Borealis

the newsletter of the

Alaska Native Plant Society

PO Box 141613, Anchorage, Alaska May 2010

Join us at our Next Meetings!

Monday, May 3, 7:30 p.m.

(Campbell Creek Science Center)

Speaker: Kate Mohatt

Topic: "Some Fungus Among Us"

Plant Family: Cupressaceae—

Thuja and Chamaecyparis – Joan Tovsen

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Inside this Issue: Some Highlights of The Alaska State Science Fair 2010 – Students are studying plants and learning

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For latest information on ANPS events, check our website at:

http:// AkNPS.org

The Name Game

At our April meeting Beth Baker talked about how Carl Linnaeus created order of the chaos of plant names. He was "the father of taxonomy"—that is, of biological classification—who in the mid eighteenth century created the Latin binomial system of naming species, still used today. The idea was to give plants, as well as other living organisms, a unique (and hopefully stable) name, as compared with common names that are often neither unique nor consistent from place to place and language to language.

So what's up with this name changing? "NOMENCLATURAL CHANGES IN THE VASCULAR PLANT FLORA OF ALASKA" published in December 2009 by David Murray (UAF) and Reidar Elven, as a result their work on the Panarctic Flora Checklist (PAF), lists a number of name changes and eliminations related to Alaskan plants. http://aknhp.uaa.alaska.edu/botany/pdfs/2009/BotanyForum/5_NOMENCLATURALCHANGES09.pdf Here are a few of the examples they cite:

- **Changes at the rank of Family**: the disappearance of Schrophulariaceae into an enlarged Plantaginaceae,
- **Genus and species**: In recent years Asteraceae has undergone many generic changes. *Aster* in Alaska has pretty much disappeared into Eurybia and Symphyotrichum. *Senecio* is now much reduced by transfers to a number of other families.
- **Revisions and adjustments**: In Saxifraga the revision of *S. rivularis* has led to changes: we have no *S. rivularis* subsp. rivularis, but we do have subsp.arctolitoralis from the arctic coast of Alaska and Yukon. What we have long referred to as *rivularis* is now *S. hyperborea*, which includes *S flexuosa*.
- **Misapplications:** The application of the name *Alnus crispa* to Alaskan plants has been deemed incorrect; our plant should be *A. fruticasa*, an otherwise Asian taxon, but at the rank in subspecies in *A. viridis*). *Alnus crispa* is not a synonym but a misapplication for there are plants elsewhere to which the name *A. crispa* is correctly applied.
- **Misspellings**: the correct spellings are *delphiniifolium* and *hieraciifolium*, required by the rules for joining of the roots and Latin endings. Also all Linnaean epithets spelled caespitosa/us/um by Hultén must be corrected to cespitosa/us/um, following the Code that requires original spelling unless it violates elements of grammar.
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Cupressaceae Family – Thuja and Chamecyparis

The Cupressaceae or Cypress Family is the most widely distributed conifer family, with a near-global range in all continents except for Antarctica, stretching from arctic Norway to southernmost Chile. In Alaska this family is represented by 2 genera, with one species in each.

Thuja

The genus *Thuja* is composes of 5 species, all constituents of a cool moist mixed conifer forest and grow from sea level up into the montane regions. The only genus now occurring in Alaska is *Thuja plicata*, Western red cedar.. The word *thuja* comes from the Greek *thuia*, an aromatic wood (probably a juniper). The word *plicata* means "folded into plaits", most likely from the flat, folded appearance of the scale-like leaves.

Western red cedar is rated as resistant to very resistant to heartwood decay. But itt is not immune to attack by termites and furniture beetles. **It** is used principally for shingles, lumber, poles, posts, and piles. The lumber is used for exterior siding, interior finish, greenhouse construction, ship and boat building, boxes and crates, sash, doors, and millwork. May cause bronchial asthma and/or contact dermatitis

A branch bearing a number of seed cones of *Thuja* was recovered from a Late Cretaceous (Turonian) deposit from the North Slope of Alaska. This reproductive material is the oldest known for the genus and is indistinguishable from the seed cones of most of the extant species of *Thuja*, indicating that the seed cones of this Alaskan fossil *Thuja* had attained a modern morphological appearance early in the evolutionary history of the genus. The ability of modern species of *Thuja* to tolerate cold to freezing conditions and the ability of fossil representatives of the genus to survive periods of extended darkness during the polar winters supports the contention that the polar winters during the Late Mesozoic and early Cenozoic were cold.

