Arnica
Family : Asteraceae/ Composite Family

Arnica frigida

Vs.

Arnica lessíngii

By, Shaina Bhojwani

Basic Characters of Asteraceae

- The inflorescence is a head/ capitulum (a cluster of 1 -2 types of flowers) which sits on a receptacle.
- There are 2 recptacular bracts/pales/palea/chaff
- The head is surrounded by involucral bracts/ phyllaries.
- Calyx is reduced to a pappus of scales, awns, bristles
- The fruit is a 1 seeded achene which uses the pappus as a mode of dispersal by wind.
- There are 3 types of flowers present:

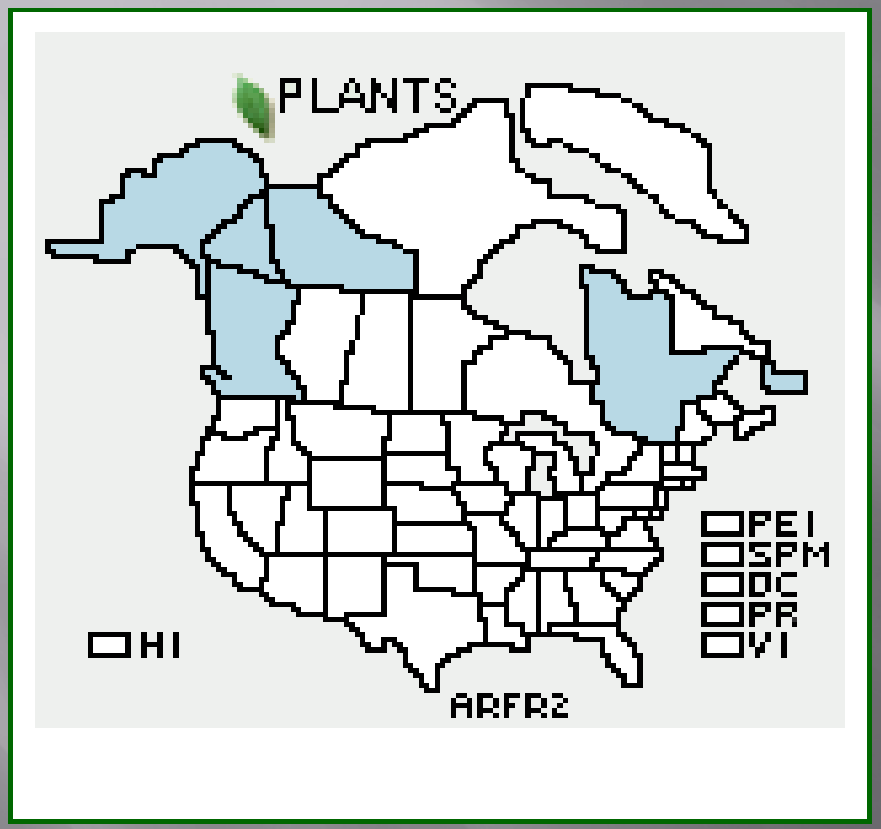
  1) Disc Florets 2) Ray Florets 3) Ligulate Florets
- CA X CO (5) A (5) G (2)

Why Arnica?

- Medicinal value: Creams/ ointments for pains and burns.
- Very commonly found in Alaska. Distribution overlap between these two species.

