

Oxytropis subsection *Arctobia*



Zachary Meyers

What is *Oxytropis*?

- Family (Fabaceae)
 - Leaves usually pinnately compound
 - 5 merous flowers = zygomorphic (Papilionoideae)
 - Standard (1) + 2 wings (1) + keel (2 fused petals)
 - Diadelphous (9+1 stamens)
 - Fruit is a Legume
 - N-fixing
 - Neural toxin (swainsonine) results in seizure, apparent blindness, clumsy gait, and death
 - Locoweed

History of *Oxytropis*

- DeCandolle established *Oxytropis* genus in 1802; based exclusively on old world species
- A genus in flux
 - Numerous nomenclature changes due to high morphological variability
 - “The species listed seemed far to outnumber those existing in nature, while their names, as they shifted back and forth between *Aragallus* and *Spiesia*, *Oxytropis* and *Astragalus*” --- Barneby
 - *Astragalus* vs *Oxytropis*
 - The status of *Oxytropis* as a genus distinct from *Astragalus* has been argued for more than a century
 - “A genus is perceived by the sum of characters common to its members, not by one of two which may prove unique to it and thereby become a practical use in a key” --- Barneby

History of *Oxytropis* (cont)

- Famous botanist who examined the genus:
 - Asa Gray (1810-1888)
 - Al. Bunge
 - Sectio. *Arctobia*
 - Sectio. *Caeciabia*
 - Rubert Barneby (1911-2000)
 - Stanley L Welsh (Present)
 - Aggregated *nigrescens* complex
 - Boris Yurtzev (1932-2004)
 - Split *nigrescens* complex
 - *O. czukotica* Jurtzev
 - *O. gorodkovii* Jurtzev

Genera Key

- A. Leaves with a slender terminal tendril
 - B. Style filiform, bearded near apex
 - B. Style flattened, bearded down inner side
- A. Leaves lacking tendrils
 - C. Leaflets 3
 - D. Inflorescence globose
 - D. Inflorescence spikelike or racemose
 - E. Flowers in short headlike racemes; pods curved or spirally coiled
 - E. Flowers in elongate racemes; pods ovoid
 - C. Leaflets more than 3
 - F. Legume articulated with transverse joints
 - F. Legume not articulated
 - G. Leaves palmately lobed
 - G. Leaves pinnate
 - H. Calyx lobes subulate, much longer than tube; fruit round, strongly reticulated, bearing stout spines on reticulations, 1-seeded
 - H. Calyx lobes shorter than tube; fruit elongated, not strongly reticulated or bearing spines, several-seeded
 - I. **Stems usually leafy; keel of corolla blunt** *Astragalus*
 - I. **Stems usually not leafy; keel of corolla tipped into an erect point**

Oxytropis

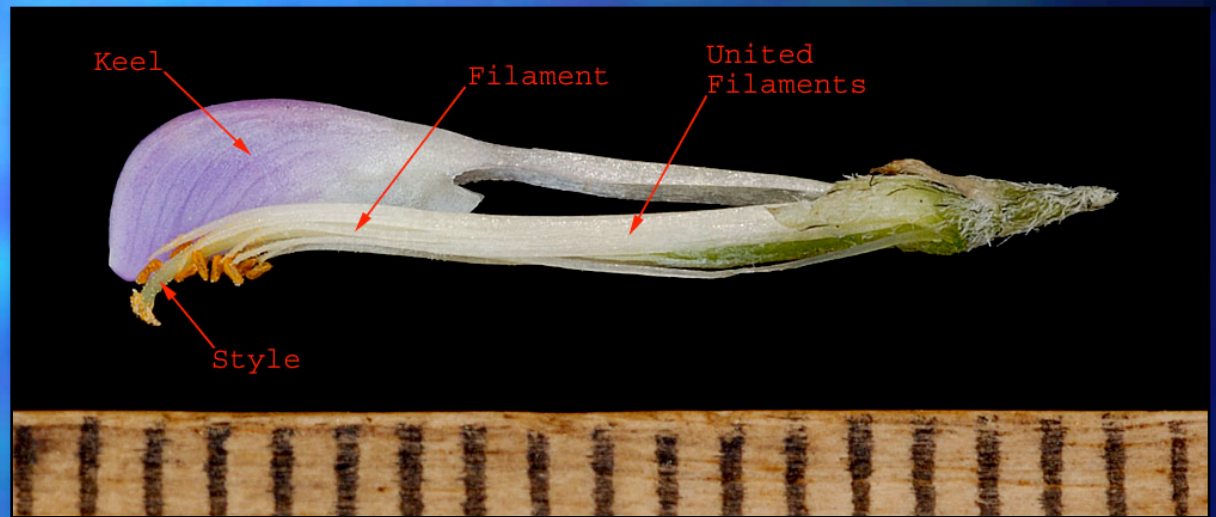
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Keels

