

Toward an understanding of arctic and alpine poppies



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Papaver sect. *Meconella*

- ❖ one of the larger and most characteristic groups of plants in the arctic landscape
- ❖ nearly continuous distribution throughout the Arctic



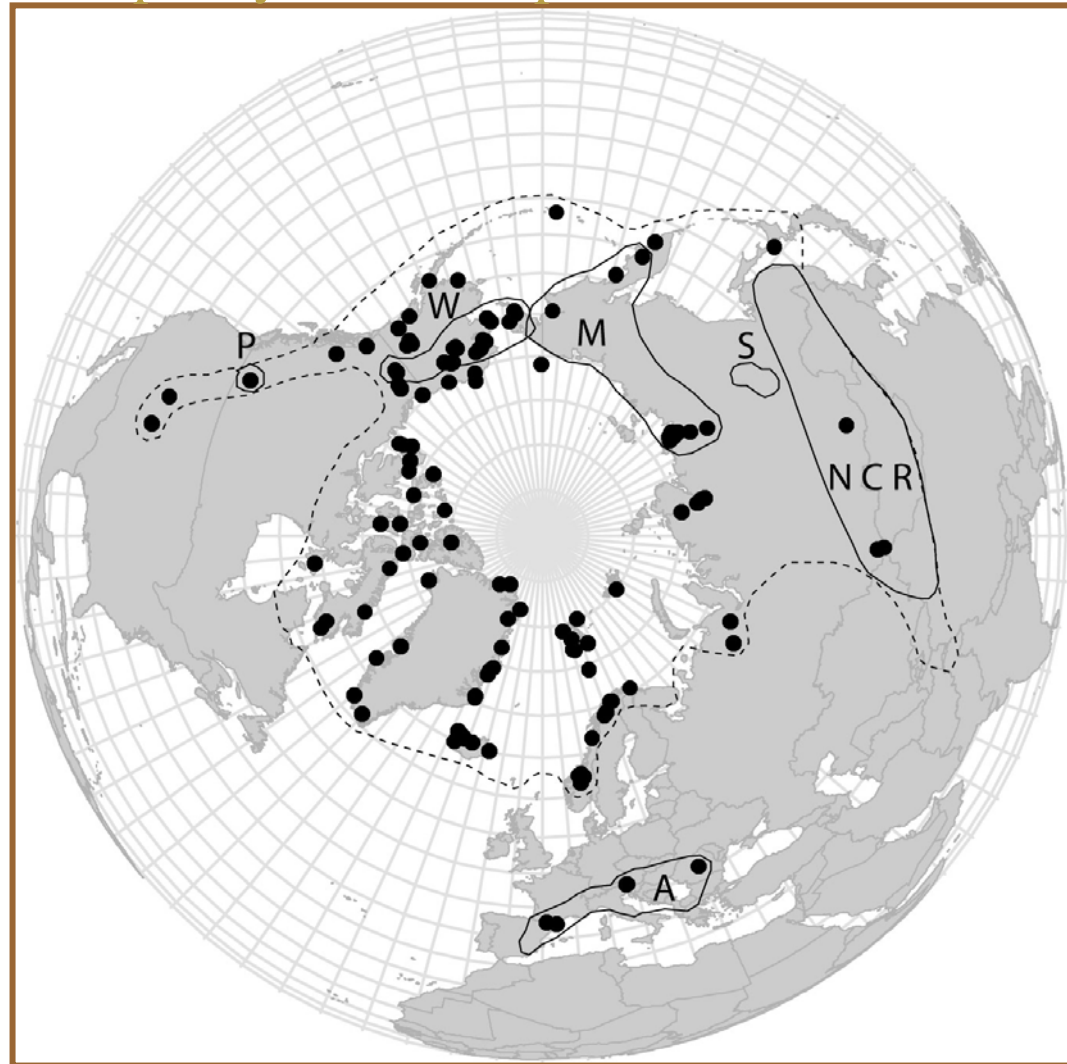
Papaver sect. Meconella

- ❖ includes a series in ploidy from diploids to high polyploids
- ❖ taxonomically complicate
- ❖ little consensus as to how to understand and circumscribe species



Solstad, H., Ehrich, D., Kvernstuen, L. G., Trávníček, P. & Elven, R.
Taxonomic variation in a complex polyploid plant group – *Papaver* sect.
Meconella (Papaveraceae) – inferred by amplified fragment length
polymorphisms, morphology and DNA ploidy. Manuscript.

Distribution & sampling



MAIN OBJECTIVES

- ❖ to identify genetic groups by analyzing the AFLP variation
- ❖ to identify morphological characters that optimize the separation of genetic groups into taxonomic units
- ❖ to initiate a revision of the taxonomy of the arctic and northern alpine representatives of *Papaver* sect. *Meconella*



