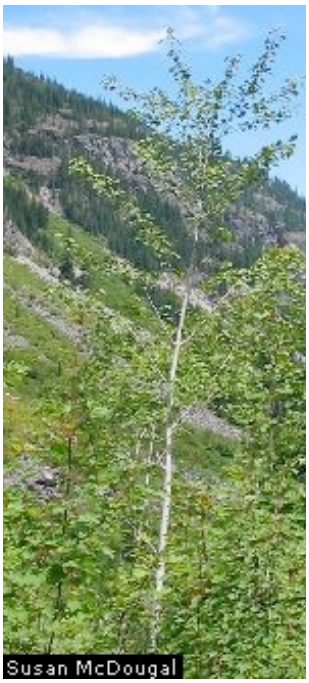
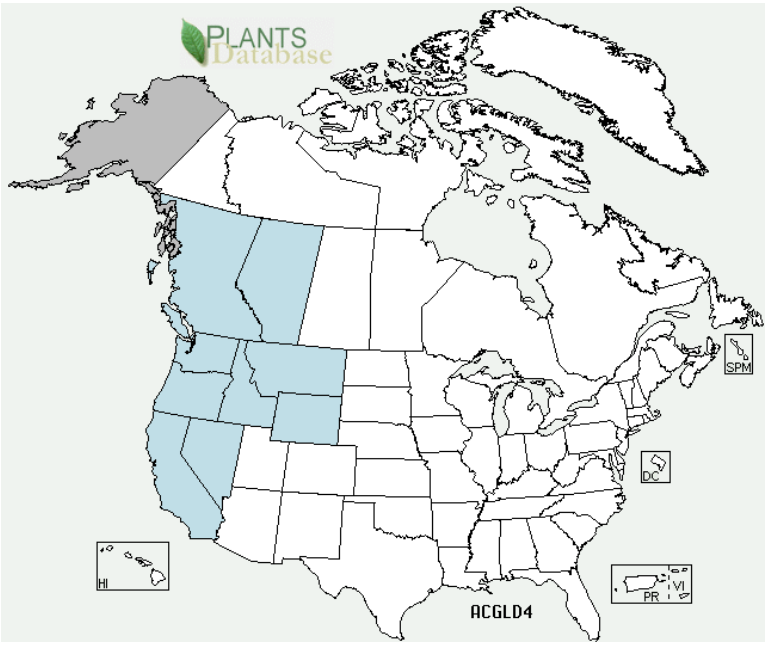
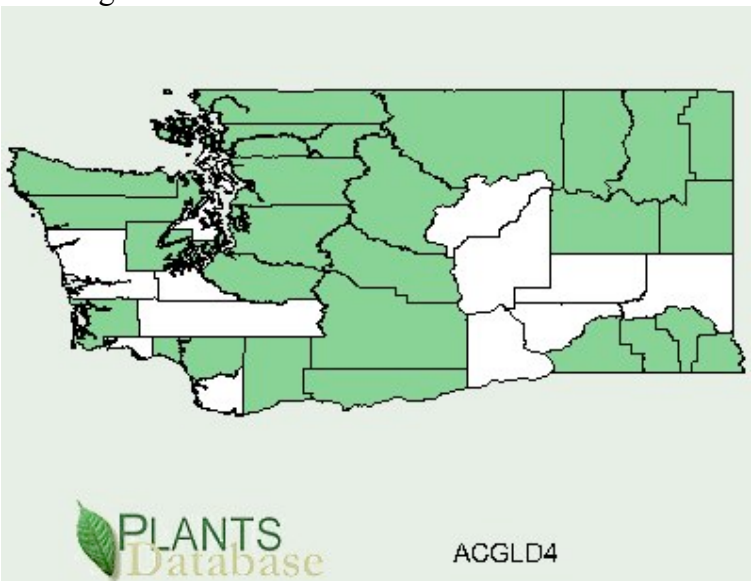
Plant Propagation Protocol for *Acer glabrum* Torr. var. *douglasii*
ESRM 412 – Native Plant Production



Susan McDougall @ USDA-NRCS PLANTS Database

TAXONOMY	
Family Names	
Family Scientific Name:	*Aceraceae*
Family Common Name:	Maple
Scientific Names	
Genus:	*Acer*
Species:	*glabrum*
Species Authority:	John Torrey
Variety:	*douglasii*
Authority for Variety:	William Jackson Hooker, Leopold Dippel
Common Synonyms	*Acer glabrum* Torr. ssp. *douglasii* Hook*, Acer douglasii* Hook*, Acer glabrum* Torr. var. *douglasii* (Hook) Dippel
Common Name:	Douglas Maple
Species Code (as per USDA Plants database):	ACGLD4

