

Borealis

the newsletter of the



PO Box 141613, Anchorage, Alaska

December 2013- January 2014

Making Connections!

Join us at our Next Meetings!

Monday, December 2, 7:00 p.m

Main Topic: "What controls tree growth at Arctic treeline?"

Despite decades of study, the answer remains unknown. In an attempt to shed some light on this question, Sarah will discuss her master's thesis research at four sites in the Brooks Range from Kotzebue to the Arctic National Wildlife Refuge

Speaker: Sarah Ellison, UAA Student

Plant Family: *Plants of Bogs & Marshes: Spike Rushes/Eleocharis* **Leader:** Annie Nevaldine

Mini-Botany: Northern Plant Success: Hairs, Stems and Mats **Presenter:** Verna Pratt

Monday, January 6, 7:00 p.m

Main Topic: "ABG: Past, Present, Future"

The Alaska Botanical Garden has come a long way in the 10 years since its grand opening, and there are big plans afoot. How does our native plant world fit in?

Speaker: Mike Monterusso
ABG Gardens & Facilities Manager

Plant Family: *Plants of Bogs & Marshes: Carex*
Leader: Anjanette Steer

Mini-Botany: Northern Plant Success:
Rhizomes and Tillers **Presenter:** Rachel Bobka

For the latest information about ANPS events and field trips, go to www.aknps.org/

"Like" Us on Facebook!

Anchorage Garden Network

The [Alaska Botanical Garden](#) hosted their annual garden networking meeting in early November. It was an opportunity for members of many of the different organizations that focus on plants and gardening to meet each other and focus on ways to coordinate.

There were representatives from many of the organizations that include many of our members, including [ANPS](#) and ABG as well as most of the local horticultural groups: Alaska Rock Garden Society, Primrose Study Group, Anchorage Master Gardeners, Wildflower Garden Club, Pioneer Fruit Growers.

New participants who drove quite a distance to participate included representatives of the Mendeltna Garden Club and Meadow Lakes Bloomers, both in the Mat-Su area.

Alaska Community Action on Toxics (ACAT), told us about their [Yarducopia](#) program. It is one part Neighborhood Supported Agriculture, one part co-op, one part gardening club and two parts community garden. Yarducopia connects landowners, who donate yard space and tools, with people who have time to spend in a Garden. ACAT trains the volunteers to build sustainable, organic gardens and meets with them once a week to problem solve any growing concerns. The homeowner and volunteers split the produce grown, saving ten percent to be given to a charity of their choice.

[The Anchorage Community Land Trust](#) project "Gardens at Bragaw" operates the community garden located at the Bragaw/Glenn Highway Interchange. ACLT is organizing community partners to offer education and resources, and provide new opportunities as the interest in gardening and food security increases.

The [Anchorage Food Mosaic](#) gets right down to business - building community through food - one bite at a time. Founded to inspire Alaskans to engage in their relationships with food, wild foraging is one focus.

[Alaska Master Gardeners, Anchorage](#) has a directory of more plant related groups and their contact information.

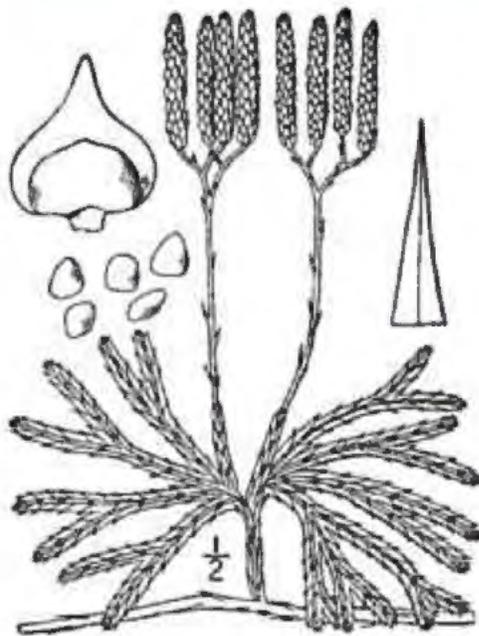
Calling all Interior Alaska Plant Lovers!

An avid group of plant enthusiasts is hoping to restart an Interior chapter of the Alaska Native Plant Society in Fairbanks. They plan to meet monthly in the fall, winter, and spring to discuss something of common interest – plants! Meetings will be in the early evening after work and will either include a pot luck style dinner or be at an establishment with food options. Informal presentations each month would spur hearty discussion on topics to include anything vegetation related from weeds to wildflowers, plant ecology or even the best domestic garden varieties for the interior (which could include some culinary sampling). They also hope to host wildflower hikes in the spring and summer around the interior, visit rare plant populations or provide plant ID instruction or participate in community weed pulls.