Oxytropis

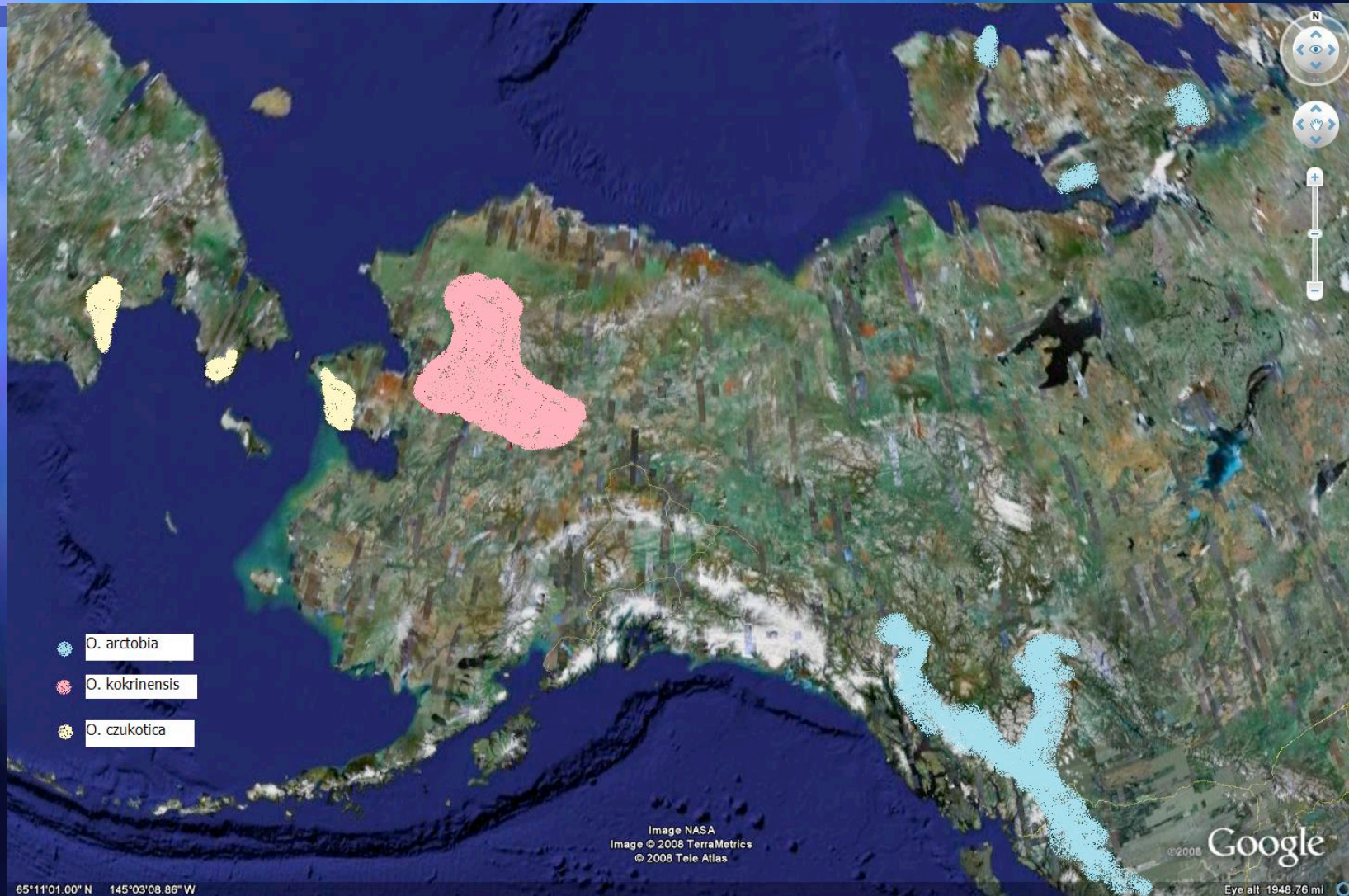


Astragalus



Distribution Map

(Endemics and Amphi Beringian)



