

Borealis

the newsletter of the



PO Box 141613, Anchorage, Alaska

January/February 2012

Practical Botany

Join us at our Next Meetings!

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

Topic: "Invasive Plants Among Us"

Speaker: Gino Graziano

Plant Family: *Scrophulariaceae* (the Figworts)
Lagotis and *Synthyris*

Presenter: Emily Beeson

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

Monday, March 5, 7:00 p.m.

Topic: TBA

Plant Family: *Euphrasia* and *Rhinanthus*

Monday, April 2, 7:00 p.m.

Topic: Carnivorous Plants - Beware!

Speaker: Mike Baldwin, President of International Carnivorous Plant Society

Plant Family: *Pedicularis*

Presenter: Annie Nevaldine

Always be prepared for
Verna Pratt's Mystery Plant!

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

Starting Plants From Seed

Now that the old year is passing it is the time for beginning anew. For gardeners, one of the most enjoyable activities we can do while we cannot get outside and dig in the soil, is to stay inside and dig in the soil – starting new plants from seeds that have been gathered in previous seasons.

This issue of Borealis is devoted to helping you jump-start your gardening process. We're going to focus on native plants, because that's what we do here, but the topics and techniques discussed will be valuable for many types of garden plants.

1. **Native Plant Seeds** - As we do every January, we're providing a list of seeds that have been collected by ANPS members for sale to other members and the general public. You'll find that list on page 4, with an order form and explanation about how to participate.
2. **Know Your Gibberellins** – Anchorage Advanced Master Gardeners learned about these plant hormones that are responsible for promoting growth in the embryo of a seed. Now Dr. Pat Holloway, from the Georgeana Botanical Garden in Fairbanks is willing to share with us some articles about how and when to make use of nature's magic. On page 2 she provides a general description of Gibberellic Acid and how it works for different plants, and on page 5, she's offered us some specific information on wild iris germination.
3. **Surfing's Up!** – Make good use of the internet to get some incredible information on seed starting. You can find how-to-articles, step-by-step videos, and very scientific research articles explaining what is going on.

Here are a few good links to get you started:

<http://www.finegardening.com/how-to/articles/ten-seed-starting-tips.aspx>
<http://www.finegardening.com/how-to/videos/seed-starting-pre-treat.aspx>

Just think – if you are receiving this newsletter via e-mail, it is so easy to click on any of the hyperlinks above to go immediately to the spot – providing you are on-line, of course!

Seed Germination and Gibberellic Acid

by Patricia S. Holloway, Georgeson Botanical Garden, UAF, Fairbanks, Alaska

Gibberellins are a phytohormone (plant hormone) and one of the most important natural substances in seeds and seed germination. Since they were discovered in the 1930s, scientists have identified more than 120 different types of gibberellins (GA) in plants, bacteria and fungi. These types are numbered based upon their order of discovery, and the ones most important in plants are GA3, GA4 and GA7.

GA is known as a seed germination promoter but its function can vary with different seed types. In grasses and many other plants, the seed is compartmentalized into the food storage tissue called endosperm and the embryo. The endosperm contains starches that must be converted into soluble sugars and transported to the embryo for growth. This process is mediated by GA. If the GA level is too low, starches are not converted, and the seed may not germinate.

GA is a big component of seed dormancy that may be caused by a variety of factors such as light, specific germination temperatures and even chemical inhibitors inside the embryo. A light requirement in seeds may be fulfilled by exposing moistened seeds to light, but a treatment with GA can overcome that requirement so seeds will germinate in light or darkness.

A seed may require high temperatures to germinate, but a GA treatment might broaden the temperature range under which the seeds will germinate. Seeds that have an embryo dormancy, one where there is chemical inhibitor in the embryo, must be cold stratified* to break down these germination inhibitors. As the inhibitors are reduced, GA often increases and is one of the main hormones promoting complete germination. GA also may be used where germination is slow or erratic to speed up the process and promote more uniform germination.

Synthetic GA is a white crystal that is not readily soluble in water. The potassium salt of GA (K-GA) is water soluble, or GA can be purchased as a pre-mixed solution. For home gardeners or hobbyists, the easiest way to use GA is as a solution because it takes a laboratory precision scale to weigh tiny amounts of the crystals. Liquids are often sold as a concentrate, and water is added to obtain the proper concentration. Follow all product label directions for use and safety.