GENERAL INFORMATION	
Geographical range	North American Distribution:  Washington State Distribution:  Images courtesy of USDA Plants Database
Ecological distribution (ecosystems it occurs in, etc):	Prefers dry, open and well-drained sites such as rocky ridges, forest edges, and bottom edges of avalanche tracks (Pojar & MacKinnon, p.93) stream-sides, sheltered canyons and ravines (U.S. Forest Service, web)
Climate and elevation range	Reported as 1,200 – 1,800 meters (U.S. Forest Service, web) and 61 – 2,134 meters (Keller, p. 6)
Local habitat and abundance;	Long lived, found in the understory of late seral forests (USDI, web)

Plant strategy type / successional stage:	Shade intolerant, not a strong competitor with conifers, can withstand heavy weight such as from avalanche or snow-pack due to flexible stem and branches (U.S. Forest Service, web), ability to resprout (USDA, web)
Plant characteristics:	Life form: small tree or shrub, 1 to 10 meters tall (USDA, web; Coward, et al, p. 76, Keller, p. 6) with opposite branches. Bark: grayish, young growth reddish. Foliage: deciduous with opposite leaves, 2-8 cm, 3-5 lobes (Keller, p. 6), coarsely toothed, green from spring to summer, turning yellow/orange/red in autumn. Flowers: greenish/yellow, males and females occurring on the same or different plants (Pojar & MacKinnon, p. 93), about 10 flowers in terminal or axillary clusters blooming from April to May (TNC Staff, web). Fruits: occur in V-shaped pairs, winged, tan to green and 2-3 cm in length (Pojar & MacKinnon, p.93), smooth and hairless (Coward, et al, p.76)
PROPAGATION DETAILS	
Propagation Method:	Seed
	Container (plug), bare-root
Stock Type:	Ray Leach Cone-Tainer (172ml) (USDI, web)
Time to Grow (from seeding until plants are ready to be outplanted):	10 months (USDI, web)
Propagule Collection:	 Susan McDougall @ USDA-NRCS PLANTS Database Seeds are in fruits which are indehiscent samaras or winged achenes, adapted for wind dispersal. They mature in trees about 10 years of age and older in August – September and can be collected from September to February. Seeds may lose viability over cold, dry winter months, so collection is best done in autumn or early winter. Collection methods are picking from tree branches or shaking the tree and collecting the fruits on a tarp (U.S. Forest Service, web). Mature seeds can be identified by firm texture and seed cavity filled by yellow cotyledons. Should collect seeds before they harden in late fall, timing dependent on elevation (USDI, web).
Propagule Processing/Propagule Characteristics:	Seed density averages 16,000/lb (USDA, web) and is reported anywhere between 7,820 to 20,300/lb (US Forest

	Service, web) depending on whether it has been cleaned. Seeds should be sown as soon as possible, but can be stored up to 2 years.
Propagule Storage:	Dry samaras until moisture content is at 10-15%. Store in sealed containers at 1-5°C (U.S. Forest Service, web)
Pre-Planting Propagule Treatments (cleaning, dormancy treatments, etc):	Seeds are recalcitrant and should be sown in the fall as soon after collection as possible (Dumroese, et al, p. 122). If stored, dormancy is difficult to overcome but can be done. Seeds have physical and physiological dormancy (USDI, web). According to the U.S. Forest Service, either warm-moist stratification for 180 days at about 20°-30°C, followed by cold-moist stratification for 180 days at about 2°-5°C OR cold-moist stratify at 3°-5°C for 2-6 months followed by warm-moist stratification at 41°C for 90 days. According to USDI, NPS, Glacier National Park protocol for *Acer glabrum glabrum* (Rocky Mountain Maple), soaking in water for 3-days to a week and changing the water every day is important. Then warm-moist stratification at 23°-25°C for 90 days followed by cold-moist stratification at 1°-3°C for 120 days. They recommend that the stratification be done with seeds shallowly buried or in moist peat moss in mesh bags. Although these recommendations are for *A. glabrum glabrum*, they may be appropriate for *A. glabrum douglasii* as well and a trial run could be established to check germination success. Cleaning: Seeds do not need to be removed from samaras. Clean by rubbing or hammermilling to remove the wings and fans or other pushed air to remove the chaff (US Forest Service, web).
Growing Area Preparation / Annual Practices for Perennial Crops:	Medium to course textured soils are desired with a pH from 5.5-7.5 (USDA, web). Preferred soils are silty to sandy or gravelly and well-drained (U.S. Forest Service, web). Glacier Mountain National Park uses a planting medium of milled sphagnum peat, perlite and vermiculite with controlled release fertilizer in 172 ml Ray Leach Cone-Tainers. Success has also been found with fall planting outdoors in mulched beds with a planting density of 15-30 seeds per sq foot and at a depth of 1-2 cm (U.S. Forest Service, web). Needs some shade for successful development, and may be