Species Key

(*Oxytropis* subsect. *Arctobia*)

- 1. Leaves **unifoliate or trifoliate** *O. mertensiana*
- 1. Leaves pinnate, leaves with more than 3 leaflets
 - 2. Stipules and **caudex rust-brown**; flowers bright pink to pink purple *O. kokrinensis*
 - 2. Stipules yellow-green or clear, with dark brown caudex; flowers range from deep purple to yellow
 - 3. Ascending/erect habit, entire plant not densely covered with strigose hairs; flowers in clusters of 3s; elliptical or rotund legumes
 - 4. **Pods inflated**, wider than long *O. podocarpa*
 - 4. Pods elliptical, longer than wide
 - 5. Scapes decumbent and rise above the caudex *O. scammaniana*
 - 6. Scapes "**clustered in succession**" *O. scammaniana*
 - 6. Scapes solitary predominantly longer than leaflets; *O. revoluta*
 - 5. Scape buried in caudex; Pods elliptic, with **abruptly hooked beak**, glabrous or minutely strigose *O. huddelsonii*
- 3. Pulvinate to semi-compact; entire plant densely covered with strigose hairs; flowers usually in pairs; cylindrical legumes
 - 7. Entire plant **snow-white, 1 flower per peduncle** *O. arctobia*
 - 7. Entire plant grayish-pubescent; flowers mostly in pairs:
 - 8. Plant densely caespitose, strigose-pubescent **with papilla on hairs**
 - 9. Older pedicels thin, slightly **curved/coiled** in ascending fashion *O. czukotica*
 - 9. Older pedicels erect
 - 10. White tufts of strigose hairs only at apex of margin; only in Siberia *O. nigrescens*
 - 10. Tufts all along the leaf margin; found through AK *O. bryophila*
 - 8. Plant pulvinate, **densely lanate with no papillae on hairs** *O. seredkovii*

Species Profiles

Nigrescens Complex:

- *O. gorodkovii*
- *O. arctobia*
- *O. czukotica*
- *O. bryophila*
- *O. nigrescens*

Other:

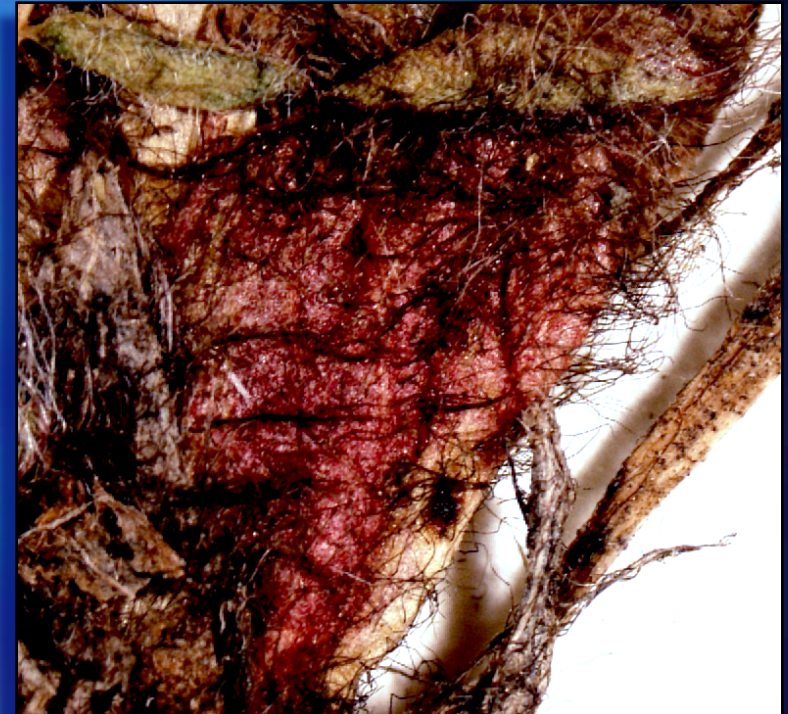
- *O. mertensiana*
- *O. kokrinensis*
- *O. scammaniana*
- *O. revoluta*
- *O. podocarpa*
- *O. huddelsonii*

