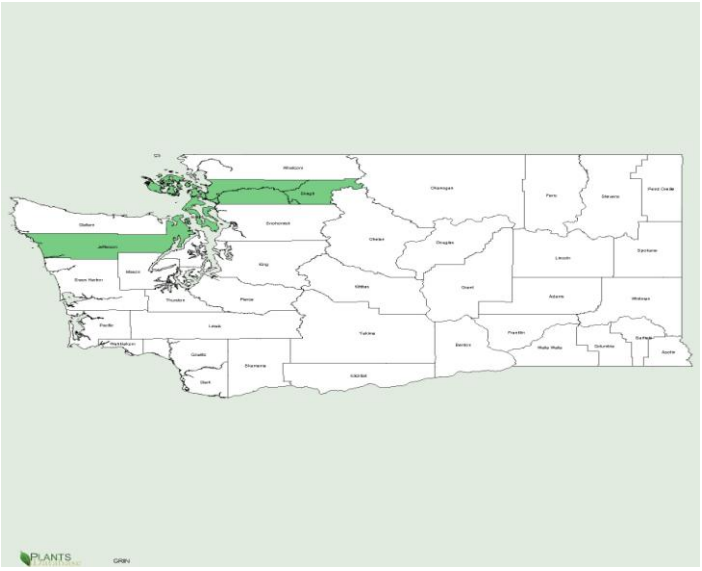
Plant Propagation Protocol for *Grindelia integrifolia*
ESRM 412 – Native Plant Production

Photo credit Derrick Ditchburn

TAXONOMY	
Family Names	
Family Scientific Name:	Asteraceae
Family Common Name:	Sunflower
Scientific Names	
Genus:	*Grindelia* Willd.
Species:	*integrifolia*
Species Authority:	Carl Ludwig Willdenow
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)	*Grindelia integrifolia* DC. var. *integrifolia* (2) *Grindelia integrifolia* var. macrophylla (3) *Grindelia macrophylla* (9) *Grindelia stricta* var. *stricta* (3)
Common Name(s):	Entire-leaved gumweed, Gumweed (9) Puget Sound gumweed (7)
Species Code (as per USDA	GRIN

Plants database):	
GENERAL INFORMATION	
Geographical range (distribution maps for North America and Washington state)	 North America Distribution (7)  Washington State Distribution (7)
Ecological distribution (ecosystems it occurs in, etc):	Beaches, rocky shores, salt marshes, mainly maritime habitats (9)
Climate and elevation range	Low elevations (9)
Local habitat and	Beaches, rocky shores, salt marshes in the Puget Sound region,

abundance; may include commonly associated species	primarily coastal (9). Common throughout the San Juan Islands archipelago (7). Found in moist, non-open maritime habitats in the Strait of Georgia-Puget Sound area through Willamette Valley (9). Often found with other high salinity salt marsh plants, including *Atriplex patula, Distichlis spicata, Jaumea carnosa, Juncus balticus, Plantago maritima, Potentilla pacifica, Salicornia virginica, Spergularia spp.*, and *Triglochin maritimum* (5).
Plant strategy type / successional stage (stress-tolerator, competitor, weedy/colonizer, seral, late successional)	Seral; climax (2)
Plant characteristics (life form (shrub, grass, forb), longevity, key characteristics, etc)	Perennial herb from a taproot, often with a stout branched stem-base. Stems are leafy, often hairy. The leaves are toothed to entire, resin-dotted, with lance-shaped basal leaves. Stem leaves are alternate, stalkless, often clasping at their bases (9). Flowers: Yellow ray flowers, 10-35. Disk flowers are yellow, with several-many heads. Sticky, glandular involucral bracts, with long slender tips loose or spreading; the stickiness of the bracts, which are covered with white, extremely sticky latex, gives it its common name of gumweed (9). Tolerates poor, sandy, or salty soils. Established plants will self-sow (10). Important note: *Grindelia integrifolia* is the preferred nectar source of the butterfly *Lycaena xanthoides*, which was thought to be extinct in western Oregon after large scale eradication of *Grindelia* species meant to preserve an endemic species of *Grindelia*. This butterfly was rediscovered in minute populations in 2004 in western Oregon. *Grindelia integrifolia* will likely play an important role in the recovery of sustainable *L. xanthoides* populations (11).
PROPAGATION DETAILS As published by Lindsay Springer in the Native Plant Network Database for Grindelia ssp., non-specific to species	
Ecotype (this is meant primarily for experimentally derived protocols, and is a description of where the	

