaceae

- Biennial/perennial *Cryptantha* → *Oreocarya*



Ferns

- *Parathelyperis* → *Amauropelta*

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- **Notable nomenclatural changes**

Montiaceae

- *Calandrinia ciliata* → *C. menziesii*



<http://www.pnwherberia.org/florapnw.php>

Flora of the Pacific Northwest, 2nd Edition

Burke Museum Herbarium & University of Washington Press

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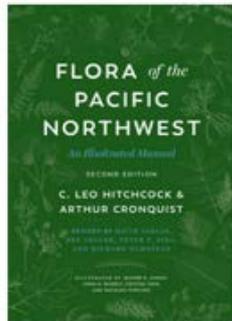
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Book of Pacific Northwest botany

The Burke Museum Herbarium at the Burke Museum has completed a revision of the *Flora of the Pacific Northwest*, based on the original manual by Charles S. Hitchcock and Arthur Cronquist. The Second Edition is available from the Burke Museum, University of Washington Press and resellers.

The original, 730-page, single volume book was designed by the authors to be a portable plant identification manual for professional and amateur botanists. Even today it remains a singular piece of scholarship and a model for how to produce a flora. The Second Edition has been fully updated to include all native and naturalized taxa presently known from the region, with up-to-date nomenclature and classifications, while maintaining the original's familiar layout, styles, and use of illustrated keys.



Why is a new Flora needed?

Neither a region's flora nor the science of vascular plant taxonomy is static in their nature. In the 40 years since publication of First Edition of the *Flora of the Pacific Northwest* significant changes have occurred to the region's flora (e.g., discovery of new species, arrival of additional non-native species) and to the classification and naming of the taxa covered in that volume. Notable changes between the two editions include:

- 25% net increase in the number of species and infraspecies treated;
- 38% net increase in the number of genera treated;
- 23% net increase in the number of families treated;
- 42% of species and infraspecies treated in the First Edition have seen nomenclatural or taxonomic changes.

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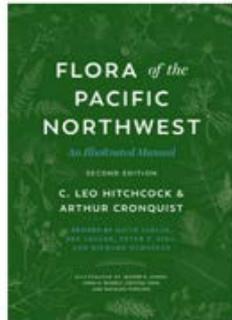
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Revised Treatments

Corrections, revisions, updates and additions made to treatments following publication of the 2nd Edition are listed here with links to PDFs.

Last entry added on 18 Feb 2022.

Sort by: Family

Aceraceae:

Aceraceae: Aceraceae segregated from Sapindaceae and Hippocastanaceae. Covers genus *Acer* only.
Posted on 19 Dec 2021.

Amaranthaceae:

key to genera: *Sarcocornia* from original key has been synonymized within *Salicornia*, and *Cycloloma* has been synonymized within *Dysphania*.
Posted on 23 Jan 2022.

Dysphania: *Cycloloma* has been synonymized within *Dysphania*.
Posted on 27 Jan 2022.

Salicornia: *Sarcocornia* synonymized within *Salicornia*; *Salicornia pacifica* replaces *Salicornia/Sarcocornia perennis* as the correct name for the perennial species of coastal western North America (Piiirainen et al., 2017. *Taxon* 66(1):109-132).
Posted on 19 Dec 2021.

Apiaceae:

key to genera: Revised key includes *Sphenosciadium* synonymized within *Angelica* (key to fruits lead 5a; key to vegetative parts lead 25b); correction to key to fruits in leads 36a through 38a (*Cicuta*, *Oenanthe*, *Sium*), including addition of *Sium* fruit (lead 37a).
Posted on 19 Dec 2021.

ACKNOWLEDGEMENTS

- Adam Schneider, UC-Berkeley (*Aphyllon*)
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- Peter Zika (WTU) and Frank Lomer, UBC (*Panicum*)
- Gerald Schneeweiss, University of Vienna and Dick Olmstead, University of Washington (*Androsace*)