

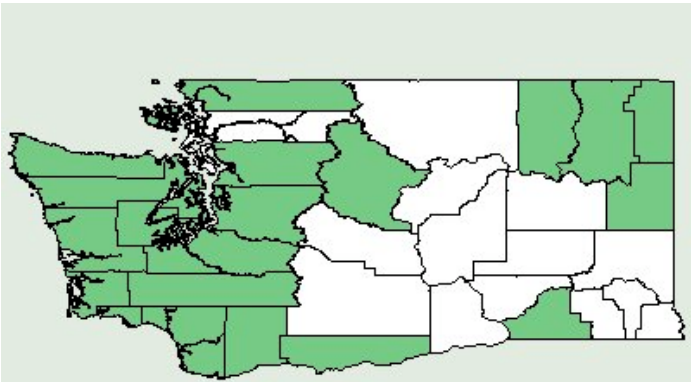

Plant Propagation Protocol for *Asarum caudatum*

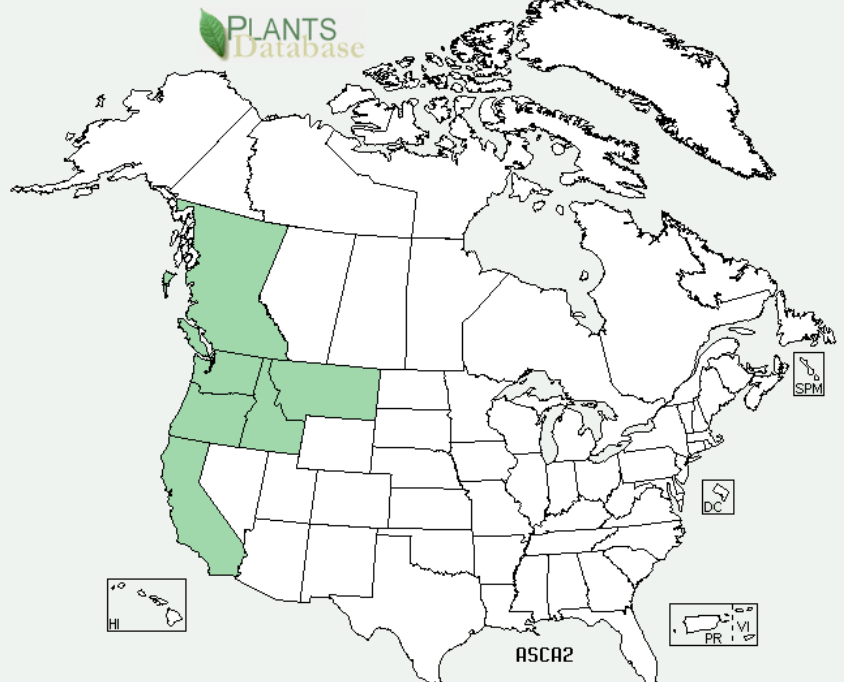
ESRM 412 – Native Plant Production

Spring 2010



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TAXONOMY	
Family Names	
Family Scientific Name:	Aristolochiaceae
Family Common Name:	Birthwort Family
Scientific Names	
Genus:	<i>Asarum</i>
Species:	<i>caudatum</i>
Species Authority:	John Lindley (1799–1865)
Variety:	caudatum [11]
Sub-species:	N/A
Cultivar:	N/A
Authority for Variety/Sub-species:	Lindl.
Common Name(s):	British Columbia wildginger, Wild Ginger
Species code:	ASCA2
GENERAL INFORMATION	
Geographical range	 <p style="text-align: center;">  ASCA2 </p>

