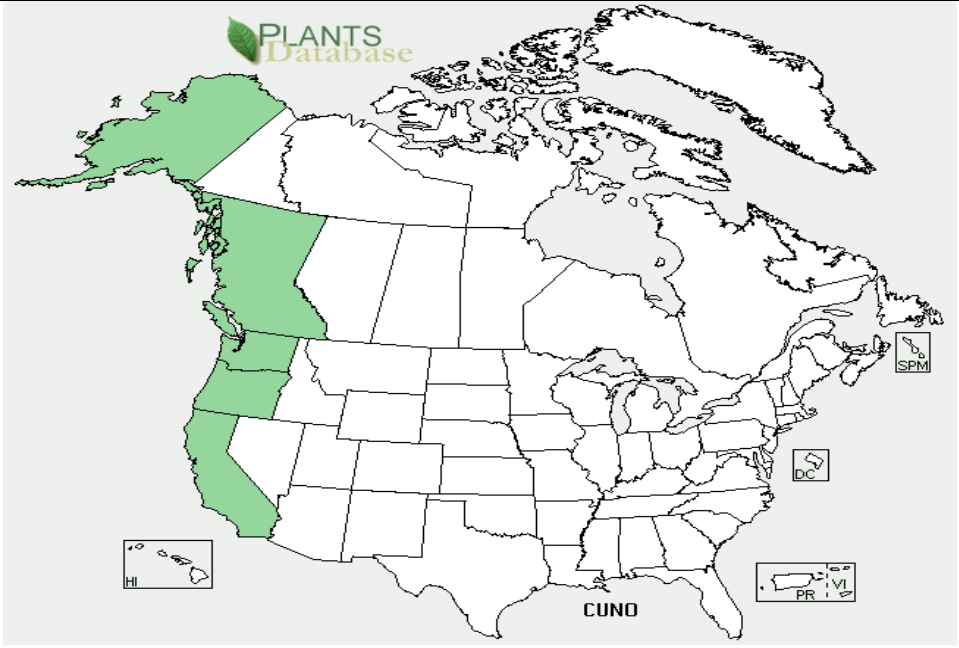
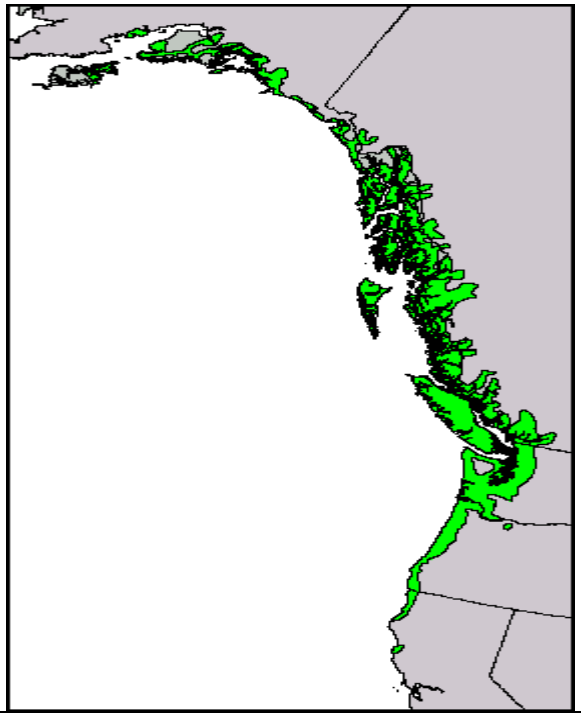
Plant Propagation Protocol for *Cupressus nootkatensis*

ESRM 412 – Native Plant Production

TAXONOMY	
Family Names	
Family Scientific Name:	Cupressaceae (USDA Plants Database)
Family Common Name:	Cypress Family
Scientific Names	
Genus:	*Cupressus* (USDA)
Species:	*Cupressus nootkatensis*
Species Authority:	D. Don (USDA)
Variety:	
Sub-species:	
Cultivar:	There are only a few desirable cultivars in existence: 'Compacta' is a dwarfed version, 'Lutea', and 'Pendula' which accentuate the weeping characteristics to an extreme. (Kruckeberg)
Authority for Variety/Sub-species:	
Common Synonym(s)	*Chamaecyparis nootkatensis* (USDA)- Stinking Cypress (Jacobson) Yellow Cedar, Alaska Yellow Cedar, Yellow Cypress (*Callitropsis nootkatensis* (Jacobson)), and Nootka Cypress (Van Pelt)- (*Xanthocyparis nootkatensis* (Jacobson)).
Common Name(s):	Alaska Cedar
Species Code (as per USDA Plants database):	CUNO (USDA)

GENERAL INFORMATION	
Geographical range	 
Ecological distribution:	C.nootkatensis is found in coastal mountain ranges from Alaska to northern California (Baskin)
Climate and elevation range:	From 0 to 1500 m elevation (Baskin)
Local habitat and abundance	Prefers forests of the Cascades, Olympics, and Vancouver Island and commonly associates with Pacific Silver fur and Mountain Hemlock. (Van Pelt)

Plant strategy type / successional stage	C. nootkatensis occurs on very moist, nutrient poor soils where there is low competition. C. nootkatensis competes by using less resources for growth and reproduction, while producing strong and durable wood with powerful natural biocides. (Ritland)
Plant characteristics	C. nootkatensis is a subalpine (Van Pelt), monoecious conifier that depends on wind for both pollen and seed dispersal. (Ritland). Alaska Cedar is known to age over 2,000 years, and is ranked the eighth largest by wood volume (Van Pelt). The foliage emits a distinctive odor when crushed making it identifiable by smell (Jacobson). Alaska Cedar can also be dwarfed in higher elevations, as short as 8-15 ft tall, compared to a medium height of 80ft and a high of over 200ft. Alaska Cedar is known for a weeping characteristic, and well as white, stringy bark and low seed germination. (Kruckeberg)

