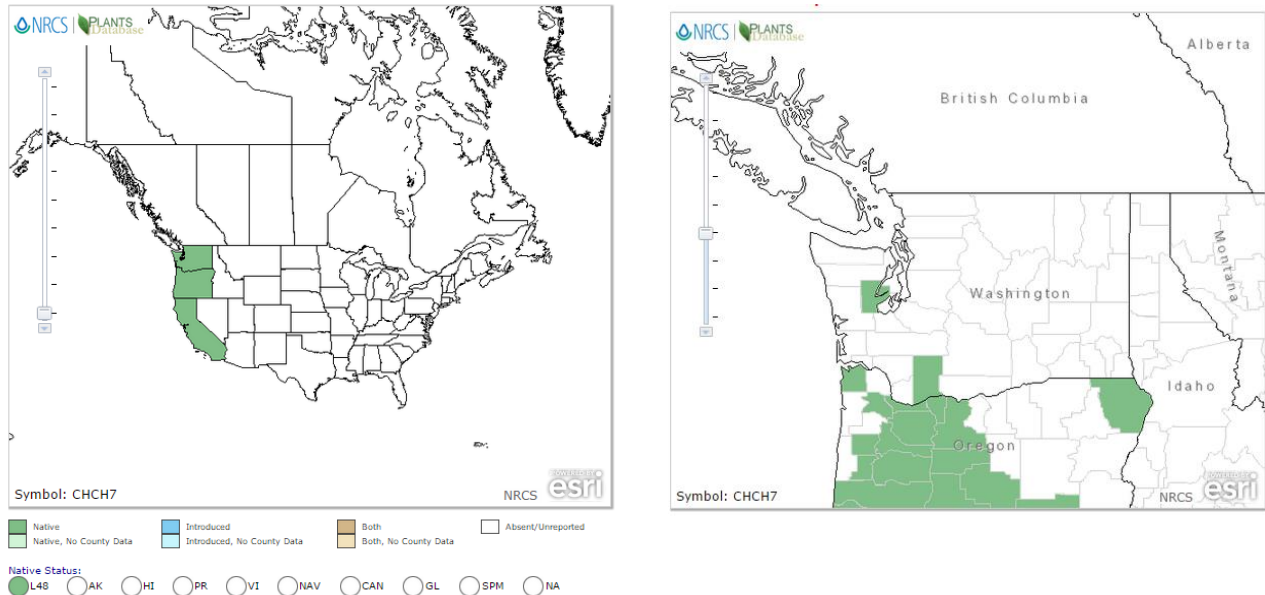


Plant Propagation Protocol for *Chrysolepis chrysophylla*

ESRM 412 – Native Plant Production

Protocol URL: <https://courses.washington.edu/esrm412/protocols/CHCH7.pdf>



Distribution Map in North America and Washington State⁵

TAXONOMY	
Plant Family	
Scientific Name	Fagaceae ⁵
Common Name	Beech family ⁵
Species Scientific Name	
Scientific Name	<i>Chrysolepis chrysophylla</i> (Douglas ex Hook.) Hjelmqvist ⁵
Varieties	Variety <i>Chrysolepis chrysophylla</i> (Douglas ex Hook.) Hjelmqvist var. <i>chrysophylla</i> ⁵ Variety <i>Chrysolepis chrysophylla</i> (Douglas ex Hook.) Hjelmqvist var. <i>minor</i> (Benth.) Munz ⁵
Sub-species	CHCHM: <i>Chrysolepis chrysophylla</i> (Douglas ex Hook.) Hjelmqvist var. <i>minor</i> (Benth.) Munz giant chinquapin ⁵ CHCHC4: <i>Chrysolepis chrysophylla</i> (Douglas ex Hook.) Hjelmqvist var. <i>chrysophylla</i> giant chinquapin ⁵
Cultivar	
Common Synonym(s)	- <i>Chrysolepis chrysophylla</i> (Douglas ex Hook.) Hjelmqvist ⁵ - <i>Chrysolepis chrysophylla</i> (Douglas ex Hook.) Hjelmqvist var. <i>chrysophylla</i> ⁵