RESULTS

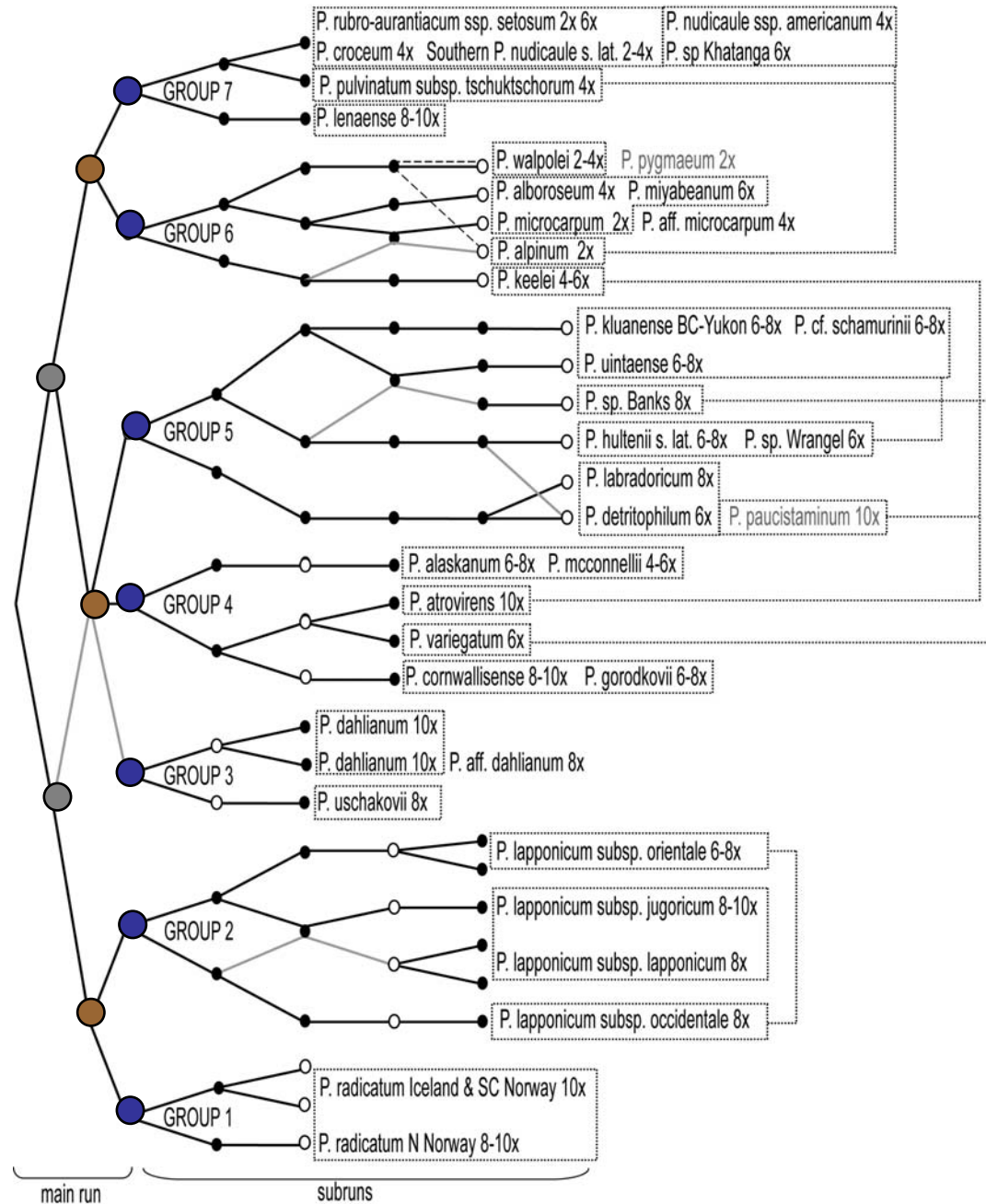
The material investigated is divisible on:

- ❖ 34 groups supported by AFLP data, morphology and ploidy levels as taxa, i.e., ca 60 % of the assumed species diversity of the section
- ❖ several not yet described species in Asia and North America (mainly Beringia)
- ❖ the taxa identified in the study correspond only partly with previous taxonomic solutions
- ❖ the relations among taxa are not obvious

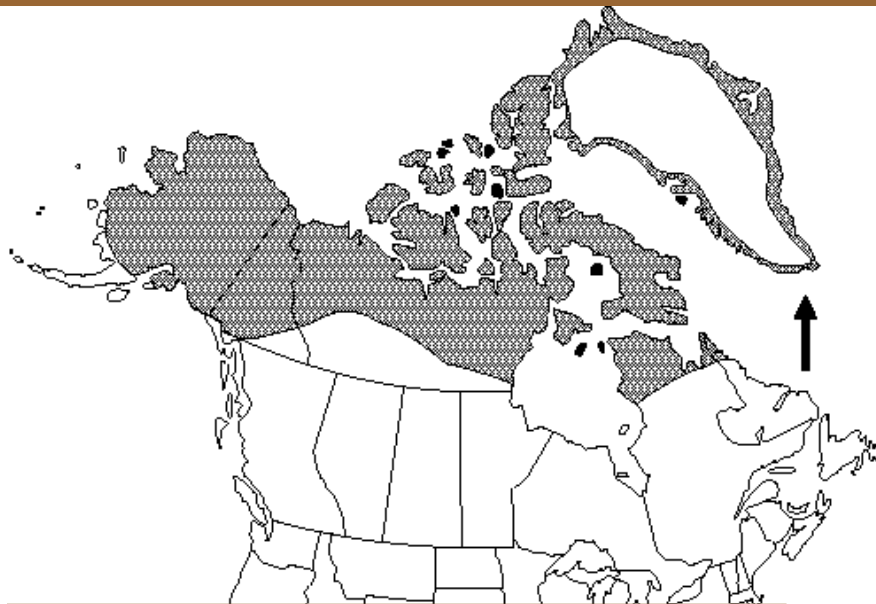


STRUCTURE GROUPS DIAGRAM

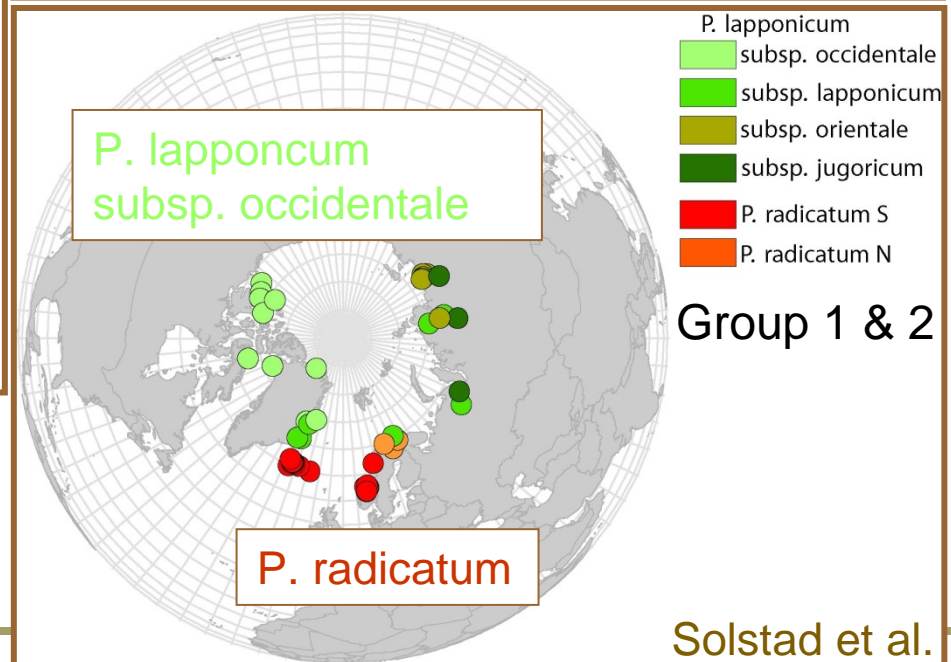
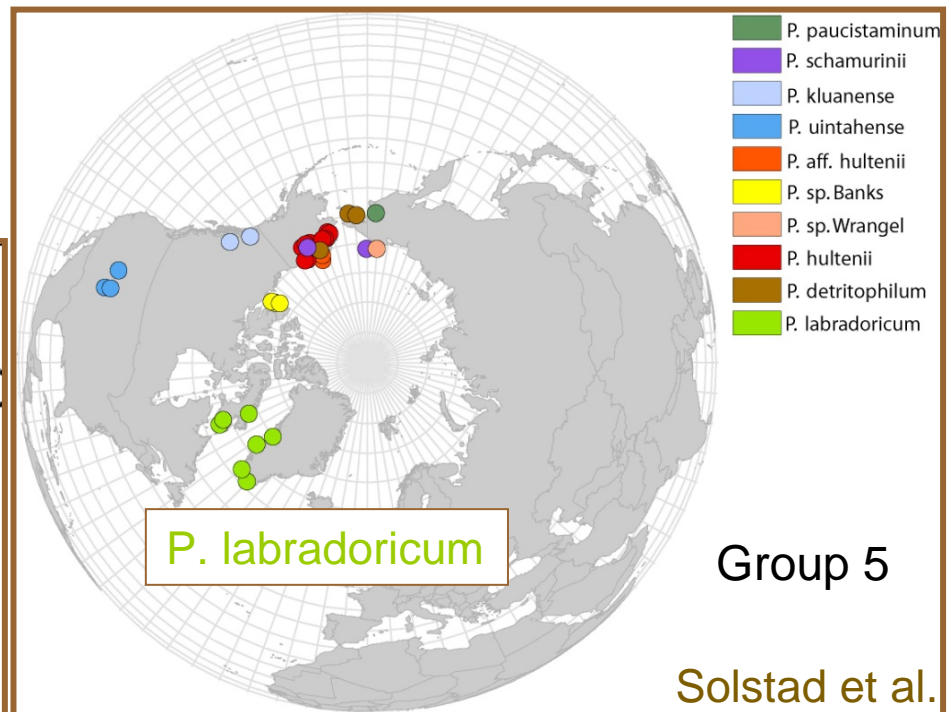
Based on
AFLP data