	
Ecological distribution:	Prefers moist coniferous understory conditions high in soil organic matter. [2]
Climate and elevation range	Grows in lowland to middle montane elevations, Mediterranean climate. [2, 12]
Local habitat and abundance; may include commonly associated species:	Commonly found along the Pacific coast and east of the Cascades. Associated species include western redcedar (<i>Thuja plicata</i>), western hemlock (<i>Tsuga heterophylla</i>), grand fir (<i>Abies grandis</i>), Pacific yew (<i>Taxus brevifolia</i>), western white pine (<i>Pinus monticola</i>), Douglas-fir (<i>Pseudotsuga menziesii</i>), western larch (<i>Larix occidentalis</i>), white fir (<i>A. concolor</i>), red alder (<i>Alnus rubra</i>), baldhip rose (<i>Rosa gymnocarpa</i>), big huckleberry (<i>Vaccinium membranaceum</i>), Rocky Mountain maple (<i>Acer glabrum</i>), twinflower (<i>Linnaea borealis</i>), Oregon boxwood (<i>Paxistima myrsinites</i>), ladyfern (<i>Athyrium filix-femina</i>), devilsclub (<i>Oplopanax horridus</i>), queencup beadlily (<i>Clintonia uniflora</i>), pioneer violet (<i>Viola glabella</i>), western sword fern (<i>Polystichum munitum</i>), oak fern (<i>Gymnocarpium dryopteris</i>), Idaho goldthread (<i>Coptis occidentalis</i>), drops of gold (<i>Disporum hookeri</i>), American trailplant (<i>Adenocaulon bicolor</i>), and threelobed foamflower (<i>Tiarella trifoliata</i>). [12]
Plant strategy type / successional stage:	Common understory plant, often dominant. Described by some as a climax species, intolerant of early seral stages. [2, 3, 8, 12]
Plant characteristics:	Creeping rhizomatous evergreen perennial forb capable of forming large, dense mats. Slow-growing and freely rooting. Large (2-5 inches) shiny dark green leaves, cordate or reniform, grow in pairs attached to long (2-8 inches) pubescent stalks from each node on the rhizome. Leaves smell of lemon-ginger when crushed. Flowers are pedunculate with 3 alternating brownish-purple sepals/bracts (1-3 cm) poisonous to fungus gnats. Flowers often concealed beneath the leaves. Fruit is a moist capsule containing sticky seeds. [2, 3, 4, 5, 8]
PROPAGATION DETAILS	
Ecotype:	N/A
Propagation Goal:	Rhizome divisions
Propagation Method:	Vegetative.
Product Type:	Propagules.
Stock Type:	Container transplants.
Time to Grow:	3-4 months.

Target Specifications:	None specified.
Propagule Collection:	Take rhizome divisions early spring or fall for outplanting the next fall or spring, respectively. [3, 4, 9]
Propagule Processing/Propagule Characteristics:	Uproot entire plant by digging spade 6-8 inches away from the root ball. Wash away excess soil and remove dead or damaged tissue. Cut pieces of rhizome with two leaves attached or pieces with a node using a sharp blade. [9]
Pre-Planting Propagule Treatments:	No information available.
Growing Area Preparation / Annual Practices for Perennial Crops:	Plant the rhizome divisions shallowly (~1 cm) so that the tip is exposed. Space 12 inches apart. Mulch to conserve moisture. [3, 4, 9]
Establishment Phase:	No information available.
Length of Establishment Phase:	No information available.
Active Growth Phase:	No information available.
Length of Active Growth Phase:	No information available.
Hardening Phase:	No information available.
Length of Hardening Phase:	No information available.
Harvesting, Storage and Shipping:	No information available.
Length of Storage:	3-4 months.
Guidelines for Outplanting / Performance on Typical Sites:	High transplant success rate. Does best in moist, shady to partially shaded environments with humus rich soil. May go dormant for up to one year after rhizome division. Generally spreads up to 6 inches in all directions annually. [5]
Other Comments:	Do not collect from plants growing in the wild. [12]
PROPAGATION DETAILS	
Ecotype:	N/A
Propagation Goal:	Plants.
Propagation Method:	Root divisions.
Product Type:	Propagules.
Stock Type:	Container transplants.
Time to Grow:	3-4 months.
Target Specifications:	None specified.
Propagule Collection:	In summer, dig up large mats for root divisions and outplanting in fall. [9]
Propagule Processing/Propagule Characteristics:	Use a spade to divide the roots at 6-8 inch intervals.[6]
Pre-Planting Propagule Treatments:	No information available.
Growing Area Preparation / Annual Practices for Perennial Crops:	Start root divisions in sand and supply with ample water. Transplant to medium high in organic content. [5, 9]
Establishment Phase:	No information available.
Length of Establishment Phase:	No information available.
Active Growth Phase:	No information available.
Length of Active Growth Phase:	No information available.
Hardening Phase:	No information available.
Length of Hardening Phase:	No information available.
Harvesting, Storage and Shipping:	No information available.