Seeds respond to a wide range of GA concentrations from 50 ppm to as high as 10,000 ppm. A bit of experimentation is required, but a common starting point is 1000 ppm (100 milligrams GA per 100 milliliters water). If the concentration is too high or the soak time is too long, seedlings may grow leggy and weak. Dissolve the crystals with tiny amounts of rubbing alcohol, and then add boiled (to sterilize it), cooled water to the final concentration. Store in a sealable dark glass jar or plastic container in the refrigerator.

Many different species respond to a GA treatment including Alaska native plants (Table 1). However, many more native plant seeds probably respond to GA but have never been tested. Add seeds to a cup or jar, and pour in enough GA solution just to cover the seeds. Allow seeds to sit at room temperature for 24 hours. Cover the container, if necessary, to slow evaporation.

Some people make small packets out of coffee or tea bag filters, then dip bag and seeds into the GA solution to make seed handling easier. Pour off the GA, and sow the seeds in a sterile seed starting mix.

*Cold stratification is the process of exposing seeds to chilling temperatures (usually around 40oF(4oC) but as low as 32oF (0oC) for a period of time, usually 60 or more days, to metabolically break down chemical inhibitors in the embryo. The seeds must be imbibed (previously soaked in water), and the temperatures must be above freezing to allow metabolic breakdown to occur. Large seeds can be mixed into a small sealable bag of sterile, moistened vermiculite, sand or peat and refrigerated. Use 2 parts mix for every one part of seeds. Tiny seeds can be sown on clean, moistened paper toweling that is folded over the seeds, inserted into a plastic bag and refrigerated.

Table 1. Some common cultivated plants and Alaska native plants that respond to GA treatment for seed germination.

GA effect	Plant
Overcomes light requirement	Dwarf Birch, <i>Betula nana</i> Grasses, Poaceae, many species Lettuce, <i>Lactuca sativa</i> Kentucky bluegrass, <i>Poa pratensis</i> Sedges, <i>Carex</i> spp. Shrub birch, <i>Betula glandulosa</i> Western giant hyssop <i>Agastache occidentalis</i>
Overcomes light inhibitory effect	Lacy phacelia, <i>Phacelia tanacetifolia</i>
Replaces or shortens need for cold stratification	Alaska Bog blueberry, <i>Vaccinium uliginosum</i> Crowberry, <i>Empetrum nigrum</i> Pale purple coneflower, <i>Echinacea pallida</i> Highbush blueberry, <i>Vaccinium corymbosum</i> Lapland rosebay, <i>Rhododendron lapponicum</i> Trollius, <i>Trollius europaeus</i> , <i>T. laxus</i> , <i>T. chinensis</i>
Promotes more complete germination after scarification or stratification (does not replace them)	Baneberry, <i>Actaea rubra</i> Bearberry, <i>Arctostaphylos uva-ursi</i> Bunchberry, <i>Cornus canadensis</i> Wild iris, <i>Iris setosa</i>
Replaces or shortens period of afterripening	Columbines, <i>Aquilegia</i> spp. Including <i>A. Canadensis</i> , <i>A. vulgaris</i> , <i>A. Formosa</i> , <i>A. jonastii</i>) esp. in fresh seeds Grasses, Poaceae, many species
Hastens germination and/or promotes uniform germination (less erratic over time)	Avocado, <i>Persea americana</i> Bean, <i>Phaseolus vulgaris</i> Bellflower, <i>Campanula latifolia</i> Butterwort, <i>Pinguicula</i> spp. Cactaceae, many species Glacier buttercup, <i>Ranunculus glacialis</i> Kochia, <i>Bassia scoparia</i> Mountain buttercup, <i>Ranunculus lyallii</i> Nolana, <i>Nolana paradoxa</i> Onions, <i>Allium</i> spp. Peas, <i>Pisum sativum</i> Pepper, <i>Capsicum annum</i> Pink plumes, <i>Polygonum bistorta</i> Poppies, <i>Papaver</i> spp. Sundews <i>Drosera</i> spp. Sweet corn, <i>Zea mays</i> Thimbleberry, <i>Rubus parviflorus</i> Tomato <i>Lycopersicon lycopersicum</i> Violets, <i>Viola</i> spp. Including <i>V. adunca</i> , <i>V. canina</i> , <i>V. cuneata</i> , <i>V. glabella</i>
Promotes germination, but specific reason unknown	Blue shrimp plant, <i>Cerithe major</i> Fringe cup, <i>Tellima grandiflora</i> Gentian, <i>Gentiana verna</i> Lewisia, <i>Lewisia tweedyi</i> Marsh marigold, <i>Caltha palustris</i> Primrose, <i>Primula parryi</i> Saxifrages, <i>Saxifraga</i> spp. Including <i>S. caespitosa</i> , <i>S. nivalis</i> , <i>S. oppositifolia</i> , <i>S. stellaris</i> Sea beachwort, <i>Honckenya peploides</i> Star of Parnassus, <i>Parnassia palustris</i> Thymeleaf speedwell, <i>Veronica serpyllifolia</i>

