

Plant Propagation Protocol for *Juniperus horizontalis*

ESRM 412 – Native Plant Production

Protocol URL: <https://courses.washington.edu/esrm412/protocols/JUHO2.pdf>



Juniperus horizontalis (6)

TAXONOMY	
Plant Family	
Scientific Name	Cupressaceae
Common Name	Cypress family
Species Scientific Name	
Scientific Name	<i>Juniperus horizontalis</i> Moench
Varieties	Varieties of <i>Juniperus horizontalis</i> include: var. <i>alpina</i> , var. <i>canadensis</i> , var. <i>douglasii</i> , var. <i>glabrata</i> , var. <i>glomerata</i> , var. <i>humilis</i> , var. <i>lanata</i> , var. <i>procumbens</i> , var. <i>prostrata</i> , var. <i>sativa</i> , var. <i>variegata</i> , var. <i>villosa</i>
Sub-species	Sub-species of <i>Juniperus horizontalis</i> include: ssp. <i>hamptonensis</i> , ssp. <i>neopangaea</i>
Cultivar	<i>Juniperus horizontalis</i> hybridizes with <i>J. scopulorum</i> (Rocky Mountain juniper) when the species' distribution overlaps, and the cultivar is named <i>Juniperus</i> × <i>fassettii</i> Boivin (Quonset' juniper) (3) Other cultivars involve 'Bar Habor', 'Blue Chip', 'Blue Horizon', 'Blue Prince', 'Prince of Wales', 'Wiltonii', 'Hughes', 'Icee Blue', 'Mother Lode', 'Plumosa', and 'Plumosa Compacta'. (8)
Common Synonym(s)	<i>Juniperus horizontalis</i> var. <i>alpina</i> (Lodd. ex Loudon) Rehder <i>Juniperus horizontalis</i> f. <i>alpina</i> (Lodd. ex Loudon) Rehder <i>Juniperus horizontalis</i> var. <i>douglasii</i> Rehder <i>Juniperus horizontalis</i> var. <i>douglasii</i> hort. <i>Juniperus horizontalis</i> f. <i>glomerata</i> Rehder <i>Juniperus horizontalis</i> var. <i>glomerata</i> Rehder <i>Juniperus horizontalis</i> subsp. <i>hamptonensis</i> Silba <i>Juniperus horizontalis</i> f. <i>lobata</i> O.W.Knight <i>Juniperus horizontalis</i> subsp. <i>neopangaea</i> Silba <i>Juniperus horizontalis</i> var. <i>variegata</i> Beissn. <i>Juniperus hudsonica</i> Forbes <i>Juniperus prostrata</i> Pers.

Juniperus racemosa Risso
Juniperus repens Nutt.
Juniperus sabina var. *humilis* Hook.
Juniperus sabina var. *procumbens* Pursh
Juniperus sabina var. *prostrata* (Pers.) Loudon
Juniperus virginiana var. *prostrata* (Pers.) Torr.
Sabina horizontalis (Moench) Rydb.
Sabina horizontalis f. *douglasii* (Rehder) Moldenke
Sabina prostrata (Pers.) Antoine
Sabina racemosa (Risso) Antoine
 (9)

