

# A Systematic Analysis of Geranium:

erianthum



Specimen (12)

VS.

bicknellii



Specimen (2)

comparing the two most populous  
Geranium species in Alaska

# Geraniaceae

- Part of the order Geraniales – both the order and family are derived from the genus Geranium
- Three genera, two of which are present in Alaska – *Erodium* and *Geranium*
- Flowers are actinomorphic, with 5-merous petals and stamens
- Fruit is a schizocarp



# Key to Gerianaceae

- 1. Petals unequal (sometimes upper 2 different from lower 3 in shape)
  - 2. Upper sepal not spurred — stem canescent - *Erodium texanum*
  - 2'. Upper sepal spurred, spur fused to pedicel - *Pelargonium*
- 1. Petals equal
  - 3. Leaf pinnate; fertile stamens 5 - *Erodium*
  - 3'. Leaf palmate; fertile stamens generally 10 - *Geranium*

# Geranium

- Four Geranium species in Alaska (according to Hulten)
- But... only two with enough specimens to compare → *G. erianthum* and *G. bicknellii*
- *G. erianthum* has over 223 specimens, and *G. bicknellii* has 25 specimens in the range at ALA

# Geranium erianthum

- Common Names:
  - Woolly geranium
  - Wild geranium
  - Northern Geranium
  - Cranesbill
- Synonyms:
  - GEPRE *Geranium pratense* L. var. *erianthum* (DC.) B. Boivin

Source: <http://plants.usda.gov/java/profile?symbol=GEER2>

# Geranium bicknellii

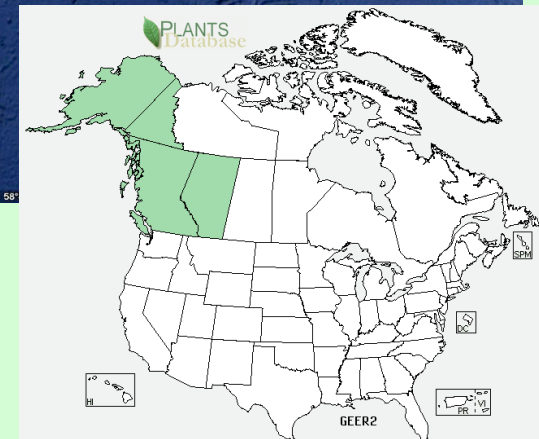
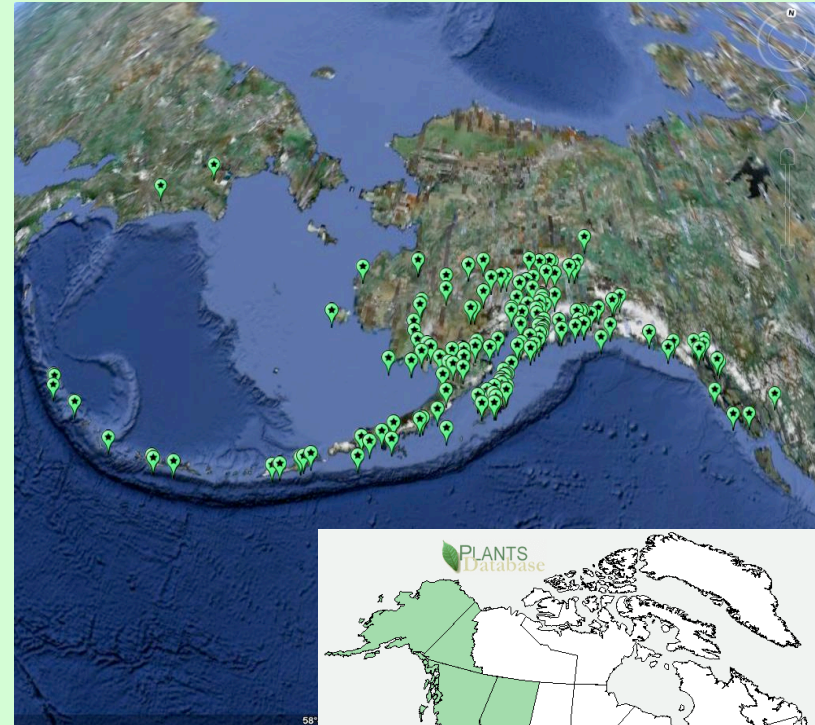
- Common Names:
  - Bicknell's northern crane's bill
  - Bicknell's crane's-bill
  - northern cranesbill
  - Bicknell's geranium
- Synonyms:
  - GEBIL *Geranium bicknellii* Britton var. *longipes* (S. Watson) Fernald
  - GECAL *Geranium carolinianum* L. var. *longipes* S. Watson
  - GENE4 *Geranium nemorale* Suksd.
  - GENE8 *Geranium nemorale* Suksd. var. *bicknellii* (Britton) Fernald

Source: <http://plants.usda.gov/java/profile?symbol=GEBI2>

# Geranium Erianthum



Specimen (9)



U.S. Distribution courtesy USDA  
Source: <http://plants.usda.gov/java/profile?symbol=GEER2>



# Geranium bicknellii



U.S. Distribution courtesy USDA  
Source: <http://plants.usda.gov/java/profile?symbol=GEBI2>



Specimen (4)

# Basic Comparison

*G. erianthum* and *G. bicknellii* have a fair amount of plasticity.