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. AN ORDER FORM MAY BE FOUND ON PAGE 10 of this newsletter or you can download a copy with instructions at: http://aknps.org/pdfs/Seed_Order_Form.pdf.

2012 Seed List

No.	Name	Common Name	Size	Flowers	Comments
1.	<i>Aconitum delphinifolium</i>	Monkshood	2-4 ft	Dark blue	Damp; stratify, sow outside
25.	<i>Agoseris aurantiaca</i>		12-14 in		easy
2. SOLD OUT	<i>Androsace chamaejasme</i>	Rock Jasmine	6-8 in	White	Stratify, sow outside
28 for 2012 5A. for 2011	<i>Aquilega brevistyla</i>	Small Blue Columbine	12-14 in	Lavendar and white	Easy
3. for 2012 6A for 2011	<i>Aquilega formosa</i>	Western Columbine	Up to 3 ft	Red sepals; Yellow lamina	Easy
4.	<i>Aruncus sylvestris</i>	Goatsbeard			
5.	<i>Aster Sibiricus</i>	Siberian Aster			
26.	<i>Caltha leptosepala</i>	Mountain Marigold	5"	White	Damp
6.	<i>Campanula rotundifolia</i>	Bluebells of Scotalnd	4-6 in	Blue/Lavendar	Easy
23A. 2011 seed	<i>Delphinium glaucum</i>	Delphinium			
7.	<i>Dodecatheon pulchellum</i>	Shooting Star	10-14 in	Pink	Stratify; recommend direct sowing - may take 2 yrs
11A. 2011 seed	<i>Draba inserta</i>	Whitlow Grass	4-5 in	Yellow	Easy
8.	<i>Erigeron caespitosus</i>	Tufted Fleabane			Easy
9.	<i>Erigeron compositus</i>	Ct-leaf Fleabane			Easy
10.	<i>Fritillaria caschaticensis</i>	Chocolate Lily	10-24 in	Brownish-purple	Damp stratify, sow outside
11.	<i>Hedysarum alpinum</i>	Eskimo potato			Easy
12.	<i>Lupinus nookatensis</i>	Nootka Lupine			Scarify
15.	<i>Myosotis alpestris</i>	Alpine forget-me-not			Sow outside
13.	<i>Oxyria dignya</i>	Mountain Sorrel			Stratify
16.	<i>Papaver alaskanum</i>	Alaska poppy			Easy
17.	<i>Papaver lapponicum</i>	Arctic poppy			Easy
18.	<i>Potentilla uniflora</i>	One-flowered Cinquefoil			Easy
27.	<i>Saxifraga punctata</i>	Brooke saxifrage	6-8 in	White	Damp stratify, plant outside
19.	<i>Viola adunca</i>	Dog violet			Sow outside

How to Germinate Seeds of Alaska Wild Iris

by Patricia S. Holloway , Georgeson Botanical Garden, Fairbanks, Alaska

Alaska wild iris, *Iris setosa*, is one of the most important landscape wildflowers in Alaska. For many years, plants used in landscaping were harvested from the wild, decimating populations near urban areas and along roads. Irises propagate easily by vegetative division in spring or late summer. Division is the only reliable method of propagating clones with a specific flower color such as white, pale lavender and rose-colored flowers. Seed is the most reliable propagation method for large quantities of irises. It is also the method of choice if a variety of flower colors is desired. Plants from seed can have a mixture of colors in many shades from deep velvety purple and red to pale lavender and occasionally white. It is exciting to throw out handfuls of seeds and see the variation in flower sizes and colors that result from seed.