Common Name(s) Creeping Juniper, Creeping Cedar, Creeping Savin

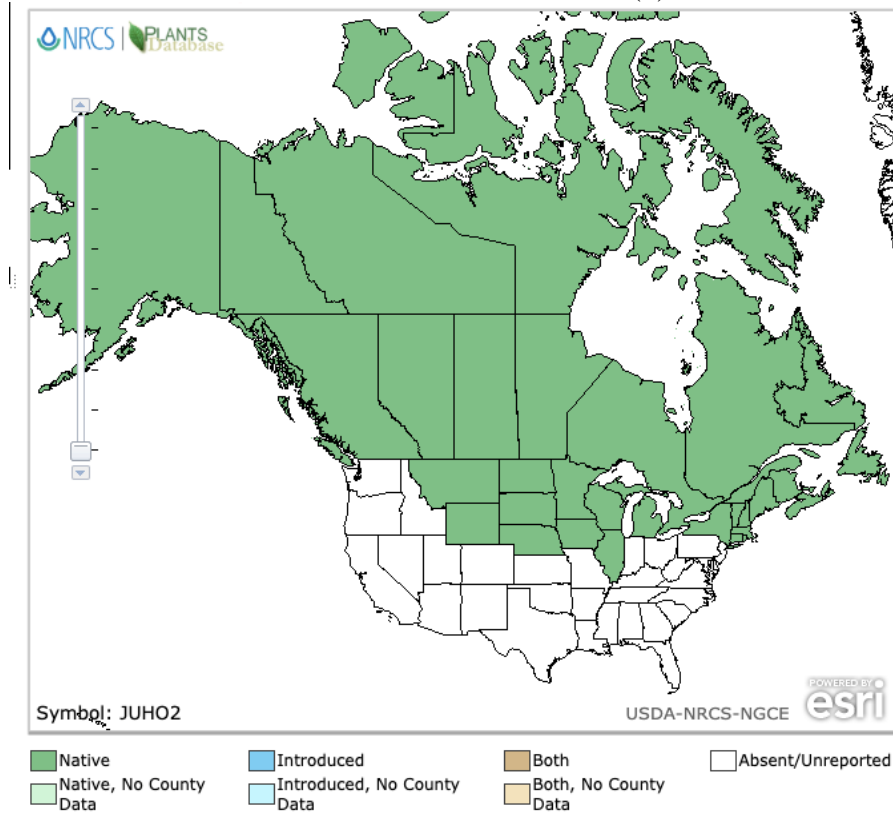
Species Code JUHO2

GENERAL INFORMATION

Geographical range

Juniperus horizontalis is native to the temperate regions of northern North America and is found in Canada and northern United States (Montana, Wyoming, South Dakota, Illinois, Michigan, Vermont, Wisconsin, North Dakota, Minnesota, Colorado, Massachusetts, Iowa, and New York).

North America Distribution: (5)



Washington/Oregon/Pacific Northwest Distribution: (5)

Ecological distribution	<p><i>Juniperus horizontalis</i> occurs in terrestrial and freshwater ecosystems, including: white-red-jack pine, spruce-fir, maple-beech-birch, aspen-birch, oak-hickory, elm-ash-cottonwood, douglas-fir, pinyon-juniper, ponderosa pine, fir-spruce, western hardwoods, mountain grasslands, mountain meadows, plains grasslands, and prairies. (3)</p>
Climate and elevation range	<p><i>Juniperus horizontalis</i> is suitable in USDA Hardiness Zone: 4-9. (8) This species can be found in continental climates that are associated with seasonal/annual temperature change and droughts.</p> <p>Generally, foothills and rocky seaside spots/wash areas are best suited for <i>Juniperus horizontalis</i>. (6) The commonly-accepted elevation that suits <i>Juniperus horizontalis</i> is reported at 2,150~8,200 fee. (3)</p>
Local habitat and abundance	<p><i>Juniperus horizontalis</i> is found from wide patches on open, dry areas, and the common habitats involves grasslands, shrublands, marine coastal/inland wetlands, and forests. It is reported that the current population trend of this species remains stable. (2)</p>
Plant strategy type /successional stage	<p><i>Juniperus horizontalis</i> is a secondary colonizer at the post-fire regeneration stage. (3)</p>
Plant characteristics	<p>Life Form: shrub Duration: perennial Foliage Color: evergreen Fruit/Seed Color: brown</p>

	<p>Size Class: 1~4 feet, groundcover Light/Shade: full sun Soil PH: PH 5.5~7.8; prefers light sandy soil Salt Tolerance: salt tolerant Boom Time: April~May Active Growth Period: spring and summer Growth Form: thick forming Growth Rate: moderate (5) (6) (10)</p>
PROPAGATION DETAILS	
Ecotype	Cuttings from the exposed ridge, Glacier National Park, Montana. (4)
Propagation Goal	Plants (4); the goal of propagation is to develop <i>Juniperus horizontalis</i> seedling production through cuttings or seeds so that the plants produced is used as groundcover/planters/mass planting, or for erosion control. (6)
Propagation Method	Vegetative propagation. (4) Propagation is possible by cuttings and seeds. Cuttings should be made after the mother plants experienced hard freezes in May, and the root formation will be enhanced by hormone treatment; seeds can be stratified and sown/sown in Autumn. (6)
Product Type	Container plants that can later be outplanted (plug). (4)
Stock Type	Containers (800 ml), container cuttings (4)
Time to Grow	15 months
Target Specifications	Height: 2.8 inches Caliper: 0.2 inches Root System: container cuttings firmly plugged into containers (800 ml) (4)
Propagule Collection Instructions	From early-mid May, cuttings should be collected from mother plants. (4) In Autumn/Winter, dry seeds should be collected from ripened fruits that are cleaned by macerating and then be stored in refrigerated containers. (7)
Propagule Processing/Propagule Characteristics	Before pre-planting propagule treatment, cuttings should be refrigerated to retain moisture. Cuttings should be treated as soon as possible after collecting, and the optimal time will be in the same day of propagule collection. (4)
Pre-Planting Propagule Treatments	Pre-rooting the semi-hardwood stem cuttings; (4) Seeds require cold stratification period and stratify at 41 °F after 30~120 days. (7) Seed germination may be accelerated by soaking into the boiling water for 3~6 seconds. (8)
Growing Area Preparation / Annual Practices for Perennial Crops	Automatic intermittent mist is set at 6-second intervals for each 6-minute for the outdoor mistbed. During the root formation stage, the mistbed is covered to prevent direct light. Temperature is retained as 70 °F by the bottom heating. After the root formation stage, the plants are propagated and established in shade house for 4 weeks and then moved to in a full-sun outdoor nursery growing environment. (4)

