

Borealis

the newsletter of the



PO Box 141613, Anchorage, Alaska

December 2015-January 2016

KEYNOTES

Join us at our Next Meetings!

Monday, Dec. 7, 6:00 p.m

Main Topic: "Steller's Writings"

Speakers: Margritt Engle, Karen Willmore

Margritt Engle and Karen Willmore are working together on newly found diaries of naturalist and explorer Georg Wilhelm Steller. Margritt Engle translated "Journal of a Voyage with Bering, 1741-1742, George Wilhelm Steller" with O.W. Frost in 1988.

Endangered Plants: *Maianthemum*

Presenter: Anjanette Steer

Saxifrage Family Plant: *Tolmiea*

Presenter: Mike Monterusso

Monday, Jan. 4, 7:00 p.m

Main Topic: "Zoopharmacology"

Speaker: Michelle Colburn

Wikipedia says ...**Zoopharmacognosy** is a behavior in which non-human animals apparently self-medicate by selecting and ingesting or topically applying plants, soils, insects, and psychoactive drugs to treat or prevent disease. Michelle works with the veterinary staff at the Alaska Zoo to adapt some of this knowledge to their animals.

Endangered Plants: *Cicuta bulbifera*

Leader: Marilyn Barker

Saxifrage Family Plant: *Heuchera, Tellima*

Presenter: Annie Ronsse



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It was a Steller Voyage....

In the service of the Russian tsarina, the German naturalist Georg Wilhelm Steller (1709-1746) accompanied the great Danish explorer Vitus Bering on a voyage that survived shipwreck and unimaginable hardship to mark the beginning of Alaska's recorded history. Thirty-two men of the 78 who set sail died, including Bering himself; 46 survived shipwreck in the winter of 1741-42 on a treeless, uninhabited island, and returned finally to home port on Kamchatka in a small vessel built from timbers of the wrecked ship. On the island, Bering and his lieutenant had become too ill to function and Steller found himself taking the lead in organizing work parties, finding antiscorbutic plant and animal food, nursing the sick, and cheering the depressed—actions that kept all from perishing.

Steller did not get to publish his manuscripts in his own lifetime, but some of his writings were later published in his native German.

In 1988 O.W. Frost and Margritt Engle published a new translation and annotation of Steller's journal of that momentous voyage and the first to be based completely upon a surviving copy of Steller's manuscript dated 1743. The journal is the best known of Steller's writings, and is a fascinating look at his biological and anthropological observations, his description of the Alaskan coast and the subsequent landings, and of those harrowing events of the return voyage.

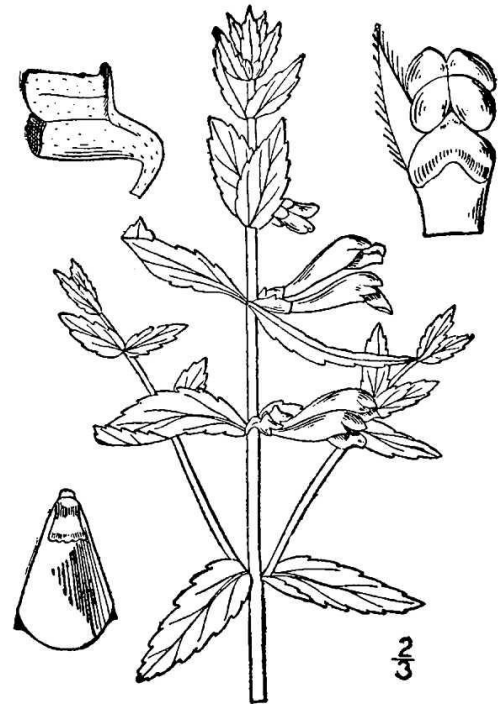
Everything was of interest to Steller. The breadth and depth of his recordings of the natural and human world he experienced are still of great value to anyone interested in Alaska's natural history. In fact, Steller has been called the pioneer of Alaskan natural history.

After translating the highly acclaimed book, *Steller's History of Kamchatka; Collected Information Concerning the History of Kamchatka, Its Peoples, Their Manners, Names, Lifestyles, and Various Customary Practices* in 2003, Margritt Engle and Karen Willmore are working together again on newly found Steller diaries. Join us at our November meeting to hear about what they have learned.

Verna's MYSTERY PLANT

ANSWER on Page 4 – Don't Peek!