Meadows may be established simply by tossing the seeds in a ditch or moist meadows, although germination may take two or more years. The seeds of Alaska iris are dormant. The buried seeds must be exposed to chilling, not freezing, temperatures (cold stratification) for at least five months in fall and spring to break that dormancy. Depending on when the seeds are sown in late summer or fall, germination may take place the following spring or a year later. Additionally, seeds require darkness to germinate, so they must be buried in soil or beneath vegetation before germination will occur. If seeds are scattered on the surface of the soil, they may not germinate for a few years until they become naturally buried by leaves and other vegetation.

Below is a method of hastening germination and sowing seeds for cultivation, breeding or commercial sale in cell packs. This process allows for fall harvest of seeds, cold stratification in the refrigerator, then planting in containers or flats in spring.

1. Collect wild iris pods that are brown and just beginning to open. Spread the pods onto newspaper or in a shallow tray. Air dry for at least one week, turning the pile to dry evenly. Iris pods average 1 1/4 inches long and contain an average of 70 seeds per pod (range 0 –150 seeds). The largest pods don't necessarily contain the greatest number of seeds.
2. Separate the seeds from the pods by vigorously shaking the pods over a screen (e.g. hardware cloth, soil sieve, colander). The holes must be large enough to allow the seeds to drop through but leave the pods and large trash on the screen. Small bits of chaff, dried leaves, pod pieces can be removed by blowing air over the pile of seeds.
3. Seeds may be sown directly outdoors in fall in the field or flats. Because of complex dormancy requirements, seeds may not germinate until the second year. Store seeds dry in plastic bags at 40oF (4oC) up to one year or in the freezer for longer periods.
4. Cold stratify the seeds by mixing one part (by volume) of seeds in at least 2 parts clean, moistened sand and place into a closeable plastic bag. White quartz sand works best because the brown seeds show up well and are easy to separate out after the stratification period is finished. Instead of sand, vermiculite or peat may be used, but seeds are harder to see. The stratification medium must be moist with no standing water. Think of the texture and consistency of moist corn meal. Any standing water in the bottom of the plastic bag will inhibit oxygen and promote the growth of molds.
5. Seal the plastic bag and store in the refrigerator at 40oF (4oC) for 5 months. Do not freeze. Germination inhibitors must be metabolically broken down, and that cannot happen when seeds are frozen. For direct field

sowing in June, start this stratification process in January. For greenhouse planting in March, start the stratification process in October.

6. After five months, remove the seeds from the sand or vermiculite using a sieve. The sand is reusable. Sow immediately (do not allow seeds to dry out) into a sterile peat-lite potting mix, approximately 1/8-inch deep. Sow 3-4 seeds per container. Water well and cover the flats with two layers of black plastic to exclude all light for seven days. Enclose in a seal able garbage bag to help maintain moisture. Seeds will germinate in about seven days, and complete seedling emergence will occur in 2-3 weeks. Don't forget to remove the black plastic after seven days and water as needed..

7. Seedlings will be large enough to transplant following 12 weeks in a greenhouse or grow room. Most will bloom in 2 years.

Hint: for even higher rates of germination, soak stratified seeds for 24hr in 1000 ppmGA3 solution, then sown into containers. The GA promotes germinations, and the sowing rate may be reduced to two seeds per container.

MYSTERY PLANT

This small plant is found on the Seward Peninsula, coastal areas in the Hooper Bay area and across the Bering Land Bridge. It is found growing in very wet areas; often in running water. It can propagate by runners and roots easily in the soggy but gravelly soil.

The small leaves are glabrous and have long petioles. They are somewhat kidney-shaped and have many, regular, blunt toothed leaves on long petioles. The flowering stem is 2-5 inches tall and is usually leafless. This is a very showy plant with many small flowers with 5 white, clawed petals, which are set off by bright pink glandular sepals and seed pods and pink stamens. It's a real eye catcher! Look for the answer in this newsletter.