seed that was tested came from):	
Propagation Goal (Options: Plants, Cuttings, Seeds, Bulbs, Somatic Embryos, and/or Other Propagules):	Seeds (8)
Propagation Method (Options: Seed or Vegetative):	Seed (8)
Product Type (options: Container (plug), Bareroot (field grown), Plug + (container-field grown hybrids, and/or Propagules (seeds, cuttings, poles, etc.))	Propagules (8)
Stock Type:	
Time to Grow (from seeding until plants are ready to be outplanted):	
Target Specifications (size or characteristics of target plants to be produced):	Reproducing plant (8)
Propagule Collection (how, when, etc):	Seeds removed from seed head in October (10/3/98) (8)
Propagule Processing/Propagule Characteristics (including seed density (# per pound), seed longevity, etc):	
Pre-Planting Propagule Treatments (cleaning, dormancy treatments, etc):	None (8)
Growing Area Preparation / Annual Practices for Perennial Crops (growing media, type and size of containers, etc):	Propagation Environment: Greenhouse 65-70˚ F day, 55˚ nights Propagated under tent with misters set 8am-8pm, with 10 sec/15 min watering intervals. One week after germination, seedlings were moved to mister area without tent (8). Germination media: Fafard Germinating Mix (superfine) Growing media: Fafard Growing Mix 2 (8)
Establishment Phase (from seeding to germination):	6 days Sowing/planting technique: Seeds surface sown in 36 pack, with 1 seed per slot. Seeds were firmly pressed into soil (8).
Length of Establishment	

Phase:	
Active Growth Phase (from germination until plants are no longer actively growing):	
Length of Active Growth Phase:	
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 Shipping (of seedlings):	
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):	

PROPAGATION DETAILS	
Ecotype (this is meant primarily for experimentally derived protocols, and is a description of where the seed that was tested came from):	
Propagation Goal (Options: Plants, Cuttings, Seeds, Bulbs, Somatic Embryos, and/or Other Propagules):	Plants (1)
Propagation Method (Options: Seed or Vegetative):	Seed (1)
Product Type (options: Container (plug), Bareroot (field grown), Plug + (container-field grown hybrids, and/or Propagules (seeds, cuttings, poles, etc.))	
Stock Type:	
Time to Grow (from seeding until	

plants are ready to be outplanted):	
Target Specifications (size or characteristics of target plants to be produced):	
Propagule Collection (how, when, etc):	Collect seeds in the fall from flowering heads (4).
Propagule Processing/Propagule Characteristics (including seed density (# per pound), seed longevity, etc):	
Pre-Planting Propagule Treatments (cleaning, dormancy treatments, etc):	Seed germinates in 2-3 weeks at 50-60°F. Sow in sharp draining seed mix and cover to depth of seed (1). Seeds harvested in the fall can be left outside in containers or in the ground to allow for cold stratification for germination. Seeds will germinate when planted in spring, but percentage is increased by a winter chilling period (4).
Growing Area Preparation / Annual Practices for Perennial Crops (growing media, type and size of containers, etc):	
Establishment Phase (from seeding to germination):	
Length of Establishment Phase:	
Active Growth Phase (from germination until plants are no longer actively growing):	
Length of Active Growth Phase:	
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 Shipping (of seedlings):	
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):	See below
Other Sources Consulted (but that contained no pertinent information) (full citations):	See below
Protocol Author (First and last name):	Sarah Otto-Combs
Date Protocol Created or Updated (MM/DD/YY):	05/10/2012

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

Sources

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(2)
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(3)
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Other Sources

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