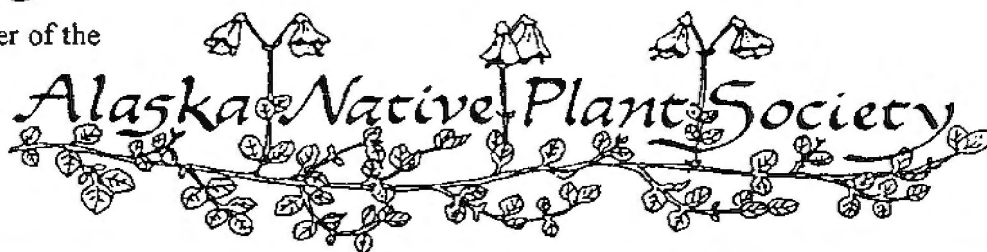


Borealis

the newsletter of the



PO Box 141613, Anchorage, Alaska

December/January 2013

Join us at our Next Meetings!

Monday, December 3, 7:00 p.m

Main Program: Interaction Between Native and Introduced Plants Affect Forage

Speaker: James Sowerwine

Bog Plants: *Lentibulariaceae* (Bladderwort family); *Iris setosa*; *Fritillaria camschatcensis*
Leader: Anjanette Steer

Mini-Botany Botanist: *Gerog Von Landsorff*
Presenter: Marilyn Barker

Monday, December 3, 7:00 p.m

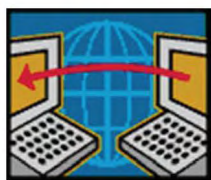
Main Program: "Working with school students and citizen scientists to explore the consumption of invasive wild European bird cherry, *Prunus padus*, by winter foraging moose in Anchorage"

Speaker: **Gino Graziano**, Invasive Plants Instructor, UAF, Cooperative Extension

Bog Plants: *Haloragaceae* (Watermilfoil family); *Equisetum fluviatile*
Leader: James Sowerwine

Mini-Botany Botanist: *Edward Lhuud*
Presenter: Annie Nevaldine

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



Native/Invasive Plants

YIN/YANG



The main programs of our monthly meetings for the next several months will offer a kind of yin/yang discussion of botany in Alaska – native plants and introduced plants – and that space where they interact..

In December, **James Sowerwine** will talk about research he performed at the University of Alaska Anchorage on how interactions between native willow and invasive forbs have the potential to alter how native plants produce defensive chemicals such as tannins. This talk will describe how the production of tannins changed in native willow growing near invasive plants, and how changes in concentration of tannins in plants commonly eaten by native browsers have the potential to affect native browsers in invaded areas of Alaska.


In January, **Gino Graziano**, Invasive Plants Instructor at UAF Cooperative Extension, will address the topic of non-native, and specifically invasive, plants and discuss some of the ways they have traditionally arrived in Alaska and describe some programs that are working to block this form of immigration.

Later in the spring, **Peggy Hunt**, of the Plant Materials Lab in Palmer, will focus on native plants of Alaska and explore both traditional uses of plants and commercialization efforts. Peggy has been involved with the Alaska Ethnobotany Project. One of the goals of the project was to evaluate which Alaska native plants were being commercially harvested and to what extent. This was because forward thinking people in the state realized that instead of being reactionary after the fact when a plant or plant population becomes scarce, the state of Alaska could be proactive and form regulations to protect the rights of plants and people before problems occurred. They have written several "Alaska Plant Profiles" on various groups of native plants harvested for edible and nutraceutical purposes. Some of these can be found at their web-site: <http://dnr.alaska.gov/pmc NTFP.htm>.

Adelbert Chamisso

Presenter: **Beth Baker**

In November Beth Baker launched our mini-botany series on botanists who have made an impact on our understanding of Alaska's botanical world. She told us about Adelbert Chamisso, a German poet and botanist. This won't be as entertaining as watching Beth in person, but will tell you a little about this many talented man.



Adelbert von Chamisso was born in 1781 in France. His family, part of the nobility, fled France during the French Revolution and settled in Berlin. Chamisso became a page to the Prussian queen and then became an officer in the Prussian army participating in the ill-fated campaign against Napoleon in 1806. After leaving the military he studied botany in Berlin. He also had an interest in literature, writing ballads and lyric poetry. One of his works was used for the lyrics for music composed by Robert Schumann. He wrote a novel called Peter Schlemihl's Amazing Story in 1814 which became a best seller Europe being translated into many different languages. The story concerns a young man's encounters with the devil, who bargains with him first for his shadow and then, as in the Faust legend, for his soul. He joined a German Romantic literary group and moved with them to Switzerland where he lived for a few years. The German Romantic movement at the time was interested in the supernatural, the mysticism of the Middle Ages, and the expression of feelings. It favored many of the social reforms of the French Revolution including destroying barriers to wealth. In 1812 he returned to Berlin to continue his scientific studies.