	- <i>Chrysolepis chrysophylla</i> (Douglas ex Hook.) Hjelmqvist var. <i>minor</i> (Benth.) Munz ⁵
Common Name(s)	Golden Chinkapin ⁵ Giant Chinquapin ⁵ Goldenleaf Chestnut
Species Code (as per USDA Plants database)	CHCH7
GENERAL INFORMATION	
Geographical range	Ranges from western Washington south into Oregon, and central California ⁷ . Maps above show distribution in North America and Washington state ⁵ . Communities: Redwood Forest, Yellow Pine Forest, Closed-cone Pine Forest, Chaparral ²
Ecological distribution	Slopes and Ridges ^x Gravelly and rocky soils in mountain slopes and canyons in Redwood and evergreen forests ^x . Shrub variety on dry ridges in chaparral and Knobcone Pine forests ^x . Forested and mountain slopes of the Pacific Coast region ^x . May also be found in valleys and sheltered ravines ⁷ .
Climate and elevation range	- Elevation 30 to 2240 meters ⁸ - Annual Precipitation: 22 to 157 inches ⁸ - Wet Season: 6 to 10 months ⁸ - Temperature Range ≤ 60 ° F ⁸ - December Low 26 ° F, July High 90 ° F, July Low 48 ° F ⁸ - Warm Season 2 to 5 months ⁸ - Hardiness Zones 7b to 10a (5 to 35 ° F) ⁸
Local habitat and abundance	Several disjunctive populations occur in western Washington in the vicinity of Puget Sound ^x .
Plant strategy type / successional stage	It may occur as either a subdominant tree or a dominant understory shrub, depending upon moisture conditions, elevation, and overstory density ^x . This species is a hardwood species in a landscape dominated by coniferous forests. Over much of its range, giant chinquapin shows several growth forms; it grows in a wide variety of habitats but is rarely a dominant component of any stand ² .

	In certain portions of its range, it can be an undesirable competitor of commercial species during early stages of stand development. Ecologically and taxonomically, it remains a poorly understood species ^x .
Plant characteristics	<p>Shrub, Tree⁵</p> <p>General⁶: Large, evergreen shrub or small tree 5-30 m. tall, the bark thick and heavily furrowed. Bark thick, rough. Twigs densely covered with tight, yellowish, peltate trichomes.</p> <p>Leaves: Leaves alternate, the blades oblong-lanceolate, to oblong elliptic, 5-10 cm. long, entire, thick and leathery, dark green and usually glabrous above, yellow-green to golden and densely scurfy-woolly below, the base acute, the tip acuminate; petioles 1 cm. long. Leaves: petiole 5-8 mm. Leaf blade flat or folded upward along midvein, margins entire, apex acute or acuminate, surfaces abaxially usually golden or brownish with dense glandular trichomes.</p> <p>Flowers: Plants monoecious; staminate flowers in groups of 3 in stiff, elongate, spreading or erect catkins; perianth deeply 5- or 6-parted; stamens 8-12; pistillate flowers at the base of the staminate spikes, 1-3 in a chaffy involucre, the perianth attached to the ovary but with 6 free lobes; styles 3.</p> <p>Fruits: Involucre hardens into a spiny bur 1.5-2 cm. broad that contains 1-2 hard-shelled nuts about 10 mm. long. Cupule yellowish, 20-60 mm thick, densely spiny, surface obscured; nut light brown, (6-)8-12(-15) mm, glabrous, completely enclosed by cupule until maturity.</p>
PROPAGATION DETAILS	
Ecotype	
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plug)
Stock Type	larger than 10 cm ³
Time to Grow	6 Months
Target Specifications	
Propagule Collection Instructions	flowering (mid-June to mid-July), fruit ripening (mid-August to early September), and seed dispersal (peaking in late September, but prolonged into early

	<p>December)</p> <p>Six-year-old stump sprouts have produced some sound seeds. Sow nuts as soon as they are ripe, but protect them from rodents. Because of its sensitive status in Washington, be very conscientious and respectful when collecting in the wild².</p> <p>Hand pick the burs in late summer or early fall, after ripening but before they open. The fruit ripens during August and September⁷.</p>
Propagule Processing/Propagule Characteristics	<p>Spiny, chestnut-like burs 0.6 to 1 in (15 to 25 mm) in diameter contain one to three hard-shelled nuts².</p> <p>Averages 960 seeds per lb (2,120 seeds per kg); ranges from 830 to 1,100 seeds per lb (1,800 to 2,400 seeds per kg)¹</p> <p>Seed may be stored for 5 years or longer in a controlled environment^x.</p>
Pre-Planting Propagule Treatments	<p>Spread burs out to dry in a warm room and run through a fruit disintegrator or shaker to separate the nuts⁷.</p>
Growing Area Preparation / Annual Practices for Perennial Crops	<p>Seeds do not need to be cold stratified and can be planted directly into containers larger than 10 cm³ and covered with 5 cm of soil. Survival after emergence can be problematic².</p> <p>As soon as they are large enough to handle, prick the seedlings out into individual pots and grow them on in a greenhouse for at least their first winter⁷.</p>
Establishment Phase Details	<p>Germination and establishment in the fall are possible. Reported germination ranges from 14 to 53 percent².</p>
Length of Establishment Phase	<p>Germination is hypogeal and takes place in 16 to 24 days².</p>
Active Growth Phase	<p>Seedlings often grow in partial shade; relatively cool, moist conditions required; seedling densities are typically low^x.</p> <p>Plant them out into their permanent positions in late spring or early summer, after the last expected frosts⁷.</p>
Length of Active Growth Phase	<p>3 Months</p>
Hardening Phase	<p>Consider giving them some protection from the cold for their first winter outdoors².</p> <p>Slow growing with a moderate lifespan⁷.</p>
Length of Hardening Phase	<p>3 Months</p>
Harvesting, Storage and Shipping	<p>Store the nuts in sealed containers at 5°C⁷</p>