They will have a kick-off meeting in early December to discuss our organization and will welcome ideas from all in attendance. Anyone who is interested in helping with this organization effort and/or in joining the Fairbanks-based group are encouraged to contact Jeff Mason at jdotmason@gmail.com.

MYSTERY PLANT

This evergreen Alaska Native is usually found in dry woodlands along with similar species of its genus, crowberry, lingonberry, Twin Flower and other common woodland species. It is rare above tree line. Horizontal stems are barely covered with plant debris and root at the nodes. The branches are erect (about 4 inches), and forked at a wide angle. The leaves are in four ranks but flattened. There are two varieties in Alaska, the southern one having two spore-bearing spikes on a stem whereas the northern one has one. These long rope-like stems have been used traditionally in Christmas wreaths and garlands.



Answer on Page 4.

Back in the 1980s, when the Alaska Native Plant Society was first formed, there was an official statewide organization and a local chapter in Anchorage. In 1983 a Fairbanks chapter was formed with approximately 25 members. Another group attempted to form on the lower Kenai Peninsula. Neither Fairbanks nor Homer was able to sustain itself as an organized chapter, and at the same time in Anchorage it was difficult to maintain both a statewide structure and a local chapter from the same pool of participants. So the Anchorage chapter and the statewide organization merged into one statewide umbrella organization, based in Anchorage. Unfortunately, meetings and field trips based out of Anchorage are not so convenient for others – and now we might all look forward to more diversity for everyone! We look forward to expansion!

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ALASKA NATIVE PLANT SOCIETY

State and Anchorage Chapter Officers

President	Anjanette Steer
Vice President	James Sowerwine
Secretary	Beryl Wardlaw
Treasurer	Bernadine Raiskums

Anchorage Chapter Program Coordinators

Membership	Bernadine Raiskums
Plant Family	Beth Baker
Mini-Botany	Beth Baker
Field Trips	Marilyn Barker

Newsletter ("*Borealis*")

Editor	Ginny Moore
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FAX:

Borealis is published bi-monthly, fall through spring. Articles may be sent to Ginny Moore, , Anchorage, AK 99516. Phone or FAX: , E-mail: tgmoore@pci.net

Alaska Native Plant Society Seed Exchange

The Alaska Native Plant Society sells seed of plants native to Alaska which have been collected by members during the year. Seeds can be purchased at the regular monthly meetings or by mail order.

NOTE to Donors: If you have gathered seeds that you'd like to donate, please do. We will offer them at meetings and upcoming mall shows.

The price is \$0.50 per package for current year. Package sizes vary considerably due to the number or amount of seeds collected. Some rare or difficult to collect species may contain few seeds, while some easy to collect species may contain a large number of seeds. For mail orders, include an additional \$0.50 for 1 - 5 packages, or \$1.00 for 6 or more. Make checks payable to: Alaska Native Plant Society. Send order to Alaska Native Plant Society, PO Box 141613, Anchorage, AK, 99514.

You can download a copy of the order form with these instructions at http://aknps.org/pdfs/Seed_Order_Form.pdf

No.	Name	Common Name	Size	Flowers	Comments
1	<i>Aquilegia Formosa</i>	Western Columbine	24-30"	Red/yellow	Easy germination
2	<i>Armeria maritime</i>	Sea Thrift		Pink	Easy germination
3	<i>Arnica alpina</i>	Alpine Arnica	7-12"	Yellow	Easy germination
4	<i>Arnica frigida</i>	Fridig Arnica	7-9"	Yellow	Easy germination
5	<i>Caltha leptosepala</i>	Mountain Marigold	5-8"	White	Wet stratification
6	<i>Dodecatheon jeffreyi</i>	Jeffrey's Sierra Shooting Star	12-24"	Violet/white	Blooms early Wet stratification
7	<i>Erigeron glabellus</i> ssp. pubescens	Streamside Fleabane	4-20"	blue to pinkish rays, disks yellow and flat	June, July Easy germination
8	<i>Fritillaria camschaticum</i>	Chocolate Lily	5-18"	Brown	Wet stratification
9	<i>Gentiana glauca</i>	Glaucous Gentian	2-6"	Blue/bluish green	Wet stratification
10	<i>Iris setosa</i> (white form)	Wild Iris	12-20"	Lavender	Winter sow in vented containers, coldframe or unheated greenhouse; stratify if sowing indoors
11	<i>Luzula parviflora</i>	Small-flowered Rush	1-3'	Tiny, brownish	Easy
12	<i>Mitella pentandra</i>	Bishop's Cap	12-20"	Yellowish-green	Damp stratification
13	<i>Oxytropis nigrescens</i>	Purple Oxytrope	4-6"	Purple-blue	Easy
14	<i>Papaver radiculatum alaskanum</i>	Alaska Poppy/Arctic Polly	6-12"	Pale yellow	Easy
15	<i>Polemonium acutiflorum</i>	Tall Jacob's Ladder	1-3'	Blue	Easy
16	<i>Saxafraga rivularis</i>	Alpine Brook Saxifrage	2-4"	White	Damp stratification
17	<i>Scheuchzeria palustris</i>	Pod Grass	4-15"	Greenish-yellow	
18	<i>Senecio triangularis</i>	Triangular-leaf Fleabane	3-4'	Yellow	Easy
19	<i>Swertia perennis</i>	Star Gentian	10-20"	Purple	Damp stratification