In 1815 he was appointed botanist to the Russian ship Rurik commanded by Otto von Kotzebue. This voyage was one of 28 Russian exploratory voyages in the first half of the 19th century. This voyage lasted from 1815 to 1818 and went around the world. The voyage discovered over 400 islands in the south seas and explored Kamchatka, the Kotzebue area, and California. Others on the voyage included 19 year old Ludwg Choris, an artist/lithographer and Johan Friedrich **Escholtz**, a doctor/entomologist. A second botanist, Danish born Morten **Wormskjold** (for whom Veronica Wormskjoldii/Alpine Veronica is named), left the voyage in Siberia after getting into conflict with Captain Von Kotzebue. Chamisso became friends with Escholtz with whom he botanized. He shared paper with Escholtz. Paper was a valuable and limited commodity on the boat, used for pressing plants. He named the California poppy, *Eschscholzia californica*, now the state flower of California, after Escholtz.

Their collection of plants, many new to science, was taken to the Berlin Botanical Garden. Chamisso became the director of the garden. He continued to write poetry and ballads. He died in 1838 and is buried in Berlin. Eric Hulten was to have said the Rurik voyage's collection was the best of Arctic plants from the 19th century. Many plants were named for Chamisso including *Saix chamissonis*, , *Romanzoffia unalaschcensis* Cham. (Alaska mistmaiden), and *Arnica chamissonis*. The Adelbert von Chamisso prize is a German literary award given yearly to a work written in German who author's mother tongue is not German. His legacy lives on in the names of these plants and for this literary award.

Here's a look at what's coming in the next two months:

December: **Georg Von Langsdorff**, a Prussian-Russian name, *Grigori Ivanovitch* (1774-1852) Presenter: **Marilyn Barker**

January: **Edward Lhuyd** Welsh naturalist, botanist, linguist, geographer and antiquary (1660-1709) Presenter: **Annie Nevelidine**

Plants of Bogs & Marshes

Lentibulariaceae (Bladderworts); *Iris setosa*; *Fritillaria camschatcensis*

"Killer Plants Suck In Prey At Record Speed"

The genus *Utricularia* is Latin meaning "little bag"; referring to the "bladders" on the stems. Aquatic, meat-eating bladderworts are among the world's best suckers and they have just been named the fastest trapping carnivorous plants, according to a *Proceedings of the Royal Society B* study.

Phillipe Marmottant, a researcher in the Interdisciplinary Physics Laboratory at Grenoble University, and his colleagues used high-speed video cameras and powerful microscopes to capture the trapping action of three species of bladderworts in the genus *Utricularia*.

The traps on these plants suck in prey in less than a millisecond, making this one of the speediest movements in the entire plant kingdom.



You can watch a video of this action at: http://www.youtube.com/watch?v=Zb_SLZFsMyQ

The investigations showed that glands in each plant first pump water out of a closed trap. "This deflates the trap and stores elastic energy, like the stored energy in a bent bow, and also generates a depression inside, like with a rubber pipette," Marmottant explained.

During the second actual trapping phase, the stored elastic energy is released. "The firing starts when sensitive trigger hairs located on the (trap) door are touched," he said. "We showed that, because of the inside depression, the door is already on the verge of inverting towards the interior. The curvature inversion of the door is an abrupt event known as an 'elastic buckling' phenomenon, and happens in everyday life when a curved elastic wall is set under depression, like a balloon or plastic bottle."

"Because of the curvature inversion, the door opens and liquid rushes in to inflate again the trap," he added.

As liquid rushes in, the plant sucks in the prey, such as a small crustacean, that triggered the trap door's opening. The force is so powerful that swirls develop inside the trap, further preventing prey from escaping after the trap door quickly shuts. Digestive juices released by glands then dissolve the trapped individual.

Sometimes "larger" animals, such as tadpoles or worms, wind up half in and half out of the trap, gruesomely losing part of their body to the plant's hunger.

When the trap door shuts, the plant excretes mucilage next to a special cuticle around the door, creating a watertight seal. The same trap can fire hundreds of times, all following the very precise and repeated mechanism.