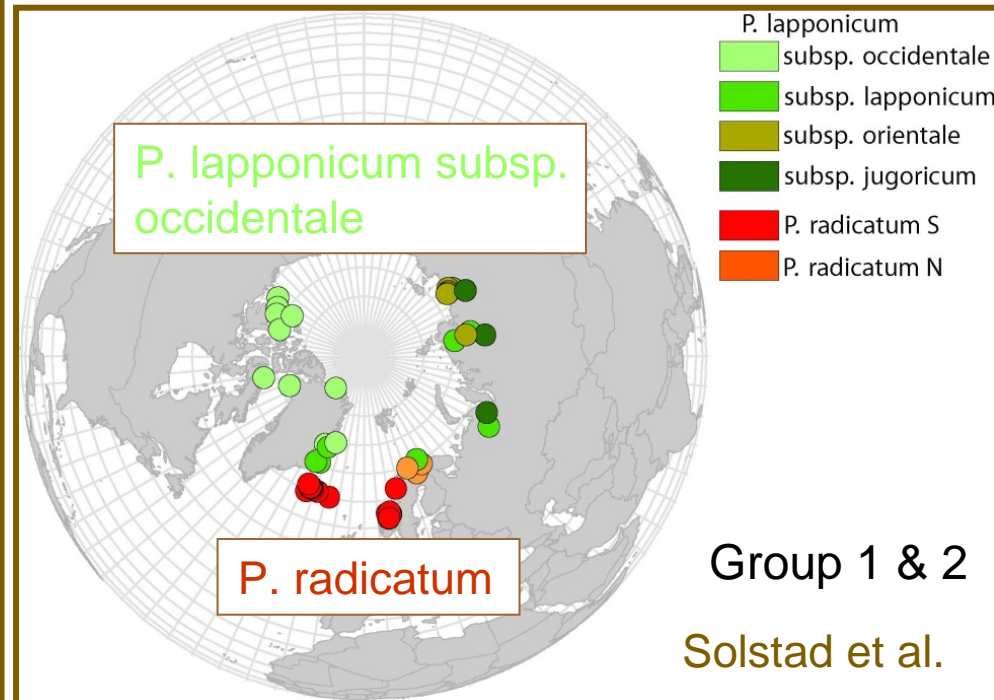
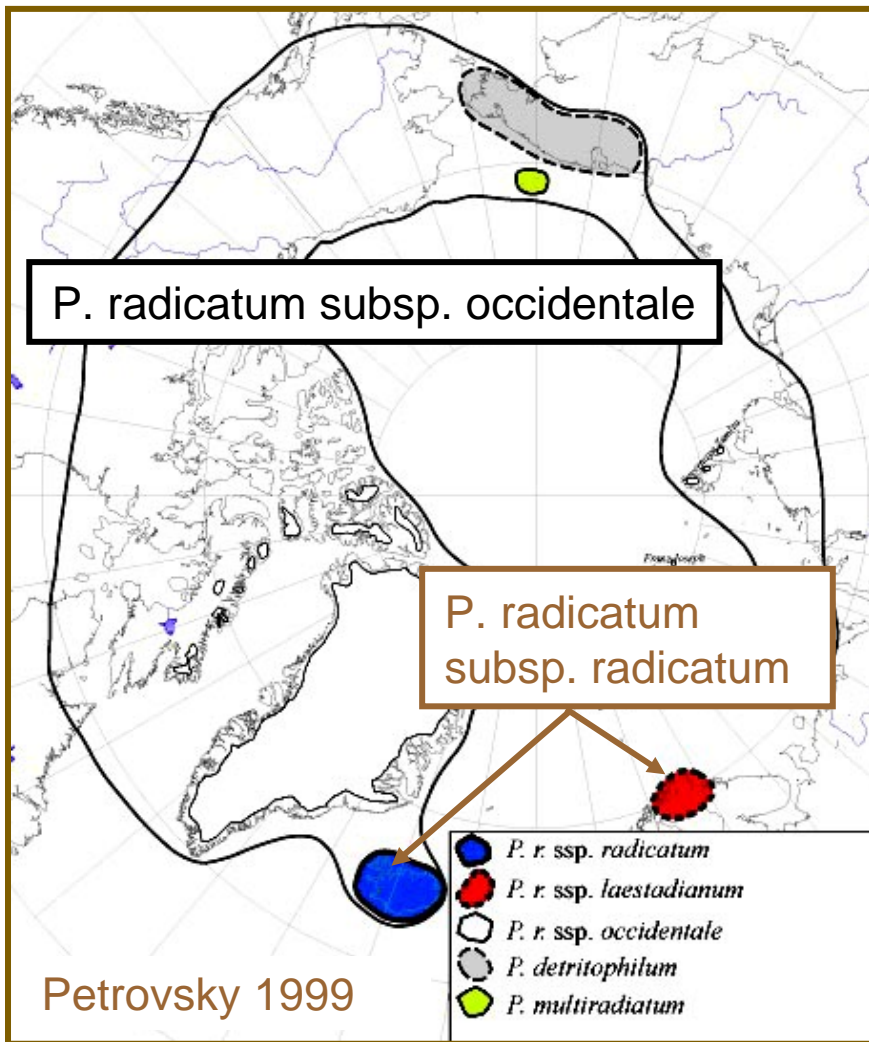