Chamecyparis

Alaska-cedar *(Chamaecyparis nootkatensis),* also known as Alaska yellow-cedar, yellow-cedar, Alaska cypress, and Nootka cypress, is an important timber species of northwestern America. It is found along the Pacific coast in Alaska and British Columbia, in the Cascade Range of Oregon and Washington, and at a number of isolated locations (1,10). It is confined to a cool, humid climate. Toward the south, Alaska-cedar rarely grows below 600 m (2,000 ft) in elevation; but north of midcoastal British Columbia, it grows from sea level to tree line. It is one of the slowest growing conifers in the Northwest. The wood is extremely durable and is excellent for specialty uses. Little effort is being made to manage the species to assure a continuing supply.

Alaska-cedar is monoecious. Flowering occurs from April in the southern part of the range to June in the north. The tiny inconspicuous yellow or reddish male pollen-bearing strobili and green female cones are borne on the tips of branchlets. Pollination occurs from mid-April to late May in cones that were initiated the previous summer. Cones generally mature in 2 years, but in the southern part of the range they may mature in I year. Both first- and second-year cones occur on the same branch and may easily be confused. Mature cones are about 12 mm (0.5 in) in diameter and globe-shaped. Mature and immature cones are nearly the same size, so care must be taken to collect only mature cones for seed. Immature cones are green and soft, often with purple markings, and are home near the tips of branchlets. Mature cones are yellow-green and hard, often with brown markings, and are borne farther from the branch tips.

ANSWER TO MYSTERY PLANT: These plants are in the *Therorhodion* genus of the Heath/Ericaceae Family. *Therorhodion* is often included within *Rhododendron,* but cladistic analyses indicate that the group lies outside the *Rhododendron* clade, and it has been given its own generic status. There are 3 species, two of which are seen in Alaska, and the answer to our quiz: The southern variety is Kamchatka Rhododendron, now called *Therorhodion camtschaticum*. The northern variety is *Therohodion glandulosum*.

The Effects of Ice Damage from Prevailing Winds on Spruce Trees

Max von Hippel, Eighth Grade - Central Middle School of Science, Anchorage, Alaska

Introduction

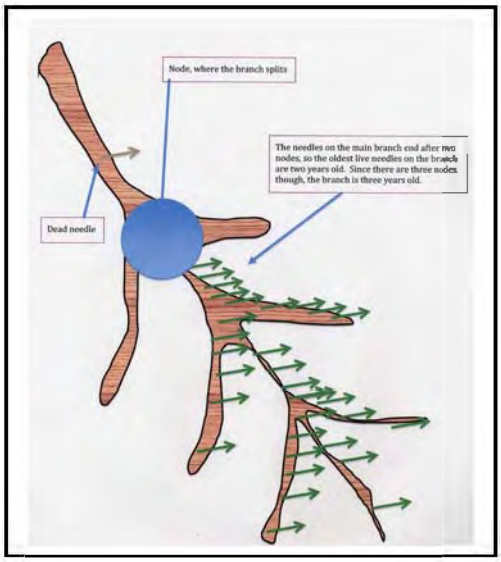
The Krummholz Effect is where wind-blown ice stunts branch-growth on the windward but not the leeward sides of trees. My project is a study of the magnitude of the Krummholz Effect on spruce trees at different altitudes.

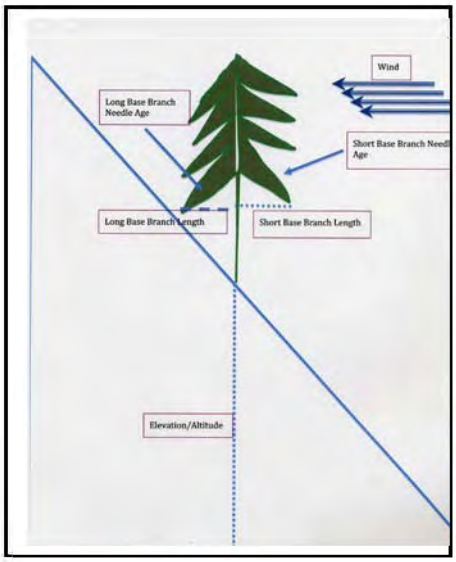
Hypothesis

If the magnitude of the Krummholz Effect on spruce trees changes at different altitudes, then spruce trees will be increasingly Krummholzed at higher elevations. This is because the wind is stronger at higher elevations, and so the spruce trees should be more Krummholzed.