Source: <http://news.discovery.com/earth/carnivorous-plant-suction-record-110215.html>

Plants of Bogs & Marshes

Haloragaceae (Watermilfoil family); *Equisetum fluviatile*

The water milfoil family occur most often in the southern hemisphere. The species found in Alaska and the northern hemisphere are aquatic plants. The leaves are deeply divided into thread-like segments. Male flowers have 3-4 sepals, 4 petals, 2-8 stamens and are found near the top of the plant. Female flowers are found near the bottom of the flower cluster. The sepals and petals fall off when the flower opens.

It is very important to be able to identify **native** species and **invasive** species of this genus.

Myriophyllum spicatum, Eurasian watermilfoil, is considered the most **invasive** of all plant species ranked by the Alaska Natural Heritage Program. Thankfully, it is not yet known to occur in Alaska waters. Eurasian watermilfoil occurs widely across the U.S. and was once thought to occur in Alaska, but it was a case of mistaken identity. It had been confused with the native northern watermilfoil. Eurasian water milfoil has 12- 21 pairs of leaflets while northern watermilfoil *M. sibiricum* only has 5-9 pairs. The two can hybridize and the resulting hybrid plants can cause taxonomic confusion as leaf characters are intermediate and can overlap with parent species.

Eurasian watermilfoil spreads by fragmentation and will colonize lakes, rivers, irrigation canals, farm ponds and even brackish estuaries. In Washington, where it is considered the most problematic plant in the state, it is estimated that it can infest an entire lake within two years of introduction.

Eurasian watermilfoil forms a dense canopy that shades out native aquatic plants, provides poor habitat for fish and waterfowl, and can dramatically alter water quality (higher pH, nutrient loading, and temperature, lower oxygen.) It can become so dense, in fact, that it can clog water intakes, restrict swimming and fishing, and interfere with safe boat operation. In Alaska, of course, another concern is for safe floatplane operation.

It has the potential to become a major weed of dams, lakes and reservoirs in Alaska. Eurasian water milfoil prefers lakes, ponds, shallow reservoirs and slow moving water, but will grow in fast moving water. It can tolerate and thrive over a range of temperatures and water conditions, including low levels of salinity.



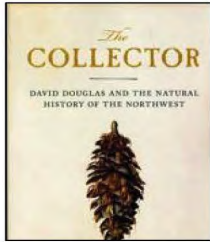
Myriophyllum spicatum, Eurasian watermilfoil on left and northern watermilfoil *M. sibiricum* on the right.

Equisetum fluviatile

The **water horsetail** (*Equisetum fluviatile*), also known as the Swamp Horsetail, is a perennial horsetail that commonly grows in dense colonies along freshwater shorelines or in shallow water, growing in ponds, swamps, ditches, and other sluggish or still waters with mud bottoms. It is a herbaceous species, growing 30-100 cm (rarely 140 cm) tall with erect dark green stems 2-8 mm in diameter, smooth, with about 10-30 fine ridges. At each joint, the stem has a whorl of tiny, black-tipped scale leaves 5-10 mm long. Many, but not all, stems also have whorls of short ascending and spreading branches 1-5 cm long, with the longest branches on the lower middle of the stem. The side branches are slender, dark green, and have 1-8 nodes with a whorl of five scale leaves at each node. The Water Horsetail has the largest central hollow of the horsetails, with 80% of the stem diameter typically being hollow. The stems readily pull apart at the joints, and both fertile and sterile stems look alike.

The Water Horsetail reproduces both by spores and vegetatively by rhizomes. It primarily reproduces by vegetative means, with the majority of shoots arising from rhizomes. Spores are produced in blunt-tipped cones at the tips of some stems. The spore cones are yellowish-green, 1-2 cm long and 1 cm broad, with numerous scales in dense whorls. (From Wikipedia, the free encyclopedia)

FROM OUR BOOKSHELVES



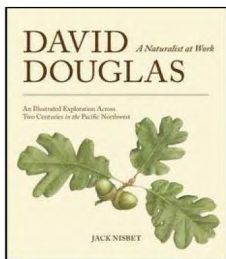
The Collector: David Douglas and The Natural History of the Northwest

By Jack Nisbet, Sasquatch Books

On April 27, 1827, botanist David Douglas decided to tally the miles he had traveled during the previous two years of wandering the Pacific Northwest. His total was 7,032, either by foot, by boat or by horse. In that time, he collected hundreds of species of plants and thousands of specimens, many new to science. (Other botanists once complained that "he carried off root and branch from the only known localities" where certain rare plants grew.)

Douglas also shot and collected dozens of bird and mammal species. He even ate a few of the specimens, noting, for example, that roasted bald eagle was very good eating. The scientific names of more than 80 plant and animal species now honor him, and this doesn't include the numerous common eponymous names, such as Douglas fir. Few botanists worldwide, and none in western North America, have had as great an impact as David Douglas.