Comparisons with earlier treatments:



Flora of North America:
P. radicatum subsp. *radicatum*
 (syn. *P. labradoricum*, *P. lapponicum* subsp. *occidentale*)





Comparisons with earlier treatments:



Flora of North America: *P. lapponicum* including *P. hultenii*

Comparisons with earlier treatments

P. lapponicum

- *P. lapponicum* subsp. *occidentale*
- *P. lapponicum* subsp. *lapponicum*
- *P. lapponicum* subsp. *orientale*
- *P. lapponicum* subsp. *jugoricum*
- *P. radicatum* S
- *P. radicatum* N

Group 1 & 2

Solstad et al.

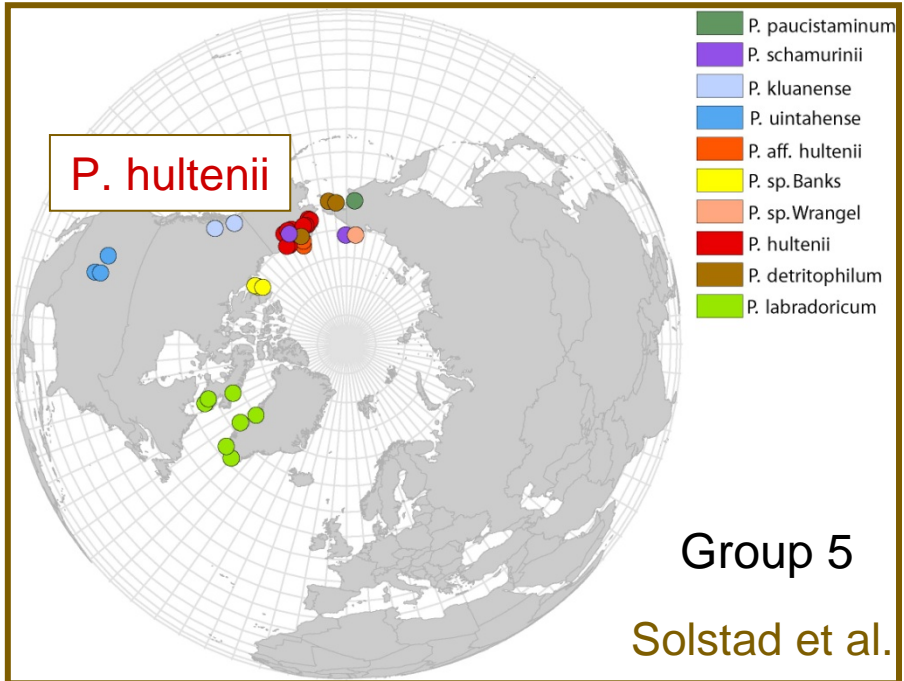
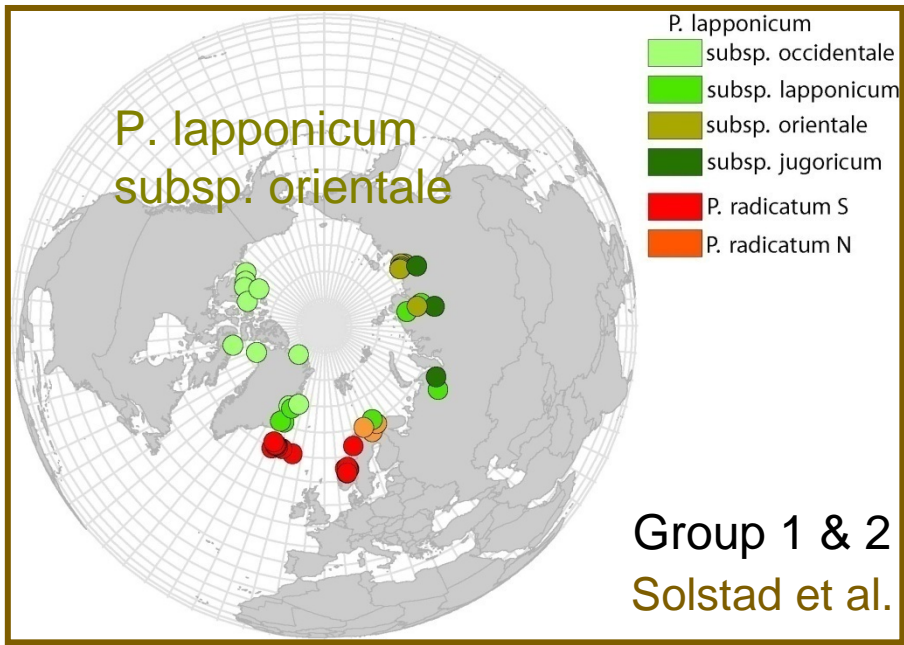
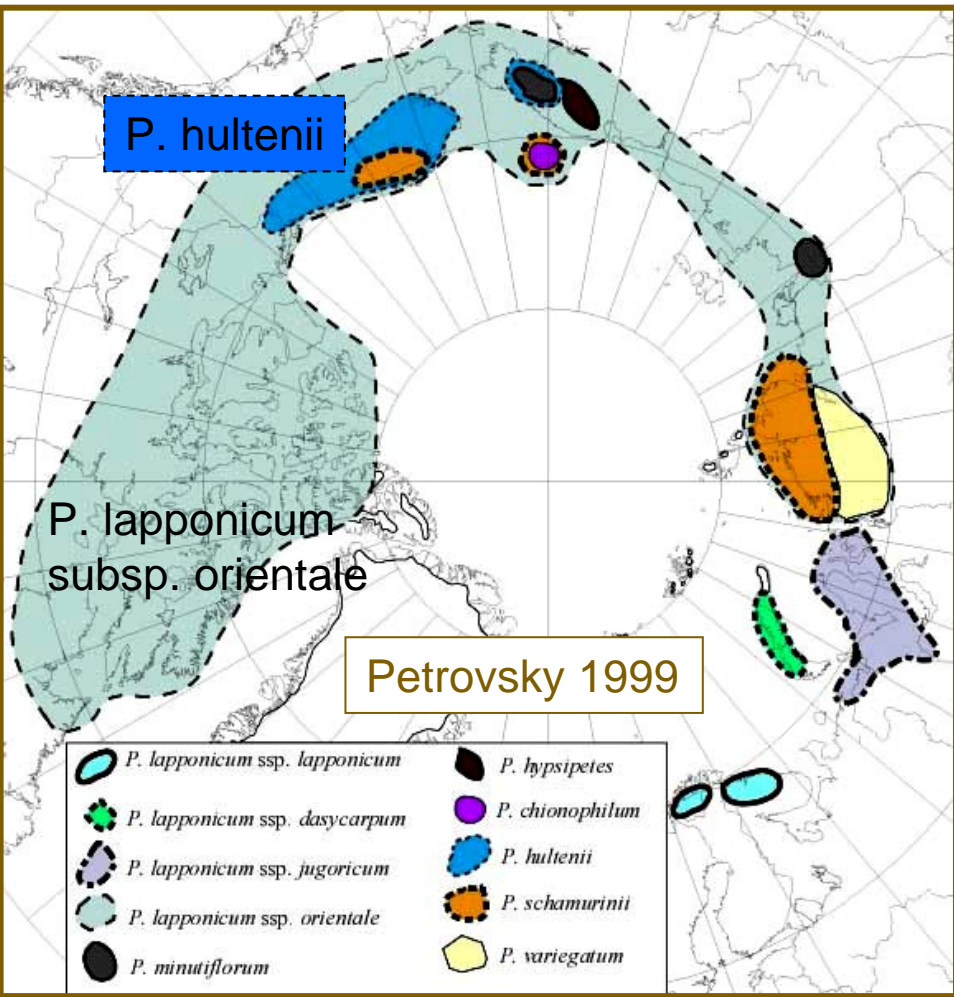
P. hultenii