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ALASKA NATIVE PLANT SOCIETY

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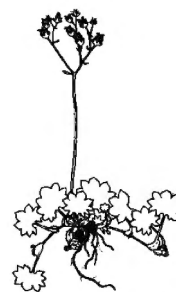
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Newsletter ("Borealis")

Editor Ginny Moore

FAX:

Borealis is published bi-monthly, fall through spring. Articles may be sent to Ginny Moore, Anchorage, AK 99516.
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What's This Mystery Plant?

Thank You!

To
November and December Guest Speakers
Michael Rasy and Julie Jesson
Family Presenters Anjanette Steer and Joe
Flynn, Plant
And the Mystery Plant Lady!

You make it happen!

Scrophulariaceae (the Figworts)

Mimulus and *Veronica*

At our January meeting, Verna Pratt will lead the discussion of the Alaskan *Mimulus* and *Veronica* species.

Mimulus guttatus

Mimulus guttatus, also called seep flowers indicating that they prefer seeps, springs, and weeping rock faces. There are many such cliff-face seeps between the Capes where you will find *M. guttatus*. They have bright yellow irregular flowers - flowers that are **bilaterally symmetrical** - with red-brown spots in the throat of the larger petal. The **paired leaves** are oval and **notched**. The lower leaves have petioles; the upper ones are sessile and clasp the stem. The upper tooth of the calyx is larger than the other teeth as shown in the lower right picture. These plants spread by stolons and rhizomes. Alaska to California, most Western States and Canadian Provinces

Distribution:

In wet places, from the plains to moderate elevations in the mountains from AK and Yukon to n. Mexico.

Edible Uses:

The leaves of yellow monkey flower were eaten, raw or cooked, by native peoples, like the Mendocino and Miwok Indians, as well as early settlers in the Rocky Mountains. They have a slightly bitter flavor, and were mostly added to salads. The leaves were also used as a lettuce substitute and as a salt substitute. Boiled leaves were also used for food.

Medicinal Uses:

The plant has agents that cause tissue to contract, and has been used for healing wounds, fresh cuts, etc.- usually as a poultice. A decoction of the leaves and stems was used by some native healers as an herbal steam bath for chest and back soreness. The Shoshoni used a poultice of the crushed leaves applied to wounds, rope burns etc. The plant is used in Bach flower remedies - the keywords for prescribing it are 'Fear or anxiety of a known origin'.

Cultivation Details:

Mimulus guttatus prefers rather moist areas such as damp borders, margins of streams and boggy spots. It grows well in heavy clay soils, and thrives in full sun so long as the soil does not dry out; otherwise it is best grown in partial shade. It is hardy to at least -20°C.

Propagation:

Seed - sow spring in a greenhouse and only lightly cover the seed. When they are large enough to handle, prick the seedlings out into individual pots and plant them out in the summer. If you have sufficient seed it can also be sown in situ in late spring after the last expected frosts. Divide in spring. Very easy, large divisions can be planted out direct into their permanent positions. It is recommended that you pot up the smaller divisions and grow them in light shade in a cold frame until they are well established before planting them out in late spring or early summer.



Mystery Plant Answer

Saxafraga Nudicaulis
Saxifragaceae/saxifrage Family

Veronicas in Alaska

Hultén lists 15 different *Veronica* species in Alaska, with numerous subspecies, and Verna Pratt will lead a discussion on how to identify the various plants, so everyone will surely be experts by the end of the evening. In this article we'll provide some other interesting information that may be of interest to us in Alaska.

What's In The Name?

According to tradition, St. Veronica wiped the face of Christ after the crucifixion and an imprint of his face was left on the cloth. The *Veronica* plant was named for St. Veronica because the flowers resemble the imprint of a face.

Many claim *Veronica* to be an excellent remedy for scrofula (tuberculosis of the neck), and it was the great Linnaeus himself who grouped it, together with all its relatives, under the family name of Scrophulariaceae. Today many of the plants he grouped there, including *Veronica*, have been reclassified through DNA sequencing into the Plantaginaceae.