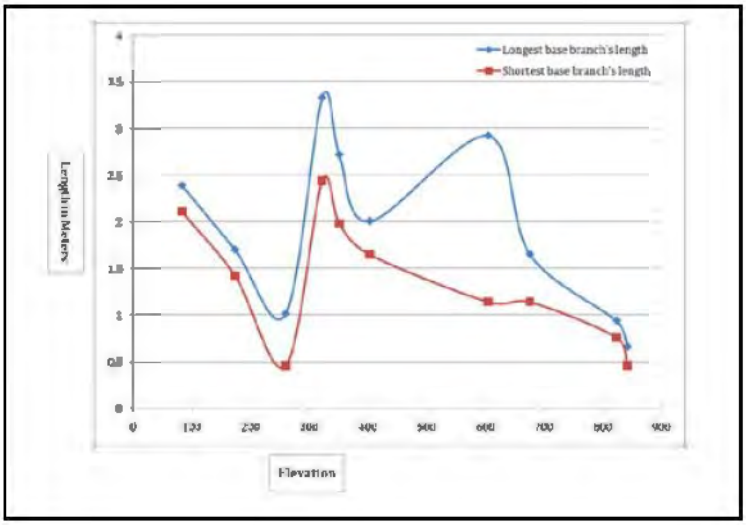
Procedure

I drove up Arctic Valley and took branch length and needle age measurements of ten exposed spruce trees (using a measuring tape and by counting nodes) at separate sites. I determined the needle ages and measured the branch lengths of the longest base branches on the short and long sides of each tree and used a GPS to determine my elevation.

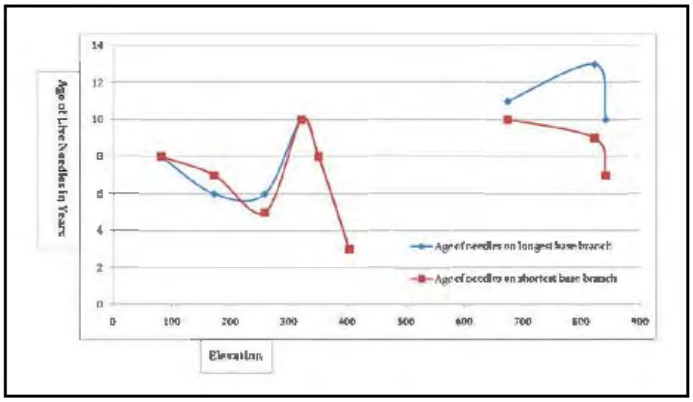




Results



This graph shows the relationship between the elevation and the lengths of the longest and shortest base branches. Up to about 400 meters elevation, the two branch lengths are similar, but above this the lengths diverge. The average length of the shorter branch goes from being 84% to 74% of the average length of the longer branch as the elevation goes above 400 meters. This shows that at higher altitudes the asymmetry of the trees is greater, and therefore the Krummholz effect is more pronounced.



This graph shows the relationship between the ages of the oldest live needles on the long and short base branches relative to the elevation. If the Krummholz effect is stronger at higher elevations, then as you move up into higher elevations the oldest live needles on the shorter branches should become increasingly younger than the oldest live needles on the longer branches.

There is one gap in the chart because of a tree that did not have any live needles, but besides that gap the ages of the oldest needles are as expected. Between fifty and four hundred meters above sea level the ratio of the ages of the needles on the long versus short branches is approximately1:1, meaning that the needle ages on the two branches are about the same. However, above seven hundred meters elevation, the ratio jumps to 13:10. This means that the oldest live needles on the long branch are 1.3 times older than those on the short branch. This shows that the higher the altitude of a spruce tree experiencing the Krummholz effect, the more severe is the damage to its needlesand the greater is its asymmetry

The results support my hypothesis that the Krummholz Effect increases with altitude because the difference between the lengths of the short and long branches increases with altitude, and so does the difference between their needle ages. In both cases the increase is where the longer sides have longer branches and older needles than the shorter sides.

Elevation (m)	Longest base branch's length (m)	Shortest base branch's length (m)	Age of needles on longest base branch (years)	Age of needles on shortest base branch (years)
83	2.3876	2.1082	8	8
173	1.7018	1.4224	6	7
259	1.016	0.4572	6	5
321	3.3274	2.4384	10	10
350	2.7178	1.9812	8	8
402	2.0066	1.651	3	3
503	2.921	1.143		
674	1.651	1.143	11	10
821	0.9398	0.762	13	9
840	0.6604	0.4572	10	7

Conclusion:

Elevation does have an impact on the damage caused by wind-blown ice toexposed spruce trees. My hypothesis was supported by trends in both branch length and needle age. At higher altitudes the spruce trees are more asymmetrical in branch length. Additionally, at higher altitudes the needles do not live as long, especially on the windward side of the tree.