This plant is probably more common than it appears in Hulten's Flora as I have seen it in places not noted. It likes moist meadows and around the margins of lakes in Eastern Alaska and wetlands that follow up major waterways into Interior and South Central Alaska, as far as Anchorage and I have seen it around lakes on the Kenai Peninsula. It is generally a slender plant, but occasionally it is branched. The stems are square and the rough textured, ovate, slightly hairy leaves are slightly rippled on the edges and placed opposite on the stems. The tubular flowers have a curved base and protrude from the base of the leaves. The petals are light lavender/blue, and are much longer than the calyx, and have a distinct protruding lip and a short cap.



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the newsletter of the



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Field Trips	Marilyn Barker

Newsletter ("Borealis")

Editor	Ginny Moore	345-1355
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Borealis is published bi-monthly, fall through spring. Articles may be sent to Ginny Moore, 14530 Echo Street, Anchorage, AK 99516. Phone or FAX: 345-1355, E-mail: elfinwood@gmail.com

The Saxifragaceae

A core mission of The Alaska Native Plant Society is education. Each season we select a plant family to study and at each meeting members present different species within that family. The plant "family" for the fall-winter 2015-16 is be *Saxifragaceae*. Thanks in advance to the volunteer speakers.

At the November meeting, Marilyn Barker opened the discussion of the Saxifragaceae (Saxifrage Family) with an overview of the family characteristics. Plants in the Saxifragaceae are herbs or shrubs, mostly with simple basal leaves; the leaves lack stipules; the flowers are often scapose, or paniculate; 5-merous; K5 C5 S 5-10 P(2); ovary position is perigynous; the pistil is commonly 2-horned at apex with 2 styles and 2 stigmas; the fruit is a many seeded capsule.

The family Saxifragaceae is comprised of 3 sub families:

1. Saxifragoideae: all stamens fertile, 2-3 carpels, fruits split lengthwise
2. Parnassioideae: some stamens reduced to staminodia, 3-4carpels, fruits split lengthwise
3. Penthoroideae: all stamens fertile, 5-7 carpels, fruits circumscissile

In the broader sense, Saxifragaceae also includes the now separately recognized families :

- Hydrangeaceae—woody, leaves opposite, ovary perigynous
- Escalloniaceae—woody alternate leaves, ovary superior (Philadelphus=mock orange)
- Grossulariaceae—woody, alternate leaves, ovary inferior fruit a berry—the currents

The genus *Chrysosplenium* is considered part of the Penthoroideae. It is a genus of 57species of flowering plants in the family Saxifragaceae. Species can be found throughout the arctic and northern temperate parts of the Northern Hemisphere, with the highest species diversity in eastern Asia; two species are found disjunctly in South America.

They are soft herbaceous perennial plants growing to 20 centimeters tall, typically growing in wet, shady locations in forests. The leaves are rounded, palmately veined, with a lobed margin; they may be arranged either alternately or opposite, depending on the species. The flowers are small, yellow or yellowish-green, with four petals; they are produced in small clusters at the apex of the shoots surrounded by leafy bracts. Most of the growth and flowering is in early spring, when more light is available under deciduous trees.

Using the key in Hultén we see that the genus has 4 or 8 stamens; petals are absent; the inflorescence is flat topped; and flowers are insubstantial. There are three local species:

- ***Chrysosplenium tetrandrum***--Northern water carpet
 - Leaves alternate, Stamens 4, calyx mostly green, petioles NOT reddish pubes
- ***Chrysosplenium wrightii***--Wright's water carpet (Bering Sea Water Carpet)
 - Leaves alternate, Stamens 8, Calyx purple mottled, petioles reddish pubescer



Chrysosplenium tetrandrum

BUT

- ***Chrysosplenium rosendahlii***—Rosendahl's golden saxifrage
 - Leaves opposite, Stamens 2-8, sepals green with purple spots

Glossary

circumscissile: Describing any seed-vessel that splits along a circumference, with the upper part coming off as a lid

scapose - resembling or consisting of a scape; having a bare leafless stalk growing directly from the ground;

racemous: having flowers arranged along a single central axis, as in a raceme, spike, or catkin.

paniculate: a compound inflorescence in which the flowers are arranged along a single central axis.

perigynous: having the stamens and other floral parts at the same level as the carpels

Aleutian Four-Parted Gentian: *Gentianella propinqua*, subsp. *aleutica*

At our November monthly meeting Mike Monterusso gave a presentation on *Gentiana aleutica*. The first thing he had to tell us was that the plant was now going by a new name. He explained that plantlist.org is a website used throughout the botanical garden industry to check the status of a particular name. This website indicates that *Gentiana aleutica* is now referred to as *Gentianella propinqua*. A similar credible website (itis.org) indicates *G. aleutica* is actually now called *Gentianella propinqua* subsp. *Aleutica*.



