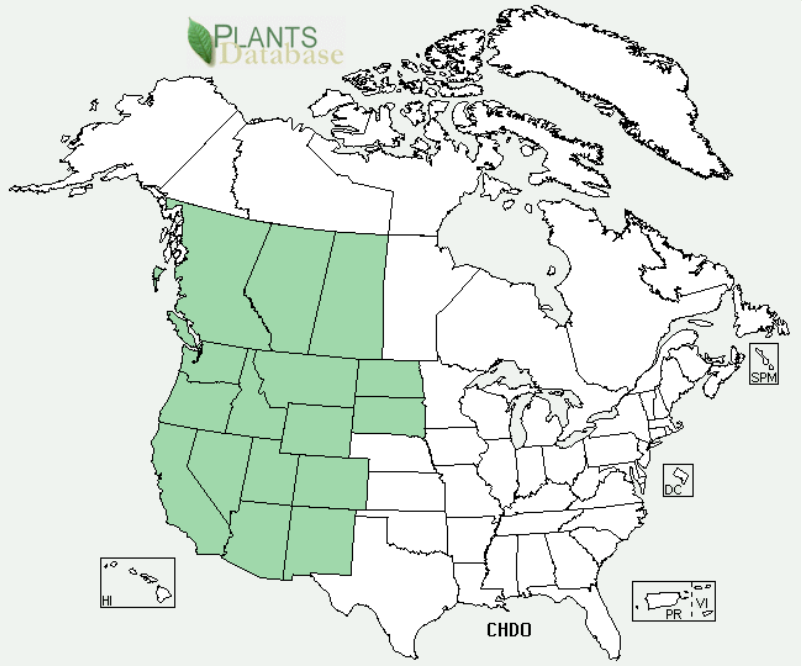
Plant Propagation Protocol for *Chaenactis douglasii*

ESRM 412 – Native Plant Production

TAXONOMY	
Family Names	
Family Scientific Name:	Asteraceae
Family Common Name:	Aster family
Scientific Names	
Genus:	*Chaenactis*
Species:	*douglasii* (Hook.) Hook. & Arn.
Species Authority:	Hook. & Arn.
Variety:	-
Sub-species:	-
Cultivar:	-
Authority for Variety/Sub-species:	-
Common Synonym(s) (include full scientific names (e.g., *Elymus glaucus* Buckley), including variety or subspecies information)	None found
Common Name(s):	*Chaenactis, Douglas' dustymaiden, hoary chaenactis* (Calflora), hoary pincushion (eFlora).
Species Code	CHDO (USDA)

(as per USDA Plants database):	
GENERAL INFORMATION	
Geographical range (distribution maps for North America and Washington state)	White=absent Green=present   (images provided by USDA)
Ecological distribution (ecosystems it occurs	• Intermountain West (Tilley) • Northern Juniper Woodland, Chaparral, Yellow Pine Forest, Red Fir Forest, Sagebrush Scrub, Pinyon-Juniper Woodland, Lodgepole Forest (Calflora).

in, etc):	
Climate and elevation range	Found in elevations between 3281 and 11483 feet (Calflora).
Local habitat and abundance; may include commonly associated species	Juniper, Chaparral, Yellow Pine, Red Fir, Sagebrush, Lodgepole Pine (Calflora).
Plant strategy type / successional stage (stress-tolerator, competitor, weedy/colonizer, seral, late successional)	-
Plant characteristics (life form (shrub, grass, forb), longevity, key characteristics, etc)	• Forb/herb (USDA) • Short lifespan (USDA) • Medium drought tolerance (USDA) • Low fire tolerance (USDA) • Medium shade tolerance (USDA) • Minimum temperature: -38 degrees Fahrenheit (USDA)
PROPAGATION DETAILS	
Ecotype (this is meant primarily for experimentally derived protocols, and is a description of where	Intermountain West (Tilley)

the seed that was tested came from):	
Propagation Goal (Options: Plants, Cuttings, Seeds, Bulbs, Somatic Embryos, and/or Other Propagules):	Seeds (Tilley)
Propagation Method (Options: Seed or Vegetative) :	Seeds (Tilley)
Product Type (options: Container (plug), Bareroot (field grown), Plug + (container-field grown hybrids, and/or Propagules (seeds, cuttings, poles, etc.))	Propagules (seeds, cuttings, poles, etc.) (Tilley)
Stock Type:	-
Time to Grow (from seeding until plants are ready to	2 Months (Tilley)

