

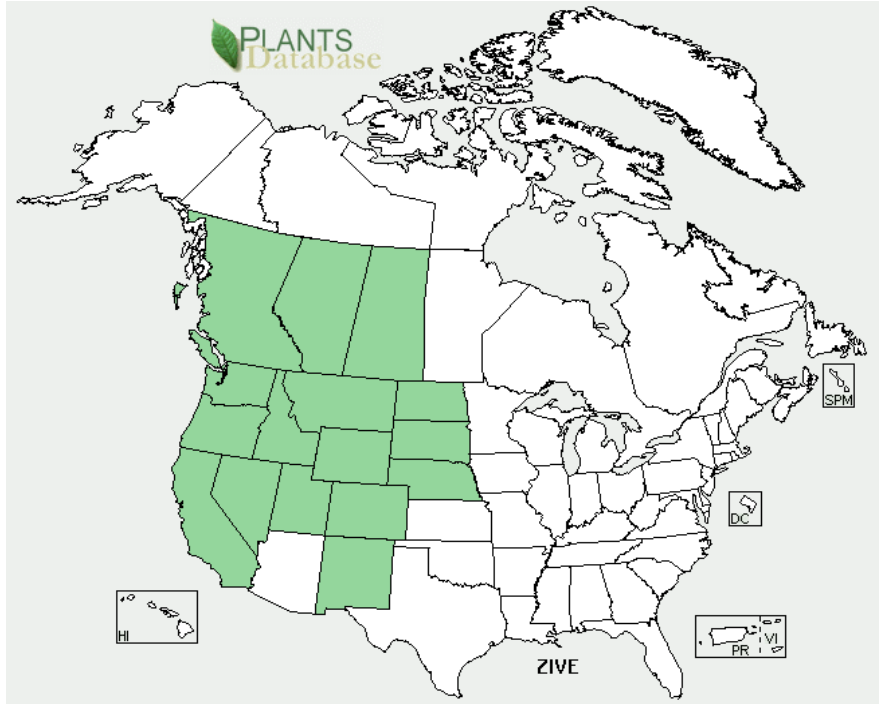
**Plant Propagation Protocol for *Zigadenus venenosus***  
 ESRM 412 – Native Plant Production  
 Spring 2008



[Bransford, W.D. Mrs.](http://www.wildflower.org/gallery/result.php?id_image=1745) [http://www.wildflower.org/gallery/result.php?id\\_image=1745](http://www.wildflower.org/gallery/result.php?id_image=1745)

<b>TAXONOMY</b>	
<b>Family Names</b>	
Family Scientific Name:	<i>Liliaceae</i>
Family Common Name:	Lily
<b>Scientific Names</b>	
Genus:	<i>Zigadenus</i>
Species:	<i>venenosus</i>
Species Authority:	S. Watson
Variety:	var. <i>gramineus</i>
Sub-species:	
Cultivar:	
Authority for Variety/Sub-species:	Walsh ex. M. Peck
<b>Common Synonym(s)</b>	
Common Name(s):	Death camas, meadow deathcamas, grassy deathcamas, narrowleaved deathcamas
Species Code (as per USDA Plants database):	ZIVE

## GENERAL INFORMATION

<b>Geographical range</b>	<p>Native perennial herb that is found from British Columbia to southwestern Saskatchewan<sup>i</sup>.</p>  <p><a href="http://plants.usda.gov/java/profile?symbol=ZIVE">http://plants.usda.gov/java/profile?symbol=ZIVE</a></p>
<b>Ecological distribution</b>	
Climate and elevation range	Low to mid elevations.
Local habitat and abundance	Open forests and forest edged, damp meadows, and rocky or grassy slopes. Also grows in dry meadows and hillsides.
Plant strategy type / successional stage	Adapted to disturbed sites. Meadow deathcamas regenerates rapidly after fire from deep, underground bulbs <sup>ii</sup>
<b>Plant characteristics</b>	Herbaceous monocot, with tightly packed raceme of small white flowers, grows to 24 inches tall <sup>iii</sup> . Basal leaves, 10-30cm in length.
<b>PROPAGATION DETAILS</b>	
Ecotype	
Propagation Goal	Plant
Propagation Method	Seed
Product Type	Container (plug)
Stock Type:	
Time to Grow:	
Target Specifications:	Grows from 6 to 28 inches (15-70 cm) in height.
Propagule Collection:	Flowers bloom April-July. Fruit is a capsule. Seed dissemination is largely in July and August <sup>iv</sup> . Seed can be shaken into envelopes or bags, or the entire capsule can be removed from the stem <sup>v</sup> . No cleaning necessary.