It appears that *Gentianella propinqua*, subsp. *propinqua* is fairly widespread but this subspecies, *aleutica*, is native only to Alaska, and it is listed on the list of endangered and rare plants with a state status of S3. That means that it is rarely found within the state of Alaska and is at moderate risk of extirpation because of: restricted range, narrow habitat specificity, recent population decline, small population sizes or a moderate number of occurrences. The Arctos database at UAF Herbarium indicates the locations where specimens have been recovered. One of those vouchers was collected by Verna Pratt and Marilyn Barker from the Bering Glacier area.

The genus *Gentianella* is composed of “dwarf gentians” that are distinguished by their short, dense, compact habit, with distinct side-branching. Leaves are oval, oblong or egg-shaped. While gentians tend to be vibrant blue in color, gentianella tend to be light purple. But just to prove the exception, *Genianella hirculus* is striking red and yellow – it is endemic to Ecuador, so maybe they go by different rules in that hemisphere!

Hultén differentiates the subspecies *aleutica* from *propinqua* largely by the shape of the calyx lobes. Calyx lobes of *G. propinqua* subsp. *aleutica* are described as broad, foliaceous, reflexed and somewhat acute, with a bluish white corolla, while those of *G. Propinqua* subsp. *propinqua* are lanceolate, markedly acute and the corolla is bluer. See the comparisons below.



G. aleutica
(from Hultén)



G. propinqua
(from Hultén)

Gentians are named for the Illyrian king Gentius who reigned from 181-168 in an area between modern Greece and Italy and has been given credit for discovering the tonic properties of gentians.

Alaska Botanical Garden database indicates that *Gentianella propinqua* was planted at ABG in the year 2000. Since it is an annual, it is unknown why it didn't return to the garden in later years.

Mystery Plant Answer:

Scutellaria galericulata var. *pubescens*

Lamiaceae/Mint family

FROM OUR BOOKSHELVES



Out of Nature: Why Drugs from Plants Matter to the Future of Humanity

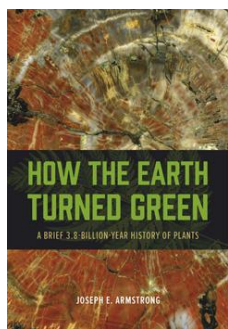
By Kara Rogers. Tucson (Arizona): University of Arizona Press.

ISBN: 978-0-8165-2969-8. 2012.

In his book *Biophilia* (1984) the naturalist Edward O. Wilson introduced and popularized the biophilia hypothesis that suggests that there is an instinctive bond between human beings and other living systems. In *Out of Nature* Karen Rodgers, who holds a PhD in pharmacology and toxicology as well as being a biomedical editor for Encyclopedia Britannica, argues that losing plant biodiversity not only impacts our environment, but it reflects a growing disconnect between humans and nature. The book explores current and potential future roles of natural products for drug discovery. She presents engaging histories of herbs that have been developed into high profile drugs, such as anti-malarial sweet wormwood (*Artemisia annua*) and anti-cancer Pacific Yew (*Taxus brevifolia*).

At the same time she warns that our age old connections with plants are deteriorating and as a result we are increasingly at risk of losing vital opportunities. ““Scientists have estimated that at the current rate at which plants and animals are going extinct,” writes Dr. Rogers, “one new major drug is being lost every two years.” This of course insists upon the question “for which diseases are we unknowingly forgoing a cure?”

The story ranges from the history of the explorations of early botanists to the present day international conventions on everything from patents to the rights of indigenous peoples to the profit and loss statements of multi-national corporations. It covers bioprospecting, ethnobotany, and drug development as it now occurs in both collegial academia as well as the profit-focused world of “Big Pharma”. The final chapter, “The Forest for its Trees,” brings all the various and seemingly disparate topics back together into her exhortation for a reawakening of our individual and collective awareness of just how reliant we have been and continue to remain on the plant world for our very well-being. Whether we follow the healing practices of traditional herbalists or seek the advice physicians in white lab coats working in the most technologically advanced facilities, We are all dependent upon plants for the treatments that will be proscribed to us.