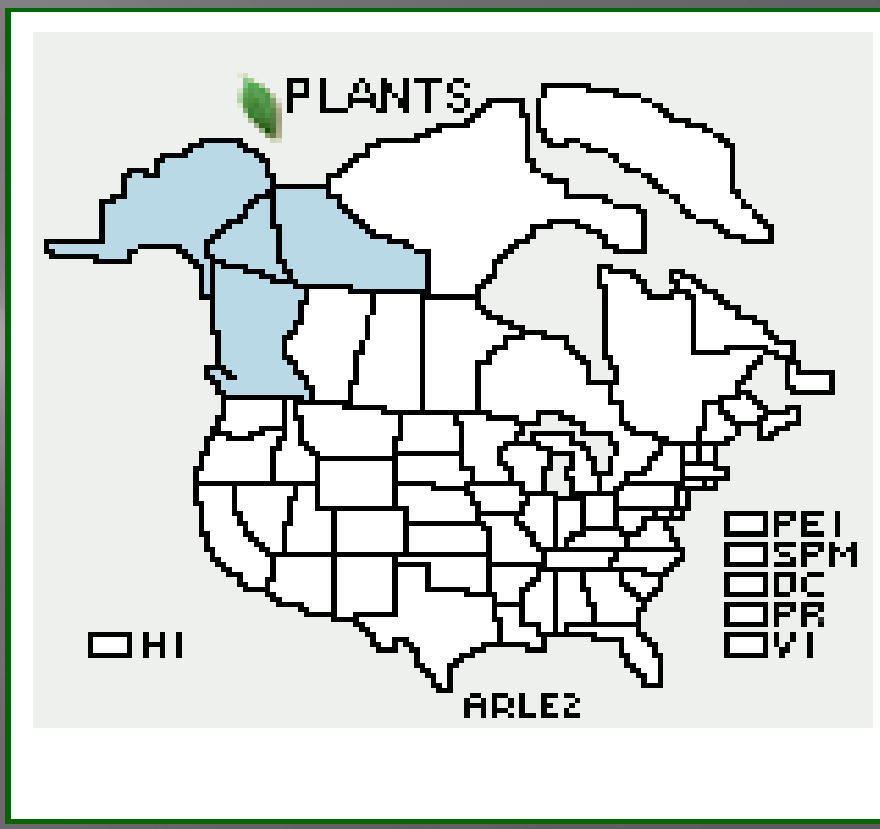
Distribution in the U.S.