They can appear very similar:



*G. erianthum*

Specimen (12)



*G. bicknellii*

Specimen (3)

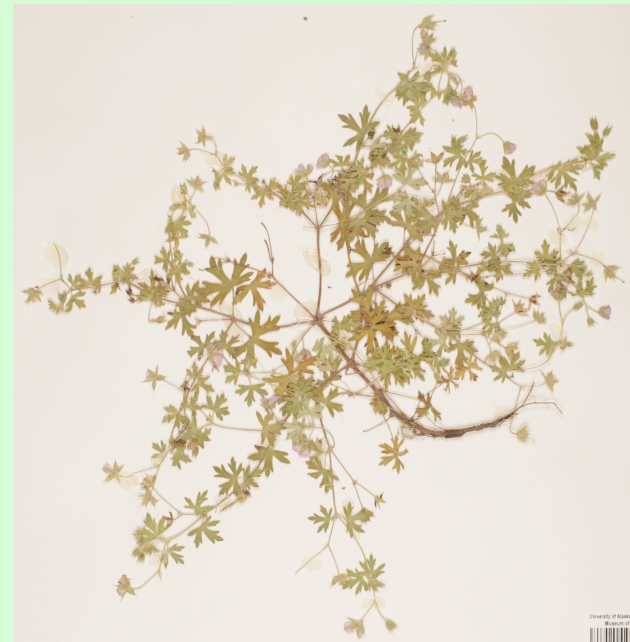
# Basic Comparison II

...They can also appear quite different:



*G. erianthum*

Specimen (8)



*G. bicknellii*

Specimen (2)

The divaricate branching in *G. bicknellii*, not present (to much extent) in *G. erianthum* is an easy way to get a good idea which species one is examining.



# Thorough Comparison I

A closer look reveals several more characters which differentiate the two species

- *G. erianthum* is perennial and possesses a thick rhizome



Specimen (10)



Specimen (11)



Specimen (12)

- *G. bicknellii* is annual or biennial and possesses a thin taproot



Specimen (1)



Specimen (4)

# Thorough Comparison II

- *G. erianthum* flowers are in groups of 3-5



Specimen (9)



Specimen (12)



Specimen (10)

- *G. bicknellii* flowers are solitary or in pairs (2 per peduncle)



Specimen (2)



Specimen (5)



Specimen (3)



# Thorough Comparison III

- *G. erianthum* petals are showy and mostly larger than 1.5x Calyx – Also, Petal color is dark purple, rarely white



Specimen (9)



Specimen (14)



Specimen (15)



Specimen (13)

# Thorough Comparison III Pt. 2

- *G. bicknellii* petal length is less than 1.5x calyx length – Also, petal color is a light pink to dark pink



Specimen (2)



Specimen (2)



Specimen (5)



Specimen (2)



# Thorough Comparison IV

- *G. erianthum* stipules are often lanceolate, large, 2-4, often 2 at basal petioles, and resembling onion skin



Specimen (9)



Specimen (15)



Specimen (16)



Specimen (11)

# Thorough Comparison IV pt. 2

- *G. bicknellii* stipules are lanceolate, 4-many often red or with black tips



Specimen (5)



Specimen (6)



Specimen (7)



# ARCTOS Links - *bicknellii*

1. ALAAC 4595 : Examined 4/6/2009  
<http://arctos.database.museum/guid/UAM:Herb:150583>
2. ALAAC 31972 : Examined 4/3/2009  
<http://arctos.database.museum/guid/UAM:Herb:87724>
3. ALAAC 59358 : Examined 4/6/2009  
<http://arctos.database.museum/guid/UAM:Herb:87230>
4. ALAAC 20171 : Examined 4/6/2009  
<http://arctos.database.museum/guid/UAM:Herb:150584>
5. ALAAC 96724 : Examined 4/3/2009  
<http://arctos.database.museum/guid/UAM:Herb:157530>
6. ALAAC 29843 : Examined 4/3/2009  
<http://arctos.database.museum/guid/UAM:Herb:86684>
7. ALAAC V120459 : Examined 4/3/2009  
<http://arctos.database.museum/guid/UAM:Herb:13434>

# ARCTOS Links - *erianthum*

8. ALAAC V119844 : Examined 4/6/2009  
<http://arctos.database.museum/guid/UAM:Herb:12839>
9. ALAAC V81328 : Examined 4/6/2009  
<http://arctos.database.museum/guid/UAM:Herb:25474>
10. ALAAC 91357 : Examined 4/6/2009  
<http://arctos.database.museum/guid/UAM:Herb:54541>
11. ALAAC 83742 : Examined 4/6/2009  
<http://arctos.database.museum/guid/UAM:Herb:48059>
12. ALAAC V130267 : Examined 4/6/2009  
<http://arctos.database.museum/guid/UAM:Herb:34094>
13. ALAAC 91175 : Examined 4/3/2009  
<http://arctos.database.museum/guid/UAM:Herb:51806>
14. ALAAC V71848 : Examined 4/3/2009  
<http://arctos.database.museum/guid/UAM:Herb:61407>
15. ALAAC V96253 : Examined 4/3/2009  
<http://arctos.database.museum/guid/UAM:Herb:25490>
16. ALAAC V78354 : Examined 4/3/2009  
<http://arctos.database.museum/guid/UAM:Herb:63103>



# Literature Cited

- Research for this project utilized Eric Hulten's *Flora of Alaska and Neighboring Territories* and Jacob Peter Anderson's *Flora of Alaska*.
- Alaska distribution maps were created using Google Earth and KML files provided by ARCTOS
- All photos used were taken by Monte Garrouette
- *G. erianthum* US distribution Maps, common names and synonyms were courtesy USDA - Source: <http://plants.usda.gov/java/profile?symbol=GEER2>
- *G. bicknellii* US distribution Maps, common names and synonyms were courtesy USDA - Source: <http://plants.usda.gov/java/profile?symbol=GEBI2>