How the Earth turned green: A brief 3.8-billion-year history of plants

Author: Joseph E. Armstrong

Publisher: University of Chicago Press

Publication Date: 2014

ISBN: 978-0-226-06977-7

There have been many introductions to paleobotany over the past century, such as Albert Charles Seward's *Plant life through the ages: A geological and botanical retrospect* (Cambridge University Press, 1933) Adolf Carl Noé's *Ferns, fossils and fuel: The story of plant life on Earth* (Thomas S. Rockwell, 1931). Armstrong, like Seward and Noé, aims his book squarely at plant-blind readers, who see plants as just a green background to life. In 11 chapters, Armstrong deftly entertains his readers with a balanced discussion of plant life on Earth, from cyanobacteria and stromatolites to flowering plants. I especially enjoyed his treatment of stromatolites, having collected fossil stromatolites in Michigan's upper peninsula and traveled hours to see living stromatolites in Shark Bay, Australia. An appendix at the end of this work provides a good summary of extinct and living plants, from brown algae to hornworts, horsetails, and whisk ferns. A glossary, reference list, and index round out this book. *How the Earth turned green* will make many a reader aware of the importance of plants to the history of this planet. - Edward J. Valauskas, Curator of Rare Books, Library, Chicago Botanic Garden.

<http://www.chicagobotanic.org/book/14.4/rogers.php>

From What We Gather - Around the Web

Searching for *Eriogonum flavum* var. *aquilinum* in Yukon

From: BEN: Botanical Electronic News: http://mpb.ou.edu/ben/497/ben497_erigeron_in_yukon.pdf

By: Bruce Bennett (B.A. Bennett Herbarium Yukon (BABY)) [brbennett@klondiker.com]

In 2016, the Committee on the Status of Endangered Plants in Canada (COSEWIC) is due to assess the status of *Eriogonum flavum* var. *aquilinum*, a variety of wild buckwheat, which is currently known from four subpopulations in the Yukon and about eighteen locations in Alaskan, along the Yukon border. It is hoped that a plant that shared the Beringian steppe with the likes of the Woolly Mammoth and the Yukon Horse will remain as a unique part of the Canadian flora.

This plant was first mentioned by Hultén (1967), who wrote “The small Alaskan population has evolved totally independent of the rest of the species during its million or more years of isolation and with this in mind, combined with its morphological characteristics, the population is given taxonomic recognition.”

James L. Reveal formally described Yukon Wild Buckwheat, *Eriogonum flavum* var. *aquilinum* as a new variety of species otherwise widespread in western North America based on a collection near Eagle, Alaska, about 10 kilometers west of the Yukon–Alaska border (Reveal 1967). The type specimen was collected by H.T. Shacklette in Alaska (Mission Bluff near Eagle) on June 26, 1960.

The Yukon first collection was made in 1981 by graduate student Jamie Bastedo. He gave his collection to Dr. Mary A. Vetter (Professor at the University of Regina), who was working on grasslands at the north end of Aishihik Lake in southwest Yukon (Vetter 2000). Using Hultén’s (1968) Flora of Alaska, Dr. Vetter recognized it as the same taxon as the one only known from near Eagle, Alaska.

The discovery remained unreported until referenced in Cody (1994). In 2004, I took a group of biologists sponsored by the Yukon Department of Environment to search for this plant in the Aishihik area. We had only vague information from Jamie Bastedo about his 1981 collection. He only remembered that he was camped on the Aishihik Lake airstrip but otherwise there were no other clues.

Mr. Harry Smith with the Champagne and Aishihik First Nations joined us for the last day of our 2004 survey. He knew of the existence of this species and said that it had been traditionally used as a heart medicine Champagne and Aishihik First Nation. In North America, several *Eriogonum* species have been also used by First Nations for medicine or food (Nancy Turner, pers.comm.). Blackfoot First Nation people in Alberta ate the root of *Eriogonum flavum* Nutt. var. *flavum* (Johnstone 1987, Moerman 2003).



Though extremely showy when in bloom, only four additional Yukon sites have been found through helicopter and ground surveys by Environment Canada (YCDC 2015). In 2016, the Committee on the Status of Endangered Plants in Canada (COSEWIC) is due to assess the status of this plant, which is currently known from four subpopulations, very close to where Jamie Bastedo found it in 1981. It is hoped that a plant that shared the Beringian steppe with the likes of the Woolly Mammoth and the Yukon Horse will remain as a unique part of the Canadian flora.

NOTE from Editor: The UAA Alaska Native Heritage Program reports that *Eriogonum flavum* var. *aquilinum* is not likely to be confused with other species growing along the upper Yukon and Porcupine Rivers. No other *Eriogonum* species occur in Alaska.

Global Distribution: Endemic to Alaska and Yukon.
Alaska Distribution: Intermontane Boreal.
Ecoregions Occupied: Yukon-Old Crow Basin, North Ogilvie Mountains.
Conservation Status: S2 G5T2; BLM Sensitive.