I have learned how to age spruce branches and their live needles and how to choose a safe campsite (using the Krummholz effect), and I have supported my hypothesis; the ice damage to spruce trees and the subsequent Krummholz effect did increase with altitude. This study could be improved with the inclusion of more trees per site and more sites with a larger elevation range.

Fun Fact:

The Krummholz effect can be very useful when choosing a safe campsite. This is because if you see a tree with the characteristics of the Krummholz effect, then that location likely experiences high winds. And where there are high winds there may be falling branches. When choosing a campsite, it is important to camp somewhere safe, where branches will not fall on you (hence why it is unsafe to camp under cottonwood trees, which often drop their branches). Also, high winds can blow away your tent. Therefore, you should avoid camping under or near a Krummholzed tree.

MYSTERY PLANT

This dwarf evergreen shrub can be found throughout interior This sub-shrub has two varieties in Alaska, both with limited distribution. The southern variety is found mostly from Kodiak Island west through the Aleutian Chain and into Japan. The northern variety is found mostly on the Seward Peninsula and across the Bering Land Bridge to the Chukchi Peninsula. I concluded that early botanists never observed this shrub in the fall, as it frequently is listed as evergreen which it isn't. The leaves turn a coppery color before falling off. This probably helps it survive in the windswept, rocky tundra where it usually grows.

The stout wood stems are usually only two inches tall and are topped with flowers about the same size. The flowers have five petals, connected at the base, eight to ten stamens and a conspicuous long curved style. The southern variety has obovate leaves ciliate hairs and the purplish magenta petals have fine hairs on their margins.

The northern variety has slightly narrower leaves with stiff glandular tipped hairs on their margins but no hairs on the petals.

There are two parts to this answer: northern and southern species of the same genus.

Answer on Page 2.

Denali National Park Field Courses

June 8 – 10- High Country Wildflowers for beginners
June 12 – 14 High Country Wildflowers A closer look
June 15 – 17- Drawing Inspiration from Denali
June 22 – 25 – Ecology of Birds

The Field Camps include rustic tent cabins and a common dining tent. All meals, accommodations, transportation, and instruction are included in the 3 course fee. Professional development credit is available through UAA. For more information or to register, go to www.murieslc.org, email courses@murieslc.org, or call 1-888-688-1269.

Wildflowers of Southcentral Alaska Class

Join Doug Tryck for a class that will focus on the spring blooming plants found in this area! Sign up soon as this fabulous 1 credit class fills quickly! Sci: UAA ED 580.413, Spring Wildflowers of South Central Alaska, 1 Credit, Summer 2009 (5/4-5/26/2009). This class explores the spring blooming plants of South Central Alaska. Each meeting time includes inclass instruction and instruction in the field. This class is for beginners to experts. Just plan on dressing for the weather and for having fun. UAA registration will be online. For more information or questions, please contact tryck_doug@asdk12.org

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

To
Mary Stensvold and Beth Baker
Speakers at the March and April meetings
And to the Mini-Botanists, and Plant Family hosts:
Glen Brown and Diane Toebe

You make it happen!

From What We Gather

Calling All Bryophiles!

Bryonet-l is an email discussion and news group sponsored by the International Association of Bryologists (IAB) and is administered by Janice Glime <jmglime@mtu.edu> through Michigan Technological University. The aim of IAB is to promote international cooperation and communication among bryologists, whether amateur or professional.

To join IAB ($11 per year), contact Jim Shevock <JShevock@calacademy.org> IAB website: <http://www.bryology.org/> IAB blogsite: <http://internationalassociationofbryologists.blogspot.com/>

The Native Plant Society of British Columbia is an organization bringing together people from throughout the province who enjoy, study and work with native plants and habitats. The society was founded in 1997 and has almost 300 members with a collective interest in education and communication about native plants and a commitment to their ethical use and conservation. The NPSBC website is at <http://www.npsbc.org/Newsletter/newsletter.htm>

BEN: This semi-monthly electronic newsletter published by Dr. Adolf Ceska provides brief full-text articles about botany and plant ecology and news on botanists, botanical conferences and other events. It focuses on the Pacific Northwest, including British Columbia, but also has an international scope. **BEN is archived at:** http://www.ou.edu/cas/botany-micro/ben/