	prone to damping off. Arbuscular Mycorrhizae (AM) forms a partnership with Maple species, and should be produced in a pot culture ahead of time. Seeds should be sown in soil mixed with the pot culture. (Dumroese, et al, p. 249 – 252)
Establishment Phase:	4 weeks with true leaves appearing approximately 2 weeks after germination (USDI, web)
Active Growth Phase (from germination until plants are no longer actively growing):	16 weeks; plants can be transplanted into 1-gallon containers approximately 9 weeks after germination (USDI, web)
Hardening Phase (from end of active growth phase to end of growing season):	Irrigate, and fertilize if desired, prior to overwintering. 6 week hardening phase (USDI, web)
Harvesting of seedlings:	Harvest in September (USDI, web). If harvesting as bare-root stock, harvest when dormant (U.S. Forest Service, web)
Length of Seedling Storage:	5 months. This species is rather frost tolerant. Outdoor storage of container plants should be fine under insulating cover (USDI, web).
Guidelines for Outplanting / Performance on Typical Sites	Glacier National Park has had 100% survival of outplanted seedlings after 5 years.
Other Comments:	Vegetative propagation has not shown much success. *A. glabrum* species are known to resprout readily following cutting and light fires (U.S. Forest Service, web). If propagating from cuttings, must be sure to propagate both male and female plants, as some *A. glabrum* trees are dioecious (Dumroese, et al, p. 159) No additional information on vegetative propagation was found.
Protocol Author (First and last name):	Brooke A. Cassell
Date Protocol Created or Updated (MM/DD/YY):	05/11/2010

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Images:

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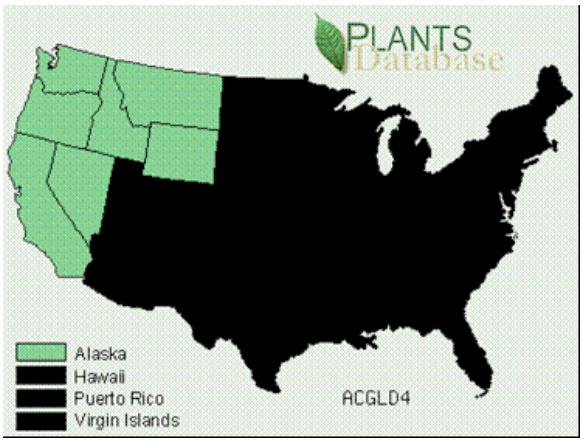
Plant Data Sheet (2004)

Species: Acer glabrum Torr. var. douglasii, Douglas maple

Native Name: twanů-wash

Traditional uses: Wood for net hoops. Shoots and seedlings can be collected and eaten fresh or cooked like asparagus. The samara seeds can be boiled and eaten, but it is usually only done so in an emergency. The sap can also provide some sweet nutrition. Douglas maple is said to be useful in curing nausea. The wood and bark are combined with twigs of Saskatoon (Amelanchier species) and made into a solution that purportedly improves the healing process of a woman following childbirth. The concoction has also been used to increase lactation. The light brown wood was carved into snowshoe frames, ceremonial pieces, drum hoops, and bows. The inner bark of the tree creates a tough fiber that was gathered and worked into mats and ropes.

Range:



Local occurrence: Douglas maple extends from Alaska through British Columbia and Alberta, proceeds down to New Mexico and southern California.

Habitat preferences: moist, well-drained soils of mountain slopes and canyons. This species is quite variable and populates the understories of coniferous and hardwood forests, dry ridges, forest edges, floodplains and uplands from mid to high elevations.

Associated species: Rocky Mountain Maple, Mountain Maple

May be collected as: seed

Collection restrictions or guidelines: Fruit seed period begins in summer ends in fall.

Seed germination: Cold Stratification Required.

Propagation recommendations; Plant bare root ,container

Soil or medium requirements: Course to medium textured soils. Ph minimum 5.5 maximum 7.5.

Installation form: Bareroot, container, seed.

Recommended planting density: 700-2700 per acre.

Care requirements after installed: Moist soil. Shade tolerant.

Normal rate of growth or spread; lifespan: Active growth period Spring and Summer. Moderate growth rate. Blooms late spring. Perennial

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http://www.nwplants.com/plants/trees/aceraceae/acer_glabrum/

Data compiled by: Karen Suyama, June 2005