The dainty blue blossoms are sometimes called “forget-me-not’s” but they are entirely different from the state flower of Alaska, *Myosotis*, which is in the borage family. Blue flowers are a traditional gift of good luck and remembrance for departing guests. The greeting ‘Godspeed’ or ‘speedwell’ basically means “God be with you.”

Friend or Foe?

Veronica species are typically hardy, easy-to-grow. This can be a plus or a minus, depending on where they are growing. While no *Veronica* species are yet on any Alaskan list of invasive species, they are being watched and there is concern that some of these plants – both native and non-native – could become problems if given the chance.

Veronica serpyllifolia L. ssp. *serpyllifolia* - Thymeleaf Speedwell

Two subspecies of *Veronica serpyllifolia* are known to occur in Alaska. *Veronica serpyllifolia* ssp. *humifusa* is native to Alaska and occurs in all three ecogeographic regions in the southern half of the state. *Veronica serpyllifolia* ssp. *serpyllifolia* is an introduced subspecies that is considered non-native in North America (USDA 2010)

Veronica serpyllifolia ssp. *serpyllifolia* can form mats and it may limit the sizes of native plant populations in disturbed areas by reducing available moisture and nutrients. However, this taxon is unlikely to impact natural communities. *Veronica serpyllifolia* ssp. *serpyllifolia* grows in moist, roadside ditches, roadsides and waste places in Alaska and Yukon. All recorded infestations in Alaska, that included information on disturbance type, are associated with anthropogenic disturbances – 87% of the infestations are associated with fill importation.

Veronica anagallis-aquatica, *V. arvensis*, *V. chamaedrys*, *V. longifolia*, *V. peregrine*, *V. persica*, and *V. spicata* are known or expected to occur as non-native species in Alaska. *V. arvensis*, *V. peregrine* ssp. *xalapensis*, and *V. persica* are considered non-native weeds in California.

Veronica serpyllifolia ssp. *serpyllifolia* is native to Europe but has been found in 37 states of the U.S. It is not considered a noxious weed in any state of the U.S. or province of Canada. However, efforts to control *Veronica serpyllifolia* ssp. *serpyllifolia* with herbicides have proven only partially successful. It is a plant we need to keep an eye on.

Growing tight to the ground, creeping Veronica, ***Veronica repens***, can show up in places where it is not wanted. This species of *Veronica* was once banned from beds at the Alaska Botanical Garden but can still be found growing in the lower perennial garden. If it gets into your lawn, you'll be sorry.

Another *Veronica*, *V. grandiflora*, the Aleutian speedwell, is an Alaskan native, but taken from the Aleutian islands and brought into the garden, this little *Veronica* can really spread. - From UAF Cooperative Extension Service “Invasive Garden Species – Don’t Plant a Problem”

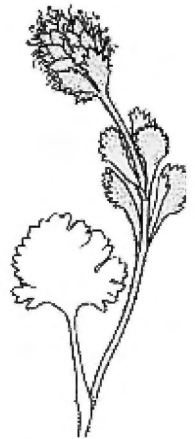
Scrophulariaceae (the Figworts)

Lagotis and *Synthyris*

In February Emily Beeson will continue our study of the Scrophulariaceae family with a discussion on the *Lagotis* and *Synthyris* genera. This will be an interesting discussion because both of these species have recently been transferred out of the Scrophulariaceae family into the Plantaginaceae.

Synthyris borealis is a diminutive mountain-top species known as "Alaska synthyris", "Northern Kitten Tails", or "Alaska Kitten Tails". It is found on high alpine ridges and tundra in a narrow arc from the western Alaska Range eastward across the northern Wrangell's into two small areas in Canada. The common name of "kittentails" for this showy, deep blue wildflower comes from the elongated raceme that, with some imagination, could resemble the tail of a kitten. The two stamens that protrude beyond the petals give the entire inflorescence a furry ambiance. The scientific genus name comes from "syn," together, and "thyris," little door or valve, in reference to the capsules of the plant in fruit.