be outplanted):	
Target Specifications (size or characteristics of target plants to be produced):	Seeding plants
Propagule Collection (how, when, etc):	Collect wildland seed by bending the top of the plant into a bag and vigorously shaking the ripe seed off. This method produces little intert matter for further cleaning (Tilley).
Propagule Processing/ Propagule Characteristics (including seed density (# per pound), seed longevity, etc):	Store collected seed in open collection sacks to dry prior to processing. If seed is collected by hand or with a Jet Harvester (Tilley and Bair, 2010), little additional processing is necessary. Seed harvested in this manner will have an intact pappus and fair to moderate purity. Following drying the seed can be sifted through 0.6 to 1.2 cm (0.25 to 0.5 in) hardware cloth to remove sticks and intact flower heads. When mixed with a diluent such as rice hulls, seed in this condition flows well through grain and no-till drills and other seeding equipment (Tilley).
Pre-Planting Propagule Treatments (cleaning, dormancy treatments, etc):	Plant as a fall-dormant seeding in November or December to allow for natural stratification (Tilley).
Growing Area Preparation / Annual Practices for Perennial Crops (growing media, type and size of containers, etc):	Seed is sown into weed barrier fabric at 23 to 45 cm (9 to 18 in) spacing. Seed should be planted in late fall into slightly roughened soil and then lightly packed. Each hole is seeded at a target rate of 12 to 25 seeds using a “Penstemon Popper” seeder, a 3 inch diameter tube with a spur at the bottom. The spur is used to roughen the soil, then seed is dropped through the tube into the roughened area and the soil is then compacted by foot. Weed control efforts should begin prior to planting. Planting into a weed-free seed bed, or using weed barrier fabric greatly reduces management inputs. Weeds can be controlled using pre-emergent herbicides and by hand rouging or by mowing along the edges of weed barrier fabric. Weedy grasses can be controlled with selective herbicides (Tilley).

Establishment Phase (from seeding to germination):	Seed germinates in early spring. Some light irrigation may be used to assist germination if soil crusting is a problem (Tilley).
Length of Establishment Phase:	1 month (Tilley)
Active Growth Phase (from germination until plants are no longer actively growing):	When using weed barrier fabric, supplemental irrigation is not necessary. Flowering begins in early summer and continues for several weeks (Tilley).
Length of Active Growth Phase:	3-4 months (Tilley)
Hardening Phase (from end of active growth phase to end of growing season; primarily related to the development of cold-hardiness and preparation for winter):	-
Length of Hardening Phase:	-
Harvesting, Storage and	Seed can be collected by hand, combine, flailvac, or vacuum-type harvester. We use a “jet combine” with the fan running at 6000 rpm. This ensures that only ripe

Shipping (of seedlings):	seed is harvested and allows for multiple harvests during the seasonSeed readily disarticulates from flower heads when ripe. The jet harvester also limits the amount of trash and other inert matter being collected and makes post-harvest cleaning easier. Harvesting by other methods significantly adds to the inert matter, which can be very difficult to clean out (Tilley).
Length of Storage (of seedlings, between nursery and outplanting):	-
Guidelines for Outplanting / Performance on Typical Sites (eg, percent survival, height or diameter growth, elapsed time before flowering):	-
Other Comments (including collection restrictions or guidelines, if available):	-
INFORMATION SOURCES	
References (full citations):	Calflora: Information on California plants for education, research and conservation, based on data contributed by dozens of public and private institutions and individuals, including theConsortium of Calif. Herbaria. [web application]. 2012. Berkeley, California: The Calflora Database [a non-profit organization]. Available: http://www.calflora.org/ (Accessed: May 11, 2012). "Chaenactis douglasii" *E Flora:Flora of North America*. E Flora, 2012. Web. 14

	May 2012. Kartesz, John, T. "Plants Profile." *USDA Plants Database*. USDA, 2012. Web. 11 May 2012. Tilley, Derek James 2010. Propagation protocol for production of *Chaenactis douglasii* (Hook.) Hook. & Arn. seeds; USDA NRCS - Aberdeen Plant Materials Center, Aberdeen, Idaho. In: Native Plant Network. URL: http://www.nativeplantnetwork.org (accessed 11 May 2012). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.
Other Sources Consulted (but that contained no pertinent information) (full citations):	*Lady Bird Johnson Wildflower Center*. Lady Bird Johnson Wildflower Center, 2012. Web. 14 May 2012. Morefield, James D. "Jepson Interchange Project."*UCJEPS*. University of California, 1993. Web. 14 May 2012. Young, James A. *Collecting, Processing and Germinating Seeds of Wildland Plants*. Portland, Oregon: Timber Press, 1986.
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