References for Germination Protocols

1. <http://nativeplants.for.uidaho.edu/network> - Good site to search for germination protocols by common or scientific name. Have found that protocols from northern states are most applicable to our species. **Seed Germination Theory and Practice**. 2nd edition. Norman Deno. 1993. <http://www.slideshare.net/PX8/t3b244>
2. **Seeds of Wildland Plants: Collecting, Processing and Germinating**. James A. Young & Cheryl G. Young. 1986.

Plants of Bogs & Marshes – Spike Sedges/Eleocharis

In December, Annie Nevaldine will continue our discussion of plants of bogs and marshes by focusing on the “Spike Rushes” of the *Eleocharis* genus. Although these plants superficially resemble the group of plants called “rushes,” they are actually members of the sedge family (Cyperaceae), not the rush family (Juncaceae). Perhaps we should begin by “fixing” their common name!

The genus itself is relatively easy to recognize. In all *Eleocharis* species, the single, tight cluster of inconspicuous flowers are borne on unbranched terminal spikelets at the apices of stems. The stems of spike-sedges appear leafless, and in fact these plants do not have leaf blades (the expanded part of the leaf), only leaf sheaths (the part that surrounds the stem).

Many species are robust, rhizomatously-spreading plants of lowland tropical wetlands, while many others are small caespitose annual or perennial herbs growing near streams, and still others are intermediate. There are also a number of species that are obligate aquatic species, which usually have submerged, branching stems and often exhibit interesting photosynthetic adaptations, such as the ability to switch between C₃ and C₄ carbon fixation in response to different environmental stimuli.

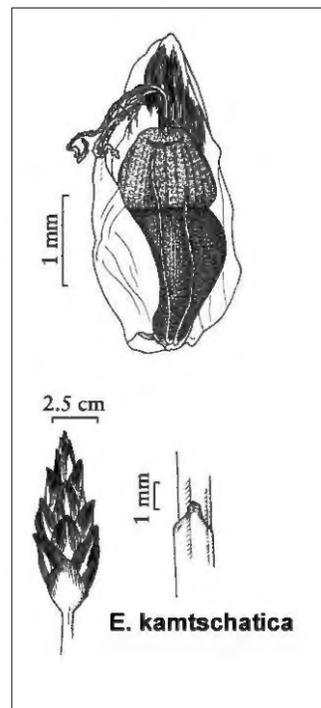
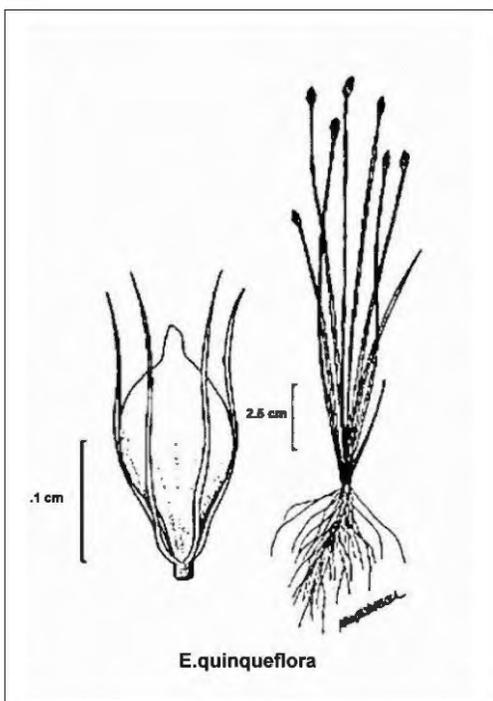
To positively identify spike-sedges (genus *Eleocharis*), a technical manual should be consulted. It is usually necessary to look at the tiny fruits of the plant under magnification to distinguish the species of spike-sedge. A little understanding of some of the key terms used to describe the plants will go a long way towards identifying them.