Length of Storage:	Can be transplanted immediately or grown for 3-4 months and outplanted in the fall. [6] Divisions do best when transplanted to a container and kept in a shady greenhouse until strong growth resumes. [7]
Guidelines for Outplanting / Performance on Typical Sites:	High survival rate. Does best in moist, shady to partially shaded environments with humus rich soil. Generally spreads up to 6 inches in all directions annually. [5]
Other Comments:	Do not collect from plants growing in the wild. [12]
PROPAGATION DETAILS	
Ecotype:	N/A
Propagation Goal:	Plants.
Propagation Method:	Seed.
Product Type:	Container.
Stock Type:	Container transplants.
Time to Grow:	1 year.
Target Specifications:	None specified.
Propagule Collection:	In summer months (April – July) depending on latitude and elevation after flowering. [9]
Propagule Processing/Propagule Characteristics:	Several ovoid seeds contained within 6-chambered moist capsules. [8, 13]
Pre-Planting Propagule Treatments:	It is best to sow the seed directly after harvesting in the summer into cold frames. If using stored seed, sow it in the winter and provide 3 weeks cold stratification. [7].
Growing Area Preparation / Annual Practices for Perennial Crops:	Observe seedling emergence carefully to prevent death of the radicle tips, which causes high fatality in other spp. of <i>Asarum</i> . [1]
Establishment Phase:	Fall/Winter - Spring
Length of Establishment Phase:	Variable
Active Growth Phase:	Spring - Summer
Length of Active Growth Phase:	4 - 5 months
Hardening Phase:	Fall/Winter - Spring
Length of Hardening Phase:	4 –5 months
Harvesting, Storage and Shipping:	Seeds can be stored for short periods in cool, dry conditions. [1]
Length of Storage:	The seed will germinate in the spring after experiencing 1-4 weeks at 18 degrees C. When the seedlings are large enough to handle, individually transplant them into separate pots with humus-rich, neutral to acidic soil and grow in light shade in the greenhouse or outdoors through the next winter. [1, 7].
Guidelines for Outplanting / Performance on Typical Sites:	Has lower success rate depending on quality of seedlot. Slower growing than vegetative propagation. [1, 7]
Other Comments:	Do not collect from plants growing in the wild. [12]
INFORMATION SOURCES	
References:	<ol style="list-style-type: none"> 1. Deno, Norman C. 1993. <i>Seed Germination Theory and Practice</i>. State College, PA. 2. Hitchcock, C. Leo and Arthur Cronquist. 1976. <i>Flora of the Pacific Northwest: An Illustrated Manual</i>. University of Washington Press, Seattle, Washington. 3. Kruckeberg, Arthur R. 1982. <i>Gardening with Native Plants of the Pacific Northwest: An Illustrated Guide</i>. University of Washington Press, Seattle, Washington.

	<p>4. Leigh, Michael. 1986. <i>Grow Your Own Native Landscape: A Guide to Identifying, Propagating & Landscaping with Western Washington Native Plants</i>. Portland, Timber Press.</p> <p>5. Pettinger, April and Brenda Costanzo. 1993. <i>Native Plants in the Coastal Garden: A Guide for Gardeners in British Columbia and the Pacific Northwest</i>. Whitecap Books, North British Columbia, Canada.</p> <p>6. Phillips, Harry R. <i>Growing and Propagating Wildflowers</i>. 1985. University of North Carolina Press, Chapel Hill and London.</p> <p>7. Plants For A Future: Edible, medicinal and useful plants for a healthier world, accessed 4/18/2010. http://www.pfaf.org/database/plants.php?Asarum+caudatum.</p> <p>8. Pojar, Jim and Andy Mackinnon. 1994. <i>Plants of the Pacific Northwest Coast</i>. Lone Pine Publishing, Redmond, Washington.</p> <p>9. Robin Rose, Dr.; Caryn E C Chachulski; Diane L Haase, 1998. <i>Propagation of Pacific Northwest native plants</i>. Oregon State University Press, Corvallis, OR.</p> <p>10. Tropicos.org. Missouri Botanical Garden, accessed 4/18/2010. http://www.tropicos.org/Name/2500009.</p> <p>11. USDA Plants Database, accessed 4/17/2010. http://plants.usda.gov/java/profile?symbol=ASCA2.</p> <p>12. USDA Forest Service Fire Effects Information System (FEIS), accessed 4/17/2010. http://www.fs.fed.us/database/feis/plants/forb/asacau/all.html.</p> <p>13. Washington Native Plant Society, accessed 4/17/2010. http://wnps.org/landscaping/herbarium/pages/asarum-caudatum.html.</p>
Other Sources Consulted:	<p>Dumroese, Kasten R, Tara Luna and Thomas D. Landis, editors. 2008. <i>Nursery Manual for Native Plants: A Guide for Tribal Nurseries</i>. United States Department of Agriculture, Forest Service.</p> <p>Hartmann, Hudson T., Dale E. Kester, Fred T. Davies, Jr., Robert L. Geneve. 2007. <i>Plant Propagation Principles and Practices, Seventh Edition</i>. Prentice-Hall of India, New Delhi.</p> <p>King County Department of Public Works, Surface Water Management Division. 1994. <i>Northwest Native Plants: identification and propagation for revegetation and restoration projects</i>. Seattle, WA.</p> <p>Link, Russell. 2000. <i>Landscaping for Wildlife in the Pacific Northwest</i>. Washington Department of fish and Wildlife, USA.</p> <p>Norris Brenzel, Kathleen, ed. 2007. <i>Sunset Western Garden Book</i>. Sunset Publishing Corporation, Menlo Park, CA.</p>
Protocol Author:	Kava Vale
Date Protocol Updated:	04/21/2010