Fortunately, Douglas kept thorough notes and journals on his expeditions, which has allowed historian Jack Nisbet to write his new book, "The Collector: David Douglas and the Natural History of the Northwest" (Sasquatch Books, 290 pp., \$23.95). As Nisbet did in his previous books about natural history and history — "Sources of the River" and "Visible Bones" — he has seamlessly woven journal entries, historical documents and modern reporting to re-create the life of one of the greatest explorers of our region. Excerpted from an article by David B. Williams in *The Seattle Times*



David Douglas: A Naturalist at Work: An Illustrated Exploration Across Two Centuries in the Pacific Northwest

By Jack Nisbet, Sasquatch Books

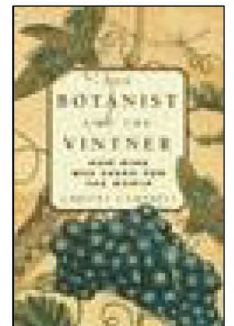
This companion volume to his popular biography on David Douglas, *The Collector*. "This new volume will delight anyone with an interest in wild Northwest history and the naturalist's adventure. In these elegantly crafted essays, Nisbet guides us beneath the surface of Douglas's narrative, and into deeper questions of plants, people, and place. The journey leaves the reader inspired, challenged, and more attuned to this unique landscape than ever before." - Lyanda Lynn Haupt.

This colorfully illustrated collection of essays examines various aspects of Douglas's career, demonstrating the connections between his work in the Pacific Northwest of the 19th century and the place we know today. From the Columbia River's perilous bar to luminous blooms of mountain wildflowers; from ever-changing frontiers of technology to the quiet seasonal rhythms of tribal families gathering roots, these essays collapse time to shed light on people and landscapes. **This volume is also the companion book to a major museum exhibit about Douglas's Pacific Northwest travels that opened at the Northwest Museum of Arts & Culture in Spokane in September 2012.**

The Botanist and the Vintner: How Wine Was Saved For The World

By Christy Campbell, Algonquin Books 2006

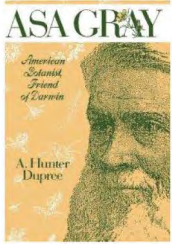
In the mid-1860s, grapevines in southeastern France inexplicably began to wither and die. French botanist Jules-Émile Planchon was sent to investigate. Magnifying glass in hand, he discovered that the vine roots were covered in microscopic yellow insects. The aphids would be named *Phylloxera vastatrix* — "the dry leaf devastator." Where they had come from was a mystery. Soon the noblest vineyards in Europe and California came under biological siege. No one could slow phylloxera's maddening, destructive pace.



The French government offered a prize of 300,000 gold francs for a remedy, and increasingly bizarre suggestions flooded in. Planchon believed he had the answer and set out to convince the skeptical winemaking and scientific establishments.

Aided by the American entomologist Charles Valentine Riley and a decade of research into the strange life history of the insect, Planchon at long last proved that the remedy rested within the vines themselves.

The Botanist and the Vintner is an astonishing account of one of the earliest and most successful applications of science to an ecological disaster. And even now, the story continues as new strains of phylloxera attack vineyards in France, California, and New Zealand. (This overview is from the Publisher, Algonquin Books)



Asa Gray: American Botanist, Friend of Darwin

By A. Hunter Dupree, The Johns Hopkins University Press (October 1, 1988)

The leading American botanist of the nineteenth century, Asa Gray helped organize the main generalizations of the science of plant geography. The manual of botany that carries his name is still in use today. Friend and confidant of Charles Darwin, Gray became the most persistent and effective American protagonist of Darwin's views. Yet at the same time, he believed that religion and Darwin's theory of natural selection could coexist. A. Hunter Dupree's authoritative biography offers the first full-length interpretation of one of America's most important men of science.

This fine biography is an excellent narrative and analysis of the life of a major 19th century American scientist, provides valuable information about the institutional development of American science, and is an insightful look at the reception of Darwin's ideas in the USA. Born, raised, and educated in upstate New York, Gray trained as a physician but his interest in natural history led him to botany. By dint of his considerable intellectual abilities, hard work, and some luck, Gray became a Professor at Harvard and one of the few professional scientists in the USA. At a time when descriptive botany and taxonomy were at the forefront of biology, Gray became the center of a network of American plant scientists. The expansion of the USA across the continent and his alliance with prominent British and European botanists provided him with what was an overwhelming amount of material but also a preeminent position in world botany.