Arnica frigida



Alaska, Yukon Territory, British Columbia, and Northwest Territories

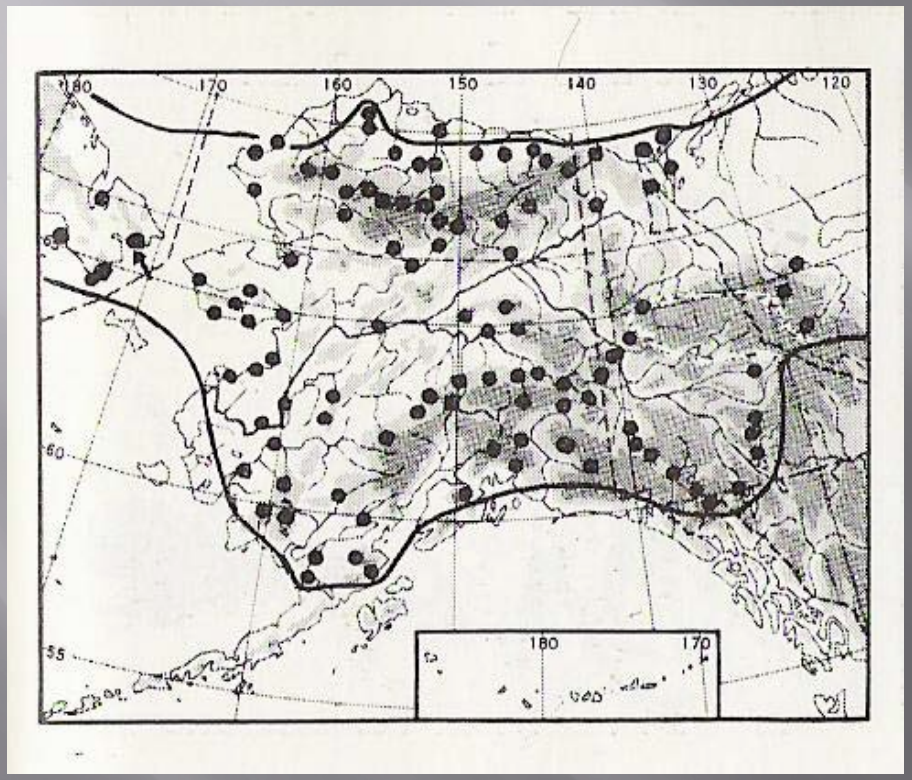
Arnica lessíngii



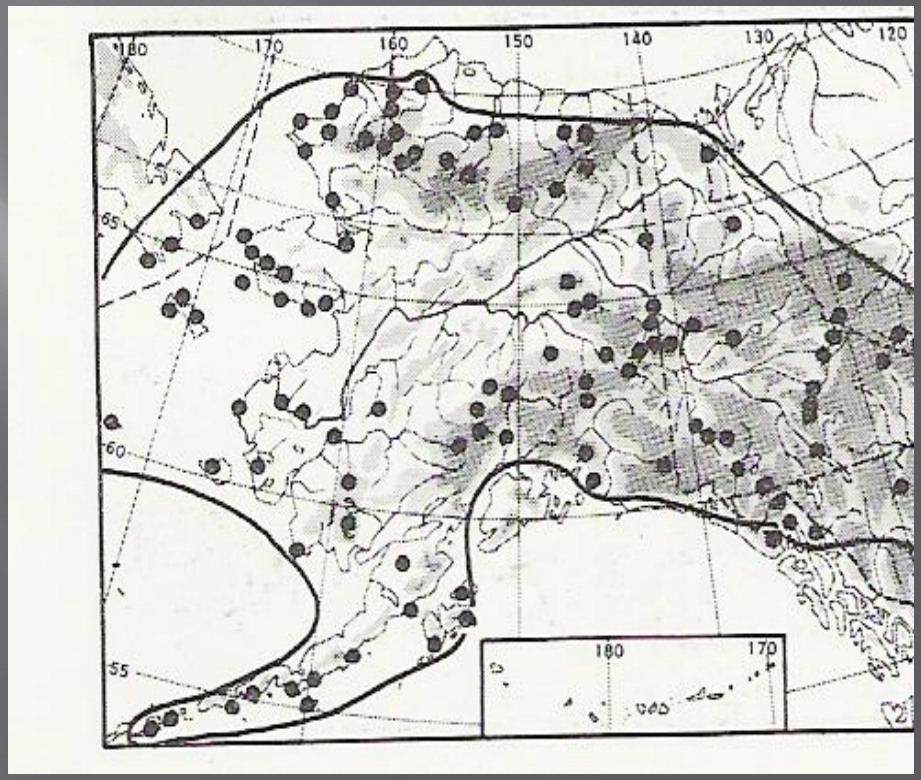
Quebec and Newfoundland

Distribution in Alaska

Arnica frigida



Arnica lessíngii



Overlapping in many areas in Alaska

Differences

Arnica frigida	*Arnica lessíngii*
1) Anthers yellow and barbellate	Anthers purplish- black
2) Stems simple from short caudex	Stem mostly solitary from slender scaly rhizome
3) Basal leaves as well as stem leaves	Leaves mostly basal (leaves mostly wither at time of flowering)
4) Achenes pubescent	Achenes strigose to glabrescent
5) Found on dry, stony slopes	Grow in alpine and sub alpine meadows
6) Peduncle apex densely villous with yellow hair	Peduncle apex moderately villous with brownish hair
7) Few leaves on stem	Stem mostly scapose
8) Heads solitary or rarely 2- 3	Roundish solitary heads
9) Pappus white	Pappus tawny

Arnica frigida

Arnica lessíngii

Root System

Arnica frigida

Stems arise from short caudex

Arnica lessíngii

Stem grows from slender, scaly rhizome

Anthers

Arnica frigida

Anthers yellow and barbellate

Arnica lessengii

Anthers purplish- black

Achene

Arnica frigida

- Achenes pubescent
- Slightly smaller

Arnica lessengii

- Achenes strigose to glabrescent
- Slightly larger

Pappus

Arnica frigida

Arnica lessingii

Pappus mostly white

Pappus tawny (pale orange brown color)

Involucral Bracts

Arnica frigida

Arnica lessengii

•Bracts sparsely pilose to glabrous apically

•10 - 18mm high

•Bracts completely pilose and ciliate

•12 – 17mm high

Peduncle

Arnica frigida

Peduncle apex densely villous with yellow hair

Arnica lessengii

Peduncle apex moderately villous with brownish hair

Key to Genus (Cody)