PROPAGATION DETAILS	
Ecotype	USFS, Malhuer National Forest, Blue Mountain Ranger District, John Day, Oregon (Barner)
Propagation Goal	Seeds (Barner)
Propagation Method	Seed (Barner) or cuttings (Kruckeberg)
Product Type	Propagules (seeds, cuttings, poles, etc.) (Barner)
Stock Type:	
Time to Grow:	Approximately one year (Raimondi)
Target Specifications:	Plants ready to be transplanted at 4-8 inches tall into either a garden or a nursery holding-bed. (Kruckeberg)
Propagule Collection	Small lot, hand collected. (Barner)
Propagule Processing/Propagule Characteristics	Seeds have a coat-imposed dormancy causing low germination rates. (Raimondi)
Pre-Planting Propagule Treatments:	The cones were kiln dried, at 90 Degrees Fahrenheit for 48 hours. They were then tumbled to extract the seeds. The seeds were air-screened, using medium speed and medium air. Seeds were finished using a Gravity Separator to remove remaining nonviable seed and extra material. The number of Seeds per Pound was 80 and 140, with a purity of 99%. (Barner)
Growing Area Preparation / Annual Practices for Perennial Crops	3/5 seeds per cavity, 112 cavities per block, each containing peat moss, and were maintained at 27 degrees C for 2 weeks before held constant at an average temperature of 20 degrees C. (Raimondi)
Establishment Phase:	Late February- late May (Raimondi)
Length of Establishment Phase:	Approximately 2 months (Raimondi)
Active Growth Phase:	Late winter through early fall (Raimondi)
Length of Active Growth Phase:	Most significant growth occurs within an eight months of outplanting, or 20 months post germination. (Raimondi)
Hardening Phase:	September- December (Raimondi)
Length of Hardening Phase:	In this case, Hardening was initiated prior to harvesting from the nursery, after only 4 months of growth post germination for a period of 3-4 months. (Raimondi)

Harvesting, Storage and Shipping	Cold Storage, 33-38 Degrees Fahrenheit (Barner)
Length of Storage	Approximately 4 months (Raimondi)
Guidelines for Outplanting / Performance on Typical Sites	Due to considerable differences in structure with varying locations along the coast, seed transfer should be constrained to within three defined regions- (*i*) Ketchikan and Petersburg; (*ii*) Mount Baker, Black Tusk, Mount Rainier, and Hurricane Ridge; and (*iii*) Anchorage, Queen Charlotte, Mount Washington, Prince Rupert, Port Hardy, Bella Coola, and Tofino. (Ritkin) Date of outplanting varies considerably depending on elevation. At higher elevations, outplanting depends on snow-melt and occurs later than at lower elevations. (Raimondi)
Other Comments	Very high genetic diversity compared with other conifers. (Ritkin)

INFORMATION SOURCES

References:

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Protocol Author	Tess Paganelli
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Plant Data Sheet

Chamaecyparis nootkatensis Alaska-cedar

Range

Pacific coast mountain ranges from south central Alaska to southwest Oregon.

Climate, elevation

Cool wet climate. Shore line to tree line in northern part of range. Only found at tree line in the southern parts of range.

Local occurrence

West slopes Cascade Mountains.

Habitat preferences

Listed as shade tolerant but this varies through range. More shade tolerant in southern parts of range. Prefers deep well-drained soil rich in calcium and magnesium. Can also be found on rocky soils of the alpine above the limits of other conifers. The only conifer to survive on sites with frequent avalanches. Low frost resistance. In sites with low temperatures, needs heavy snow pack to protect roots.

Plant strategy type/successional stage

Successional stage depends on site. Can be long-lived seral species or a climax species. Can be the dominant or co-dominant over story species.

Associated species:

Western white pine, mountain hemlock, Pacific yew, noble fir, subalpine fir, incense cedar, Sitka spruce, Doug-fir.

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

Seeds, layers, cuttings.

Collection restrictions or guidelines

Good seed crops are irregular, occurring at 4 year or longer intervals. Seed maturation time varies through range. It is around September and October. Mature and non-mature cones can appear on the same branch. Mature cones are yellow brown.

Seed germination

Germination rates are low. Tetrazolium stain recommended to test seed viability.

Two recommendations for breaking dormancy:

1.) Cold moist stratification for 90 days. Germination will occur at 24C. (Native Plant Network.)

2.) Warm stratification at 68-86F for 30 days followed by moist stratification at 40F for 30 days. (Forest Service Database.)

Seed life

3-5 years in storage.

Recommended seed storage conditions

Dry seeds and store at 32F.

Propagation recommendations

Vegetative propagation recommended for container stock. Treat cuttings with indolebutyric acid and pot in greenhouse.

Soil or medium requirements

No inoculum necessary.

Installation form

Container plant from cutting. Young tree can be ready to plant one year after cutting taken.

Normal rate of growth or spread; lifespan

Slow growing. Can reach 100 feet tall and four feet diameter but id usually smaller. At tree line, often shrub like. Long lived. Can live 3,500 years.

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Data compiled by Katie McGowan May 15, 2003