Propagule Processing/Propagule Characteristics:	Seeds brown, 5-6mm in length.
Pre-Planting Propagule Treatments:	Warm/cold stratification for 6 weeks <sup>vi</sup> . Cone-tainers filled with Sunshine #1 (a soil-less peat-based media) amended with micro-nutrients (Micromax) and a slow release fertilizer (Osmocote 14-14-14) <sup>vii</sup> .
Growing Area Preparation / Annual Practices for Perennial Crops:	
Establishment Phase	Full sun, spacing at 3 inches. Place in greenhouse set at moderate temperatures (70 degrees days/50 degrees nights) <sup>vi</sup> .
Length of Establishment Phase:	About 30 days.
Active Growth Phase:	
Length of Active Growth Phase:	
Hardening Phase:	It reaches maturity and enters dormancy during early summer as soil moisture declines <sup>viii</sup> .
Length of Hardening Phase:	
Harvesting, Storage and Shipping:	
Length of Storage:	
Guidelines for Outplanting / Performance on Typical Sites:	
Other Comments	Highly toxic plant. Poisonings in sheep, cattle, horses, pigs, fowl, and humans have been reported <sup>ix</sup> . Bulbs resemble onions, with black scales.
<b>INFORMATION SOURCES</b>	
References:	See below
Other Sources Consulted	Lady Bird Johnson Wildflower Center Native Plant Database, University of Texas at Austin <a href="http://www.wildflower.org/plants/result.php?id_plant=ZIVE">http://www.wildflower.org/plants/result.php?id_plant=ZIVE</a> (Last accessed 5/7/08).  Flora of North America website <a href="http://www.efloras.org/florataxon.aspx?flora_id=1&amp;taxon_id=135314">http://www.efloras.org/florataxon.aspx?flora_id=1&amp;taxon_id=135314</a> (Last accessed 5/7/08).
Protocol Author:	Erik Injerd
Date Protocol Created or Updated:	5/14/08