Useful Rare Plant Links (Compiled by Carrie Nadeau, B.Sc., R.P.Bio. Biologist, Summit Enviornmental Consultants, Vernon, British Columbia, Canada)

- E-Flora of BC http://www.eflora.bc.ca <http://www.eflora.bc.ca/>
- Pacific Northwest Wildflowers http://ghs.gresham.k12.or.us/science/ps/nature/basin/basinid.htm
- USA Department of Agriculture: Natural Resources Conservation Service (Plant Profiles) http://plants.usda.gov/java/profile?symbol=CRMOR
- Digital Flora of Texas http://www.csdl.tamu.edu/FLORA/imaxxlam.htm
- Wisconsin State Herbarium http://www.botany.wisc.edu/herbarium
- University of Wisconsin http://wisplants.uwsp.edu/index.html
- University of California: CalPhotos http://calphotos.berkeley.edu <http://calphotos.berkeley.edu/>
- University of Washington: Burke Museum WTU Image Collection: Plants of Washington http://biology.burke.washington.edu/herbarium/imagecollection.php
- Flora of North America http://www.efloras.org/index.aspx
- Connecticut Botanical Society http://www.ct-botanical-society.org/index.html
- Native Plant Society of BC http://www.npsbc.org

Seed Requests – Can You Help?

Hello,

In 1996 my partner and I excavated the eroding remnants of a small Dena'ina settlement here in Kachemak Bay. It was probably occupied during the mid-to-late 1800s. The only plant remains we found were several piles of elder berry seeds (not uncommon in Dena'ina sites), birch bark, and spruce wood. From research on Dena'ina plantlore and usage, however, I've learned that silverberry *Elaeagnus commutata* seed pods, possibly obtained in winter, were commonly strung on clothing fringe prior to the arrival of glass trade beads from Euro-Americans in the 1800s. I would like a handful of seeds to study and photograph for my research.

Silverberry bushes do not grow on the Kenai Peninsula. They are found in the Mat Valley and northward into Denali Park and eastward to Glenallen. Thus, I'm looking for a knowledgeable plant enthusiast who would be interested in collecting a handful of seed pods on his/her next botanical foray and sending them to me. I will gladly reimburse the person for postage. I contacted the Alaska Botanical Gardenstaff and learned that they are not aware of any silverberry plants in the garden, planted or naturally growing there.

Thank you for considering my request and I'd appreciate other contact ideas if no one in AKNPS can assist me.
Enjoy the return of spring,

Janet Klein
Homer archaeologist/historian
jrklein@homernet.net>

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Good afternoon. My name is Sara Marie Johnson, and I am a student at UAA.

I am looking for seeds for leguminous plants that are native to Alaska for a small group project that we are doing in my International Studies class. We will be giving a presentation to a group of junior high/high school aged home-school students regarding the activities of the non-governmental organization Heifer, International; specifically in Haiti. The case study we have chosen to talk about involves the issues of deforestation and slash-and-burn agricultural practices and the problems caused. Part of the solution involves replanting trees and using nitrogen-fixing leguminous plants to revitalize the soil.

As part of our presentation, we would like to give the kids seeds/seedlings of plants and/or trees that are native to Alaska to help illustrate the potential for environmental responsibility close to home, as well as raising awareness on a global level. Ideally we would be able to offer them seeds for local leguminous plants.

If there is anyway you can help, either seeds or even a recommendation of types of plants we should be looking out for, it would be greatly appreciated.

Thank you,
Sara Marie Johnson

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Hello,
I am a research technician with the USDA at Fort Detrick Maryland. We are looking for seeds of native *Saussurea* species from Alaska. Our target list includes *Saussurea americana, S. angustifolia, S. nuda,* and *S. viscida*. Any help you can provide would be greatly appreciated. Thanks so much!

Emily Smallwood, Biological Science Technician
Unit AED Coordinator, USDA ARS NAA Foreign Disease-Weed Science Research
1301 Ditto Avenue
Fort Detrick, Maryland 21702
301-619-8393 (office), 301-619-5199 (lab) Emily.Smallwood@ars.usda.gov

Don't Miss: **Alaska Science Fair Project 2010**
Seed Requests
The Name Game – What's That Plant Called Now?

Have you renewed your membership? Remember all memberships extend through the calendar year.

Alaska Native Plant Society
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