Members of this genus, as other members of the Cyperaceae, possess a type of fruit called an “achene,” which is hard and nut-like. Achenes in the spike-sedges are topped by a protuberance (a “tubercle”), which varies in shape, size, and texture among species.

Eleocharis kamtschatica, the Kamchatka spikerush, is a 10-cm-tall graminoid plant growing in brackish soils along the coast. It is identified from other spikerushes by the large size of the tubercle, a solitary basal sacale, and its coastal habitat.

Eleocharis quinqueflora, few flowered spikerush, is similar in size to *E. kamtschatica* but prefers fresh water marshes. It has a Cordilleran distribution, following the mountains into

central Alaska. Its near coastal appearance at the Bering Glacier is a range extension. Few-flowered Spike-sedge differs from nearly all other spike-sedges in that the tubercle is confluent with the achene, rather than forming a distinct cap has a very small, barely distinguishable tubercle and. The species gets its name from the small number of flowers per spike, typically three to nine, but many other spike-sedges are similar in this respect. Its egg-shaped spikes are 4 to 8 mm long.



Lycopodiaceae/Club Moss Family

Lycopodium complanatum – Creeping Jenny

MYSTERY PLANT ANSWER:

Plants of Bogs & Marshes – Carex Family

In January, Anjanette Steer will continue our study of the Cyperaceae (sedges) with some information about more members of that ubiquitous *Carex* species: *Carex aquatilis*, *C. lyngbyei*, *C. pauciflora*, *C. pluriflora* and *C. aurea*

Carex plants must have mature seeds for most accurate identification. You also need to examine the basal portions of the stems and the underground organs. The basal portion of the plant is important for observing the leaf sheath color, presence/absence of blades, and the form of the sheath as it disintegrates. Observation of underground organs is necessary to determine if the plants are rhizomatous or clumped.

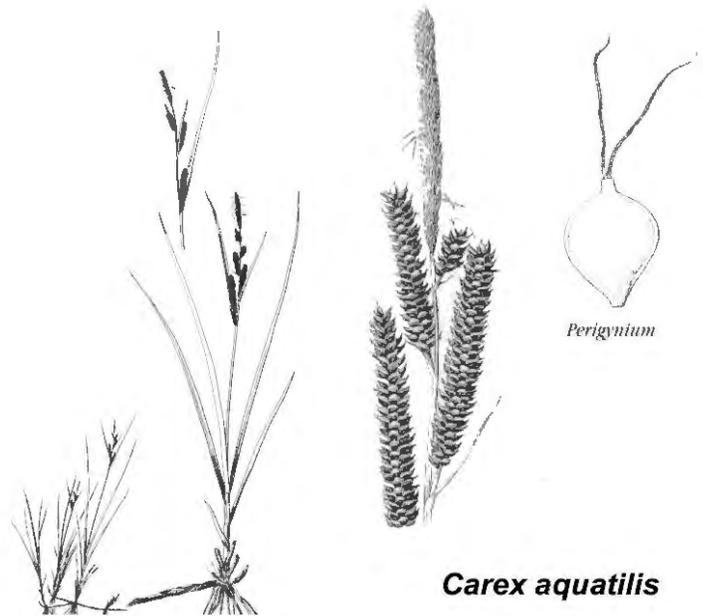
***Carex aquatilis*: Water sedge**

Some authors include three varieties within this species in Alaska. This common and distinctive species is often dominant in wet meadows, bogs, swamps, lakeshores and streambanks of Alaska, except for the southeast panhandle. Typically in fresh water it can sometimes be found in brackish areas. It is circumboreal at high latitudes.

C. aquatilis is easily distinguished from other sedges with 2 stigmas by its typical habit and habitat: a tall erect sedge with a long lower bract that overtops an inflorescence usually containing >1 staminate spike above and several erect, elongate pistillate spikes below.