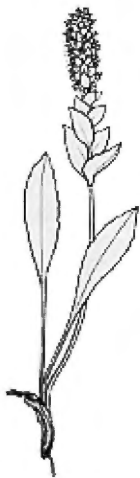
Synthyris is a perennial growing from rhizomes and produces mostly basal, long-petiolate, leathery leaves with cordate bases, although several small, reduced leaves may be found below the flowering stalk. The leaf margins are shallowly to deeply toothed, with individual teeth often possessing even smaller teeth. The leaf blades are palmately veined and about as long as wide.

Synthyris borealis

The mainly Asian genus *Lagotis* is present in the Arctic and near-arctic areas with two to four assumedly closely related taxa, variously treated as from one to four species. At least six species names have been applied through times for northern parts of this species or species aggregate, under the genus names *Lagotis* and *Gynandra*: "*glauca*", "*gmelinii*", "*hultenii*", "*minor*", "*ovata*", and "*stelleri*".

Lagotis is represented in North America by *L. glauca* Gaertn., in which there are three taxa, the diploid subspecies *glauca* in the areas surrounding the northern Pacific coasts, the tetraploid subsp. *minor* in northeastern European Russia and northwestern east to northern Yakutia, and a diploid taxon in northeastern Asia and northwestern North America for which Murray, Elvin and Gandhi have published the new combination sub. *lanceolata*. Each subspecies is distinct in its main range.

In North America, subsp. *glauca* is very limited, where it occurs along the coastline of the Aleutian Islands, Alaska Peninsula, Kodiak Island, the Pribilof Islands, St. Matthew Island and intermittently north along the mainland coast to Cape Prince of Wales, Seward Peninsula. Subspecies *lanceolata* in NA occurs farther north and eastward along the Arctic Coastal Plain, Arctic Foothills, and Brooks Range southward to the mountain ranges of interior Alaska, arctic and interior Yukon and westernmost NWT. However, there is a narrow zone along the coast of the Bering Sea where transitional forms occur north to the Seward Peninsula, and thus the rank of subspecies has been chosen.

*Lagotis glauca*

According to Murray, Elven and Gandhi, the two NA subspecies can be distinguished in the following key.

1. Basal leaf blades broadly obovate – oblanceolate, apex rounded or obtuse, sometimes subacute, margins crenate-dentate; filaments ca 1.5 mm or shorter.....**1a. *Lagotis glauca* subsp. *glauca***
1. Basal leaf blades narrowly oblanceolate, apex obtuse or subacute, sometimes acute, margins entire or distantly dentate to serrate; filaments 2 mm or longer.....**1.b. *Lagotis glauca* subsp. *lanceolata***

ALASKA NATIVE PLANT SOCIETY 2012 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. 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

NEED MORE HELP TO GROW YOUR SEEDS?

For more information on growing native plants from seeds, check out these websites:

The Native Plant Network: Website of the Professional Native Plant Industry whose goal is to provide technical and practical information on the growing and planting of North American (Canada, US, and Mexico) native plants for restoration, conservation, reforestation, landscaping, roadsides, and so on.

<http://www.nativeplantnetwork.org/>

Illustrated Tutorial To Sowing Native Plant Seeds

http://www.wnps.org/landscaping/documents/tutorial_alan_yen.pdf

"Native Seed Information & Culture" Puget Sound Chapter Washington Native Plant Society

<ftp://kcwppub3.co.kitsap.wa.us/pw/sw/Native%20Seed.pdf>

ANPS SEED EXCHANGE ORDER FORM

Orders will be filled in the order that they are received

Order by plant number appearing before the name

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The price is \$0.50 per packet. For mail orders, add \$0.50 for 1 -5 packets, or \$1.00 for 6 or more.

Name _____ Number of packets ____ @\$.50 = \$ ____

Address _____ Mailing cost (\$.50 for 1-5 or \$1.00 for 6 or more) = \$ ____

City _____ State _____ Zip _____ Total enclosed \$ ____

Make checks payable to: Alaska Native Plant Society

Send order to: Alaska Native Plant Society, PO Box 141613, Anchorage, AK. 99514



BOTANY BOOKSHELF

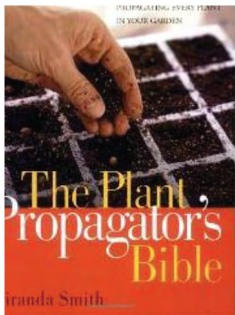


Creating new plants from existing ones is one of the most rewarding aspects of gardening. But to many, the idea of propagating plants seems like a feat that only the most experienced gardeners can master. Here are a few books that help to strip away the mystique and makes multiplying plants easy even for the novice.