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

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## INFORMATION SOURCES

- <sup>i</sup> Munro, D. B. [Canadian poisonous plants information system - on-line resource. \(Can Poison Pl\)](http://www.cbif.gc.ca/pls/pp/ppack.jump?p_null=all&p_psn=80&p_type=all&p_sci=sci&p_x=px). [http://www.cbif.gc.ca/pls/pp/ppack.jump?p\\_null=all&p\\_psn=80&p\\_type=all&p\\_sci=sci&p\\_x=px](http://www.cbif.gc.ca/pls/pp/ppack.jump?p_null=all&p_psn=80&p_type=all&p_sci=sci&p_x=px) (Last accessed 5/6/08).
- <sup>ii</sup> Volland, Leonard A.; Dell, John D. 1981. Fire effects on Pacific Northwest forest and range vegetation. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Region, Range Management and Aviation and Fire Management. 23 p. [2434]
- <sup>iii</sup> Atkinson, S.; Sharpe, F. 1985. *Wild Plants of the San Juan Islands*. The Mountaineers, Seattle.
- <sup>iv</sup> Dayton, William A. 1960. Notes on western range forbs: Equisetaceae through Fumariaceae. Agric. Handb. 161. Washington, DC: U.S. Department of Agriculture, Forest Service. 254 p. [767]
- <sup>v</sup> Skinner, David M. 2008. Propagation protocol for production of container *Zigadenus venenosus* S. Watson var. *gramineus* (Rydb.) Walsh ex M. Peck bulbs (10 cu. in.); USDA NRCS - Pullman Plant Materials Center, Pullman, Washington. In: Native Plant Network. URL: <http://www.nativeplantnetwork.org> (Last accessed 5/6/08). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.
- <sup>vi</sup> Drake, Deanne, and Kern Ewing. undated. Germination Requirements of 32 Native Washington Prairie Species. Center for Urban Horticulture, University of Washington, Seattle, WA. Available online at <http://www.southsoundprairies.org/documents/completedgerminationdoc.pdf> (Last accessed 5/6/08).
- <sup>vii</sup> Bartow, Amy L. 2003. Propagation protocol for production of container *Zigadenus venenosus* S. Watson plants; USDA NRCS - Corvallis Plant Materials Center, Corvallis. In: Native Plant Network. URL: <http://www.nativeplantnetwork.org> (Last accessed 5/7/08). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.
- <sup>viii</sup> Hauser, A. Scott. 2006. *Zigadenus venenosus*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [Last accessed 5/14/08].
- <sup>ix</sup> K. E. Panter and L. F. James. Death Camas: Early Grazing Can Be Hazardous *Rangelands*, Vol. 11, No. 4 (Aug., 1989), pp. 147-149.

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## Plant Data Sheet

Species *Zigadenus venenosus*



### Range

Death camas is distributed in North America from B.C. to Saskatchewan and south to Colorado, Utah, California, and Baja California (FEIS).

### Climate, elevation

Death camas grows at low to mid elevations.

### Local occurrence (where, how common)

On the coast, it coincides closely with the occurrence of *Camasia quamash*.

### Habitat preferences

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Open forests and forest edged, damp meadows, and rocky or grassy slopes.

Plant strategy type/successional stage (stress-tolerator, competitor, weedy/colonizer, seral, late successional)

Death camas is an increaser with grazing.

Associated species

Camasia quamash (camas), dwarf rose (*Rosa gymnocarpa*) and cinquefoil (*Potentilla* spp.)

Other common names include:

grassy deathcamas

meadow grasscamas

alkali grass

deadly zygadene

hog potatoes

lobelia

mystery-grass

poison-sego

soap plant

squirrel food

May be collected as:

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Seeds ripen in July and August and are dispersed by mid-August. Seeds germinate in the spring and a bulb is formed in the first year. Death camas reproduces vegetatively from bulb fragments and sexually with sexual maturity taking up to 3 years.

### Collection restrictions or guidelines

This plant is toxic in all forms and caution must be taken when handling plant material.

### Seed germination (needs dormancy breaking?)

Needs six weeks of cool stratification

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

2 to 6 months.

### Recommended seed storage conditions

Paper bag at room temperature.

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

Seeds and/or bulbs.

### Soil or medium requirements (inoculum necessary?)

None recommended.

### Installation form (form, potential for successful outcomes, cost)

### Recommended planting density

None specified.

### Care requirements after installed (water weekly, water once etc.)

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## Normal rate of growth or spread; lifespan

Death camas grows rapidly in early spring from root reserves when temperatures are cool and soils are moist.

## Sources cited

Drake Deanne, Kern Ewing, and Patrick Dunn, 1998. Techniques to Promote Germination of Seed from Puget Sound Prairies. Restoration & Management Notes 16:1 Summer.

<http://www.rook.org/earl/bwca/nature/grass/carexros.html>

[www.horticulture.com](http://www.horticulture.com)

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[www.botany.com](http://www.botany.com)

[greenwoodnursery.com](http://greenwoodnursery.com)

Pojar, Jim and Andrew MacKinnon. 1994. Plants of the Pacific Northwest Coast Washington, Oregon British Columbia & Alaska. BC Ministry of Forests and Lone Pine Publishing, Vancouver, British Columbia, Canada 527 p.

Data compiled by (student name and date)

Lara Johnson