O. mertensiana

Unifoliate or Trifoliate leaves



O. kokrinensis



Caudex and Stipules Rust-brown

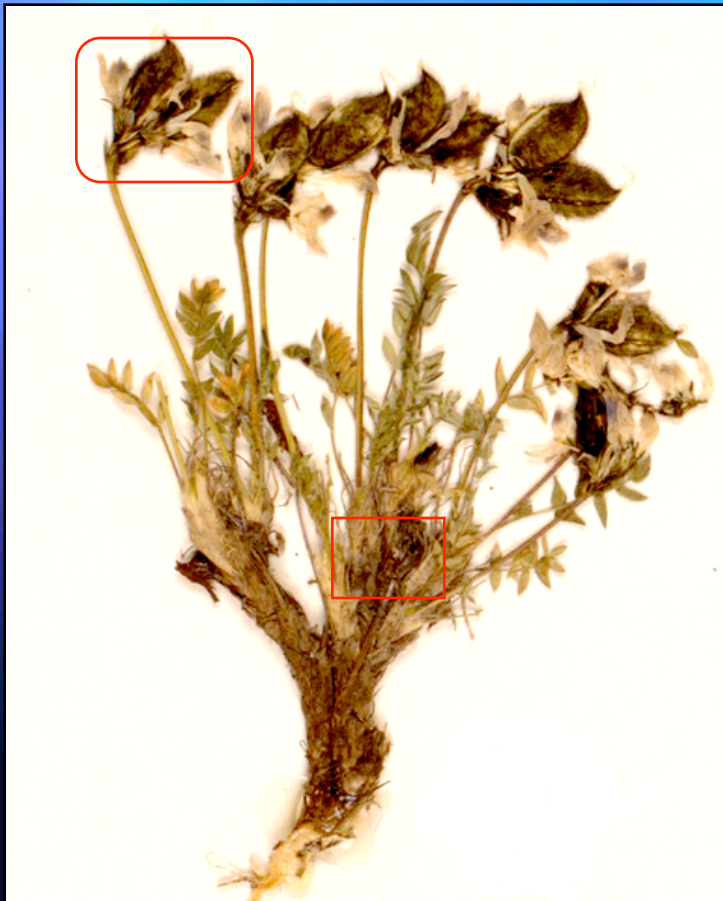
O. podocarpa

Legume inflated



O. scammaniana

Clustered in succession



Decumbent/ Erect



Legume Shape

O. revoluta



Large ovate leaflets (well spaced)

Solitary scape



Strigose hairs appressed at the edge of leaflet

(cupped)