- *P. paucistaminum*
- *P. schamurinii*
- *P. kluanense*
- *P. uintahense*
- *P. aff. hultenii*
- *P. sp. Banks*
- *P. sp. Wrangel*
- *P. hultenii*
- *P. detritophilum*
- *P. labradoricum*

Group 5

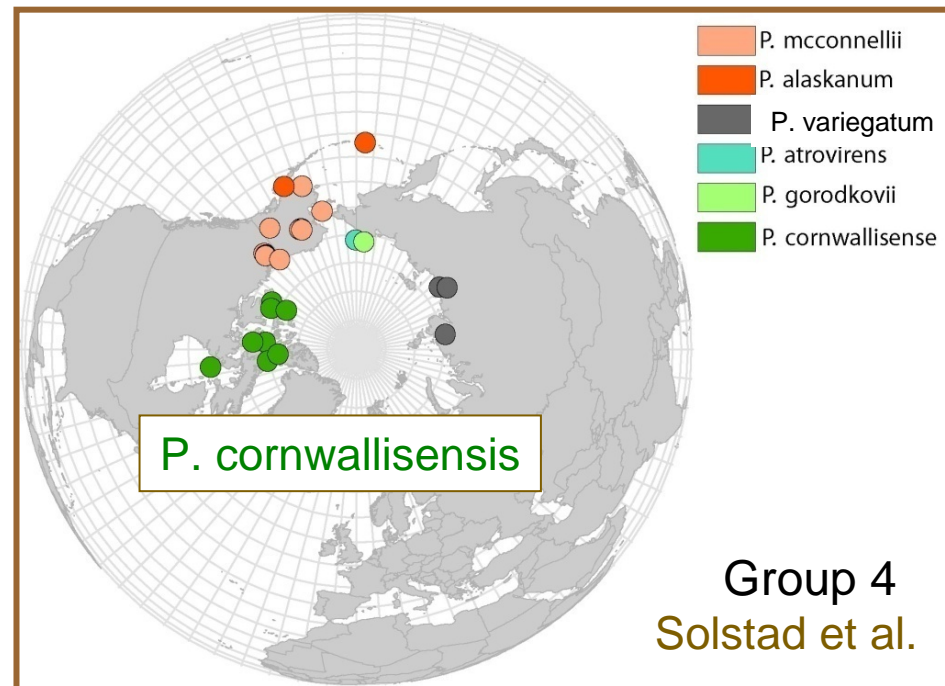
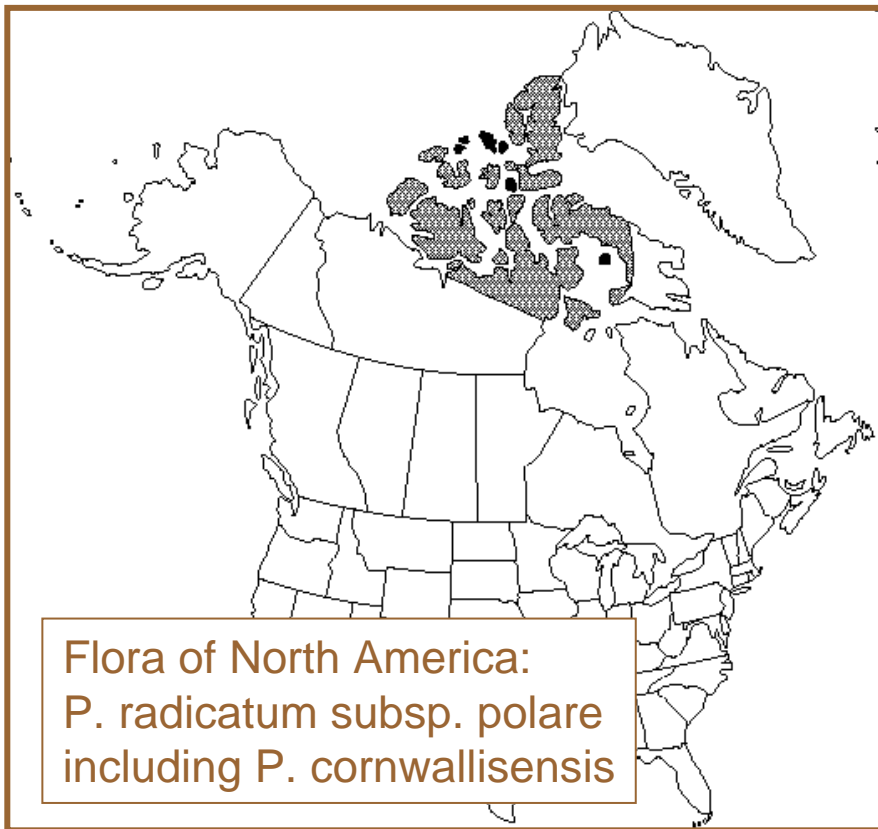
Solstad et al.