Key to groups of genera

A. Flowers all ligulate and perfect; juice milky ..... **Group I** p. 538

A. Flowers not all ligulate; ray flowers when present either pistillate or neutral; juice watery

B. Heads radiate

C. Rays yellow or orange

D. Pappus chaffy, or of firm awns, or none; receptacle chaffy, bristly or naked ..... **Group II** p. 539

D. Pappus partly or wholly of capillary bristles, sometimes plumose; receptacle naked ..... **Group III** p. 539

C. Rays white or pink or purple, never yellow or orange ..... **Group IV** p. 539

B. Heads discoid (without rays)

E. Pappus of numerous capillary bristles, in some plumose ..... **Group V** p. 540

E. Pappus of scales, awns, very short chaffy bristles, or a mere crown, or none ..... **Group VI** p. 540

GROUP III
(Rays yellow or orange; pappus of capillary bristles; receptacles naked)

A. Leaves opposite ..... *Arnica*

A. Leaves alternate, or all basal

B. Involucral bracts in one series ..... *Senecio*

B. Involucral bracts imbricated, in several series

C. Heads mostly solitary on each stem (ours) ..... *Haplopappus*

C. Heads several on each stem ..... *Solidago*

GROUP V
(Heads discoid; pappus capillary)

A. Receptacle densely bristly

B. Leaves spiny-margined ..... *Cirsium*

B. Leaves not spiny-margined ..... *Saussurea*

A. Receptacle naked

C. Flowers perfect, yellow or orange

D. Plants with a stout taproot ..... *Haplopappus*

D. Plants with fibrous-rooted and branching base

E. Leaves mainly opposite ..... *Arnica*

Key to Species (Hultén)

Arnica L.

Anthers purplish-black; pappus tawny:
- Heads nodding in (late) anthesis; ligule of ray-flowers longer than the purplish involucral bracts:
  - Stem leaves in 2–3 pairs . . . . . 1. *A. Lessingii* subsp. *Lessingii*
  - Stem leaves in 4–6 pairs . . . . . 2. *A. Lessingii* subsp. *Norbergii*

Anthers yellow; pappus white, tawny, or brown:
- Heads lacking ligulate flowers . . . . . 13. *A. Parryi*
- Heads with ligulate marginal flowers:
  - Basal leaves and lower stem leaves broad, ovate, elliptic or cordate:
    - Pappus white, barbellate:
      - Involucrum densely white-pilose, inconspicuously glandular; achenes uniformly hirsute . . . . . 5. *A. cordifolia*
      - Involucrum sparsely hispidulous-puberulent, short-stipitate-glandular; achenes glabrous or sparsely pubescent . . . . . 6. *A. latifolia*
    - Pappus brownish or tawny:
      - Heads nearly hemispherical, broad; lower leaves sessile or abruptly short-petiolated; involucrum with long-stipitate glands . . . . . 9. *A. mollis*
      - Heads more or less turbinate; lower leaves petiolate; involucrum not long-stipitate-glandular . . . . . 12. *A. discoidalis*
  - Basal leaves and lower stem leaves narrower, never cordate:
    - Pappus white, barbellate:
      - Leaves regularly dentate; lower leaves long-petiolated, prominently 3–5 nerved . . . . . 14. *A. lonchophylla*
      - Leaves entire or irregularly toothed in margin; lower leaves with shorter petioles:
        - Achenes sparsely hispid at summit or subglabrous; leaves obtuse or abruptly pointed, head single . . . . . 3. *A. frigida*

Problems Encountered

- The achenes of *Arnica frigida* were said to be pubescent. Did not see this in specimens.
- Noticed that the achenes of *A. frigida* were always slightly smaller and slightly lighter colored in comparison to that of *A. lessíngii.*
- *Arnica frigida* is referred to as *A. griscomii* and *A.louiseana* in a couple books and this made it hard to locate.

Work Cited

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THANK YOU!!

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&
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