O. huddelsonii



Legume elliptic, with abruptly hooked beak



O. arctobia



Snow-white Leaflets



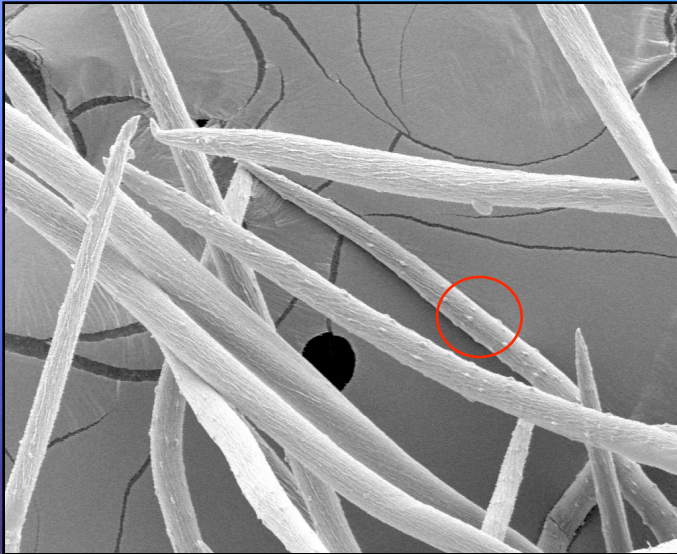
1 flower per scape

O. czukotica

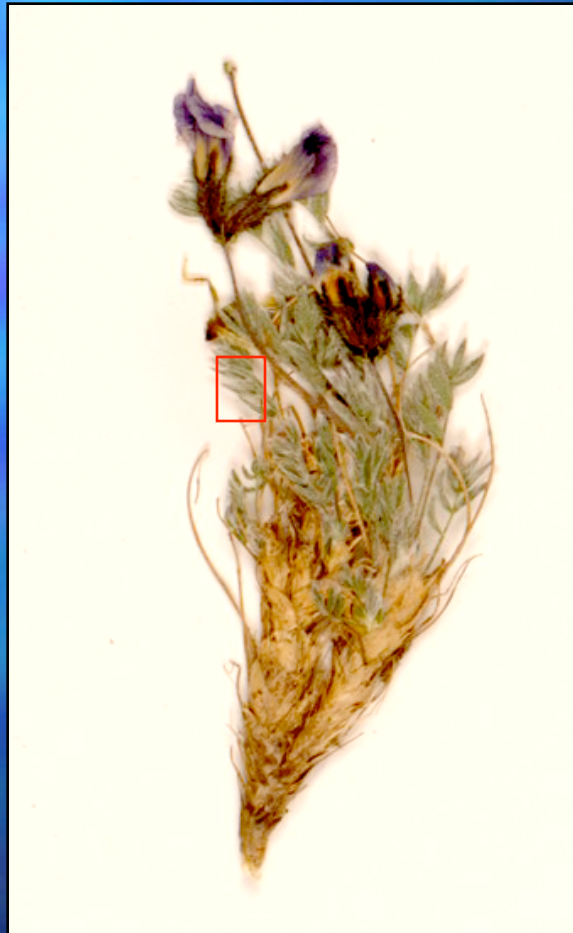
Curved/Coiled



O. bryophila



Papillae on hairs



Legumes cylindrical



O. nigrescens



3 flowers per pedicel

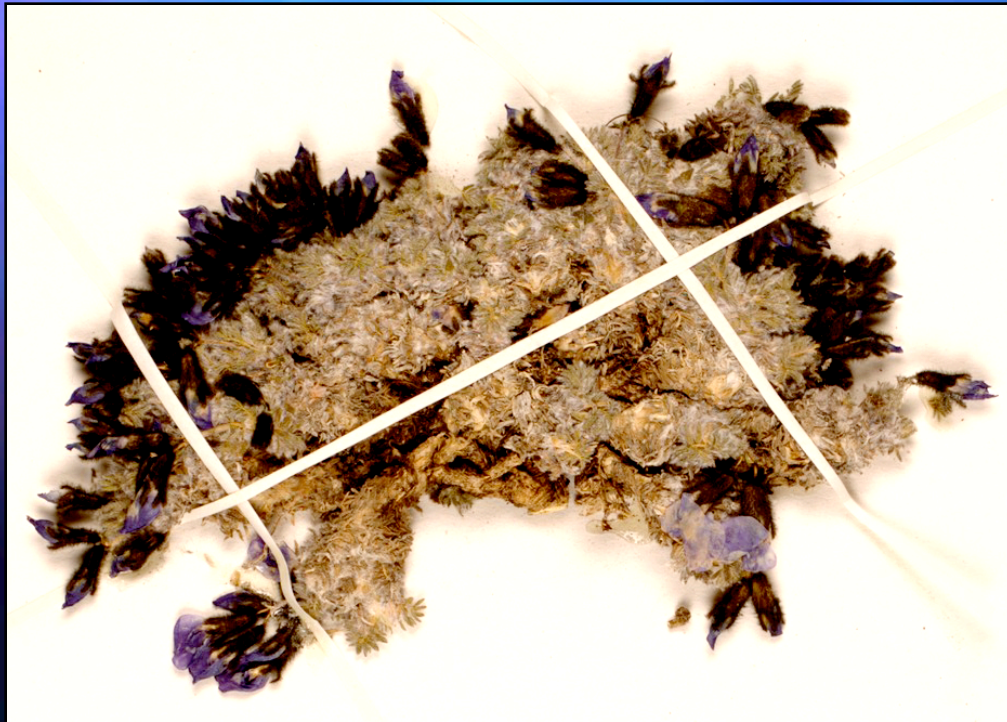


Tufted Pubescence at Apex

O. gorodkovii



Lanate



No papillae on hairs

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