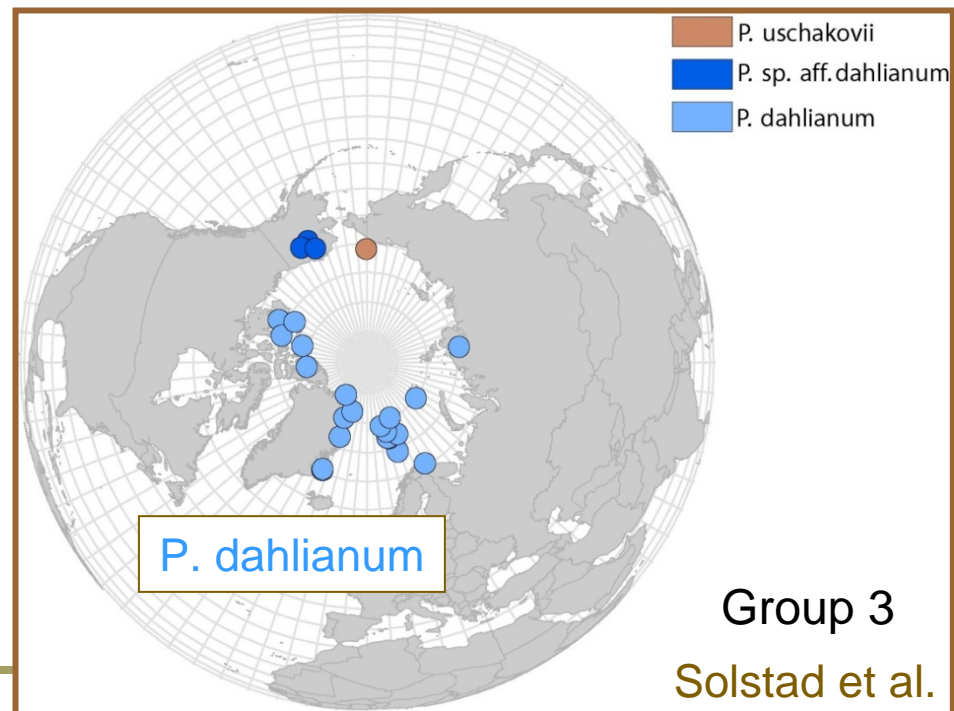


Comparisons with earlier treatments









Comparisons with earlier treatments



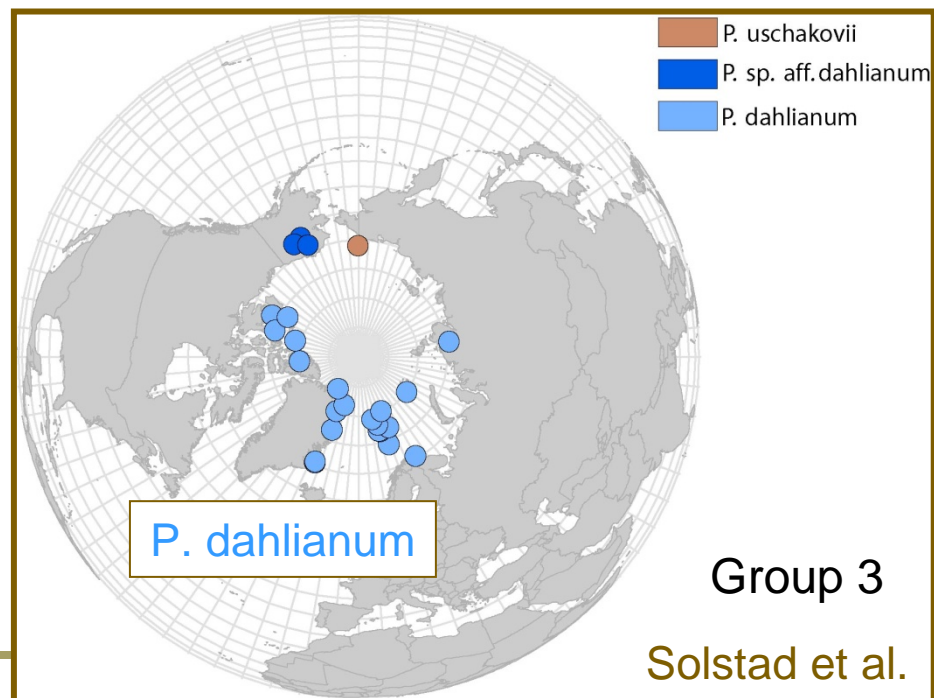
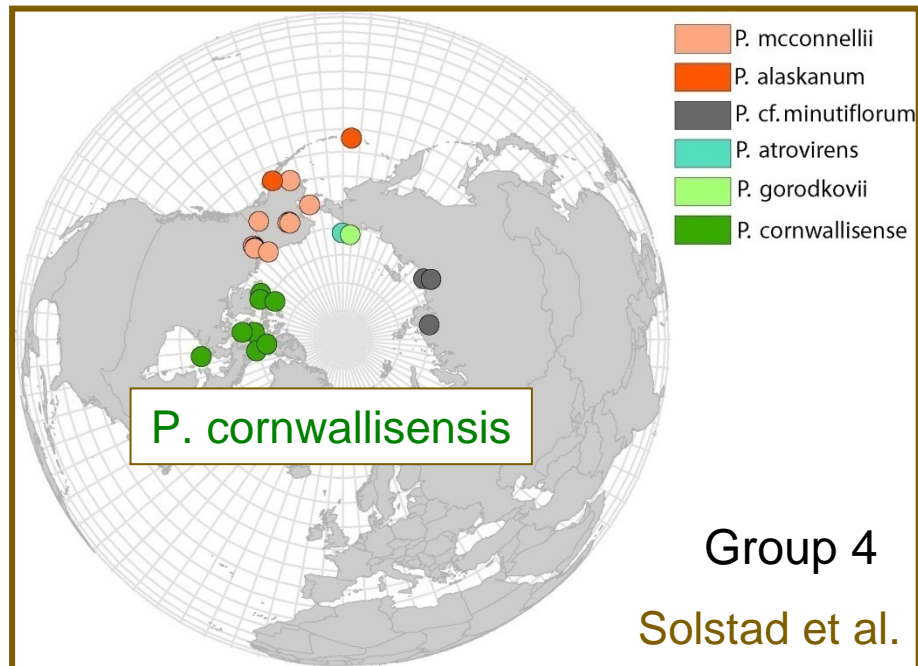
Petrovsky 1999