Note: This template was modified by J.D. Bakker from that available at:
<http://www.nativeplantnetwork.org/network/SampleBlankForm.asp>

Plant Data Sheet



Species (common name, Latin name)

Asarum caudatum – ‘wild ginger’

Range

North from British Columbia to central California, Found less frequently east of the Cascades in Washington, and sometimes in northern Idaho and western Montana

Climate, elevation

Found in low- to mid-elevations, below 1500m; prefers part to full shade in the understory of moist coniferous forests, and likes soils high in organic matter.

Local occurrence (where, how common)

Found most frequently along the Pacific Coast, east to the Cascades.

Habitat preferences

Shady sites in coniferous forests, highly organic soils

Plant strategy type/successional stage

Understory species, indicator or dominant in forest community and habitat types.

Associated species

Tsuga heterophylla, *Pinus monticola*, *Abies grandis*, *Pseudotsuga menzeisii*, *Thuja plicata*, *Adenocaulon bicolor*, *Clintonia uniflora*, *Coptis occidentalis*.

May be collected as: (seed, layered, divisions, etc.)

Seed (though this is difficult); also easily propagated from rhizome divisions, root cuttings

Collection restrictions or guidelines

Collect seed in July/August; pay special attention and look for empty seed coats, as this has been an issue for two other spp. of *Asarum*. Divide rhizomes in early spring or fall, when plant is dormant. Take root cuttings in summer.

Seed germination (needs dormancy breaking?)

These seeds require no scarification, but may require first a warm, then a cold/moist stratification to simulate climatic changes from when seeds are sown (typically in April) until their normal emergence the next spring.

Seed life (can be stored, short shelf-life, long shelf-life)

Can be stored for a short time with reasonable expectation of germination success.

Recommended seed storage conditions

Store in cool dry space, like refrigerator, for fall and winter after harvesting; sow outdoors in April for plants the following spring.

Propagation recommendations (plant seeds, vegetative parts, cuttings, etc.)

Due to high frequency of unviable/absentee seeds, I would recommend propagating by rhizome divisions, because this method can be done either in early spring or in fall, allowing for easy, reliable reproduction within a broad time range.

Soil or medium requirements (inoculum necessary?)

If propagating from seed, pay special attention to emergence, as death of the radicle tips causes high mortality in other spp. of *Asarum* seedlings. Germinated seedlings should be transferred immediately to high OM media and kept outdoors. For root cuttings, these should be started in a sand medium and planted out in the fall. No inoculum necessary.

Installation form

Seed – free; low success rate, many potential problems along the way; beneficial in increasing genetic diversity of populations

Rhizome – also free; can be taken at two times during the year, which allows for flexibility in restoration project timelines; consistently propagated with success.

Root cuttings – can be taken only during summer, and must be planted in fall; high potential for success of plants.

Recommended planting density

Plant 1 cm deep with the tip of the rhizome at soil level. Space about 30cm (1ft.) apart.

Care requirements after installed

Mulch planted rhizomes to ensure adequate moisture; as they prefer naturally wet environments, additional watering should not be necessary.

Normal rate of growth or spread; lifespan

Slow-growing plant, but readily self-propagates by seed when established.

Sources cited

Deno, Norman C. Seed Germination Theory and Practice, Aug. 1991.

Leigh, Michael. ‘Grow Your Own Native Landscape: A Guide to Identifying, Propagating, and Landscaping with Western Washington Native Plants. Portland: Timber Press, 1986.

Rose, Robin et al. Propagation of Pacific Northwest Native Plants. Corvallis: OSU Press, 1998.

USDA Forest Service Fire Effects Information System page for *Asarum caudatum*:

<http://www.fs.fed.us/database/feis/plants/forb/asacau/all.html>

Data compiled by

Claire West, June 2, 2004