Gray became a major figure in plant taxonomy and pioneer in plant biogeography, which had great importance in his acceptance of Darwin's ideas. Dupree shows nicely how Gray's preoccupation with species relationships, his concept of species, and his considerable knowledge of plant distributions prepared Gray's mind for Darwin's ideas. Gray became Darwin's leading advocate in the USA. He lent his considerable prestige to Darwin's cause, assisted publication of his books, and wrote articles explicating and defending Darwin's ideas. Gray enjoyed both warm professional and personal relations with Darwin until the latter's death.

Gray's advocacy of Darwin exacerbated a conflict with another great figure of American science, the flamboyant Swiss-American naturalist Louis Agassiz. Even before the conflict over Darwin, Gray and Agassiz exemplified very different approaches to science with Agassiz propounding a highly romantic and idealistic (in the Platonic sense) form of science. Agassiz was also at the heart of very ambitious plans to reshape American science, both in Boston and nationwide, into a form that Gray found unattractive. In almost all the debates, and most importantly the one over Darwin's ideas, Agassiz was defeated.

Dupree is particularly good on the intersection of Gray's approach to science, issues of philosophy, and religion. Gray's approach to science, unlike Agassiz, was highly empirical and inspired in good part by the idea of looking for evidence of divine design. A sincerely religious man, though not doctrinaire, Gray worked hard to reconcile his biology with Christianity. Since he never endorsed biblical inerrancy, literal departures from Scripture were no obstacle for him. The potential of Darwin's ideas for exploding the argument from design was a concern and Gray became an advocate of a form of theistic evolution. Dupree suggests that some of Gray's thinking on the relationship of science to religion and other issues had unexpected consequences, becoming an influence of the American pragmatists. Excerpted from a review by Roger Albin, <http://www.amazon.com/Asa-Gray-American-Botanist-Friend>

It is Winter – But Think “Rain” – As in “Rain Garden”

A rain garden is a depression in the landscape designed to catch and filter the water that runs off your roof, driveway, sidewalk, and other hard surfaces. Rain gardens often contain native plants that help absorb and filter runoff, leading to cleaner waterways. They are used in many places, and promoted by many cities. The Municipality of Anchorage is promoting Rain. In addition to providing you with the online “How-To-Manual”, MOA is offering to reimburse homeowners who install rain gardens 50% of the cost of installation (up to \$750) based on availability of funds. To apply for this “mini-grant”, go to www.AnchorageRainGardens.com or call your rain garden program coordinator:

Between June 2010 and September 2012, MOA sponsored 76 Rain Garden projects, with reimbursements totaling \$59,601. This included 65 residential gardens, 4 school gardens, 3 commercial gardens, 2 municipality gardens, and 2 municipal/commercial gardens. If you imagine a half inch rain event across the Municipality, these gardens would hold back a total of 6327 cubic feet, or 47,331 gallons of stormwater. Combined, these small projects can have a great impact.

The Alaska Plant Materials Center has donated 8 types of native plant seed to be used in rain gardens. <http://www.anchorageraingardens.com/documents/NativePlantSeedsAvailable.pdf>

For great additional information about Alaska native plants and photos [visit the PMC Plant Flyer on revegetation](#) http://dnr.alaska.gov/ag/ag_PMCPlantFlyers.htm. Check out the Alaska Master Gardener's [Northern Gardening Tips](#) for other ideas. For native plant supplier around the state visit the Directory of Alaska Native Plant Sources: http://www.dnr.state.ak.us/ag/NEWnative_directory.htm.

Follow this link for a Printer Friendly List of Landscapers and Nurseries Trained in Rain Gardens. http://www.anchorageraingardens.com/documents/Handout_Landscapers110722.pdf.

MYSTERY PLANT

The Mystery plant for this month is a small evergreen plant that grows in moist forests in coastal areas of British Columbia, South-east Alaska and Prince William Sound. It could easily be mistaken for a fern.

The shiny leaves are all basal and are 3 to 5 parted with pinnately divided segments that are sharply toothed. The flowering stem is 4 to 5 inches tall and usually has two flowers.

The flowers have no petals and the whitish sepals are long and very narrow.

The follicles (seed capsules) are arranged in a whorl at the top of the stem and are a strong characteristic of this plant.



Answer on Page 3.

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 |

Name _____

Address _____

City: _____ State _____ Zip _____

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

Membership is on a calendar year basis.

ANNUAL SEED EXCHANGE – Please Donate!

We're collecting seeds for packaging and sale later in the winter. Please bring seeds you have collected to the December meeting, call Verna about what you have, or mail them to the P.O. Address below.

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