***Carex aurea*: Golden-fruited sedge**

Golden-fruited sedge is unique in having nearly spherical, bright orange perigynia, but the color does not show until the perigynia are fully mature and ready to be shed. The lowest bract of the carpellate spikes has a prolonged closed sheath usually longer than 4mm.



***Carex pauciflora*: Few-flowered sedge**

Few-flowered sedge, a plant of open bogs, is unusual in that it displays mechanical throwing of seeds away from the plant (ballistic dispersal) to a distance of one or two feet when disturbed. The seeds are also somewhat sticky, and can adhere to clothing or animal fur for longer-distance dispersal.

***Carex lyngbyei*: Lyngbye's sedge**

Lyngbye's sedge is the most common sedge in south coastal Alaska's salt marshes and shorelines. It is an important forage species for brown bears and waterfowl in the spring, since young shoots can contain up to 25% crude protein. It is a pioneer colonizer of tidal mudflats and has been used successfully in wetlands restoration and creation programs. This sedge produces stems 25 centimeters to well over one meter tall from a network of long rhizomes. The leaves have reddish brown sheaths which do not have spots. The inflorescence produces stiff, nodding spikes on peduncles. The fruit is coated in a leathery yellowish brown sac, the perigynium.

Lyngbye's sedge is named for Hans Christian Lyngbye, a Danish botanist and monk (1732-1837). In 1836, he wrote a [dissertation](#) for a doctorate degree, but it remained forgotten in the pocket of the cloak worn by the messenger conveying it to the University of Copenhagen and it missed the deadline. He died the following year. The botanical part of the thesis was published in 1879.

***Carex pluriflora*: Manyflower sedge**

This sedge is often a good indicator of the transition from freshwater plant communities to a more brackish salt marsh environment. Its ranges extends seaward from shrubby forest borders into mid-marsh transition zone.



FROM OUR BOOKSHELVES

This month's book recommendations include a field guide and taxonomic reference that might be helpful in studying Alaskan species.

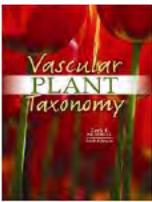
WETLAND SEDGES OF ALASKA



Wetland Sedges of Alaska, by Gerald Tande & Robert Lipkin, Alaska Natural Heritage Program, University of Alaska 2003.

This guide was developed to provide a treatment for 41 of the more common and ecologically important Alaskan wetland sedges likely to be encountered by wetland scientists and naturalists. Each is described in detail and accompanied by range maps, illustrations, summaries of habitat preferences, wetland indicator status. An additional 36 species are covered in lesser detail. It is quite user-friendly using simple, non-technical language in the text and keys, and emphasizes characters readily seen by the naked eye.

It was developed for the US Environmental Protection Agency and [The Kenai Watershed Forum](#) has printed 4000 copies that have been purchased by a variety of agencies for distribution. Go to their website to find out where you can pick up a copy. This publication is also available [online](#) as a downloadable pdf.



Vascular Plant Taxonomy, by Zack F. Morrell, 6th edition 2010

Still having trouble figuring out how to identify or classify specific plants that may not be in Hultén, or have been moved to different family trees? *Vascular Plant Taxonomy* is a great resource that deals with both classical and modern taxonomic methods. Used as a textbook in many college courses, *Vascular Plant Taxonomy* is designed to lead students through the world of plant taxonomy giving them a solid understanding of vegetative terminology, basic skills for data gathering and techniques. In this 6th edition, *Vascular Plant Taxonomy*, has been extensively updated to include knowledge from experimental systematics. It can be quite pricey as a new book but is often available as a "gently used" book for much less. (Customer reviews warn you not to purchase the 5th edition because of numerous editing and printing problems.)

Horsetail spores found able to 'walk' and 'jump' (w/ Video)

ANPS member and Advanced Master Gardener Mike Baldwin recently shared with Anchorage Master Gardeners information and an incredible video that might make you think twice before you callously attempt to dig out the Equisetum in your garden.

A trio of researchers working at University Grenoble in France has discovered that spores produced by horsetail plants are able to move around using "legs" known as elaters. In their paper published in *Proceedings of the Royal Society B*, the researchers describe the types of movement exhibited by the spores when subjected to changing humidity conditions. The researchers put the spores under a microscope and filmed (using a high-speed camera) what they found. The spores, they saw, which have a central bulb surrounded by four independent elaters, are heavily impacted by the amount of moisture in the air. During times of high humidity, the elaters curl up, much like human hair—when the air dries out, so too do the elaters, allowing the curls to relax. It was this curling and relaxing that caused the spores to move in their environment—as the elaters unfurled against the ground, it caused the entire spore to move. More intriguingly, they found that on some occasions, the elaters uncurled so fast that it caused the entire spore to be pushed up into the air. Such jumps, the researchers noted, sometimes reached heights of centimeters—more than enough to allow the spore to leap into passing air currents, carrying them to a far flung locale.