P. cornwallisensis

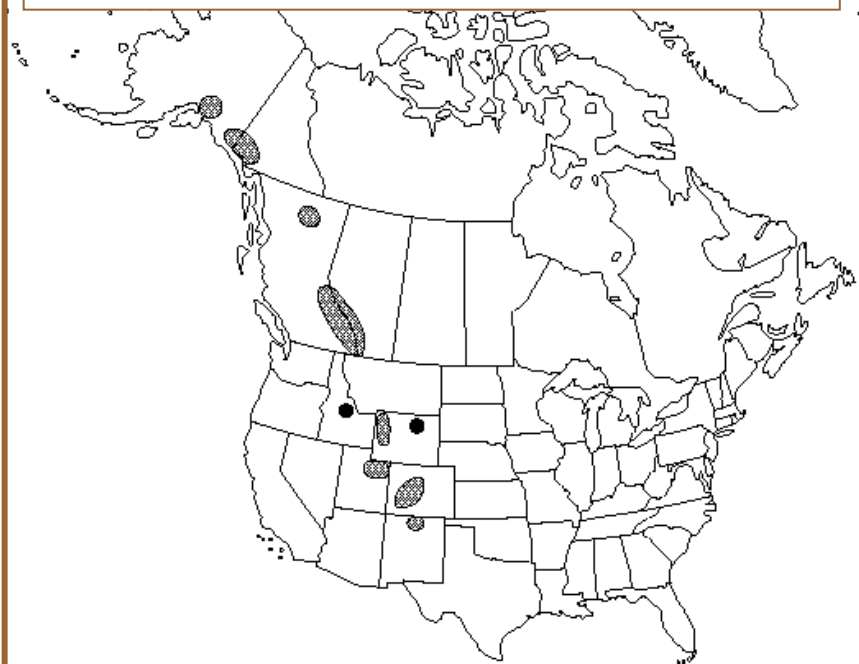
P. dahlianum

-  *P. d. ssp. dahlianum*
-  *P. polare*
-  *P. cornwallisensis*
-  *P. calcareum*
and *P. uschakovii*

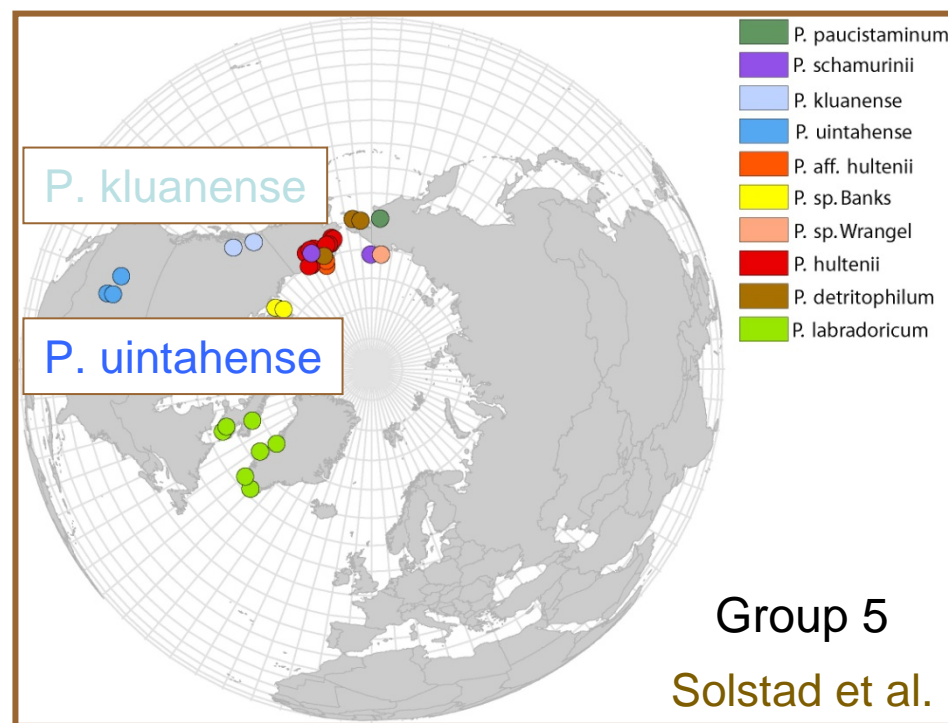
Comparisons with earlier treatments



Flora of North America: *P. radicatum* subsp. *kluanensis*



Comparisons with earlier treatments



GEOGRAPHICAL DIVERSITY PATTERNS

- ❖ the highest species diversity is found in Beringian Asia and Beringian North America
- ❖ the species diversity in North America and Greenland is distinctly higher than what has been accepted in previous surveys
- ❖ the diversity in northern Asia is somewhat lower than what has been proposed from these regions



GEOGRAPHICAL DIVERSITY PATTERNS

- ❖ the material is divisible into a mainly Beringian component (the majority of taxa) and a non-Beringian component
- ❖ the Asian and American Beringian areas have several species in common and are closely connected
- ❖ the Beringian and non-Beringian areas have few species in common