Length of Storage	They will retain their viability for two to five years ⁷
Guidelines for Outplanting / Performance on Typical Sites	300-700 plants per acre ² .
Other Comments	
INFORMATION SOURCES	
References	See Below
Other Sources Consulted	See Below
Protocol Author	Mahshid Gharibimarzanola
Date Protocol Created or Updated	05/20/15

References

- 1 "Appendix8: Tree Species Profile," accessed May 2015, http://ecoshare.info/wp-content/uploads/2012/04/CCFT_App_8_Tree_Profiles.pdf
- 2 "*Chrysolepis chrysophylla*," accessed May 2015, <http://www.fs.fed.us/database/feis/plants/tree/chrchr/all.html>
- 3 "Plants for a Future," accessed May 2015, <http://www.pfaf.org/user/Plant.aspx?LatinName=Chrysolepis+chrysophylla>
- 4 "Golden Chinquapin, *Chrysolepis chrysophylla*," accessed May 2015, <http://nativeplantspnw.com/golden-chinquapin-chrysolepis-chrysophylla/>
- 5 "*Chrysolepis chrysophylla*," accessed May 2015, <http://plants.usda.gov/core/profile?symbol=CHCH7>
- 6 "*Chrysolepis chrysophylla*," accessed May 2015, http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=220002877
- 7 "*Plant Data Sheet*," accessed May 2015, http://depts.washington.edu/propplnt/Plants/Golden_Chinkapin.htm
- 8 "*Plant Data Sheet*," accessed May 2015, <http://www.calflora.org/entry/plantchar.html?crn=2069>
- 9 "golden chinkapin," accessed May 2015, <http://dendro.cnre.vt.edu/dendrology/syllabus/factsheet.cfm?ID=199>
- 10 "*Chrysolepis chrysophylla* (Douglas ex Hook.) Hjelmq.," accessed May 2015, <http://www1.dnr.wa.gov/nhp/refdesk/fguide/pdf/chchc4.pdf>

Other Sources Consulted

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- 12 "Native Plant Database," accessed May 2015, http://www.wildflower.org/plants/result.php?id_plant=CHCH7
- 13 "Burke Museum of Natural History and Culture," accessed May 2015, <http://biology.burke.washington.edu/>
- 14 "Giant Chinkapin," accessed May 2015, <http://www.americanforests.org/bigtree/giant-chinkapin-chrysolepis-chrysophylla-3/>
- 15 "*Chrysolepis chrysophylla* (Douglas ex Hook.) Hjelmq.," accessed May 2015, http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=508097
- 16 "*Chrysolepis chrysophylla* (Douglas ex Hook.) Hjelmq.," accessed May 2015, http://ucjeps.berkeley.edu/cgi-bin/get_cpn.pl?CHCH7

Plant Data Sheet



Species (common name, Latin name)

Golden Chinkapin, *Chrysolepis Chrysophylla*

Range

ranges from western Washington south into central California.

Climate, elevation

1000-2000 m in the mountain slopes of the Pacific Coast region, may also be found in valleys and sheltered ravines.

Local occurrence (where, how common)

Several disjunct populations occur in western Washington in the vicinity of Puget Sound.

Habitat preferences

Forested slopes

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

may occur as either a subdominant tree or a dominant understory shrub, depending upon moisture conditions, elevation, and overstory density.

Associated species

Golden chinkapin grows in association with western juniper, canyon oak, and scrub oak

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

Hand pick the burs in late summer or early fall, after ripening but before they open. Spread them out to dry in a warm room and run through a fruit disintegrator or shaker to separate the nuts.

Collection restrictions or guidelines

The fruit ripens during August and September.

Seed germination (needs dormancy breaking?)

Seeds do not need to be cold stratified and can be planted directly into containers larger than 10 cm³ and covered with 5 cm of soil. Survival after emergence can be problematic

Seed life (can be stored, short shelf-life, long shelf-life)
they will retain their viability for two to five years

Recommended seed storage conditions

Store the nuts in sealed containers at 5°C;

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

Seed - best sown in a cold frame as soon as it is ripe. As soon as they are large enough to handle, prick the seedlings out into individual pots and grow them on in a greenhouse for at least their first winter.

Soil or medium requirements (inoculum necessary?)

Dry rocky soils to deep rich soils.

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

May be planted as seeds or seedlings.

Recommended planting density

300-700 plants per acre.

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

Plant them out into their permanent positions in late spring or early summer, after the last expected frosts, and consider giving them some protection from the cold for their first winter outdoors.

Normal rate of growth or spread; lifespan

Slow growing with a moderate lifespan.

Sources cited

Propagation of Pacific Northwest Native Plants by Rose, Robin.; Chachulski, Caryn E. C.; Haase, Diane L., Corvallis Oregon State University Press, 1998.

Gardenbed.com, http://gardenbed.com/source/17/1654_gen.asp

Plants Database, <http://plants.usda.gov>

Data compiled by (student name and date)

Doug Schmitt 6-8-03