MICRANTHES RUFOPILOSA (SAXIFRAGACEAE) - SAXIFRAGE CONFINED TO REFUGIAL AREAS OF BERINGIA

From: David F. Murray (Fairbanks) and Reidar Elven (Oslo)

After reviewing specimens of *Saxifraga tenuis* and *S. nivalis* in North America, we believe that it was D.B.O. Savile, who first reported a third element, one from the boreal alpine of Alaska and Yukon, and apparently confined to refugial areas of Beringia.

This taxon was first named *Saxifraga nivalis* var. *rufopilosa* by Eric Hultén (1967), based on material he collected in Interior Alaska with Les Viereck. It was obviously part of a complex of forms exhibited by *Saxifraga nivalis* and *S. tenuis*. Erling Porsild saw it as a distinct species, *Saxifraga rufopilosa* (Porsild 1974). We have followed Porsild's taxonomy but saw the obvious need to make the combination in *Micranthes*, to which these species have been transferred — see the treatment of *Micranthes* in Flora of North America, Vol. 8, by Luc Brouillet and P.E. Elvander (2009).

Brouillet and Elvander did not formally recognize *Micranthes rufopilosa*, rather they referred to it in their discussion of *M. gaspensis*.

Micranthes gaspensis, which also has a chromosome number of $2n=40$ is cytologically intermediate between *M. tenuis* ($2n=20$) and *M. nivalis* ($2n=60$) thus ipso facto, interpreted by Gervais et al. (1995) as a stabilized hybrid between *M. tenuis* and *M. nivalis*, notwithstanding the absence of the putative parents on the Gaspé. The occurrence of a published count of $n=20$ from Yukon has led to speculation that such a saxifrage would also be a hybrid between the same parental species as *M. gaspensis* and would “key out” in Gaspé et al. to *M. gaspensis*.

The voucher for the Yukon count has not yet been found. Please look for Krause, Beamish, and Luitjens 682000, Mile 101, Lapie L., Yukon, det. *S. nivalis-tenuis* complex.

As we wrote: One must ask why, where both *Micranthes tenuis* and *M. nivalis* are sympatric, sometimes growing in mixed stands, such as throughout the Scandinavian mountains and in the Svalbard Archipelago of arctic Norway, throughout northern Greenland and arctic Canada, and in most of arctic Russia, intermediates, fertile or sterile, have not been found and no counts of $2n = 40$ have been made with the singular exception of one from Wrangel Island. Hybridization, if that is the explanation for the existence of $2n = 40$ cytotypes, must be a very rare event.

Our key to the morphologically related, arctic-alpine species of *Micranthes* follows.

1. Petals white or margins pink with age; stems glabrous or with only white hairs, hypanthium triangular to hemispheric.

2. Stems and inflorescence with short crisp and long tangled white hairs _____ *M. nivalis*_ (L.) Small

2. Stems and inflorescence glabrate or with short white hairs _____ *M. gaspensis*_ (Fernald) Small

1. Petals reddish to purple; stems pubescent not as above, hypanthium turbinate.

3. Stems with long tangled white and brown hairs; inflorescence racemose or paniculate in fruit ___ *M. rufopilosa*_ (Hultén) D.F.Murray & Elven

3. Stems glabrate or with short white and short, glandular hairs; inflorescence corymbose in fruit ___ *M. tenuis* (Wahlenb.) Small

References

Brouillet, L. & P.E. Elvander. 2009. *Micranthes*. In: Flora of North America Editorial Committee, eds. *Flora of North America north of Mexico*. Oxford Univ. Press, New York, U.S.A. 8:49–70.

Gervais, C., N. Dignard, & R. Trahan. 1995. The chromosome number of *Saxifraga gaspensis* Fernald. *Rhodora* 97: 171–175.

Hultén, E. 1967. Comments on the flora of Alaska and Yukon. *Arkiv for Botanik* Ser.2, 7(1): 1-147.

ANNUAL MEMBERSHIP APPLICATION/RENEWAL

The Alaska Native Plant Society was organized in 1982 by an enthusiastic group of amateur and professional botanists. It is a non-profit educational organization with the goal of uniting all persons interested in the flora of Alaska. Membership is open to any interested individual or organization. If you wish to join us, please indicate the category of membership you desire, fill in the form below and mail it with the appropriate remittance to:

**Alaska Native Plant Society,
P.O. Box 141613,
Anchorage, AK 99514**

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