For More Information on Germinating Seeds with Gibberellic Acid GA-3
'Seed Germination, Theory and Practice', by Dr. Norman C. Deno; available for \$20.00 postpaid
Dr. Norman C. Deno, 139 Lenor Dr., State College, PA 16801.
Describes testing 4000 species and gives pre-germination requirements, plus how to use GA-3.

American Horticultural Society Plant Propagation: The Fully Illustrated Plant-by-Plant Manual of Practical Techniques - American Horticultural Society, Peter Anderson (Photographer), Alan Toogood (Ed.) – 1999

The American Horticultural Society's Plant Propagation is one of those stuck-on-a-desert-island books. All the information you could ever possibly want in order to propagate virtually any plant or tree or cactus or succulent that might be growing on said desert island is to be found somewhere between the covers of this marvelous, informative book. If you're tired of buying many pots of expensive perennials, tuck a copy of Plant Propagation under your arm and buy one good specimen. From that specimen, following the simple directions, make many plants. It's the kind of skill that all grandmothers of a more distant generation seemed to have. From Amazon.com



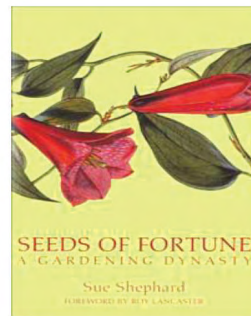
Plant Propagator's Bible by Miranda Smith Publication Date: **March 6, 2007**
With her reader-friendly, easy-to-follow directions, a veteran horticulture teacher demonstrates all the ways to cultivate new plants--whether from seed or cuttings or with techniques such as layering, grafting, and budding

Drawing on her many years as a horticulture teacher, Miranda Smith explains the natural process and conditions in which plants grow and reproduce, and shows gardeners how to use these systems to propagate any plant that grows in their garden or greenhouse--or even on their windowsill. The book features:

- an A to Z directory of more than 1,000 individual plant species--with appropriate propagation techniques for aquatics, ornamental plants, houseplants, shrubs, trees, vegetables, and wildflowers
- "What Can Go Wrong" advice for each type of plant, explaining potential problems and how to prevent or fix them
- detailed, step-by-step illustrations and annotated photographs, including information on essential tools and equipment.

For more information on growing native plants from seed, look for this hard-to-find reference:

- Phillips, H. 1985. **Growing and Propagating Native Wildflowers**. By Harvey Phillips, 1985; The University of North Carolina Press.



Seeds of Fortune
A Gardening Dynasty
Sue Shephard, Foreword by Roy Lancaster

Hardcover, 300 pages + 16 color plates, 6 1/4 x 9 1/2, Bloomsbury
ISBN 1-58234-256-3

For fans of *The Tulip* and *Orchid Fever*, here is a captivating account of big business, adventure, and family intrigue in the horticultural world. For over a century and across five generations, one Scottish family pioneered the introduction of hundreds of new plants into gardens, conservatories, and houses, and became the foremost European cultivators and hybridizers of their day. The story begins in 1768 when a Scotsman named John Veitch went to England to find his fortune, starting out as a gardener for the aristocracy. Realizing that horticultural mania had begun to spread throughout the population, Veitch and his wife opened a nursery and began to send the first commercial plant collectors to North and South America, Australia, India, Japan, China, and the South Seas. These plant collectors were among the first people allowed into the countries of the Far East and the tales of their travels—many of them perilous and some fatal—are wonderful adventure stories. Combining an historian's eye for detail with a flair for storytelling, Sue Shephard charts the fortunes of one family and through them tells the fascinating story of the modern garden.

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.

IT IS TIME TO RENEW! ANPS membership is on a calendar year basis. Would you rather receive your Alaska Native Plant Society electronically? You can save postage, paper, and receive your information in a more timely fashion! All you need to do is e-mail Ginny Moore at tgmoore@gci.net and your next newsletter will be sent electronically instead of by snail mail.

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