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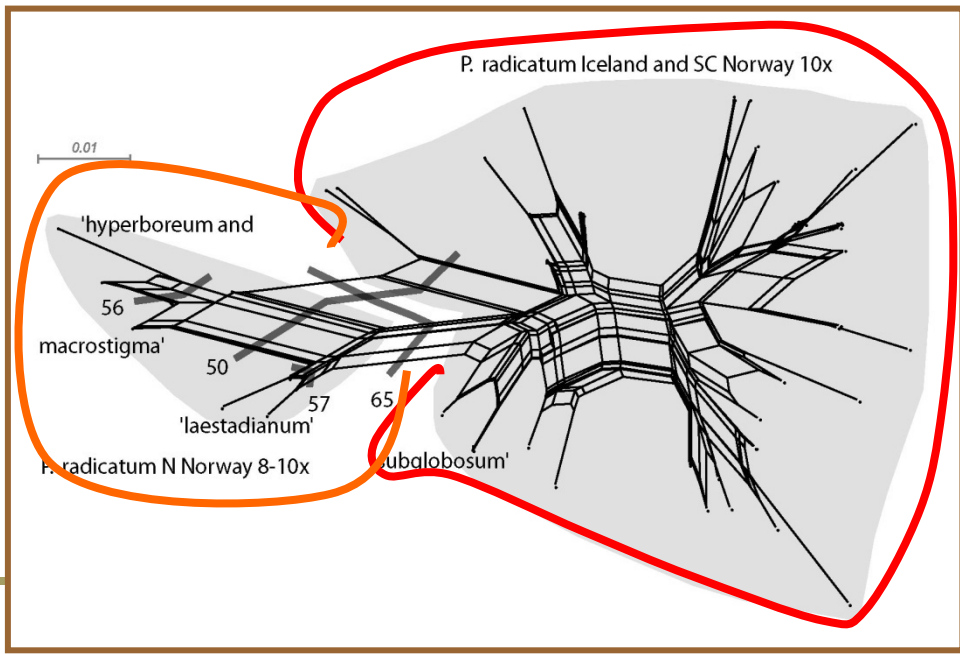
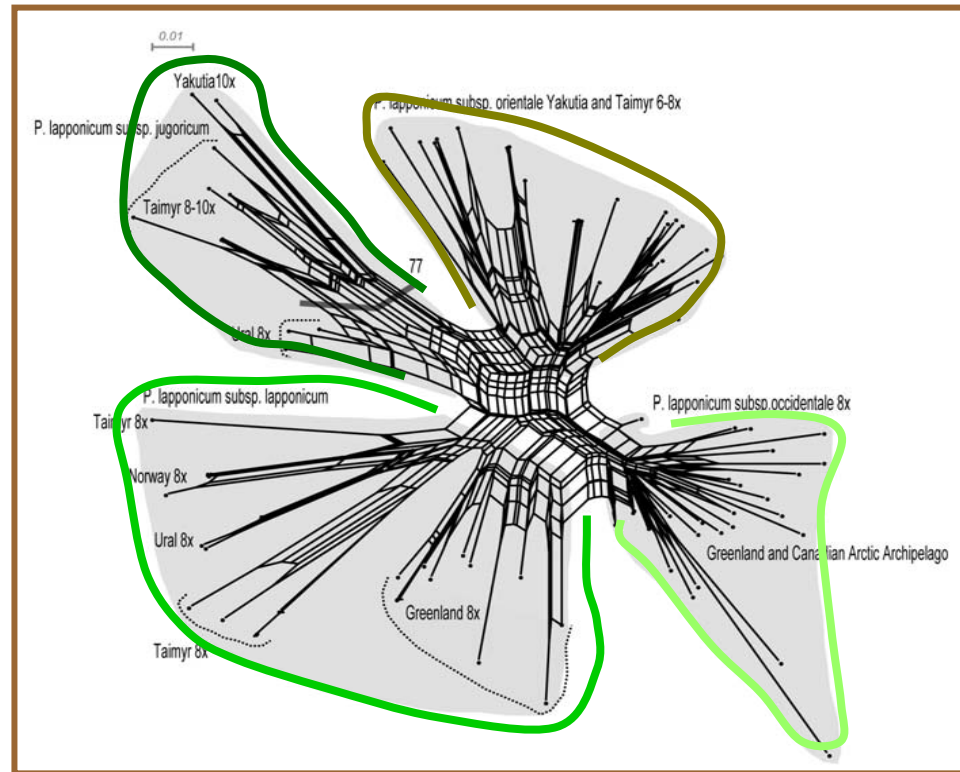
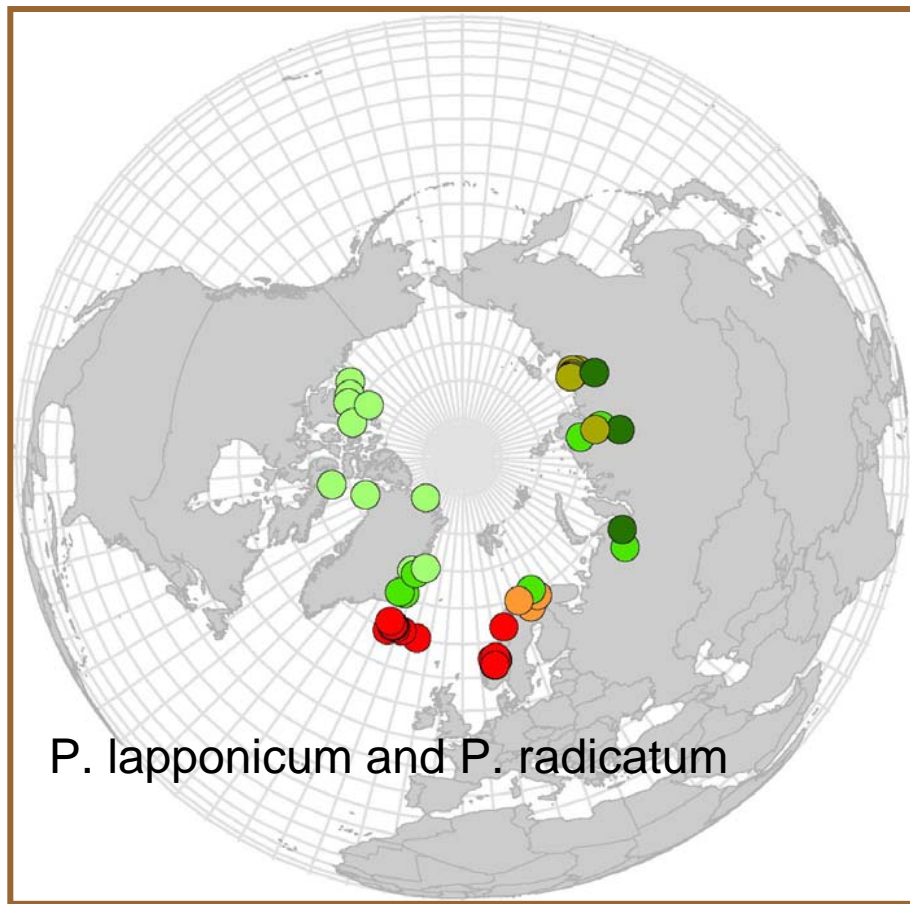
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- *P. uschakovii*
- *P. sp. aff. dahlianum*
- *P. dahlianum*