The researchers also uncovered the mechanism behind the curling—the elaters are made of two different types of materials—one hard layer and one soft layer. The discrepancy between the ability of the two layers to absorb moisture causes the curling and uncurling.

Read more and watch the video at: <http://phys.org/news/2013-09-horsetail-spores-video.html#jCp>

From What We Gather - around the web

Revisiting Chris McCandless and “Into The Wild”

Twenty-one years ago the decomposed body of Christopher McCandless was discovered by moose hunters just outside the northern boundary of Denali National Park.

In “Into the Wild,” the book *Jon Krakauer* wrote about McCandless’s brief, confounding life, he speculated that McCandless had inadvertently poisoned himself by eating seeds from a plant commonly called wild potato, known to botanists as *Hedysarum alpinum*. According to his hypothesis, a toxic alkaloid in the seeds weakened McCandless to such a degree that it became impossible for him to hike out to the highway or hunt effectively, leading to starvation. Because *Hedysarum alpinum* is described as a nontoxic species in both the scientific literature and in popular books about edible plants, his conjecture was met with no small amount of derision, especially in Alaska.

Krakauer had surmised that the toxicity in the seeds of *H. alpinum* but researchers at the University of Alaska Fairbanks found no evidence of any toxic alkaloids in seeds from the plant. Just last year a website essay published by journalist Ronald Hamilton offered more evidence that the wild-potato plant is highly toxic. The toxic agent in *H. alpinum* turns out not to be an alkaloid but, rather, an amino acid, and according to Hamilton it was the chief cause of McCandless’s death. Studies instigated by Hamilton and Krakauer have found that seeds of *Hedysarum* contain dangerously high levels of the amino acid ODAP, which is known to cause lathyrism.

Wikipedia says “Lathyrism or neurolathyrism is a neurological disease of humans and domestic animals, caused by eating certain legumes of the genus *Lathyrus*. The toxicological cause of the disease has been attributed to the neurotoxin ODAP which acts as a structural analogue of the neurotransmitter glutamate. Ingestion of legumes containing the toxin results mostly from ignorance of their toxicity and usually occurs where the despair of poverty and malnutrition leaves few other food options.”

When Ron Hamilton read about Chris McCandless in Krakauer’s book, he immediately connected his symptoms to those of Jewish prisoners in a concentration camp in the Ukraine. In 1942, as a macabre experiment, an officer at Vapniarka started feeding the Jewish inmates bread made from seeds of the grass pea, *Lathyrus sativus*, a common legume that has been known since the time of Hippocrates to be toxic. The resulting effects were not unlike what happened to McCandless.

Krakauer concludes that “Hamilton’s discovery that McCandless perished because he ate toxic seeds is unlikely to persuade many Alaskans to regard McCandless in a more sympathetic light, but it may prevent other backcountry foragers from accidentally poisoning themselves. Had McCandless’s guidebook to edible plants warned that *Hedysarum alpinum* seeds contain a neurotoxin that can cause paralysis, he probably would have walked out of the wild in late August with no more difficulty than when he walked into the wild in April, and would still be alive today.”

You can read Krakauer’s complete article in the September 2013 New Yorker at <http://www.newyorker.com/online/blogs/books/2013/09/how-chris-mccandless-died.html>.

You can read Ronald Hamilton’s essay “[The Silent Fire: ODAP and the Death of Christopher McCandless](http://www.scribd.com/doc/166341536/The-Silent-Fire),” at <http://www.scribd.com/doc/166341536/The-Silent-Fire>.

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**

STATUS New RENEWAL

CATEGORY

- | | | |
|--------------------------|-------------------|------|
| <input type="checkbox"/> | Full-time Student | \$12 |
| <input type="checkbox"/> | Senior Citizen | \$12 |
| <input type="checkbox"/> | Individual | \$15 |
| <input type="checkbox"/> | Family | \$20 |
| <input type="checkbox"/> | Organization | \$30 |

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Telephone: (Home) _____ (Work) _____ E-Mail: _____

Membership is on a calendar year basis.

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Let us know when renewing or by e-mail to tgmoore@gci.net.**

Time To Renew! Don't make us waste more postage to keep reminding you!

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