Establishment Phase Details	To reduce fungal development, regular hand watering of the rooting medium is suggested for the cuttings; Pre-rooted cuttings should be collected from the mistbed after root systems were sufficiently formed. (4)
Length of Establishment Phase	Cuttings establish by 12 weeks. (4)
Active Growth Phase	Cuttings are transplanted into containers (800 ml) after being collected from the mistbed and irrigated in the shade house for 4 weeks and then moved to in a full-sun outdoor nursery after the establishment of the plants. (4)
Length of Active Growth Phase	16 weeks (4)
Hardening Phase	From August~September, the plants are fertilized with 0-20-20 liquid NPK at 200 ppm. (4)
Length of Hardening Phase	4 weeks (4)
Harvesting, Storage and Shipping	Harvesting Time: 1.3 years (4)
Length of Storage	Cuttings can be stored in 5 months; Sealed, refrigerated seeds can be stored up to 10 years. (4)
Guidelines for Outplanting / Performance on Typical Sites	No data found
Other Comments	No data found

INFORMATION SOURCES

References	<p>(1) The Forest Service C.S. Schopmeyer. (1974). <i>Seeds of the Woody Plants in the United States</i>. Agriculture Handbook No. 450, U.S.F.S., Washington D.C. [Book]. [Cited 2019 May 28th]</p> <p>(2) Farjon, A. (2013). <i>Juniperus horizontalis</i>. The IUCN Red List of Threatened Species 2013: e.T42237A2965318. [Internet]. [Cited 2019 May 28th] available from http://dx.doi.org/10.2305/IUCN.UK.2013-1.RLTS.T42237A2965318.en</p> <p>(3) Gucker, Corey L. (2006). <i>Juniperus horizontalis</i>. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). [Internet]. [Cited 2019 May 28th] available from https://www.fs.fed.us/database/feis/plants/shrub/junhor/all.html</p> <p>(4) Luna, Tara; Wick, Dale; Hosokawa, Joy. (2008). <i>Protocol Information for: Juniperus horizontalis</i>. US Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources. [Internet]. [Cited 2019 May 28th] available from https://rngr.net/npn/propagation/protocols/cupressaceae-juniperus-67</p>
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	<p>(5) [USDA] plants database. <i>Plants Profile for Juniperus horizontalis</i> [Internet]. [Cited 2019 May 28th] available from https://plants.sc.egov.usda.gov/core/profile?symbol=JUHO2</p> <p>(6) Mark H. Brand. University of Connecticut Plant Database. <i>Juniperus horizontalis</i> [Internet]. [Cited 2019 May 28th] available from http://www.hort.uconn.edu/plants/detail.php?pid=229</p> <p>(7) Lady Bird Johnson Wildflower Center. <i>Juniperus horizontalis</i> [Internet]. [Cited 2019 May 28th] Available from https://www.wildflower.org/plants/result.php?id_plant=juho2</p> <p>(8) Moench. Plants For A Future. <i>Juniperus horizontalis</i> - Moench. [Internet]. [Cited 2019 May 28th] Available from https://pfaf.org/user/plant.aspx?latinname=Juniperus+horizontalis</p> <p>(9) The Plant List. <i>Juniperus horizontalis</i> Moench. [Internet]. [Cited 2019 May 28th] available from http://www.theplantlist.org/tpl/record/kew-2332743</p> <p>(10) Cornell University. Woody Plants Database. <i>Species: Juniperus horizontalis</i>. [Internet]. [Cited 2019 May 28th] Available from http://woodyplants.cals.cornell.edu/plant/124</p>
Other Sources Consulted	No data found
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